



Delft University of Technology

Campus NL - Knowledge sharing and hybrid working Annual report 2023-2024

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Campus **NL**

Knowledge sharing and hybrid working
Annual report 2023-2024



Campus **NL**

Knowledge sharing and hybrid working
Annual report 2023-2024

“Campus NL is for universities by universities”

Commissioned by
UNL (Universities of the Netherlands)
and fourteen Dutch universities,
edited by members of TU Delft’s Campus Research Team

October 2024

Colophon

This research report is the result of the first year of Campus NL 2023-2027, a project that was conducted on behalf of “Universities of the Netherlands” (UNL) and each of the fourteen Dutch universities by a research team from TU Delft, during the period from June 2023 to August 2024. The editor team thanks UNL, steering group, core team and all campus contacts for providing advice, data and text for this study (see pg. 266-267).

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Preface

At the beginning of 2023, the collective universities, represented by UNL (“Universiteiten van Nederland”, an association of universities in the Netherlands), commissioned a project to explore knowledge sharing about the past, present, and future of Campus NL. The focus is on campus management and supporting decisions about land, buildings, and other facilities of Dutch universities.

Campus NL is a four-year project, from 2023 to 2027. This report summarises the results of the first year, 2023-2024. During this year, our academic team, the steering group, the core team and the 14 campus contacts started working together. Collectively, we focused on Campus NL office space and chose “hybrid working” as the first year’s theme for knowledge sharing.

This Campus NL report consists of three parts: (I) introduction and research background, (II) results of the year 2023-2024, and (III) conclusions, strategies, and next steps. In part II, the results follow the research structure, with (A) campus data, (B) campus trends, (C) campus elsewhere, and (D) campus learning. Considering the various (teams of) authors who contributed to this report — for which we are grateful — we have marked chapters with an orange page.

While we are proud of the output of 2023-2024, which amounts to a considerable number of pages. Due to its size, this report requires and contains a management summary (before part I of this report) and a detailed summary of conclusions in part III. A Dutch version of the management summary can be found at the very end of this report.

On behalf of the Campus NL team, I would like to thank all the universities for providing data, text, and images, for the inspiring meetings and workshops, from the preparatory input workshop in October 2022 to the first annual conference in May 2024, and for their feedback on draft versions of (parts of) this report.

Special thanks go to all the campus contacts, the steering group, core team and UNL for their intensive guidance and valuable discussions, especially Boudewijn Peters and Mansur Karadavut. Last but not least, I would like to thank my Campus Research Team colleagues in Delft - especially Monique Arkesteijn, Chiara Pelosi and Jasmine Bacani - and the other authors from TU Eindhoven (TUE) and Center for People & Buildings (CfPB) for our collective writing, assembling, and editing process, as well as Daan Schlosser and Ruben Vos for the graphic design and final editing. During the first year, Campus NL has already demonstrated its goal: “for universities, by universities”.

Alexandra den Heijer
TU Delft’s Campus Research Team
Professor of Public Real Estate
Delft, October 2024

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Management summary



Zernike Campus Groningen
(photo RUG / AEROPHOTO EELDE
2012)

Management summary

Campus NL is a four-year project, from 2023 to 2027, and aims to pool the knowledge and experience of 14 Dutch universities to tackle contemporary campus challenges together. This report includes the results of the first year, 2023-2024. This cooperation already has a decades-long history and connects theory and practice of real estate management. This year’s theme was ‘hybrid working.’

Dilemmas around hybrid working and on/off-campus studying are just two of the major challenges facing universities. Other collective challenges include large numbers of incoming students – but possibly also shrinkage – the tight (student) housing market, sustainability, and a healthy working environment. Crises including the coronavirus pandemic, energy prices, material shortages, and staff shortages have only reinforced the urgency to share campus knowledge. The research project of Campus NL brings together insights from theory and practice to make campus management within each of the 14 Dutch universities (even) more effective and efficient.

‘Campus NL is for universities by universities’

Not only the complexity of campus management is the subject of study, but also the way of exchanging knowledge. Besides a scientific team from TU Delft, a campus contact has also been designated for each university, making ‘team Campus NL’ a network organisation. Via steering group, core team and various workshops, other stakeholders are involved in addition to administrators, policy makers and directors of campus/FM (facility management).

Hybrid working as a theme for 2023/2024

Focusing on the theme “hybrid working”, it was important to collect facts and figures of office space on Campus NL, such as locations and floor area, but also substantial data about office utilisation, comparing the use of university workplaces and meeting rooms before and after the corona pandemic (see part A). To illustrate the changing (campus management) context, both a trend analysis and literature study on hybrid working were conducted to prioritize challenges for campus decision makers. Additionally, a comparison of university policies and guidelines was required: how many days are university staff members allowed to work on- and off-campus? (see part B) To compare strategies with other (public) organisations and learn from international universities, their experiences with respectively hybrid working and inter-organizational knowledge sharing were added to this report (see part C and D).

Striving for a campus dashboard to support decision-making

Since 2000, TU Delft’s Campus Research Team has been periodically publishing data on changing campus floor area: from educational space per student to office space per employee (fte). In parallel, biennial benchmarks of the total costs and floor area data were conducted via the facilities directors (Colliers, 2018, 2022, 2024). Over the next few years, the Campus NL team will build a campus dashboard to support decision-making and decision makers in the broadest sense: the university community. Step-by-step, data from practice and insights from science will be added, about the total campus and particular space types (like university offices in 2023-2024).

Focus on university offices: increasingly efficient accommodation

Office space is a larger part of the campus than one might expect. Prior Campus NL research (2016) showed that about 1/3 of usable floor area on Campus NL has the function ‘office’. Since then, the office footprint per employee has decreased rapidly:

from around 20 m² usable office space per FTE (full-time equivalent) staff via 12.512.5 m² (Colliers 2022) to 11 m² on average (Colliers 2024). This efficiency gain within eight years is partly due to reallocation (to education, for example) or reduction of m², but largely due to the substantial growth in the number of employees (head count and FTE) to be accommodated.

In 2023-2024, campus decision makers reinforced the great need for comparable occupancy and utilisation figures. How often is workplace used and how well are multi-occupancy rooms utilised, for example? Last year, the Campus NL team members joined forces to collect as many studies on office utilisation as possible. With the agreement that the building data would be processed anonymously, the occupancy and utilisation figures poured in. With pride from both academia and practice, this Campus NL inventory yielded office utilization studies of more than 100 campus buildings. The figures showed, among other things, that the average occupancy rate of office spaces after corona is clearly lower than before the corona pandemic: post-corona occupancy is 2/3 of pre-corona occupancy. By the way, the opposite is true for meeting rooms: they are better utilised after the 2020-2021 ‘campus lockdowns’.

Challenges and policy choices around hybrid working

TU Eindhoven researchers were asked to conduct a literature review on hybrid work in international media. One of the definitions they found: ‘Hybrid work blends remote work and in-person work, offering flexibility in work location. It has evolved over time and encompasses activity-based working and flexible work.’ A key challenge is resistance to changing work environments, but there also appears to be a willingness to discuss sharing territory in exchange for greater autonomy. Here, collective and individual goals need to be balanced. Yet, people are also cautious about rapidly reducing office area, as it can also become too crowded and opportunities for working in silence or (video) calling are already limited.

Hybrid policy at Campus NL: “from hierarchy to autonomy”

Parallel to the literature review, the research team collected the most up-to-date guidelines, regulations or policies for hybrid working at the 14 universities. These varied from encouraging from encouraging largely on-campus presence to leaving the choice of location to team leaders or individual employees. From hierarchy via direction to autonomy, or back again. At least 60% on-campus or up to 40% at home: it seems the same, but academics are also often ‘elsewhere’ (not on-campus and not at home). In addition, on-campus does not automatically mean at a desk or in a meeting room, but often also in a teaching space or in a laboratory.

Observing the differences in policy, the dilemma became razor-sharp: do we choose an on-campus university and does that include a minimum number of days of campus presence, or do we embrace the hybrid reality and facilitate the resultant of individual choices?

Learning from non-university practice

In this consideration process, Dutch universities are in good (and very large) company with any organisation that uses and/or owns offices. The Delft Center for People & Buildings (CfPB) reports that in 2023 80% of Dutch knowledge workers worked less than two days at their at the designated office space of their employer, based on their ‘Work in Transition’ study. The rest of the time was spent working at home or elsewhere.’ Office users do sometimes experience more or less ‘busyness’ than objectively measured, which argues in favour of measuring both. Too busy and too quiet can both be reasons to go home and work from home.

Media reports confirm the conflicting strategies for the future of offices. For instance, several employers are trying all kinds of things to get the employee back to the office. Other reports show the opposite: organisations actually want to give (future) employees more autonomy and attract or retain them with favourable working conditions to combine work and private life and the possibility of even moving further away from the traditional work location. In mid-2023, the central government also sketched the possible scenario of needing fewer buildings in the future because of hybrid working. Regional hubs, closer to where civil servants live, are part of their strategy.

But what about the office workplace becoming too quiet and colleagues no longer meeting each other? Don't the burdens of this outweigh the benefits of less office space? In addition to 'active strategies', it was indicated that there is also a 'passive, wait-and-see' strategy that ensures that some days (such as Tuesdays and Thursdays) are increasingly busy but the office gradually becomes quieter, employees decide about their own home working days or move further away from work.

Two opposing strategies for hybrid working

Based on utilisation studies, literature review and analysis of policy papers and comparable organisations, two 180-degree-different strategies for Campus NL can be outlined with corresponding choices for the working environment: (1) 'we are a campus university' and (2) 'embrace the hybrid reality'. Both strategies and the associated dilemmas are explained.

1. Opting for 'we are a campus university'

Strategy (1) 'we are a campus university' that bets on commitment of employees to be physically present on campus more often again and on-campus community and teamwork. The underlying vision is that teaching and research require physical presence, innovation cannot happen without chance encounters/cross-pollination, presence is essential for team building and employee loyalty is important for continuity. Community is is considered more important than individual autonomy.

Office space can remain similar to the current situation: territory for those who are actually there (often). Accommodation costs are relatively high (as % total), but there are supposed 'savings' on HR costs: less staff turnover and more important for mutual communication and learning from each other? Energy costs and infrastructure costs are high, but occupancy/utilisation of campus is higher again (more utility from m2) and serves the primary process, so perhaps also higher productivity per m2. Sustainability does benefit from less territory and a smaller workplace in m2 per FTE.

2. Opting for 'embrace the hybrid reality'

Strategy (2) 'embrace the hybrid reality' assumes more off-campus working, at home or elsewhere, and uses this as a strategy to facilitate the individual employee more at a time when staff are scarce and live or have moved further away from the traditional work location. The premise is that education and research have changed after the corona pandemic (and even before) into hybrid, location-independent processes. According to this vision, innovation largely takes place with parties outside the own campus. In addition, this strategy bets on facilitating the work-life balance of employees (on/off-campus), enabling more target groups to work flexibly for the university. Individual support outweighs group interests.

Office space can be reduced in this strategy (in m2 per FTE). Consequently, energy and infrastructure costs are also lower, also due to less commuting. Is this the inevitable end of the private workplace? Accommodation costs could come down (% total), but it might lead to additional HR and other costs: possibly more staff turnover due to less loyalty to organisation, more difficulty in leading hybrid research/teaching teams and concern about how innovation takes place without chance encounters.

Concretising the potential reduction in office space:

- the utilisation studies show that, theoretically, a 'reallocation' of at least 30% of the office area is possible
- this 'reallocation' could mean: not building on growth, facilitating more education on office space, but also selling, even (circularly) demolishing or transforming into housing

However, the main question is: do universities want to reduce office space (regardless if it is possible)? What are the costs and benefits of both strategies for the organisation, community, sustainability goals and university's finance?

Combining both strategies or 'just wait and see'

For both strategies, the first thing is to enter into a dialogue with the university community: what kind of university do we want to be and what are the functional, financial and (environmental) technical consequences of this? Space is expensive, but lack of space is perhaps more expensive. But jointly deciding that, for example, territorial workplaces should continue to exist also means "jointly considering what would have to be cut back" on in order to (continue to) pay for this.

Universities themselves indicate that without an explicit choice between the two strategies, 'a passive strategy is chosen: just wait and see' and that usually means that there is no direction on presence/absence, substantial vacancy and too little discussion about the resources this costs. Of course, there is also a golden mean between the strategies, if there are clearly identifiable user groups or time periods for which more campus presence is more effective or - on the contrary - the possibility of more home working. Whatever strategy is chosen, the realisation that vacant space does need to be heated or cooled, cleaned and paid for, should lead to more conscious space use and (space reservation) behaviour. This in the context of the sustainable campus and the ambition to use scarce resources (more) efficiently, especially in times of austerity and ambitious environmental goals.

Capture collective campus memory

Although it is still too early to draw conclusions about the process of knowledge sharing through project Campus NL, a 'baseline measurement of knowledge sharing', or survey, was done among almost 200 campus management staff members in November and December 2023. This showed, on the one hand, that there are already many inter-university networks sharing knowledge on various topics, illustrating that there is a willingness to share knowledge among many. And on the other hand, it indicates that improvement is possible in the effectiveness of knowledge sharing and actually storing knowledge to be able to retrieve it. The 'collective campus memory' can be better captured and there is certainly fertile ground (and motivation) for this. At the same time, there is urgency, as the new generation of 'campus managers' changes jobs faster and also depends on the knowledge sharing of the older generation with decades of campus expertise (who sooner or later will retire or perhaps otherwise leave). Campus NL will work closely with campus managers in the coming years to suggest improvements for more effective knowledge sharing.

Part I

BACKGROUND CAMPUS NL



CUBE Tilburg University
(photo TiU/Irvin van Hemert)

Introduction

Project Campus NL aims to consolidate and combine the knowledge and experience of the 14 Dutch universities with scientific insights and expertise from abroad and other sectors. The goal is to collectively address contemporary challenges on campus—such as innovation, sustainability, affordability, inspiration, efficiency, and health—and to organize campus management within each university more effectively and efficiently.

History and prior research of Campus NL

Since the 1990s, when Dutch universities they became owners of their buildings and land, they have joined forces and exchanged knowledge about managing their campuses. In this process they also frequently connected their campus practice with campus theory, with many publications as evidence (for a selection: see reference list at the end).

Following the well-received results of the 2016 Campus NL research project, a proposal was made to initiate a four-year research process starting in 2023. The goal is to jointly develop, document, and disseminate campus (management) knowledge within universities. This process will involve close collaboration between science and practice: “Campus NL is for universities, by universities.”

As a preparation for the Campus NL research proposal, a workshop was organized in early October 2022 with representatives from all Dutch universities and various networks. During this workshop, it was confirmed that the challenges are increasing in meeting the dynamic spatial needs (rapid growth, hybrid learning/working, fast-paced innovations) with limited resources (energy, space, labor, finances). There is a strong focus on and urgency for learning from each other to support internal operations and justify necessary decisions and investments. There is also an opportunity to better utilize the knowledge of our own scientists (from all 14 universities) and innovation potential: “practice what you preach.” The insights from the workshop have been incorporated into this proposal.

The goals of Campus NL

- Why do we want to improve campus (management) knowledge together?
- A. To collectively generate (campus) management information that fulfills the need for references from comparable organizations when making (campus) decisions and justifying (campus) investments; see part A of the research.
 - B. To jointly seek solutions for (managing) the campus of the future, including current campus challenges such as the energy transition, post-COVID hybrid work environments, climate adaptation, and collaboration between university and municipality (campus and city), also as a living lab using academic knowledge from our own universities; see part B of the research.
 - C. To support our internationally esteemed education and research with state-of-the-art facilities and evidence-based campus management, emphasizing the innovative nature of our universities, allowing us to benchmark against other sectors and countries, from which we investigate knowledge exchange systems; see part C of the research.
 - D. To maintain an efficient and effective learning campus organization, even in times of an aging working population, staff shortages, and labor mobility, where much (unrecorded) knowledge and experience is lost, staff is scarce, knowledge is often outsourced, and significant time is spent on onboarding and/or internally training new staff, requiring learning from and with each other; see part D of the research.

To achieve the aforementioned four goals, the Campus NL research process includes four components (see Figure I.1), each producing annual results:

- A. CAMPUS DATA** – Inventorying campus data, both on the existing campus and new projects, resulting in a project database, time series, and campus dashboards with decision-supporting information.
- B. CAMPUS TRENDS**– Describing future scenarios and campus trends based on the changing context and strategic choices universities can or must make within it, linked to insights from science, resulting in an annual trend report.
- C. CAMPUS ELSEWHERE** – Exploring practice and theory of knowledge sharing elsewhere: how do other countries organize knowledge sharing on this topic, what can we learn from other (public) organizations, resulting in alternative (information) organization models for campus management.
- D. CAMPUS LEARNING** – Disseminating campus knowledge (with input from A, B, and C), resulting in an annual knowledge day, an (online) platform for knowledge exchange, infographics for various target groups within the university, workshops on important themes, and ‘on-demand learning’ for campus staff.

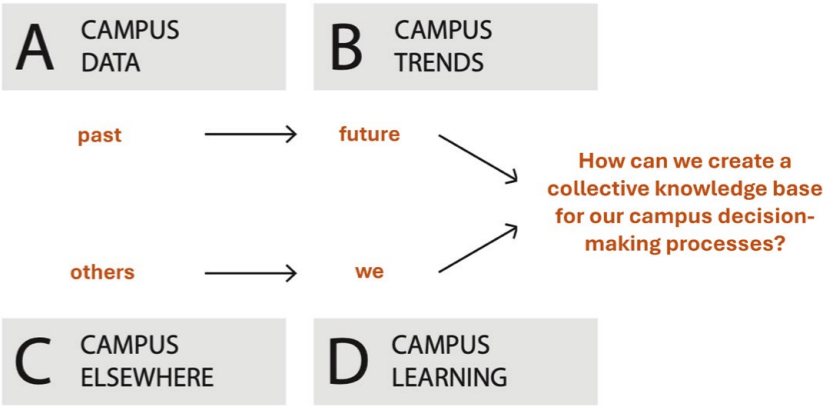


Figure I.1: Part ABCD of the Campus NL research process (Campus NL, 2024)

Expected results of Campus NL 2023-2024

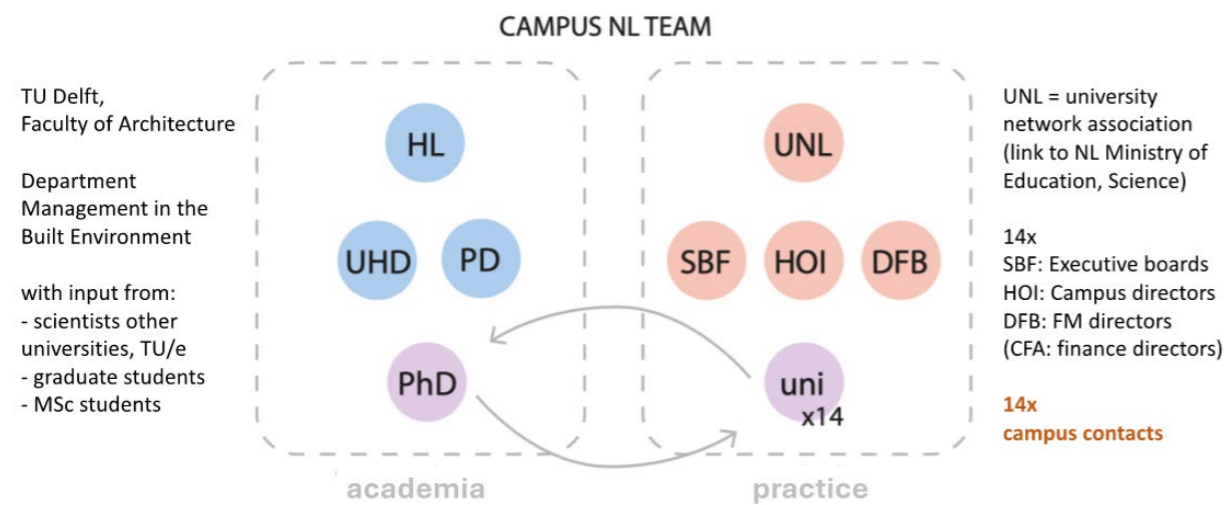
It is assumed that decision-making processes regarding the campus during “Campus NL” will be better (more efficient and effective) supported by the availability of management information in the form of:

- A. Campus dashboard and (recent) project database/timeline.
- B. An annual trend report with solutions and strategies from collective campus practice and science (with a different focus each year).
- C. Lessons from foreign universities and other comparable organizations, and alternative future models for organizing knowledge exchange.
- D. Knowledge platform and exchange network for staff.

Project organisation Campus NL

The project organisation connects knowledge from academia with knowledge from practice. This whole organisation forms the CampusNL team: the campus research team on the one hand and a campus practice team on the other, see Figure I.2.

- It is emphasised that the team aims to bridge the gap between the two by:
- recruiting academics who want to work partly in practice or at least conduct research based on practical cases;
 - involving campus staff with scientific ambitions or at least a need to deepen the knowledge available about their own work and broaden it by wanting to mirror dilemmas from their own universities with colleagues from other universities, so-called ‘campus contacts’.



The research question for science focuses on the management information needed (part A) to support and justify campus decisions to prepare for the future (part B) and the organisational models and information systems available for this purpose in theory and at other organisations (part C). For the latterW, a PhD researcher was recruited for the full period of four years. To manage the various parts of the research, a postdoc position (PD) was added to the team. The team is led by a full professor and an associate professor, who both also conduct parts of the research. Student assistants and an illustrator were added to the team.

From various inter-organisational networks - with delegates for 14 universities - members are involved: SBF (executive board members), HOI (campus directors) and DFB (facility management directors). The research planning was aligned with their meeting cycles as much as possible, see Table I.1 with and overview of (milestones in) the research process 2023-2024.

Figure I.2: “Campus NL team”, the project organisation combining (campus management) knowledge from academia and practice (Campus NL, 2024)

Four-year planning and 2023-2024 process overview

With a survey at the beginning (see chapter D1) and end of the four-year process, the Campus NL team will measure if and how decision-making has improved. We will also periodically (around the annual conference) evaluate the process: what is the balance between benefits and efforts? The intended result after four years is that we have strengthened the knowledge function for campus management with insights from collective campus practice and the expertise of (our own) scientists. We will also test a collaboration model that serves as a stepping stone for the future or an experiment that is concluded.

2023			2024			2025			2026			2027		
January	February	March	January	February	March	January	February	March	January	February	March	January	February	March
April	May	June	April	May	June	April	May	June	April	May	June	April	May	June
July	August	September	July	August	September	July	August	September	July	August	September	July	August	September
October	November	December	October	November	December	October	November	December	October	November	December	October	November	December

Figure I.3: The four-year project follows the structure of four academic years, from 2023-2024 as the first year to 2026-2027 as the last year, summarizing all results and insights (Campus NL, 2024)

Through this research, the Dutch campus will also become a “living lab” for Dutch universities: scientific insights on sustainability, circularity, hybrid working, digitalization, and the relationship between environment and mental health can be incorporated into lessons for the campus and campus management of the future. Conversely, (campus) science can use the case studies from the 14 universities to discover patterns and gain new insights, and publish them both in scientific articles and in (trend) reports for practice.

What do we want to achieve and how do we measure results? In four years, we aim to gradually improve the collective campus knowledge function and explore and solidify the role distribution in this. Annually, we will evaluate, with a to-be-formed advisory group from various networks and the aforementioned surveys, how far we have progressed.

Process overview 2023/2024

This annual report summarizes the results of the first year, 2023-2024. During this year the steering group, project team and network of campus contacts started their tasks and decided to zoom in on the office and hybrid working. Table I.1 contains all 2023/2024 meetings. The rows include the dates for the Campus NL steering committee, core team, HOI-DFB, meetings with campus contacts, and seminars/workshops. The columns list the topics discussed within the networks, sorted according to the research components ABCD.

2023			2024		
January	February	March	January	February	March
April	May	June	April	May	June
July	August	September	July	August	September
October	November	December	October	November	December

Figure I.4: This report focuses on the first year of the four-year Campus NL project, it summarizes the 2023-2024 results and end with an outlook to the next theme for 2024-2025 (Campus NL, 2024)

Table I.1: (continued in next page)
All 2023/2024 meetings: rows include the dates for the steering committee, core team, HOI-DFB, meetings with campus contacts, and seminars/workshops; columns list the topics discussed within the networks, sorted according to the research components ABCD (Campus NL, 2024)

Date	Type	Research part				
		Planning process	A	B	C	D
Juni	27	Campus contacts	Introduction meeting, community building			
August	31	CIBP congress	Knowledge exchange CIPB (Centre for People & Buildings) about hybrid working			
September	20	Kerngroep	CampusNL congress (organisation)	Discuss the preliminary results of first data collection on hybrid working	Introduction to the survey (planned send October to HOI/DFB)	
	22	SBF meeting				
	22	DFB-HOI				
	28	UNLimited	Congress			
November	1	Kerngroep	Request for data	Presentation preliminary analysis on hybrid working	Update of the LinkedIn group and other networking platforms	Discussion of content and methodology of the survey (1st test), list of whom to send it
	2	Campus contacts	Discussion over data anonymisation			
	23	Stuurgroep	Planning and Campus NL congress (organisation)	Colliers benchmark rapport (2021) - comments and ideas	Discussion on survey distribution and feedback on the 1st version	
December	15	Kerngroep	CampusNL congress (organisation)	Research focussed on data not included in the Colliers benchmarkrapport 2024	Students of the REM research on trends and scenarios per university: planning interviews with campus contacts	Survey updates: distribution started on 12/12/2023

Date	Type	Research part				
		Planning process	A	B	C	D
January	24 Kerngroep	CampusNL congress (organisation)	Discussion on starting of Colliers benchmark rapport (2024) Beginning of work on dashboards/timelines	Second round of data collection Hybrid working workshop (TU/e) Update research of REM students on trends and scenarions per university		Discussion on survey reponses Planning discussion of preliminary results
	29 CfPB Impulse	Knowledge exchange CfPB (Centre for People & Buildings) about hybrid working				
February	29 Stuurgroep					
March	1 HOI-DFB		Discussion on the 1st preliminary analysis of the frequency and occupancy rates of the universities			Discussion on the results of the survey
	6 Kerngroep		Request data for CampusNL research to Colliers	Trends and strategies of hybrid working: finishing data collection	Workshop of 2 April about hybrid working abroad	Preparation for HOI/DFB following meeting Discuss proposition for knowledge sharing
	12 Campus contacts					
April	2 Workshop hybrid working	Workshop: Hybrid work a lesson from the theory for the practice				
	17 Kerngroep	Discuss the transition from analysis to synthase of the CampusNL	Discussion on Collier's list of data to share with CampusNL	Discussion on university trends and scenarios for the university		Feedback on the concept report of the survey
	19 HOI-DFB	CampusNL congress (organisation)	Frequency rate 2nd preliminary results presentation (data collection concluded)			Discussion on the cause of the results of the survey and solutions for better knowledge exchange
May	17 Stuurgroep	Discussion on the draft report CampusNL Congress (organisation) Possible future themes for camusNL	Presenting and discussing draft results 2023/2024 + next years theme			
	24 Campus NL seminar					
	29 Kerngroep	Discussion and feedback on the congress CampusNL (24/05/2024) Report Discussion on next themes for CampusNL research 2024/25 Planning of the research process (2024/25)	Discussion on the 3rd preliminary analysis of the frequency and occupancy rate Request explicit consent for sharing data for the final CampusNL report			
June	14 DFB	Draft report + new theme	Colliers benchmark rapport (2023) - draft report			
	21 HOI	Draft report + new theme	Colliers benchmark rapport (2023) - draft report			
	28 Stuurgroep	Draft report + new theme				
July	3 Kerngroep	Information demand new theme				
August		Final report				
September	18 Stuurgroep	Final report + eerste inventarisatie nieuw thema				
	21 HOI-DFB					
October	11 SBF	Discuss the findings from the annual report, open-source publication				

Structure of the report

This Campus NL report consists of three parts, including this part (I) with introduction, research background and process overview, (II) results of the year 2023-2024 and (III) conclusions, strategies and next steps. In part II the results follow the research structure, with (A) campus data, (B) campus trends, (C) campus elsewhere and (D) campus learning. Considering the various (teams of) authors who contributed to this report, we have marked chapters with an orange page that explicitly mentions the authors.

While we are proud of the output of 2023-2024 that added to a considerable number of pages. Due to its size, this report requires and contains both a management summary (before part I of this report) and a long summary of conclusions in part III of this report. A Dutch version of the executive summary can be found at the very end of this report.

First meeting campus contacts 2023-2024: composing a Campus NL illustration

The aim of the first meeting with the campus contacts - 27 June 2023 - was to get to know each other better and jointly design an initial 'Campus NL logo': a map of the Netherlands showing all 14 universities. The group result can be found in Figure I.5. For this purpose, illustrator and lecturer (TU Delft, Industrial Design) Mark van Huystee was invited, who had drawn more images for the team, as also is demonstrated in this report.

The design process of the illustration of 'Campus NL' (see Figure I.5) generated the discussion and facilitated the process of defining Campus NL: it makes clear what is unique, but also what is generic about Campus NL: sustainable ambitions, relationship with the city and care for local communities, economic impact in the region, plenty of space for start-ups and living labs, strong connection with business activity and MBO/HBO. In the illustration, one or more image-defining buildings per university are drawn, in relation to the surroundings, with people and with logo or abbreviation and some characteristics and/or images that illustrate the (research) actuality. The illustrations are also used individually in this annual report.

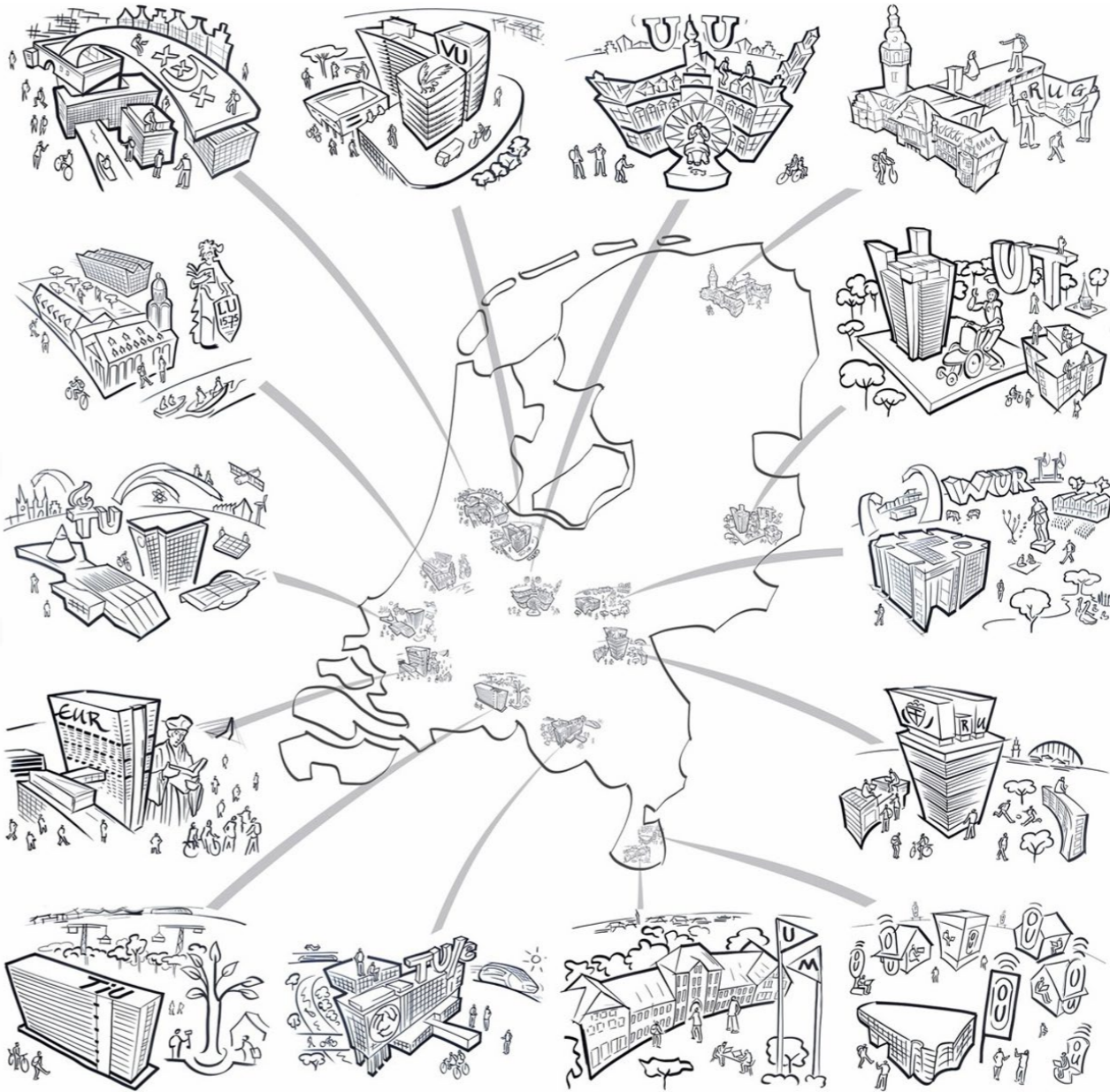


Figure I.5: 'Campus NL', drawn by Mark van Huystee with input from 14 campus contacts (version 3 after comments on version 2 in summer 2023)

Definitions

When writing about the fourteen Dutch universities, we refer to (14) publicly funded institutions that are affiliated with UNL. Figure I.6 shows the (main) locations on a map of the Netherlands and the university names and abbreviations in a table.

#	university names	abbreviations
1	Erasmus University Rotterdam	EUR
2	Leiden University	LEI
3	Radboud University Nijmegen	RU
4	University of Groningen	RUG
5	Delft University of Technology	TUD
6	Eindhoven University of Technology	TUE
7	Maastricht University	UM
8	University of Twente	UT
9	Utrecht University	UU
10	University of Amsterdam	UvA
11	Tilburg University	TiU
12	Vrije Universiteit Amsterdam	VU
13	Wageningen University and Research Centre	WUR
14	Open University in the Netherlands	OU



Since the dissertation “Managing the university campus” (Den Heijer 2011) TU Delft’s Campus Research Team has defined the campus as “the collection of buildings and land, used for university and university-related functions and not necessarily on one location”. Internationally, the term “campus” is often associated with a collection of buildings on one location, while the choice in 2011 to broaden this definition to “building and land on any location” was also context-related: many Dutch and other European universities are characterised by using buildings and land throughout the (inner) city and/or on various locations; they did not resemble the “greenfield outside the city” campus model, as illustrated as one of the three spatial configurations in Figure I.7, but were more like a combination of the other two models, in the city.

Figure I.6: Dutch universities, names, locations (of main headquarters), and abbreviations used (translated from Campus NL, 2016)

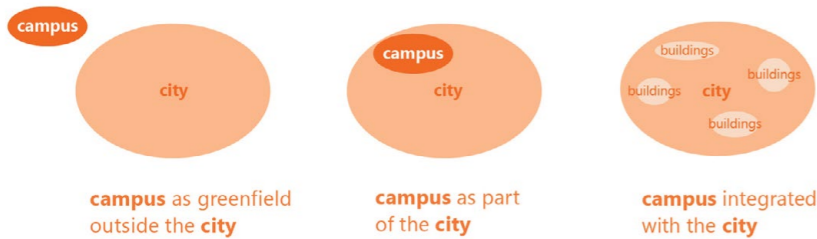


Figure I.7: ‘Three different spatial configurations for the campus in relation to the city (translated from Campus NL, 2016)

Defining the campus as more than (only) academic buildings was also the result of studying the development of “the campus as a city” (Den Heijer and Curvelo Magdaniel, 2018) – with housing, retail, cultural facilities and more - and “the city as a campus”, welcoming students and employees to study, work and meet in buildings that are not owned by the university. Nonetheless, in this Campus NL research we do focus on academic space.

In the campus definition, “use” and not “ownership” has been chosen as the main criterion; nonetheless, in the Dutch context, the majority of buildings that are predominantly used for university functions are also owned by the university.

Campus management refers to the responsibility that universities have to manage the space that is used by students and employees for university purposes, regardless of its owner. More definitions and conceptual frameworks can be found in Den Heijer’s dissertation (2011).

N.B. In time, and certainly in times of corona, the broad “campus” definition could even include the homes of students and employees as “buildings used for university functions”. However, this could be confusing, while buildings that do not have “university or university-related functions” as primary functions are often indicated as “off-campus” facilities that are “time-shared” for university functions for certain parts of the day, week, month or year; examples are churches that host diploma ceremonies and theatres that accommodate lectures (text based on Den Heijer 2021). The results of 2023-2024 also include a map which exceeds the traditional university locations, see chapter A1.

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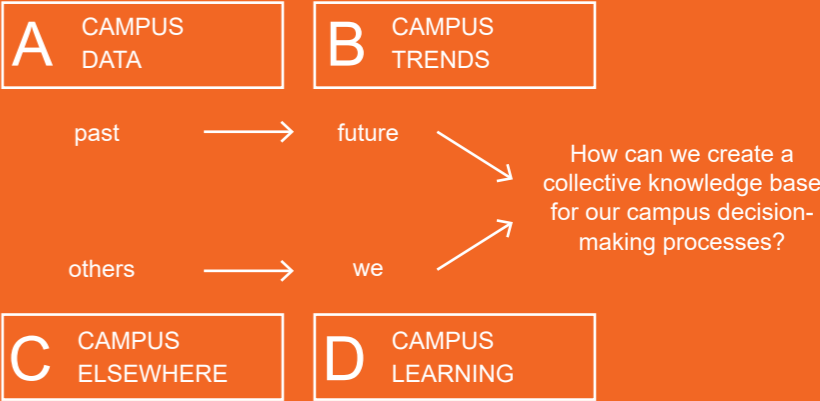
TU Delft. (2016). *Campus NL: Investeren in de toekomst* [Campus NL: Investing in the future]. Delft: TU Delft, Architecture, Management in the Built Environment. <http://resolver.tudelft.nl/uuid:3a2d0cfd-6ed0-4f7d-bc88-b2253641ebb6>



Campus Tilburg University
(photo TiU/Maurice van den Bosch)

Part II

CAMPUS NL 2023/2024 RESULTS



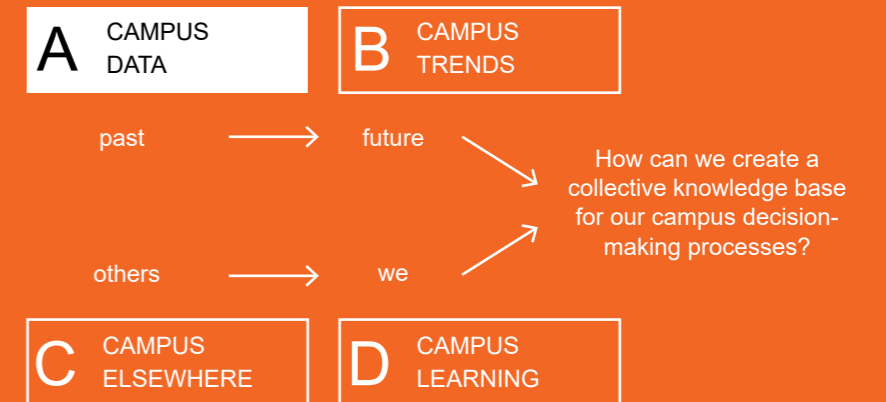


Sensor Engineering department
Maastricht University (photo Campus NL)

Part II - Results 2023/2024

A1 Campus NL locations

A2 Campus NL in numbers



Author:

Alexandra den Heijer

Introduction

Collecting campus data is the basis of the Campus NL study. While the team aims at (gradually) providing decision makers with a campus dashboard during the course of this 2023-2027 Campus NL study, the first year 2023-2024 focused on exploring what is already collected by other networks and studies. Parallel to the first year, the DFB network (facility managers of Dutch universities) worked with Colliers on their biennial facility costs study among Dutch universities. These biennial studies include more variables than only costs, like floor area and conditions. We thank both Colliers and the universities for their permission to use their 2021 and 2023 data in this chapter (Colliers 2022, 2024). In this chapter, some findings for office space are summarized, while other data will be used for the next research year(s)

A1 - Campus NL - locations

Before we elaborate upon the locations of Campus NL, we repeat the “campus” definition that TU Delft’s campus research has used in their past studies. In this study, the term ‘campus’ includes all buildings and sites used by the university or for university-related functions, either leased or owned by the university, and not necessarily in one location. Thus, the term ‘campus’ can also refer to a collection of buildings spread across the city, region or even (foreign) country (definition den Heijer, 2011).

While part A includes defining Campus NL and mapping its various locations, the perception that Dutch universities only use buildings in their ‘own’ university city (which the name may imply) was already no longer true even in the previous Campus NL survey (2016, see left map of Figure A1.1). The three different views of Campus NL (Figure A1.1) were modelled. An initial meeting with CCs in summer 2023 already concluded that Campus NL is already less and less the traditional map on the left (or ‘solid’) and more and more a network (or ‘liquid’) with many shared and jointly managed facilities. The home office of the map on the right (or ‘gas’) was also mentioned as a reality, with a link to Campus NL’s first theme: ‘hybrid working’.

At a meeting with CCs in early 2024, the following question was asked: ‘Does your university have any other locations in use other than the main location?’ These are locations where your university uses space substantially and structurally. So this does not mean occasional use of, say, a conference venue or lectures in a cinema or college building, but substantial buildings, labs or other facilities (could possibly be in combination with another university).

N.B. We did not aim for a complete overview, but for examples to show that ‘Campus NL’ is not limited to traditional university cities. (Examples of) foreign locations were also allowed to be mentioned. Depending on the response to this map - see Figure A1.2 - the legend could be expanded to include size and type of facilities and cooperation partners. The map gives an indication of the network that Campus NL already is and also shows the potential of more cooperation (or providing study/work places at a shorter distance from residential locations).

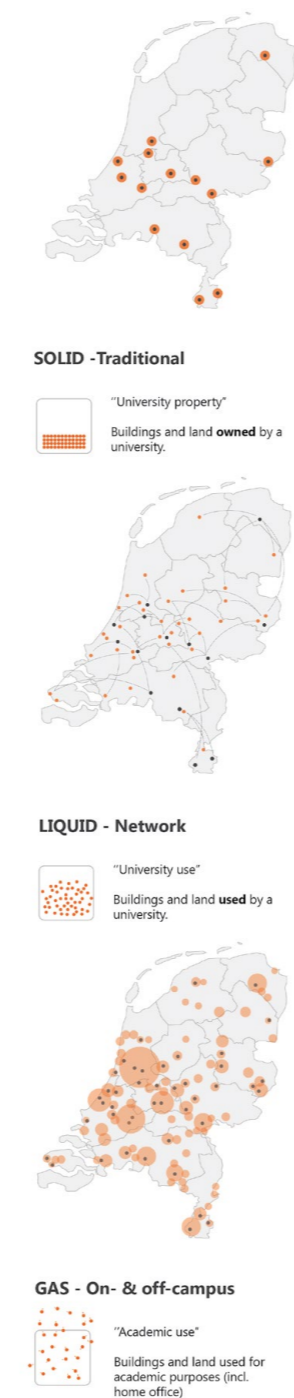


Figure A1.1: Three different definitions and maps - ‘solid, liquid & gas’ (Campus NL, 2024, modeled - not reality) More about the metaphor solid-liquid-gas can be found in the book Campus of the future (Den Heijer, 2021).

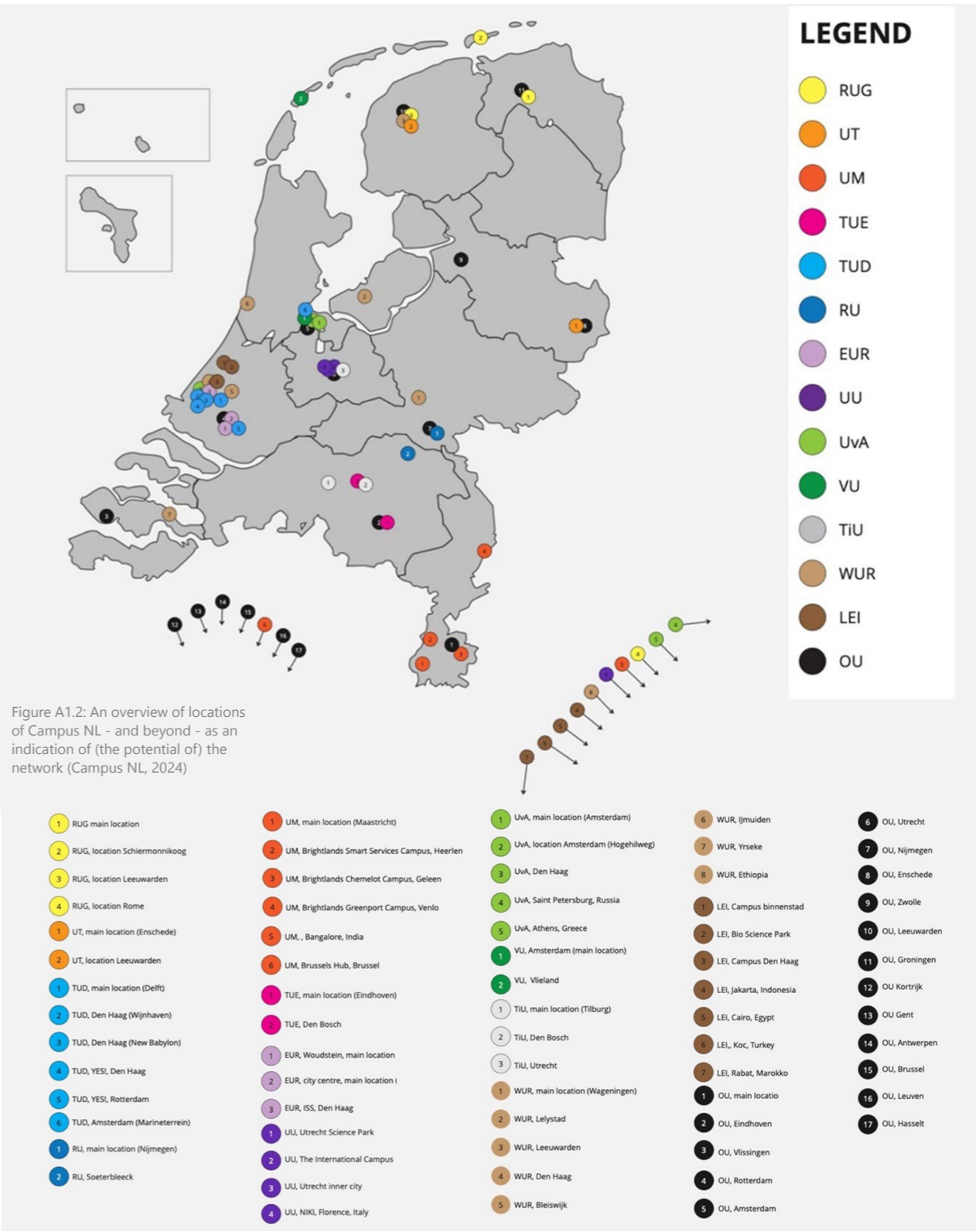


Figure A1.2: An overview of locations of Campus NL - and beyond - as an indication of (the potential of) the network (Campus NL, 2024)

A2 - Campus NL - in numbers

In November 2023, it was already agreed in the core group and steering committee that campus data for the Campus NL survey would not be duplicated, in parallel with the biannual Colliers 'Benchmark facilities and accommodation' (see Table A2.1 below for data points that will be shared with Campus NL).

Category type	Main category	Subcategory	Sharing with Campus NL	Method of sharing
Space use	Key figures	Number of employees	Yes	By university number of employees employed. Also found at www.universiteitenvannederland.nl
Space use	Key figures	FTE number	Yes	By university number of FTEs employed. Also found in www.universiteitenvannederland.nl
Space use	Key figures	Students number	Yes	By university number of students enrolled. Also to be found in www.universiteitenvannederland.nl
Space use	Key figures	Surface areas	Yes	Total GLA managed by universities, excluding medical centres.
Space use	Key figures	number of premises	Yes	According to universities' own property coding systems
Space use	Key figures	Ownership & Rentals	Yes	Share of owned and rented GLA under management
Space use	Key figures	Ownership & Use	Yes	Share own use, rented, vacancy (economic and architectural added up) of the GLA under management.
Space use	Key figures	Age & Condition	Yes	Condition and age in percentages for the total portfolio
Space use	Key figures	m2 per student	Yes	m2 GLA in own use / number of students = data derived above
Space use	Key figures	m2 of teaching space per student	Yes	m2 allocated to space category 'education' / number of students = data derived above
Space use	Key figures	m2 of research space per student	Yes	m2 allocated to space category 'research' / number of students = derived data above
Space use	Key figures	m2 Office space per FTE	Yes	m2 allocated to space category 'office' / number of FTEs = derived data above
Costs	Real Estate	1.1 Housing	Yes	Total absolute costs per university
Costs	Real Estate	1.2 Taxes	Yes	Total absolute costs per university
Costs	Real Estate	1.3 Insurance	Yes	Total absolute costs per university
Costs	Real Estate	1.4 Maintenance	Yes	Total absolute costs per university
Costs	Real Estate	1.6 Energy	Yes	Total absolute costs per university
Costs	Real Estate	1.6 Energy heat	No	
Costs	Real Estate	1.6 Energy electricity	No	
Costs	Services	2.1 catering - Restaurant	No	
Costs	Services	2.1 catering - Coffee machines	No	
Costs	Services	2.1 catering - Meeting service/ Events	No	
Costs	Services	2.2.10 security	No	
Costs	Services	2.2.20 prevention	No	
Costs	Services	2.2.30 reception	No	
Costs	Services	2.3 cleaning	No	
Costs	Services	2.4 moving	No	
Costs	Services	2.5 document mail	No	
Costs	Services	2.5 document repro	No	
Costs	Services	2.6 waste	No	
Costs	Management	5. Management	No	

Table A2.1: An overview of 'data points' to share - collected by Colliers from Dutch universities - for purposes of Campus NL (source Colliers for Campus NL, 2024)

Until our Campus NL team received the Excel - with 2021 data and in the summer the 2023 data - we based our figures on the overviews from Colliers' 2022 report. The most relevant as context for our 2023/2024-Campus NL theme of 'hybrid working' are shown below. The graph (Figure A2.1), for example, shows that a growing university community is being housed on a nearly constant campus area, i.e. increasingly efficient.

Figure A2.1: The the change % compared to previous years in student numbers, staff number of FTEs and campus area (in m2 VVO ("verhuurbaar vloeroppervlak"); this is lettable floor area) 2023 data compared to 2021 data and 2018 data (Colliers, 2022, 2024).

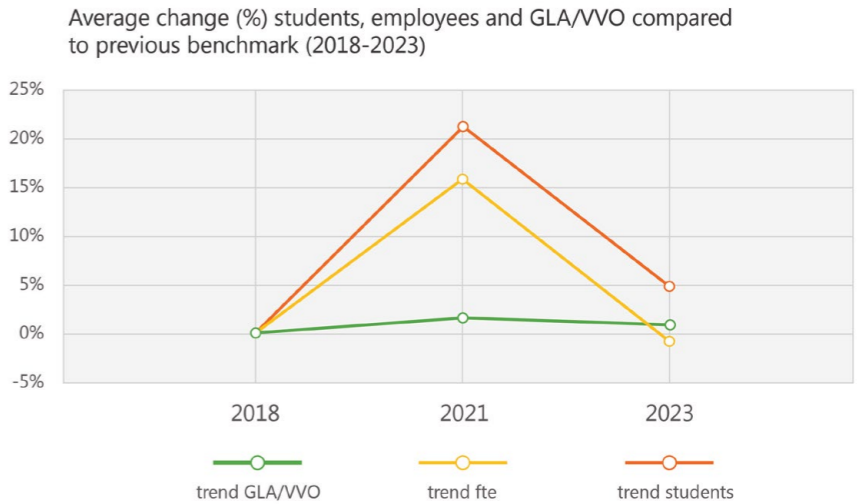
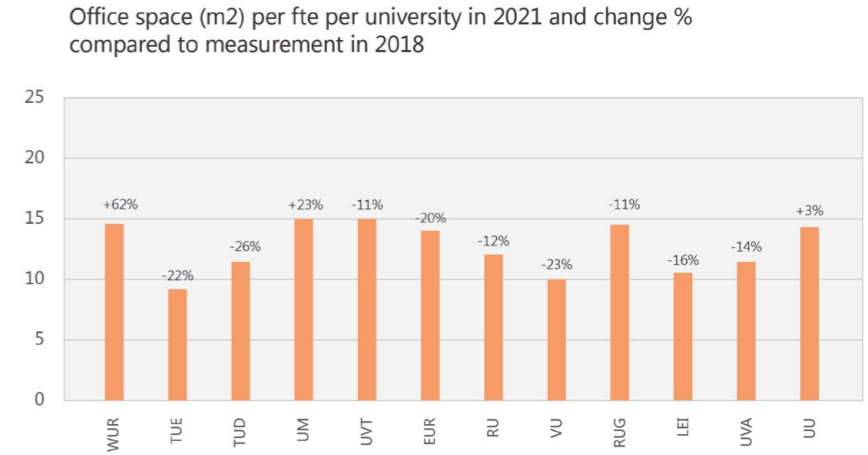


Figure A2.2 shows the number of sqm of office space per FTE (Colliers, 2022). On average, there is 12.5 m² of office space per FTE available at universities. This is down from 13.5 m² in the previous 2018 benchmark. Due to the sharp increase in the number of employees, the ratio of m² of office space per employee has decreased at most institutions. Through hybrid working, the decrease in available sqm of office space is partly absorbed. Notable decreases in available m² of office space are visible at TUE, TUD and VU. This is related to the strong increase in the number of employees at these universities: 18%, 25% and 19% respectively.

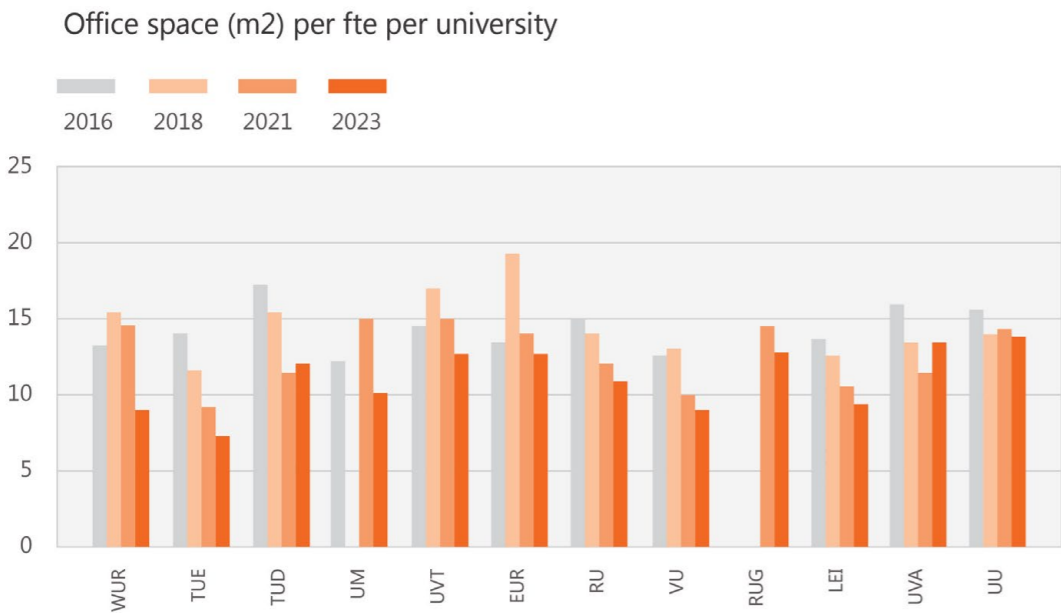
Figure A2.2: Office space m² per FTE with the % change compared to the previous measurement of 2018 above it. 2021 data compared to 2018 data (Colliers, 2022).



Office space data from the Colliers report (2022) has been updated, as demonstrated in Figure A2.3 (Colliers 2024), based on university data from 2023.

2023 data show that the footprint per fte has decreased even more, to 11,0 m2 on average - this means that office use has even become more efficient in the last two years. Colliers also concludes that both increasing staff numbers and hybrid working have contributed to the reduction of the university office footprint.

In 2024, this is all the more reason to explore the hybrid working theme, because there might be limits to growth (see chapter B1) and the hybrid working dilemmas that many universities have, are significant in shaping the campus of the future, see chapter B4 (university policies), chapter B5 (literature) and part III: extreme strategies.



Next steps

During the first research year (2023-2024), the Campus NL team awaited both the results of the 2023-2024 Colliers study and the universities’ explicit permission to use the data. In the meantime, the researchers focused on location data (in this chapter) and office utilisation data (see chapter A3). In the summer of 2024, the Campus NL team received permission - from both Colliers and the individual universities - and the datasets of 2021 and 2023 in Excel. These datasets will also be used in the next research years, as a component to provide campus dashboards for decision makers.

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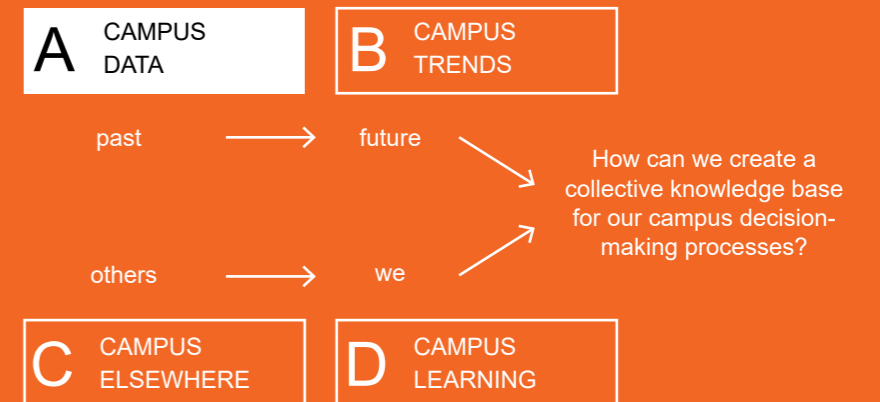
Figure A2.3: Office space m² per FTE from 2016 - 2023 (Colliers, 2024, based on the 2023 data, used with permission from Colliers)



Vrije Universiteit Amsterdam
(photo VU/Too van Velzen)

Part II - Results 2023/2024

A3 Office space utilisation at Dutch university buildings



Authors:

Monique Arkesteijn, Chiara Pelosi,
Alexandra den Heijer & Daan Schlosser

A3.1 Introduction

As the landscape of campus management is continuously evolving, we aim to improve our understanding and management of campus resources and facilities.

This four-year Campus NL research explores the strategic approach towards this goal in the following areas:

- The goal is to generate comprehensive campus management information. This is fundamental for providing reference data that supports campus-related decision-making and investments.
- We focus on collecting data on existing campus buildings as well as future projects. This results in a project database, with time series analyses and campus dashboards. These dashboards are designed to offer decision-support information for strategic planning and management.

Throughout the first of the four (academic) years, the 2023/2024 period, the theme of “hybrid working” was chosen, reflecting the workspace use, specifically after the COVID-19 pandemic and lockdowns (2020-2021). This focus supported the collection and analysis of data related to office spaces on university campuses, specifically utilisation, and the evolving usage patterns before and after the pandemic.

In the summer of 2023, the 14 universities of the Netherlands acknowledged the lack of detailed “office utilisation data (as stated by executive board member, campus and facilities directors in their respective SBF, HOI and DFB network meetings).” It was decided that Campus NL should prioritize the collection of those data. While individual universities had data regarding their facilities, a comprehensive dataset was missing. This report represents the first step in building this comprehensive dataset, which the Campus NL team will build with input from practice and theory during the research period (2023-2027).

In the beginning of 2024, the data collection and data analysis regarding utilisation of office spaces in the universities began. This process was discussed and improved through meetings with HOI-DFB (campus and facilities directors respectively) on the 25th of January, the 1st of March, and the 19th of April, where process updates and preliminary results were shared.

To facilitate the collaboration, each participating institution identified a designated campus representative, collectively called campus NL-contacts. They played a crucial role in ensuring the quality of the data collection, enhancing the reliability and comparability of the data.

Through this collaboration, we are not only responding to current needs but are also shaping the way for future innovations in campus management.

How universities work is partly reflected in the utilisation rates of office space: when and where workplaces are used (or not). It is up to the universities whether or not they actively would like to use this information to steer. The information found in this report represents a combination of the physical (workplace) and functional (utilisation) perspective. Other perspectives representing the universities’ way of working: organisational (hybrid policies), physical/functional (m2 per user), functional (user demands) and impact on resources (financial and ecological) are discussed in the other parts.

A3.1.1 Space utilisation

The main research question in this report is: **What is the space utilisation in office spaces in university buildings and is there room for improvement?**

In order to answer this question, the following sub questions are answered:

- A3: What is the average seat occupancy of office spaces?
- A4: What is the average seat occupancy without signs of life?
- A5: What is the peak seat occupancy?
- A6: Which weekly seat occupancy patterns can be distinguished?
- A7: What is the room frequency and occupancy per space type?
- A8: What is the relationship between seat occupancy and a provisional workplace norm (workplaces per fte)?

These seven questions are respectively answered in chapter A3.3 to A3.9 and are all related to offices spaces in university buildings.

A3.1.2 Definitions and terminology

Frequency, occupancy and utilisation rates are all terms that inform us about how well the physical spaces are been used. However, they all explain a piece of the puzzle.



Frequency rate (“bezettingsgraad”) measures “the proportion of time that space is used compared to its availability” (Space Management group (SMG). It is the percentage of spaces that are “used”, by at least one person. It indicates if the space is used or not, independent of the number of people. For example, the frequency of 40% indicates that 40% of the office spaces is used, by any number of people¹.



Occupancy rate (“benuttingsgraad”) measures “how full the space is compared to its capacity” (SMG). It is defined as a percentage of total capacity. For example, an occupancy of 50% indicates that half of the workplaces (seats) in an office space is occupied by either a person or personal objects in a specific time frame. (based on various reports amongst others by SMG and Valks, 2021)

Utilisation is a function of the frequency and occupancy rate (SMG): the frequency rate is multiplied by the occupancy rate. The universities in their individual space utilisation studies did not calculate the utilisation, so therefore in this report the utilisation rate is not used. The term “utilisation” is used as overarching for frequency and occupancy, defined more general as “making use of space”.

Bezettingsgraad (“Frequency (rate)”) = een ruimte is “bezet” met minimaal 1 persoon.

Benuttingsgraad (“Occupancy (rate)”) = welk deel van de maximale capaciteit van de ruimte is gebruikt.

It is important to note that, according to Valks et al. (2021, p. 445) “[...] the definition of space utilisation assumes the room as the object of measurement: frequency describes its availability and occupancy describes its use of capacity. However, in office areas and study spaces, the object of measurement is a workplace (also referred to as seat). Here, the frequency and occupancy are essentially the same because the value of the capacity can only be 0 (free) or 1 (occupied).”

Room frequency and room occupancy are depicted in Figure A3.1.

Footnote 1: The availability of space for offices is determined the amount of measurements that are done

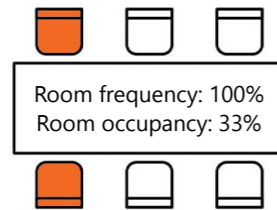


Figure A3.1: Example of room frequency and room occupancy of meeting space (Campus NL, 2024)

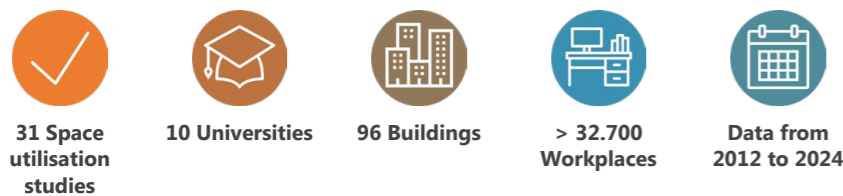
In this study we therefore chose to use the following terms of frequency and occupancy as defined above, but specifically call it:

- Room frequency when the object of frequency measurement is a room.
- Room occupancy when the object of occupancy measurement is a room.
- Seat occupancy when the object of measurement is a seat (i.e. workplace). This means that we do not use seat frequency because it is equal.
- Space use: when referring to this phenomenon in general
- Space utilisation studies: when referring to the studies in general that report on either frequency, occupancy or both.

For the utilisation of office, the seat occupancy of workplaces is the most important as discussed in A3.2, while for meeting spaces both the room frequency and the room occupancy is important (see A3.6).

A3.2 Data collection and methods

This study was conducted to assess the frequency and occupancy rates (respectively “bezettingsgraad” and “benuttingsgraad” in Dutch) for workplaces and meeting spaces across all 14 universities in the Netherlands. Our campus-contacts provided detailed insights about their respective university and campus. We requested relevant space utilisation studies. Data collection began in January 2024 and finished end of April, 2024. We obtained ethical approval to collect data from human subjects.



Each campus NL-contact received an email request for information and documents, which they either uploaded to a secure, protected database or sent via email. In cases of non-response, every campus contact was contacted again either by phone or with an email reminder. We successfully collected space utilisation studies of 96 office space - workplaces and meeting spaces from **10 universities, resulting in 31 reports covering almost 100 buildings** (Figure A3.2). Of these, 6 buildings - 5 from university U10 and 1 from university U4 were mentioned in multiple reports. Therefore, they are presented separately in our analysis, accounting for data from a total of 96 buildings, which include more than 32,744 working places. Some universities have done one space utilisation study for one building while others have done longitudinal studies over the years for one or all their buildings². One university was not able to provide their space utilisation studies and three universities have not done any studies.

Frequency vs. Occupancy



Measurement amounts



Pre- or Post-Covid 19



Chairs



Work places or Meeting spaces



Closed or Open space



Amount of seats



Figure A3.2: Study years per university (Campus NL, 2024)

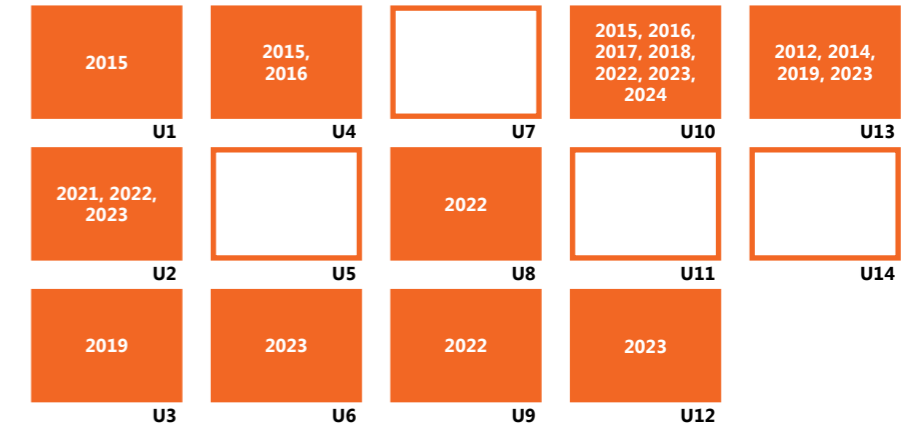
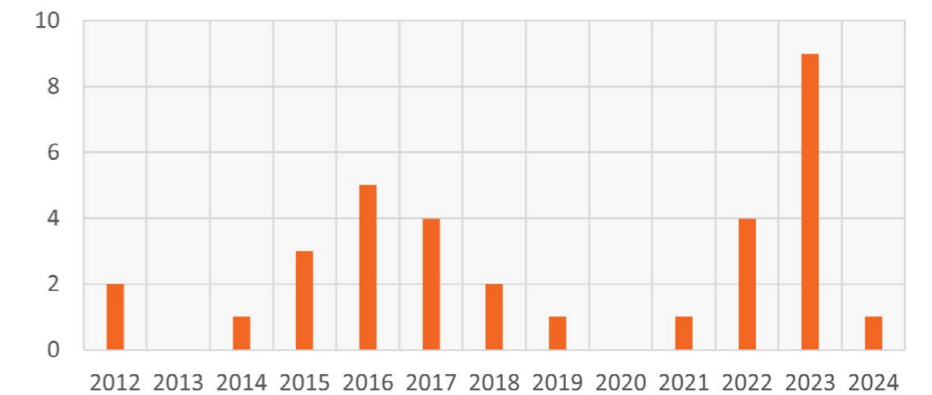
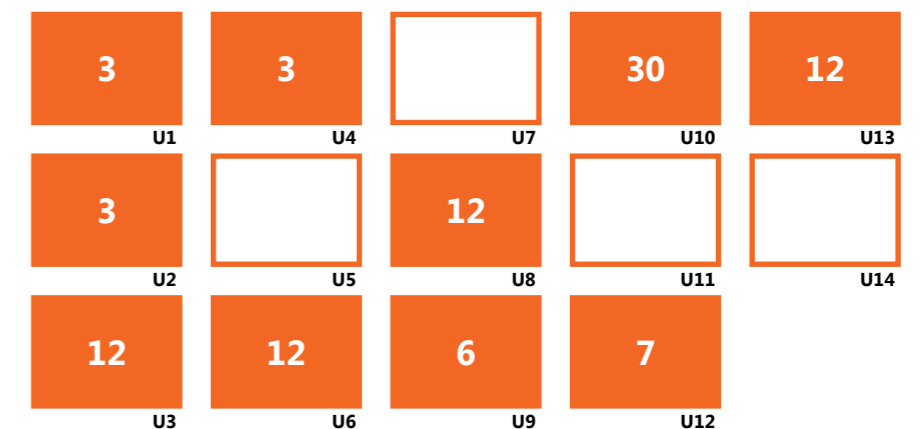


Figure A3.3: Timeline of space utilisation studies indicating the number of studies per year² (Campus NL, 2024)



The collected space utilisation studies have been conducted between 2012 to 2024. The distribution of the studies over the years can be seen in Figure A3.2. Most studies have been done in the year 2023. In total, more than half of the studies (18) have been done before COVID and a bit less than half of the studies after COVID (13). In Figure A3.3, the timeline of space utilisation studies, which we collected for Campus NL can be seen.

Figure A3.4: Buildings included in the studies per university (Campus NL, 2024)



Footnote 2: U2 has one space utilisation study over multiple years, therefore they have been presented in this graph in all three years (2021, 2022, 2023) separately

A3.2.1 Dataset

All the received space utilisation studies from the various universities have been anonymised using alphanumerical codes, making the universities and reports anonymous, but the data still traceable to the underlying used reports. The structure of this code is as follows: Every university received a unique code (Ux);

- Every report received an alphanumeric code (y);
- Every building received an alpha numerical code (z).

Resulting in a combination of Ux.y.z, for example, U9.1.2.

We firstly collected information per report, including year and days of the research, number of measurements per day and company that perform the measurement. Further we collected other type of information per report, including number of workplaces, meeting facilities and laboratory places to get a general idea of the reports. (see appendix A).

Secondly, we selected all the data regarding number of working-places, meeting spaces and average, lowest and highest frequency, and occupancy. To account for difference in building size we calculated the weighted mean for each cohort, resulting in higher influence of larger buildings on the final mean. When data on working places was lacking, we provided an arithmetic mean instead.

A3.2.2 Comparison

Given the variability in research methods and the timing of the documents, we took measures to minimize bias and enhance comparability. Documents were organized by time and measurement frequency. We categorized all measurements taken after 2020, the beginning of the covid-19 pandemic, as Cohort A. U2 started their continuous measurements in September 2021 and the first time-bound space utilisation study post-lockdown was from U9 from June 2022. Measurements conducted before 2020 were classified as Cohort B, representing the pre-lockdown period. The last space utilisation study pre-lockdown was done in October 2019. Cohorts are classified as follows: 8+ measurements constitute Cohort 1, 5-6 measurements as Cohort 2, 4 measurements as Cohort 3, and 2 measurements as Cohort 1 (see Figure A3.5 and appendix B). If a university measured 8 times during a day the average frequency and occupancy gives an overview of that day, if however, a university measured two times during peak hours, the average frequency in that time period more resembles the peak frequency than the average frequency per day. In order to compare the data, these cohorts were defined.

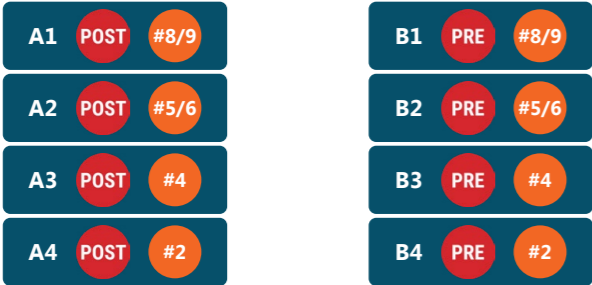
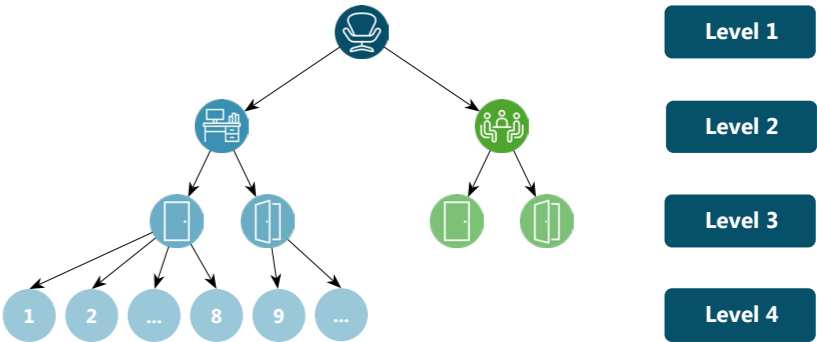


Figure A3.5: Definition of cohorts per study year (A- after COVID-19 and B- before COVID-19) and per number of measurements per day. (Campus NL, 2024)

Further analysis was conducted on the places across four levels (see Figure A3.6):

- Level 1 was defined as all the places (seats) in the buildings without distinction between workplaces and meeting spaces and without distinction between spaces;
- Level 2 was defined as workplaces and meeting spaces (seats) observed separately;
- Level 3 was defined as either closed or open meeting spaces or workplaces;
- Level 4 more specifically looked at the types of spaces.

Figure A3.6: Division in 4 levels for visualization of various places in the universities (Campus NL, 2024)



At level 1 and 2 the analysis is done on seat level. In many reports this is called the frequency rate (bezettingsgraad), however as explained in the introduction (definitions and terminology), if the unit is one seat, the frequency rate and occupancy (benuttingsgraad) rate is the same. In general, in these reports for meetings spaces the difference between frequency and occupancy is made, but not for the offices spaces.

Weighted mean and average

In principal we have use the weighted mean in this analysis. In this way, the conclusions are drawn based on the amount of workplaces under investigation . However, in cohort A4, the average is shown instead of the weighted mean for both working places and meeting spaces due to the lack of information on the number of places per building. In cohort B3 meeting spaces, the average is used instead of the weighted mean because of inconsistencies in the report regarding the number of places per building. Additionally, some reports provided the cumulative number of places per report instead of per building. In that case, each of the buildings has the same frequency or occupancy rate.

Weighted mean: An average computed by giving different weights to individual values. If all the weights are equal, the weighted mean is the same as the average.

Average: The mean value, calculated by dividing the sum of a set of values by the total number of values in the set.

Dataprocessing

Sometimes it was necessary to process the data that was reported in the space utilisation studies. For instance, if the information was given per room type but the average for the spaces was not given, the average or weighted mean had to be calculated by the researchers. Furthermore, sometimes in the report the frequency and occupancy rates were not reported for a building but for instance per measurement (U9 for example). In that case we have calculated the average between the measurements as the rate for the building.

A3.3 Seat occupancy rates

In this section the question is answered **What is the average seat occupancy of office spaces?** In this section we present the seat occupancy per type of space and per cohort, starting with all spaces (level 1), followed by workplaces and meeting spaces (level 2).

A3.3.1 All spaces seat occupancy rate (Level 1) - post-lockdown

In this paragraph, we present the seat occupancy rate of 3 buildings in one university because this is the only university where no distinction can be made between workplaces and meeting spaces. For this study the average building size was 857 and the average seat occupancy was very similar, the lowest in building U2.1.1 (15%) and the highest U2.1.3 (18%) (see Figure A3.7). The interesting aspect from this study is that the measurements are continuous, meaning this set is the only one that presents an image over multiple years. For the other universities we present the seat occupancy for workplaces and meeting places separately.

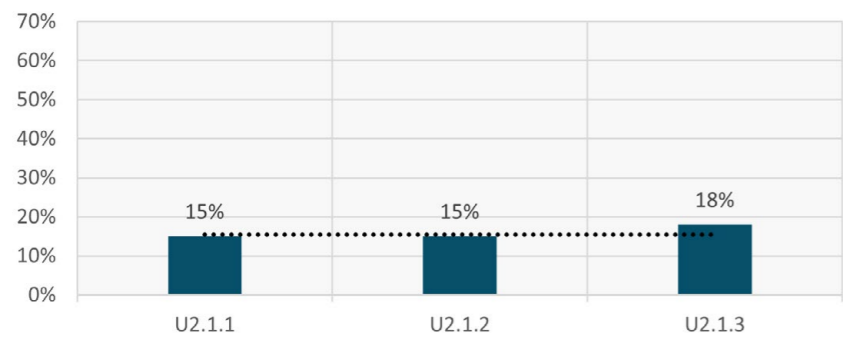


Figure A3.7: Mean of frequency rate per cohort A (after COVID-19), 1 (continuous measurements per day). (Campus NL, 2024)

A3.3.2 Workplaces and meeting spaces (Level 2)

For universities, the seat occupancy of the workplaces is the most important, because their aim is to provide their employees with a sufficient capacity of workplaces. However, from a capacity point of view it does not matter how many workplaces (i.e. seats) a room has. The workplaces can always be used if they are “free”. This contrary to meeting spaces, if one seat in a meeting space is used, the room is “used” and the other seats cannot be used anymore. There both the room frequency and room occupancy are interesting.

A3.3.2.1 Workplaces pre-lockdown

Cohort B encompasses measurements taken before the COVID-19 pandemic (2012-2019). We further subdivided this cohort based on the number of measurement moments per day. Consequently, four B cohorts were defined, although no measurements were categorized as B4.

The seat occupancy rates of Cohort B are shown in Figure A3.8. It presents data from 17 buildings across three universities, with an average seat occupancy rate of 42%. The average building size was 514 workplaces, ranging from 15 to 1765 workplaces. The highest seat occupancy rates, both 57%, were recorded in buildings U1.2.2 and U3.1.1, with the first also being the smallest building in this cohort. Lowest seat occupancy rate was shown for building U3.1.9 (34%).

Figure A3.10 illustrates the seat occupancy rates for Cohort B2, where the mean building size is 82 workplaces. The size range in this cohort extends from a minimum of just 1 workplace to a maximum of 734 workplaces. Only three buildings in this cohort contain more than 100 workplaces. The mean seat occupancy rate is 32%, with the lowest rate of 17% observed in building U13.3.8, which is also the smallest in terms of workplace count, and the highest rate of 37% noted in building U13.3.6.

Figure A3.12 shows the seat occupancy rates for Cohort B3, which includes 27 buildings from 2 universities. The average size of these buildings is 265 workplaces, with the

smallest having 16 and the largest having 1213. The mean seat occupancy rate is 43%. The lowest seat occupancy rates were recorded in buildings U10.9.18 and U10.13.35 (31%), while the highest seat occupancy was observed in building U10.7.12 (57%).

A3.3.2.2 Workplaces post-lockdown

Cohort A includes measurements taken after the COVID-19 pandemic (2020-2024). This cohort is further subdivided based on the number of daily measurement moments. The seat occupancy rates of cohort A1 are depicted in Figure A3.9. It presents data from 7 buildings from the same university, with an average seat occupancy of 27% and an average building size of 630 (ranging from 227 to 1568 workplaces). The lowest mean seat occupancy, 21%, is observed in building U12.1.1, while the highest, 40%, is in building U12.1.7.

The seat occupancy rates for Cohort A2 are shown in Figure A3.11, featuring 31 of the 50 buildings in cohort A, including buildings from four universities. The average seat occupancy here is 23%, slightly lower than the previous cohort, with building sizes averaging 254 workplaces, ranging from a minimum of 2 to a maximum of 1264 workplaces. The highest seat occupancy rate, 42%, is recorded in building U8.1.10, and the lowest, 14%, in building U10.1.1. Both buildings are relatively small in terms of workplace count. Notably, buildings in U8 generally show higher seat occupancy rates than those in U10 and U6.

Cohort A3 is presented in Figure A3.13, the mean seat occupancy rate is 30% across buildings averaging 283 workplaces (from 156 to 515 workplaces). This figure includes 3 buildings from the same university, with the highest seat occupancy rate, 35%, noted in the largest building (U10.4.8). The other two buildings, with 156 and 177 workplaces respectively, show similar seat occupancy rates of 21% and 23%.

Lastly, Figure A3.14 presents data from Cohort A4, which consists of 5 buildings from a single university. The building sizes are unspecified, but the overall mean seat occupancy rate is 35%. The highest rate, 47%, is observed in building U9.1.2, and the lowest, 25%, in building U9.1.6.

A3.3.2.3 Conclusions seat occupancy rates workplaces

Before COVID-19 (cohort B), the seat occupancy rates for the 4 cohorts, were higher than after COVID-19 (cohort A). For example, after the pandemic, seat occupancy rates were recorded at 27%, 23%, 30%, and 35% for cohorts 1 to 4, respectively. After COVID-19, these rates were to 42%, 32%, 45%, for cohort B1 to B3, respectively (no building was classified as B4), corresponding to about 2/3 of their values (see Table A3.1). In each cohort a drop of 10 to 15 percentage points can be seen. Therefore, the impact of hybrid working due to COVID-19 on workplace seat occupancy rates is evident when comparing data from before and after its onset.

Logically, cohorts 3 and 4 exhibit higher seat occupancy rates compared to cohorts 1 and 2, with relatively minor differences between the first two as the they exhibit fewer measurements on the relative peak hours.

Across Cohort A there are important differences in seat occupancy rates with A1 showing an seat occupancy of 27% and A4 of 35%, which account to 8 percentage point difference. Despite broader trends, some buildings, like U8.1.10 in Cohort A2 at 42% and U1.2.2 B1 at 57%, maintain higher utilisation rates. This means that the seat occupancy of workplaces can be improved. In order to do so, it is not possible to keep (all) dedicated workplaces and universities need to decide whether they want to change their way of working and introduce flexible working on a larger scale.

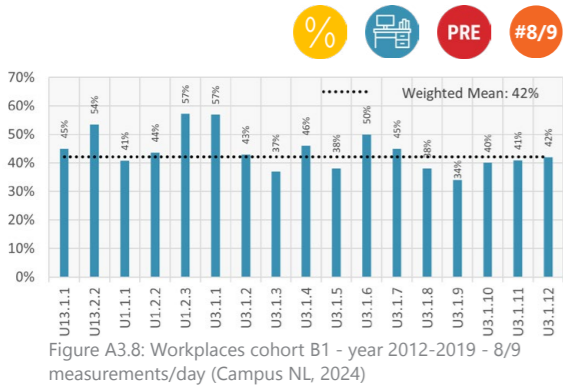


Figure A3.8: Workplaces cohort B1 - year 2012-2019 - 8/9 measurements/day (Campus NL, 2024)

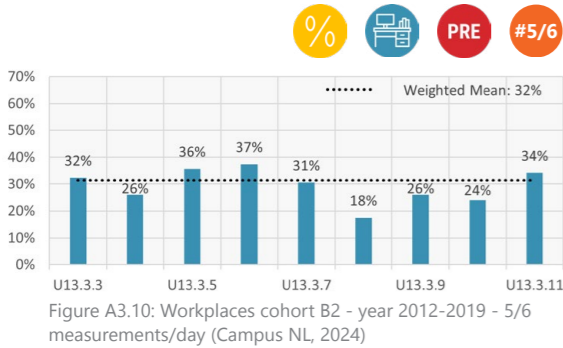


Figure A3.10: Workplaces cohort B2 - year 2012-2019 - 5/6 measurements/day (Campus NL, 2024)

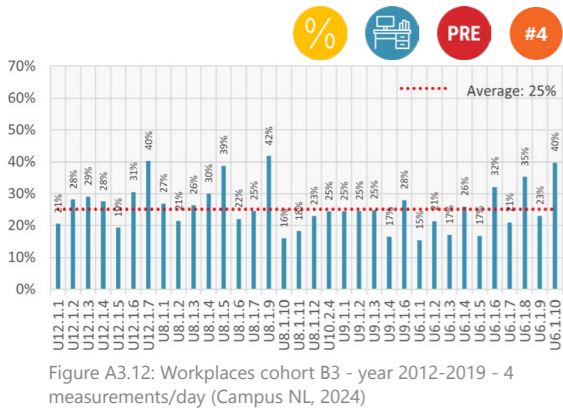


Figure A3.12: Workplaces cohort B3 - year 2012-2019 - 4 measurements/day (Campus NL, 2024)

	Pre lockdown	Post lockdown	Difference and Factor
#8/9	42%	27%	27/42 = 0,64 Minus 15 percentage points
#5/6	32%	23%	23/32 = 0,72 Minus 9 percentage points
#4	43%	30%	30/43 = 0,70 Minus 13 percentage points

Table A3.1: Changes in seat occupancy rate of workplaces (weighted mean) pre- and post-lockdown in the same measurements cohorts (Campus NL, 2024)

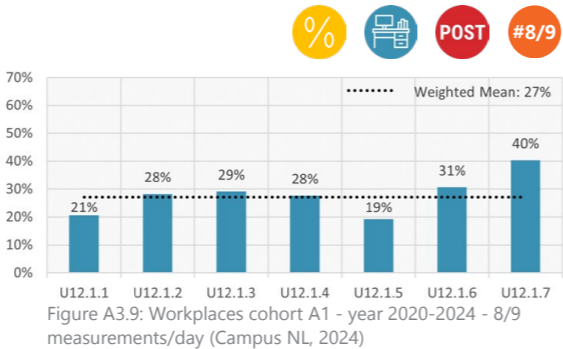


Figure A3.9: Workplaces cohort A1 - year 2020-2024 - 8/9 measurements/day (Campus NL, 2024)

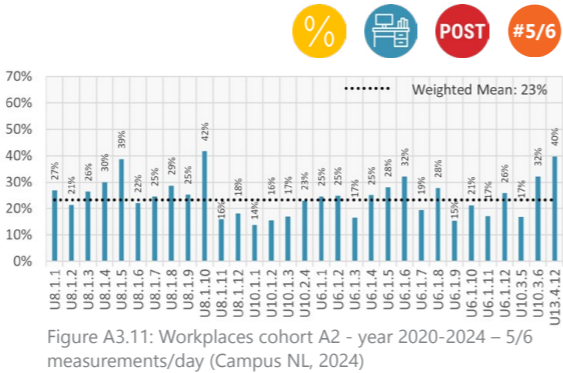


Figure A3.11: Workplaces cohort A2 - year 2020-2024 - 5/6 measurements/day (Campus NL, 2024)

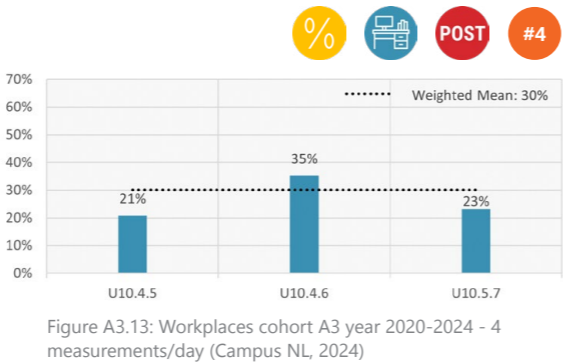


Figure A3.13: Workplaces cohort A3 year 2020-2024 - 4 measurements/day (Campus NL, 2024)

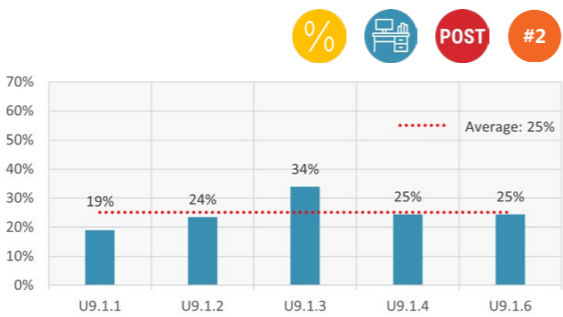


Figure A3.14: Workplaces cohort A4 - year 2020-2024 - 2 measurements/day (on peak hours) (Campus NL, 2024)

A3.3.3 Meeting spaces

We assessed the mean frequency rates of meeting spaces per building for each cohort. In total, data was collected on 63 buildings: 34 in Cohort A and 29 in Cohort B.

A3.3.3.2 Meeting spaces pre-lockdown

Cohort B covers pre-lockdown measurements (2012-2019), with the same subdivision criteria as used for working spaces. Figure A3.15 displays the frequency rates for meeting spaces in 17 buildings across three universities. The mean frequency rate is 17%, ranging from 2% (building U1.2.3) to 49% (building U3.1.1).

Figure A3.17 presents frequency data for meeting spaces in 8 buildings within the same university. The mean frequency rate is 10%, with the lowest at 5% (building U13.3.9) and the highest at 17% (building U13.3.11), characterizing this cohort by a generally low utilisation of meeting spaces.

Figure A3.19 presents the frequency rate data for meeting spaces in 21 buildings across 2 universities. The mean frequency rate was 19%, with the lowest mean frequency rate in building U10.13.36 (3%) and the highest in building U10.7.13 (41%). As not all universities provided data regarding the specific number of meeting spaces per building, this cohort is characterized by high variability.

A3.3.3.1 Meeting spaces post-lockdown

Cohort A includes post-lockdown lockdown measurements (2020-2024), using the same categorization criteria as the working spaces analysis. Figure A3.16 presents the frequency rates for meeting spaces in 7 buildings at the same university. The mean frequency rate is 28%. The lowest rate is 24% (building U12.1.4), and the highest is 33% (building U12.1.1). Buildings in this cohort typically have 25 meeting spaces, with a range from 3 to 52.

Figure A3.18 shows the frequency rates for meeting spaces in 26 buildings across three universities. The mean frequency rate is 11%. The rates range from 4% (building U8.1.2) to 30% (building U10.1.4). Information on the number of meeting rooms was inconsistently provided, with some universities detailing the number of seats instead.

Figure A3.20 displays frequency rates for meeting spaces in 3 buildings at the same university, showing a high variability between buildings. The mean frequency rate is 26%, with the lowest at 7% (building U10.5.9) and the highest at 36% (building U10.4.8). The average number of meeting spaces is 33, ranging from 23 to 38.

Lastly, Figure A3.21 illustrates frequency rates for meeting spaces in 5 buildings at the same university. No data on the number of meeting spaces was provided. The mean frequency is 40%, with the lowest at 24% (building U9.1.3) and the highest at 53% (building U9.1.6).

A3.3.3.3 Conclusions meeting spaces

In general, the frequency rate in meeting spaces increased after the COVID-19 pandemic, with variations across different cohorts. Cohort 1 saw an increase in frequency from 17% to 28%, a factor of 1.6 times. Cohort 2 had a more modest increase from 10% to 11%. Cohort 3 increased from 19% to 26% (Table A3.2). Finally, Cohort 4, which has no pre-pandemic data available, reported a frequency rate of 40% post-pandemic. This overall rise in frequency may be attributed to an increased demand for meeting spaces for hybrid groups post-pandemic. Specifically, Cohort 2 showed the lowest frequency rates

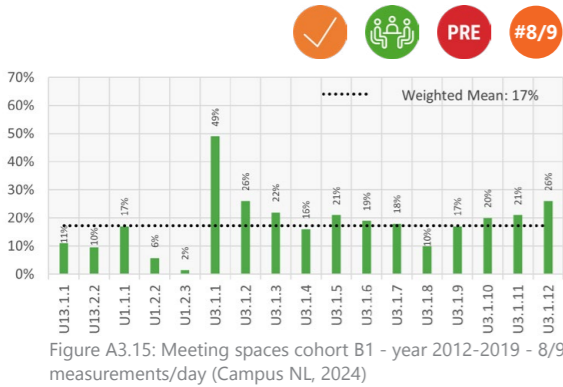


Figure A3.15: Meeting spaces cohort B1 - year 2012-2019 - 8/9 measurements/day (Campus NL, 2024)

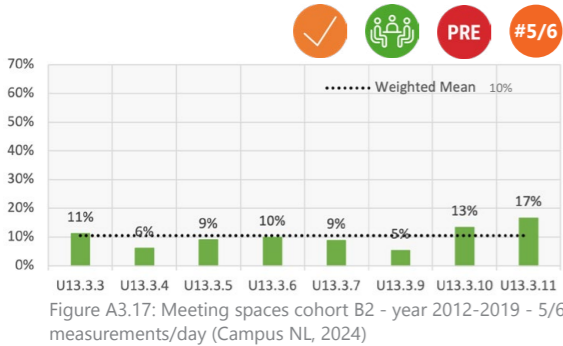


Figure A3.17: Meeting spaces cohort B2 - year 2012-2019 - 5/6 measurements/day (Campus NL, 2024)

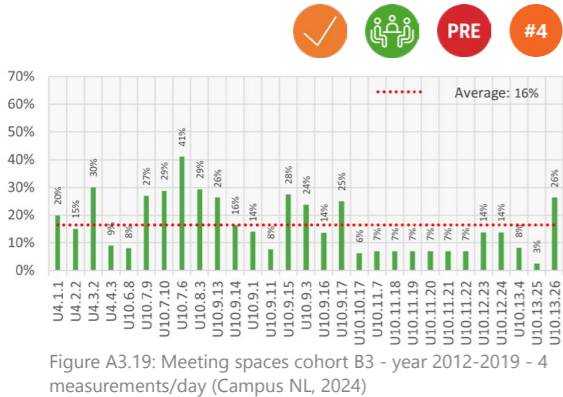


Figure A3.19: Meeting spaces cohort B3 - year 2012-2019 - 4 measurements/day (Campus NL, 2024)

	Pre lockdown	Post lockdown	Difference and Factor
#8/9	17%	27%	27/17 = 1,60 Plus 10 percentage points
#5/6	10%	11%	11/10 = 1,10 Plus 1 percentage point
#4	N/A	26%	N/A

Table A3.2: Changes in (weighted mean) occupancy rate of meeting spaces pre-post lockdown in the same measurements cohorts (Campus NL, 2024)

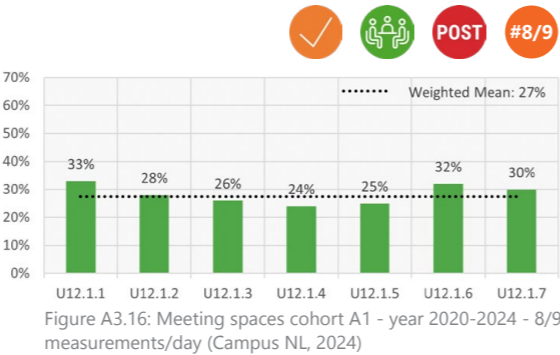


Figure A3.16: Meeting spaces cohort A1 - year 2020-2024 - 8/9 measurements/day (Campus NL, 2024)

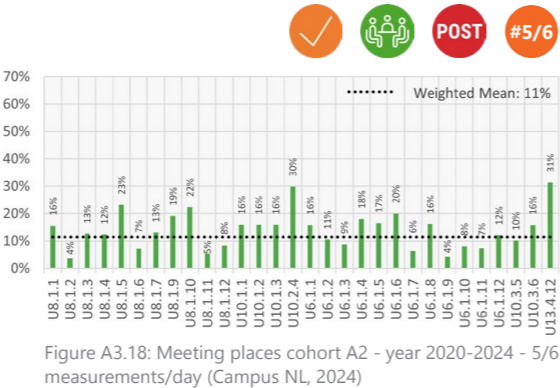


Figure A3.18: Meeting places cohort A2 - year 2020-2024 - 5/6 measurements/day (Campus NL, 2024)

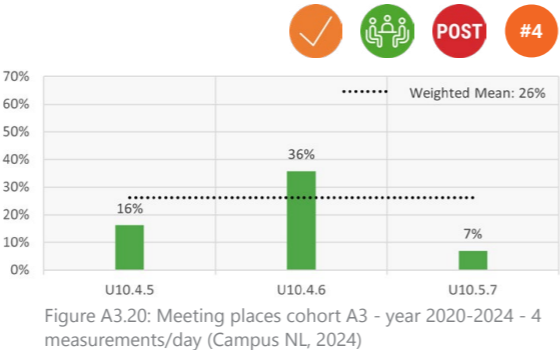


Figure A3.20: Meeting places cohort A3 - year 2020-2024 - 4 measurements/day (Campus NL, 2024)

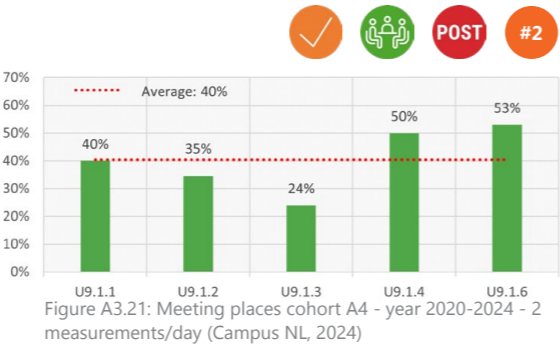


Figure A3.21: Meeting places cohort A4 - year 2020-2024 - 2 measurements/day (Campus NL, 2024)



Table A3.3: Signs of life workplaces space utilisation studies post-lockdown (Campus NL, 2024)

both before and after COVID-19, while Cohorts 3 and 4 had higher frequency rates than Cohorts 1 and 2.

This means that the frequency of meeting spaces can be improved. In order to do so, it is not possible to keep (all) dedicated workplaces and universities need to decide whether they want to introduce flexible working on a larger scale.

A3.4 Signs of life in seat occupancy rates

In this paragraph the following question will be answered: **What is the average seat occupancy rates without signs of life?**

When measuring the seat occupancy in most reports signs of life are included . It is understandable to include them in the because if a workplace or meeting space is occupied by ‘stuff’ another person is not able to use the place. However, the place or space is not actually used by a person, so in theory it could be available. At the swimming pool, this phenomenon is referred to as “handdoekje leggen”.

The percentages signs of life are given (see Table A3.3) either for the workplaces specifically, but also sometimes for meeting spaces and sometimes as average for all spaces.

University	% signs of life		
Level	Meeting spaces	Workplaces	All spaces
U2	not indicated	not indicated	not indicated
U6	0,5%	4,7%	3,6%
U8	not indicated	not indicated	4,4%
U9	unknown	unknown	unknown
U10	under investigation	4,7%	unknown
U12	not indicated	7,1% ³	not indicated
U13	not indicated	12% ⁴	not indicated

Five universities specify this percentage. The signs of life differ per type of space, whereas at U6 this is rather low for group spaces with a range from 0,4 to 1,4 (which is only % of the average seat occupancy). For individual workstations this ranges from 2,6 to 9,5%, where the latter is almost 1/3 of the occupancy rate. At U8, the signs of life range from 2,7 to 11,1% with an average of 4,4%. When looking at the signs of life as percentage of the average seat occupancy in the buildings this ranges from 16 to 31% with an average of 21%. That means that 1 in 5 places that is occupied by signs of life. In U10, we see that the average sign of life is 4,7% and a smaller range from 2 to 6%. However, this corresponds with 19% on average as percentage of the average frequency for the workplaces in the buildings this ranges from 11 to 32%. U12 has a range of signs of life from 3,1% to 11,3%, corresponding with a weighted mean of 25% for the signs of life / average occupancy, but the underlying range is wide and ranges from 16% to 35%. For U13, a visual inspection gave an average of 12% of spaces with a sign of life which corresponds with 33% of the average frequency. U13 encompasses one building with 4% of the workplaces, while U6 has 71% and U10 26% of the workplaces. As can be seen in Table A3.4, this gives an average of 23% of the workplaces that are temporary unoccupied.

Footnote 3: Percentages of signs of life were not given, but a graph was included that showed these percentages. A visual indication gave a range of 11 to 14%. Similarly, the average occupancy was between 38 and 42%.

Footnote 4: Indicated as percentage of average occupancy per building, based on discussion between researchers and U12 weighted mean calculated.

University	% signs of life (workplaces)	% signs of life (workplaces) / average seat occupancy	Amount of workplaces per university
U6	4,7%	21%	6.864
U10	4,7%	19%	2.473
U12 ⁵	7,1%	25%	5.287
U13	12,0%	33%	348
Weighted Mean	5,0%	23%	14.972

We can conclude that, the “signs of life” for individual workstations at universities is 5,7% (weighted mean) with range from 4,7% on average to 12%. This corresponds on average with 23% unoccupied workplaces of the average seat occupancy in buildings. As a rule of thumb for workplaces the average frequency without signs of life is 0,8 * average seat occupancy. We concluded that there is room for improvement in seat occupancy of buildings and this is even more so when the signs of life are considered. To do this, besides introducing flexible working universities can introduce a teachers-room (docentenkamer) for instance and/or using a clean desk policy.

In libraries for instance there are policies in place that when a workplace is occupied by stuff for too long and the person does not return in time, the stuff is removed from the workplace and can be collected later.

A3.5 Peak seat occupancy

In the former section, we have concluded that the average frequency in buildings give possibilities to use the space more efficiently. For capacity planning campus managers aim to have sufficient workplaces available. The target value for government offices (FWR) assumes a seat occupancy rate of 75%⁶. To see which percentage would be possible for universities the peak seat occupancy is studied and the following question is answered **What is the peak seat occupancy?**

One needs to bear in mind that this section only discusses the efficiency possibilities from the physical-functional point of view. Whether or not a university will choose to accommodate themselves more efficiently, can only be decided after taking more information from the perspectives: strategic, functional and financial into account (see management summary).

In Figure A3.22 the peak seat occupancy⁷ has been shown for all buildings in cohort A. The average of the peaks is 45%, whereas 45% of the buildings have a lower peak and 55% a higher or equal peak. One out of forty-four buildings have a frequency of 100%.

For capacity planning campus managers aim to have sufficient workplaces available and set a target value. A 70% target value is possible since 93% of the buildings in this analysis are below this line. This conclusion is on the ‘safe side’ for two reasons: (1) the peak seat occupancy includes the signs of life and (2) for capacity planning organisations will not only study the highest peak seat occupancy.

When looking at the three building above 70%, U8.1.10 (17 workplaces and 77% peak) and U6.1.6 (62 workplaces: 73% peak) falls under the 70% target if the signs of life are



Table A3.4: Signs of Life workplaces in relation to the average seat occupancy (Campus NL, 2024)

Footnote 5: These numbers are based on the larger dataset as indicated by U12

Footnote 6: source: Factsheet Government Working Environment, January 1, 2015

Footnote 7: The highest peak refers to the highest recorded seat occupancy (both physical and temporarily unoccupied) during one of all the measurement moments

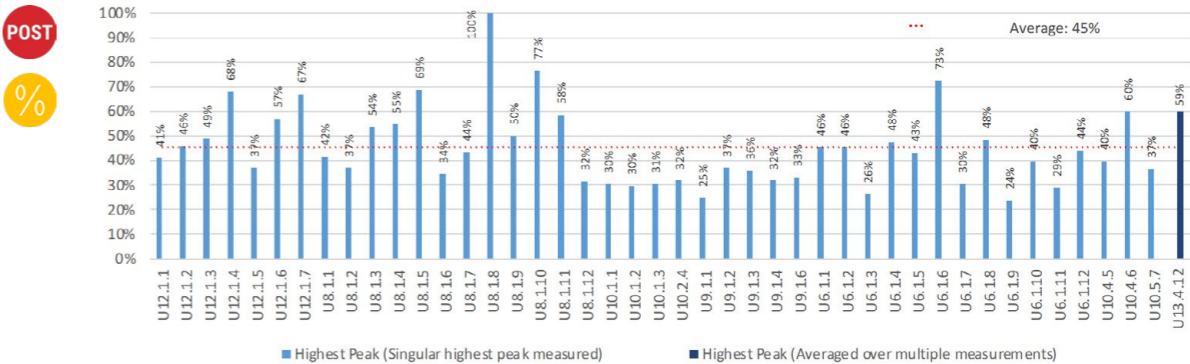


Figure A3.22: Peak seat occupancy per building in cohort A (Campus NL, 2024)

Based on these numbers, we can conclude that the average peak seat occupancy is 45% and using a target value of 70% for capacity planning is realistic. This means that there is room for a (at least) 30% efficiency improvement. In the next steps of this research, we will discuss with the campus managers how to determine the target value based on additional analysis.

A3.6 Weekly seat occupancy patterns

Occupancy patterns are recently due to hybrid working addressed to as the camel, where the Tuesday and the Thursdays are busiest. (Even Dutch comedian Arjan Lubach has dedicated a show to this phenomenon). This section is based on 36 buildings in cohort A (post-lockdown) that report about the weekly occupancy patterns⁸ and answers the question: **Which weekly seat occupancy patterns can be distinguished?** First, we explain how the seat occupancy patterns are determined, after that the seat occupancy patterns at the universities are described, followed by the conclusion. Next to that, we study the core and peak hours at universities.

A3.6.1 Determination of occupancy patterns

For the patterns we look at the days that have a higher occupancy than the others. However, we also consider the differences between the occupancy rates per day. The occupancy can have larger difference or smaller differences . Take the graph in Figure A3.23. Although at first glance you would classify it as a camel, the occupancy rates of the Monday and the Thursday are very similar, with respectively 21 and 22%. It makes

Footnote 8: For some universities the weekly patterns are given including the underlying percentages (U6 & U13) and partially this was the case for U10. For some the patters were visually analysed (U8 & U12) and for one (U2) the patterns have been concluded by the university themselves

no sense – if an organisation would apply peak shaving – to shift occupancy from the Thursday to the Monday. Therefore, we decided to call this pattern the Mon – Tues - Thurs pattern. Meaning that the pattern is based on both peaks and differences between days. In the following analysis, we have looked at a difference of maximum 5% between the days to include them in de weekly pattern. We realise that 5% is a larger or smaller part of the seat occupancy depending on the highest seat occupancy on a specific weekday as can be seen in Table A3.5. Therefore, the percentage that determines the pattern will be discussed with the universities in the follow-up study. Next to that, an analysis is made based on a difference of 7,5% between the days to include them in the weekly pattern which is displayed in Figure A3.23. In Figure A3.25 all patterns are displayed (see next spread).

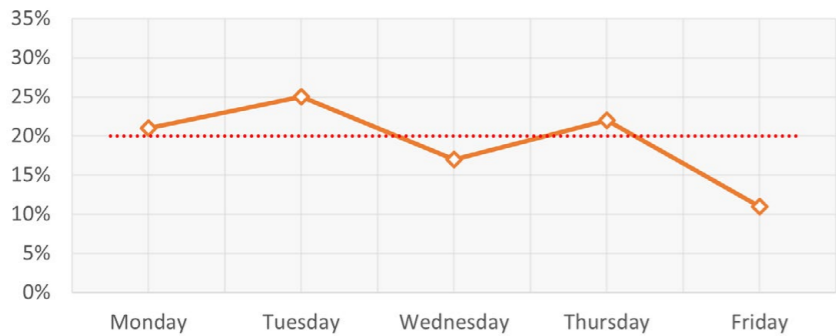


Figure A3.23: Illustrative ccupancy pattern example (Campus NL, 2024)

A3.6.2 Weekly occupancy patterns at universities

At universities there are more diverse weekly patterns than the commonly referred to “camel” as is shown in Figure A3.24. We distinguish four patterns, 1 day, 2 days, 3 days and 4 days patterns: all patterns representing about 25% of the buildings.



Figure A3.24: Occurrence of the weekly day patterns (Campus NL, 2024)

There are four particular patterns that are most common as can be seen in Table A3.5. The two most popular patterns ar Mon-, Tues-, Wednes- and Thursday (4 day pattern) and on Mon-, Tues- and Thursday (3 day pattern) with both 23%. Followed by the ‘camel’ which is present in 21% of the buildings and the 1 day pattern on the Monday with 18%.

Pattern					# Observed	% of Total
Monday	Tuesday	Wednesday	Thursday	Friday	9	23%
Monday	Tuesday	Wednesday	Thursday	Friday	9	23%
Monday	Tuesday	Wednesday	Thursday	Friday	2	5%
Monday	Tuesday	Wednesday	Thursday	Friday	8	21%
Monday	Tuesday	Wednesday	Thursday	Friday	1	3%
Monday	Tuesday	Wednesday	Thursday	Friday	7	18%
Monday	Tuesday	Wednesday	Thursday	Friday	2	5%
Monday	Tuesday	Wednesday	Thursday	Friday	1	3%
Total					39	100%

Table A3.5: Occurrence of the weekly patterns (Campus NL, 2024)

In general we can conclude that the higher the occupancy on a certain day, the bigger the differences between the days. The largest group (10 buildings) has a highest occupancy on a certain day between 21 and 30% and a differences of 10-20% with the day that has the lowest occupancy. The second largest group has a highest occupancy on a certain day between 31 and 40% and a differences of 20-30% with the day that has the lowest occupancy.

If we look at the specific universities, U2 has a very low occupancy on the Fridays, while the occupancy on the other days is similar.

University U6 has provided weekly patterns for each of their buildings and the 3 day pattern on Mon-, Tues, Thursday is the most prevalent followed by a flatter 4 day pattern where only the Friday has a lower occupancy and only 2 buildings have a camel pattern (Tues-Thursday). Half of their buildings have a highest occupancy between 21 and 30% with differences of 10-20%. Some buildings have a highest occupancy between 31 and 40% and differences of 20% per weekdays,.. For U6, mostly the Friday is the day with the lowest occupancy except for two buildings where the Monday or Wednesday is the lowest.

U8 has provided weekly patterns for each of their buildings and the 2 day pattern on Mon and Tuesday is the most prevalent. In general they have a lower occupancy on both Wednesday and Friday.

Looking at the averages of two weeks, the most prevalent patterns for U10 is the 3 day pattern on Mon- Tues and Thursday. Because not all average percentages per day of the week are displayed in the graph, we cannot exactly give the differences between the days, but a visual inspection gives the impression the differences at U10 are not so big and are less than 5%. In one building the Wednesday is the least occupied day and for the other building the Wednesday and Friday are similarly lower.

University U12 also presented the patterns per building like U6 and concluded that they mostly have the “camel-like” pattern. In our analysis some have the camel-like pattern, but when looking at the 5% difference per day, most of them are classified as a 1 day pattern on the Tuesday if a difference of 7,5% or 10% per day would be taken more buildings would have the camel or the 3 day pattern of Mon-Tues- and Thursday. Making it interesting to study which percentage should determine the pattern.

For U13, the pattern is the camel.

At the universities, more diverse occupancy patterns are observed with the most prevalent patterns: the 4 day Monday to Thursday pattern and the 3 day Mon - Tues – Thurs pattern. The camel is observed in more than 1/5th of the buildings and the 1 day pattern on Tuesday is seen in a bit less than 1/5th –of the buildings. Universities that reported all their buildings separately also show divers patterns. These more diverse patterns can be caused by the different tasks that are performed at universities: education, research and valorisation.

Results have shown that there are possibilities to raise the average occupancy rate per day. When, looking at weekly patterns, giving the diversity per building, the use of the specific building should be the starting point. This process is often referred to as peak shaving and aims to distribute the use of the university buildings more evenly to all days of the week. Peak shaving can be used, next to raising the occupancy for all days. Peak shaving is only interesting if the peak occupancy will be higher and close to the target value. Universities need to change their way of working and scheduling if they want to achieve peak shaving.

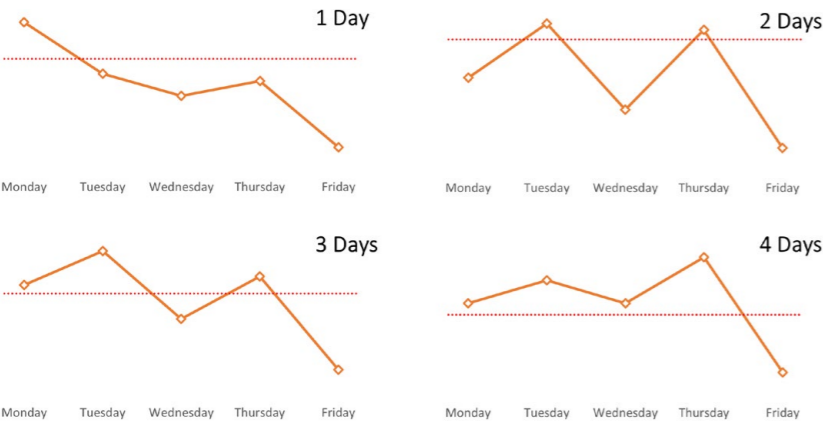


Figure A3.25: Illustrative examples of the four distinct weekly patterns, vertical axes have been scaled differently and do not start at zero. (Campus NL, 2024)

Looking at the weekly patterns it could be interesting to study the buildings that have a 4-day occupancy. Is that the case for specific faculties, specific ways of working or have specific measures been taken to create these patterns.

A3.6.3 Core and peak hours

Five of the universities (U2, U6, U8, U10 and U12) analysed the core and peak hours per hour for each building (n=36). Two reports were excluded as they provided average of the core and peak hours data across multiple buildings rather than providing specific ones per building. Another report was excluded because it only provided occupancy data per floor. Core hours are defined as hours that the frequency is above 20% and peak hours indicates the hour that is busiest during the day.

The core hours shown in the Table A3.6 refer to the post-lockdown pandemic (after 2020). It shows that the for the majority of the buildings, core hours are from 8.30-9.30 (depends on the time the measurement started) until 16.30-17.30 (the last measurement time). Mondays, Tuesdays, and Thursdays showed more often this patter, whereas for Wednesdays and Fridays the core hours concentrate in shorter intervals during the day.

Peak hours were mostly registered during lunch time and in the early afternoon. The highest frequency was from 11.00 to 12.00 and from 14.00 to 15.00. In some cases, from 13.00 to 14.00⁹ or 13.30 to 14.30 or from 14.30 to 15.30. Rarely, peak hours were registered after 16.00 or before 10.00.

These occupancy measurements are based on all types of rooms (which we refer to as level 1) in combination with a weighting so that office rooms for instance have a greater weight that phone booths for instance and include signs of life.

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Total
08:30-09:30 to 16:30-17:30	18	17	9	17	6	67
11:00 to 17:00	3	2	2	3		10
10:00 to 16.30	3	2	2	2		9
10:00 to 17:00		4	1	3		8
10:00 to 15.30	1	1	2	2	1	7

Table A3.6: Most frequent core hours in weekdays (Appendix C shows core times that occur less than 5 times) (Campus NL, 2024)

Possibilities:

These frequency rates (around 25%) give opportunities for improvement of the efficiency. When a university would like to take more precise measures core and peak hours can help them to either better schedule events. For instance, events could be strategically planned in the morning to spread out attendance or scheduled during peak hours to maximize higher occupancy rate.

POST

Table A3.7: Available data per university level 3 and 4 (Campus NL, 2024)

A3.6.4 Conclusion

At the universities, more diverse occupancy patterns are observed with the most prevalent patterns: the 4 day Monday to Thursday pattern and the 3 day Mon - Tues – Thurs pattern. The camel is observed in more than 1/5th of the buildings and the 1 day pattern on Tuesday is seen in a bit less than 1/5th –of the buildings. Universities that reported all their buildings separately also show divers patterns. These more diverse patterns can be caused by the different tasks that are performed at universities: education, research and valorisation. This means, that results show that there are possibilities to raise the average occupancy rate per day with peak shaving.

Peak shaving is only interesting if the peak occupancy will be higher and close to the target value. Universities need to change their way of working and scheduling if they want to achieve peak shaving.

A3.7 Utilisation per space type

In this section, we will answer the question **What is the room frequency and occupancy per space type?** First, we will conclude if the room frequency is different in open or closed spaces and secondly, we will conclude if the room frequency is different for different types of rooms (see Appendix D for types of workplaces and meeting spaces). The data analysis in this section is based on space utilisation studies after COVID to give the latest insights. In total seven universities have done studies after COVID of which four universities have room frequency and sometimes room occupancy rates per space type (see Table A3.7).

University	Workplaces	Meeting places
U2	No specification - level 1	No specification - level 1
U6	No specification - level 1	No specification - level 1
U8	No specification	No specification
U9	Office rooms (assumed closed) and open workplaces (assumed open) and closed	Phone booth and meeting spaces and use per meeting space by 1 person
U10	Diversity of workplaces	Diversity of meeting spaces
U12	Single-, multiple workplaces, phone booth and 'touchdown' space ¹⁰	No specification
U13	Open and closed & number of persons per room	Open and closed

A3.7.1 Open and closed workplaces

When looking at the difference between open and closed workplaces at U9, Figure A3.26 and Figure A3.27 show that the room frequency in open spaces (average 67%) is higher than in closed spaces (average 43%). While for the room occupancy it is the opposite because the room occupancy is 19% for the open spaces and 27% for the closed spaces. For U13, for room frequency the same conclusion can be drawn with an average room frequency of 45% for open workplaces¹¹ and 39% for closed workplaces as can be seen in figure A3.33. The room occupancy in both type of rooms is slightly higher in open spaces than closed spaces with respectively 30% and 27%. The descriptions of closed and open spaces by U9 and U13 can have different a slightly different meaning (see footnotes). The differences between buildings are large though. Note that U9 measured at the peak moments with two measurements, while U13 performed six measurements per day.

Footnote 9: For U2 this is the case in 80% of the days in the three buildings that have been measured

Footnote 10: aanlandplek in Dutch

Footnote 11: U9 refers to closed and open spaces in their space utilisation study, while U13 (slide 6) shows that closed rooms have 1 to 8 persons per room and open spaces 2 to more than 8 persons in the space

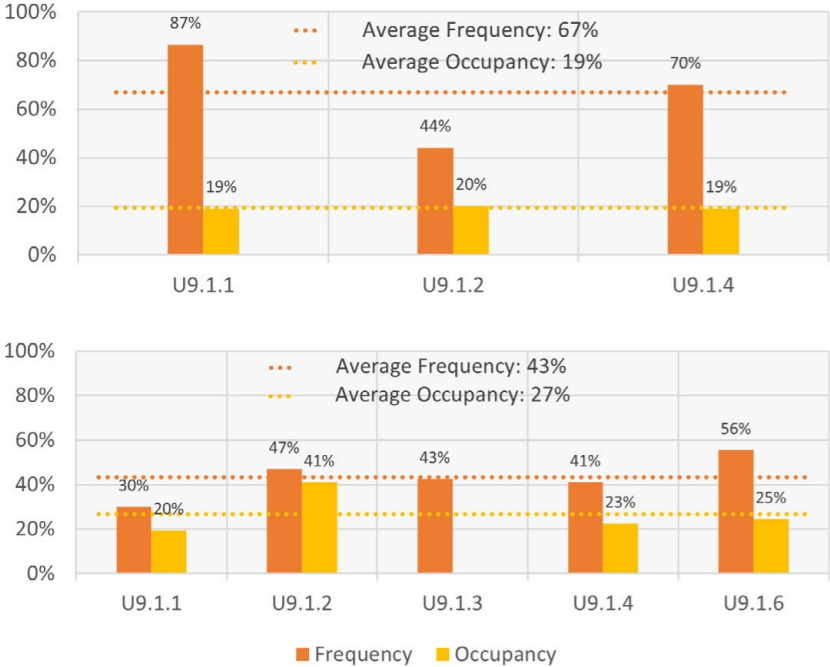


Figure A3.26: Room frequency and room occupancy open spaces [U9]¹² (Campus NL, 2024)



Figure A3.27: Room frequency and room occupancy closed spaces [U9]¹³ (Campus NL, 2024)

When looking at the peak room frequency for U9 in open and closed spaces, it is on average respectively 83% and 56%, while the peak room occupancy is very similar with 34% for the open spaces and 36% for the closed spaces. Two buildings even have a room frequency of (almost) 100% which shows that people first fill the different spaces before filling up a space, because in one of the buildings the room occupancy is as low as 25% while the other is 50% (be aware for U9 this is not a daily average but based on the two measurements in peak hours).

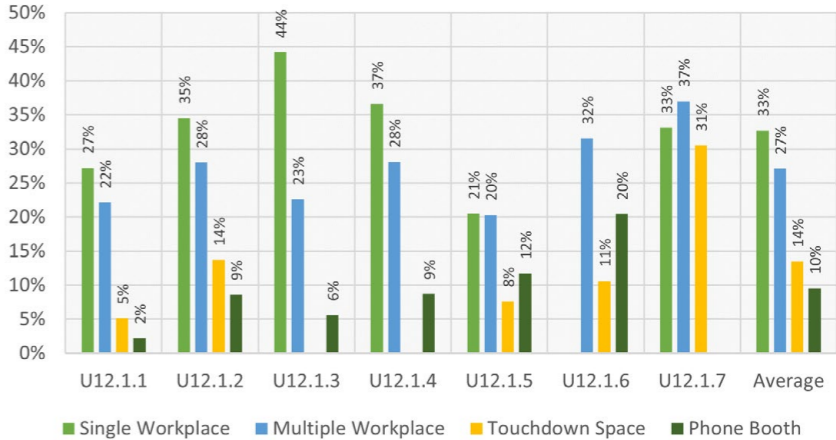
The room frequency is higher in open spaces than in closed spaces, but for the room occupancy closed spaces are higher than open spaces in U9 but not in U13 where open spaces have a slightly higher room occupancy than closed spaces.

University U12 made an analysis per type of workspace in which they distinguished four types of spaces (Figure A3.28). Single workplaces have the highest average room frequency (33%), followed by the multiple workplaces (27%), whereas the “touchdown spaces” and the phone booths are lower with 14% and 10% on average. There are differences per building, but the order is almost the same for each building except for U12.1.7. Based on the numbers provided by U13, we also concluded, for the closed workplaces, that the single workplaces (49%) have higher room frequency than the multi workplaces (36%). Since most of these workplaces (probably) are ‘designated’, i.e. fixed, it is more relevant to look at the room occupancy which upholds the conclusion with 32% and 25% respectively but the difference in room occupancy is smaller than for the room frequency. U13 did not have any single workplaces, so for those spaces this comparison cannot be made.

University U13 not only made a distinction between single and multi-workplaces, but also made an analysis per room size, as can be seen in the Figure A3.29. For the closed rooms: “the fewer persons per room, the higher the room frequency” and the 1-person room has the highest room frequency with 49%. For the open spaces this is the opposite, the more persons per room the higher the room frequency, although this correlation is less strong and only valid for the room frequency and not for the room occupancy. The



Figure A3.28: Room frequency different workplaces [U12]¹⁴

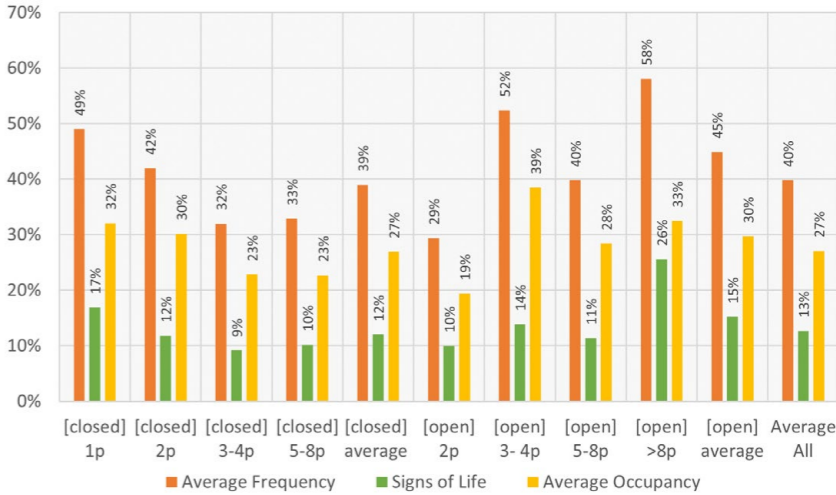


In closed rooms: the fewer persons per room, the higher the room frequency.

University U10 made a different distinction in workplaces as can be seen in Figure A3.30 and determined the room frequency and room occupancy for in total almost 2000 workplaces. The weighted mean room frequency is 24% and the weighted mean room occupancy 19%, which is lower than registered at U10. The difference between the spaces is not that big, but three spaces are the most common: fixed desk (1085), office desk (625) and standard workplace (191)¹⁵.



Figure A3.29: Average frequency, signs of life and room occupancy per room type for U13 (Campus NL, 2024)



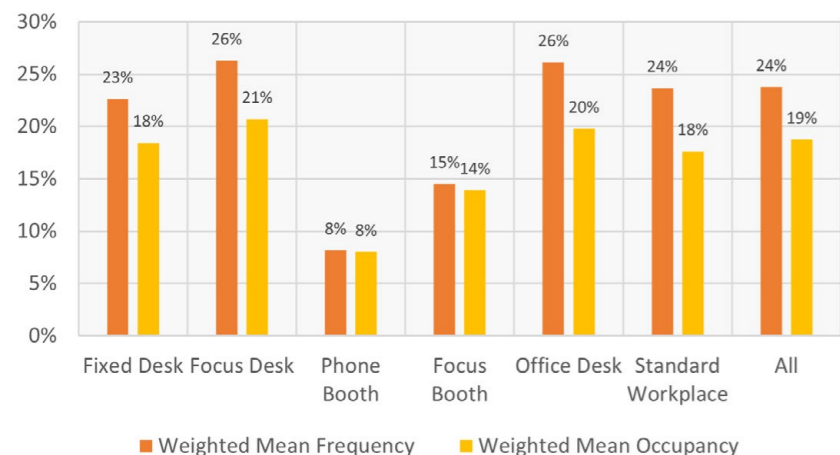


Figure A3.30: Weighted mean room frequency and room occupancy for different (types of) workplaces [U10.1 to U10.5] (Campus NL, 2024)

A3.7.2 Meeting spaces

For meeting places it is important to study the room frequency but also to look at the capacity of the room. For meeting spaces if the room is used, regardless of the amount of persons that use the room, nobody else can use the room. For workplaces this is not the case as explained in A3.

In the table underneath, we can see as expected that in meeting spaces at U10: “the higher the capacity of the room, the more persons present”. However, we can also see that the number of persons in relation to the capacity is negatively correlated with the room size. This means that “the bigger the room, the more the room is not used to its full capacity”. On average 3,5 persons are in a meeting space, based on the observed data (see Figure A3.31). Larger rooms are meant for larger groups, however if meetings with more than 9 people are not that frequent it is good they are used by smaller groups.

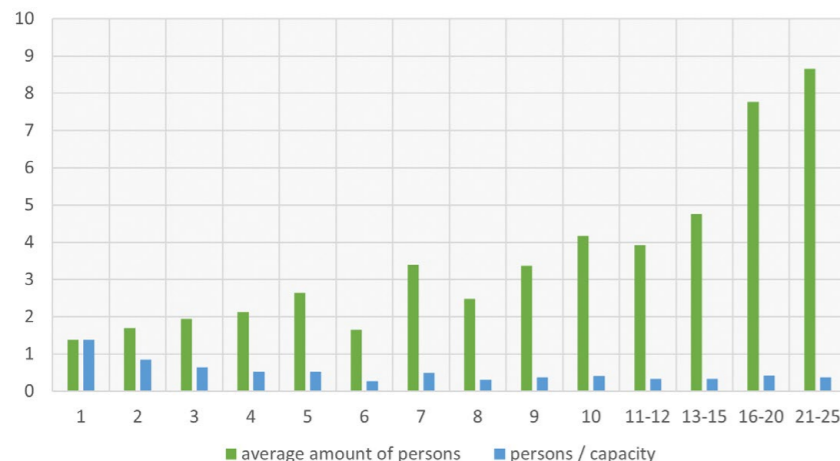


Figure A3.31: Room occupancy (number in persons in a room – (Y axis divided by the capacity of the room (X axis, number of persons) (U10) (Campus NL, 2024)

Footnote 15: It could well be that these workplaces are similar but have been given a different names in the reports based on how they are called in a particular building

In principal it is not a problem if a room with a larger capacity is used by a smaller group. If the room is available and the room is needed because smaller meeting spaces are fully occupied. In that case, it is better that it is used than not. However, it could be a problem but that is dependent on the booking behaviour in a university. If larger rooms are booked by smaller groups, while smaller meeting spaces are available. It could happen that larger groups have no meeting spaces available, although they could have been one available.

Next to that, for the capacity planning universities want to know whether they have the right mix of meetings spaces. This data, especially when collected year over year (or based on an planned meetings spaces), can inform universities if they have the ‘right’ amount and type of meeting spaces.

A3.7.3 Conclusion

The room frequency rate varies in different types of spaces. At U9 and U13, the room frequency is higher in open workplaces than in closed workplaces. The room occupancy however is inconclusive, in one university it is higher in closed spaces and in one it is higher in open spaces. For the open spaces U13 showed that the spaces with more than 8 seats had the highest room frequency. For the closed spaces U12 showed that the single workplace is most used, followed by the multiple workplaces, touchdown-spaces and the phone booth, however in this set we do not know whether the multi workplaces are open or closed. When only looking at closed rooms, the single workplace is also the most used (of the closed rooms but not of closed and open rooms jointly) at U13, but they also observed that “the less persons per room, the higher the room frequency”.

A3.8 Seat occupancy and workplace norm

In this section the following question will be answered **What is the relationship between seat occupancy and a provisional workplace norm?**

University U8 made an analyses per organisational unit of the average seat occupancy¹⁶ versus a provisional “workplace norm”. The workplace norm (a space standard used to plan or allocate offices) they have used in their analysis is a provisional bandwidth of 0,7 to 0,9 workplace per fulltime equivalent (fte) university staff. Four units fall within this range, one unit is below the norms while the other 10 of in total 15 units are accommodated above this norm (see Figure A3.32). Although this is an provisional norm, it shows that there is a negative correlation of (-0,65) between the average occupancy and the amount of workplaces per fte. Meaning that less workplaces per fte, lead to a higher occupancy.

We can conclude that according to expectations, if organisational units are accommodated “within the workplace norm”, the occupancy of workplaces is higher.

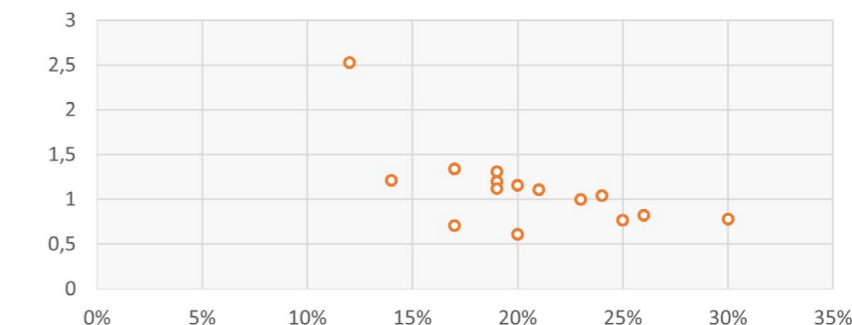


Figure A3.32: Relationship between average occupancy and workplaces per fte (bandwidth norm from 0,7 to 0,9 workplace per fte is included in the graph) (Campus NL, 2024)

Footnote 16: U8 has processed the information from report U8.1 in this particular analysis, to use the average occupancy per organisation unit

A3.9 Summary, conclusions and discussion

In September 2023, it was decided (by SBF, HOI, and DFB) that figures on space utilisation were important, especially actual occupancy and utilisation. In the first months of 2024, campus contacts were asked to provide their occupancy and utilisation measurements from recent years. Ultimately, the research team received a large number of studies, dating from 2012 to 2024.

The Campus NL team is proud of the collectively gathered data: over 100 buildings encompassing nearly 33,000 workspaces. This has allowed Dutch universities to collectively build a database that can be expanded in the (near) future. The comparison in this study is based on the data from the reports. For the expansion of the database, we see two possibilities: on the one hand, we aim to aggregate the underlying source data in a joint data warehouse, this will make more data available at measurement level for additional analyses (the quantity of data increases). On the other hand, we want to include more (explanatory) data in the database: what characteristics of accommodation solutions lead to low or high occupancy and what can we collectively learn from them? The universities are also considering giving new studies the same format to increase comparability - which was not optimal now.

Naturally, many conclusions can already be drawn from the current database, which are summarized below.

The current working practices of universities are reflected in the occupancy rates of buildings. These practices include individual choices about why and when people come to the office, as well as how scheduled meetings and educational activities are planned.

- **The average occupancy rate of office spaces is clearly lower post-COVID than pre-COVID, ranging from 23% to 30% (post-COVID) compared to 32% to 43% (pre-COVID) (see table).** This is a decrease of 9 to 15 percentage points, meaning the post-COVID occupancy is 2/3 of the pre-COVID occupancy. Looking at the post-lockdown studies that took many measurements per day (8 to 9 measurements), the average occupancy per day is 27% compared to 42% pre-lockdown. This is post-lockdown slightly lower than in the study with 4 measurements per day where occupancy was 30%. We study the seat occupancy of the workplaces, because universities aim to provide their employees with a sufficient capacity of workplaces. Therefore, from a capacity point of view it does not matter how many workplaces (i.e. seats) a room has; the workplaces can always be used if they are “free”.

	Pre lockdown	Post lockdown	Difference and Factor
#8/9	42%	27%	27/42 = 0,64 Minus 15 percentage points
#5/6	32%	23%	23/32 = 0,72 Minus 9 percentage points
#4	43%	30%	30/43 = 0,70 Minus 13 percentage points

Table A3.8: Changes in seat occupancy rate of workplaces (weighted mean) pre- and post-lockdown in the same measurements cohorts (Campus NL, 2024)

- In order to have sufficient workplaces available, campus managers also study peak occupancy because not all days are equally busy. **When looking at the highest measured values, the “average” peak load is 45% (post-COVID) across 44 buildings. The busiest times are between 11:00 and 12:00 and between 14:00 and 15:00.** At the same time, many occupancy measurements count a workspace as “occupied” if there is a coat, bag, or laptop present as a “sign of life.” Studies that noted this separately show that this can lower the occupancy by a factor of 0.2 to 0,25.

- **Unlike workspaces, meeting spaces were better utilized post-COVID. Here, there is a wide range from 11% to 40%. note that this measures if the meeting room is “used”: this is also the case when only one person uses a meeting room with a small, medium or large capacity).**
- The so-called “camel” (Tuesday-Thursday peak in space usage) is also observed in the academic office, but only in 1/5th of the buildings. Together with another two-day pattern (Monday-Thursday) 1/4 of the buildings have a two-day peak. At universities, we observed four patterns: besides the two-day pattern, there were also patterns with a peak on 3 or 4 days or only on 1 day of the week. All patterns have around ¼ of the buildings: 1/4 of the buildings had a four-day pattern (Monday-Tuesday-Wednesday-Thursday), and 1/4 had the three-day or one-day pattern (1/4). The days when it is busy differ. Monday is also relatively busy at the university. Based on the information available in the space utilisation studies, we cannot conclude what causes these differences, but teaching alongside doing research certainly contributes to it. Universities that reported all their buildings separately also show divers patterns. These more diverse patterns can be caused by the different tasks that are performed at universities: education, research and valorisation.
- **Four universities examined post-lockdown the occupancy and utilisation of specific spaces, but because the number of measurements varies from university to university, not all data can be compared one-to-one. Most universities also do not know whether the workplaces are shared or not , how the spaces are furnished and whether they have been recently upgraded or not. Nevertheless, we provide some insights from these studies to get a picture of how spaces are used. This information can be used -by a university- to determine whether they have the right mix of workplaces.**
 - Room frequency is higher at U13 in open spaces (45%) than in closed spaces (39%), this is the same at U9. Looking at room occupancy does not give an unambiguous picture, at U13 the difference is very small (open workspaces 30% and the closed workspaces 27%. and U9 has just the opposite picture (open workspaces19% and closed workspaces 27%).
 - At U13, for the closed spaces it was found that ‘the less capacity in a space, the higher the occupancy’: the individual workstation has the highest room frequency at 49%. This is higher than the average of the open spaces (45%), but lower than the room frequency of the >8 person spaces (58%) and the 3-4 person spaces of the open spaces (52%).
 - U13 has an room occupancy rate of 30% in open work places compared to the average room frequency rate of 45%, with only room frequency in 3-4 person spaces being higher than the average (38%). At another University (U10), the difference between room frequency and room occupancy is less pronounced, and the average room frequency rate (19%) is lower.
 - At U12, individual workstations are on average the most occupied (33%), followed by multi-person work places(27%). ‘Landing’ work places and the ‘phone boots’ are the least occupied here. This is not entirely comparable with U13 and U9 because in this study the distinction between open or closed places is not made; the multi-person places can therefore be either open or closed.
- **Occupancy is higher in organizational units that are accommodated according to a provisional space norm,** as shown in a study by U8. In the future they aim to determine a space norm.

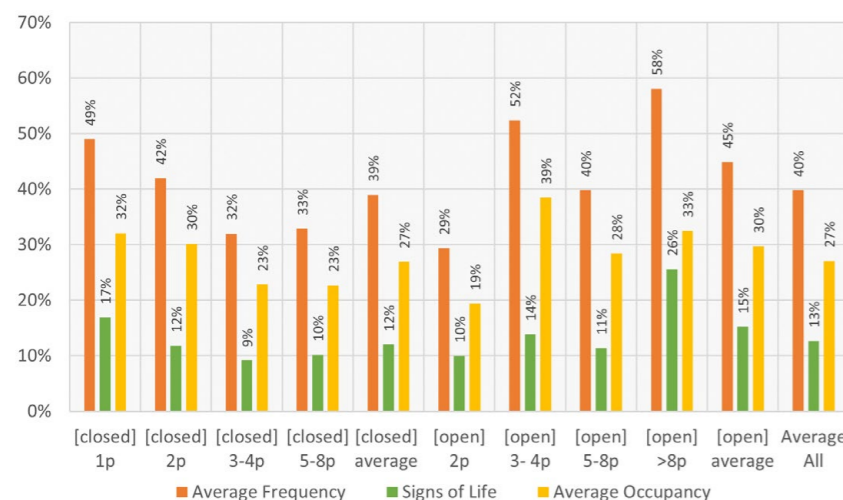


Figure A3.33: Average frequency, signs of life and room occupancy per room type for U13 (Campus NL, 2024)

A3.9.1 Discussion: Making (at least) a 30% Reduction Theoretically Possible

The current way of working and planning at universities leads to occupancy rates between 23% and 30% including signs of life. The average seat occupancy shows that the space can be used more efficiently, next to the average campus managers also study peak-occupancy in order to provide sufficient work places also on the more busy days and hours. For government offices a target value of 75% is used. With an average peak occupancy of 45% post-lockdown, with the lowest peak seat occupancy of 24% and an exceptional highest average occupancy of 100% which is caused because in this building only 2 workplaces were studied. It can be cautiously concluded that universities can aim for 70% as a target value for capacity planning. More than 90% of buildings have a lower peak occupancy than this. This conclusion is on the 'safe side' for two reasons: (1) the peak seat occupancy includes the signs of life and (2) for capacity planning organisations will not only study the highest peak seat occupancy. It is most effective to first improve occupancy for all days by further exploring the possibilities for flexible working if universities choose – taking everything into consideration (see other sections of the book– to change the space use).

A3.9.2 Discussion: “Space Use and Utilisation Also Allows for Peak Shaving”

Additionally, universities can use peak shaving. Although, this is not the most effective measure they can take, it can still be interesting from a mobility point of view to avoid the hyper rush hours. Peak shaving is possible by intensifying the use in the (early) mornings or spread the usage over more days, as the weekly patterns show. This needs to be based on specific measurements for a building as the patterns differ greatly. This requires a different way of space planning and scheduling (of meeting rooms).

There is certainly room—literally and figuratively—to increase occupancy on all days of the week. The demand can also be better spread over the hours of the days and the days of the week.

A3.9.3 Summary

The occupancy/utilisation figures indicate that a “repurposing” of up to 30% of office space is feasible. This “repurposing” could mean not constructing additional buildings despite growth, facilitating more educational activities in office spaces, or even selling, (circular) demolition, or transforming spaces into housing. See Part III of this report for (extreme) strategies and other solutions.

Universities can use this management information to make informed decisions. This will always be done in combination with the results from other parts of this study, such as trends impacting the size of universities, sustainability goals, and available resources.

A3.9.3 Next steps

This first comparative analysis has provided valuable results and discussion points for universities which they can use in combination with the results of the other perspectives (organisational, functional, financial). For the space utilisation study, the next step is to determine in a workshop with the campus managers and/or campus contacts, if this information is sufficient for decision making. This will provide input for the next steps in this study and will guide the expansion of the database.

References and further reading

This chapter is based on a list of utilisation studies, which can be found in appendices A-D.

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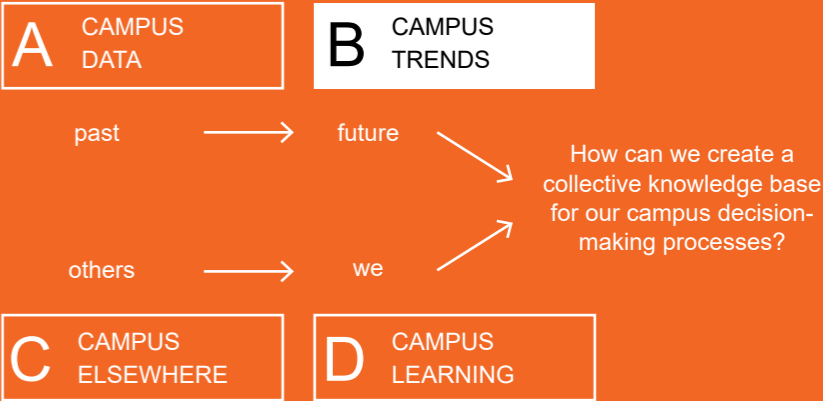
Website AUDE, Smart Management Group (SMG), UK - <https://www.aude.ac.uk> <https://www.hesa.ac.uk/collection/c23042/a/occupancyrate>



Sport hall used for exams in Tilburg University (photo TiU/Erik van der Burgt)

Part II - Results 2023/2024

B1 Forecasting student numbers: insights from reference projections in 2024



Authors:
UNL (Universities of the Netherlands) &
text by Boudewijn Peters

B1 - Forecasting student numbers

University education is not expected to grow in the coming years. In the past, the number of students in university education grew significantly: from 242,800 students in 2010 to 342,100 students in 2021. However, since 2022, the number of students has remained virtually unchanged. It is expected that university education will remain relatively stable in the future as well. This is illustrated in the figure and table below.

The reference projection 2024 has been revised downward compared to the previous estimate, see figure B1.1 ("RR" refers to the Dutch word "referentieraming" for "reference projection"). In 2023, 341,800 students were counted, 9,700 (-2.8%) fewer than projected last year. The previous projection assumed that university education would continue to grow slightly. The current projection assumes that it will remain relatively stable. By 2030, 341,800 students are expected, 18,600 (-5.1%) fewer compared to the previous projection.

The lower number of university students is primarily due to a reduced transition from pre-university education (VWO) to university bachelor's programs and from university bachelor's to master's programs. In the bachelor's programs, the lower transition rate is compensated by an increase in intake from outside the education system, likely from international students. As a result, there are few adjustments in the number of bachelor's students. However, in the master's programs, the lower transition rate from bachelor's programs results in a significant downward adjustment.

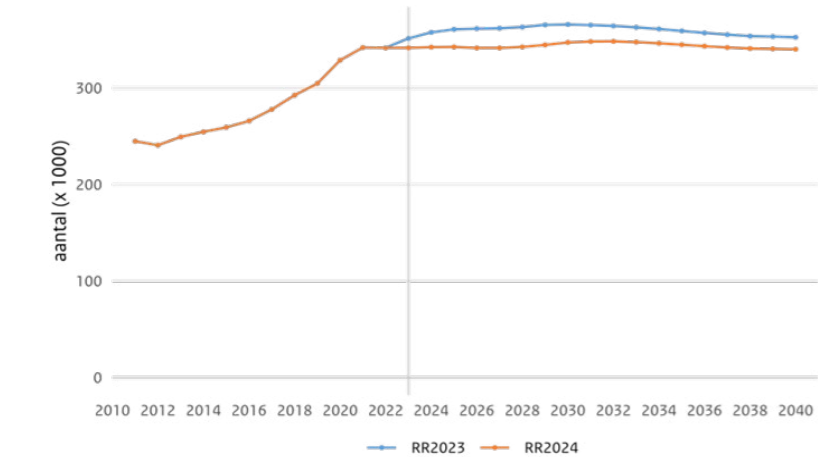


Figure B1.1 Number of university students: history and projections, based on respectively 2023 and 2024 data (source: reference projections "RR 2023" and "RR 2024"; the abbreviation RR is short for the Dutch word "referentieraming" for reference projection) (UNL, 2024)

	telling		raming						
	2022	2023	2024	2025	2026	2027	2028	2029	2030
RR2023	341,9	351,5	357,7	360,9	361,6	362,0	363,2	365,5	365,9
RR2024	341,7	341,8	342,4	342,7	341,7	341,7	342,7	344,8	347,3
verschil	-0,1	-9,7	-15,3	-18,3	-19,9	-20,4	-20,6	-20,8	-18,6

Table B1.1: Registered (until 2023) and projected (from 2024) number of university students (x 1.000, excluding Open University) and the difference between 2024 and 2023 reference projections (UNL, 2024)

B1.1 Volatility of Reference Projections

The reference projections have been quite dynamic (or better, variable) in recent years. In the 2019 and 2020 reference projections, a slight increase in the number of students was still expected. In the 2021 and 2022 projections, this was adjusted to a strong increase in the number of students to over 400,000, partly due to the high graduation rates in pre-university education (VWO) during the COVID-19 pandemic. The 2023 and 2024 reference projections seem to "correct" this increase and bring the forecasts reasonably back to pre-pandemic levels.

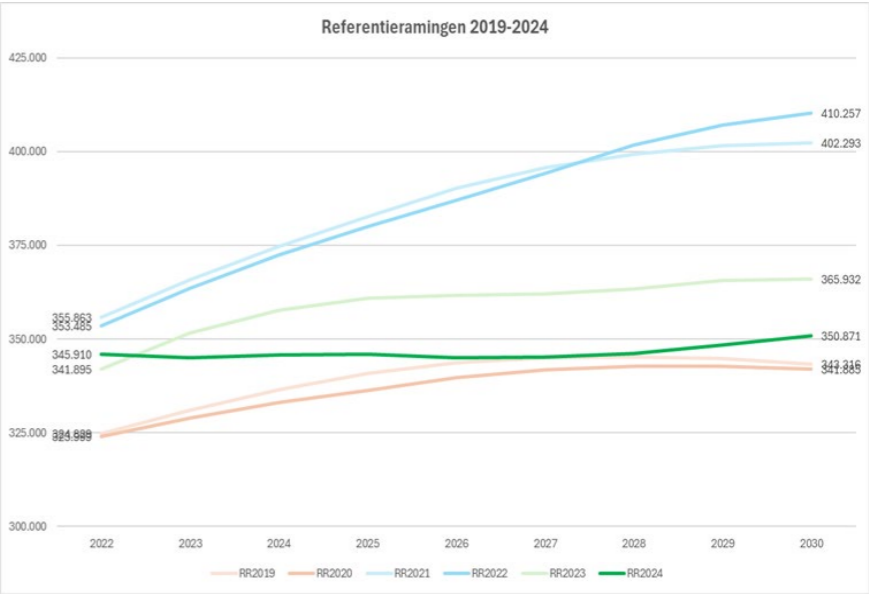


Figure B1.2: Comparing the reference projections of the years 2019-2024 for the development of the total Campus NL student population until 2030 (UNL, 2024)

B1.2 Planning of Campus Facilities

The widely varying multi-year forecasts for the number of students in university education complicate the strategic campus (facilities) agenda. In two years, the forecast for the year 2030 has dropped by approximately 60,000 students. That is almost one-fifth of the current number of students. Given the time required to develop and execute construction programs, 2030 is not the distant future, but rather "today."

Decisions are currently needed that focus on the provision level for 2030. Reacting only as situations arise is not a form of good governance. But with what student volume should we plan? What flexibility is desirable, and what specific facilities or composition of the real estate portfolio promote that flexibility, and what is the cost of this? Estimates of construction cost developments and sustainability considerations only complicate this puzzle further.

For further reading:
<https://www.universiteitenvannederland.nl/onderwerpen/onderwijs>



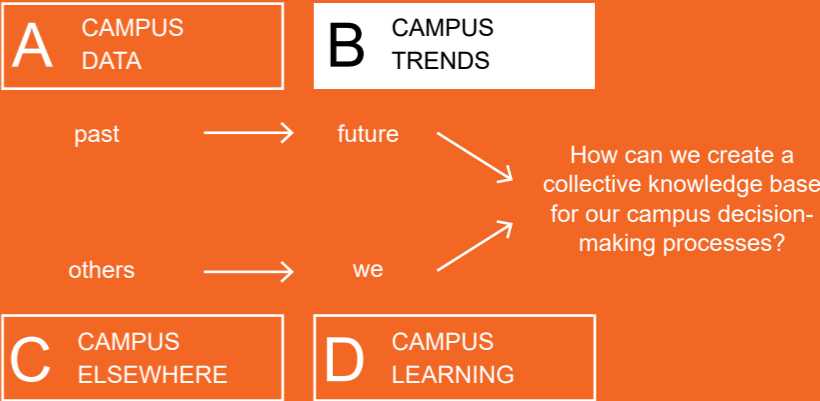
Vrije Universiteit Amsterdam
(photo VU/Too van Velzen)

Part II - Results 2023/2024

B2 Trend analysis university of the future

B3 Higher education & SURF scenarios

B4 Hybrid working policies Campus NL



Authors:
Chiara Pelosi & Alexandra den Heijer

B2 - Trend analysis university of the future

For this part - chapter B2 and B3 - the Campus NL team collected trend reports to describe the context of the future campus, in general (Europe) and more specifically in the Netherlands.

While this part of the research was not the key focus in 2023-2024 and will be explored in the next year, the conclusions in this part are still descriptive and general. The challenges on today’s campus seem to be growing when it comes to meeting the dynamic space needs (significant growth, hybrid learning/working, speed of innovations) with scarce resources (energy, space, labor, finances). The energy transition, post-COVID hybrid work environment, climate adaptation, and collaboration between university and city (campus and city), also as a living lab using academic knowledge from the universities themselves, are current trends often mentioned.

B2.1 EUA report “Universities without walls”

The European University Association’s report of 2021, “Universities Without Walls: A Vision for 2030,” describes a future where universities are more integrated into society, focussing on openness, inclusivity, and collaboration.

Main trends from EUA report

1. Climate crisis and sustainability.
2. Technological developments.
3. Democracy and political systems under pressure in Europe.
4. Erosion of public debate and misinformation.
5. The world order is changing and education, research and innovation are fundamental in geopolitical horizon.
6. Social disparities and demographic changes.
7. Underfunding of the universities.
8. Changes due to the COVID-19 pandemic in the digital direction.

By 2030, universities will be open, engaged, and integral to society, mantaining the core values of being autonomous and responsible. They will drive societal change, improving knowledge through research, education, and innovation.

Main values from EUA report

- **Open, Transformative, and Transnational:** Universities will become more open and engaged communities, characterized by collaboration and networking at local, national, and international levels. They will serve as spaces for innovation and idea testing, involving both academic and non-academic partners. The hybrid nature of universities will blend physical and virtual spaces. Transnational cooperation will be vital, enhancing high-quality research, innovation, and teaching while promoting European and global identities. These universities will bridge cultures and sectors, driving societal progress through collective knowledge production.

- **Sustainable, Diverse, and Engaged:** Sustainability is the main global challenge, with universities aligning their missions with the UN Sustainable Development Goals, balancing economic, social, and environmental needs. They will focus on interdisciplinary approaches to foster innovation, addressing societal challenges through equitable access to education and diverse, inclusive environments. Universities will play a pivotal role in promoting social cohesion and recovery from crises like COVID-19. By upholding democratic values and engaging in global partnerships, they will enhance their civic role and contribute to a knowledge-driven society.
- **Strong, Autonomous, and Accountable:** By 2030, European universities will have high autonomy, enabling strategic decisions. Inclusive governance will ensure representation and efficiency. They will stay accountable through proactive communication, uphold academic freedom, and engage in societal dialogue. Professional staff, supported by training, will ensure quality. Universities will foster attractive workplaces aligned with their mission and societal needs.

University mission in 2030 from EUA report

The main values of the european universities of being open, pluralistic and democratic will remain in its mission for teacing, educationg and innovating (source: EUA, 2021).

- 1. Learning and Teaching:** Universities will nurture creative, critical thinkers and responsible citizens, emphasizing lifelong learning. The focus will be on curiosity, creativity, and high-level skills, integrating studies with real-world problem-solving and interdisciplinary exposure. Education will be learner-centered, blending digital and physical experiences while promoting equitable access and diverse learning paths.
- 2. Research:** Universities will push the frontiers of knowledge through interdisciplinary collaboration, valuing both fundamental research and practical applications. Open Science will be the norm, promoting accessible, ethical research and fostering a robust scholarly information infrastructure.
- 3. Innovation:** Universities will drive human-centered innovation, collaborating with diverse partners to address societal challenges. They will lead innovation ecosystems, encouraging an entrepreneurial spirit and bridging gaps between academia, business, and civil society.
- 4. Culture:** Universities will continue to be cultural hubs, preserving and interpreting cultural heritage, engaging in artistic activities, and fostering intercultural dialogue. They will support cultural diversity and promote mutual understanding in a digitally connected world.

How to turn this vision into reality?

European universities need the right framework conditions—academic freedom, institutional autonomy, sustainable funding, and collaboration support—to thrive.

Differentiation and institutional profiling are strengths of Europe’s diverse university landscape, allowing them to serve society effectively. Collaboration, despite competition for resources, enhances their missions of learning, teaching, research, innovation, and culture.

The Factors for Success from EUA report:

1. Enabling Frameworks:

- Strengthen university autonomy.
- Support continuous development and interdisciplinary approaches.
- Ensure academic freedom and open science.
- Improving innovation and collaboration among Europe’s universities.

2. Adequate Investments:

- Increase public funding for research, education, and infrastructure.
- Strengthen financial autonomy and diversify income sources.
- New investments in infrastructures.
- Invest in academic and professional staff development.
- Funding programmes for flexibility of universities to bridge between disciplines.
- Financial incentives and flexibility ot increase collaboration.
- Additional european funding in addition to the national ones.

3. Strong Leadership:

- Inclusive, transparent decision-making.
- Support for leadership skills development.
- Professional staff training for strategic implementation.

Priorities for Action from EUA report:

1. Reform Academic Careers:

- Broaden evaluation practices and promote parity between research and teaching.
- Encourage open science and diverse career impacts.
- Incentivising activities with different forms of impact, including innovation to expand human knwoledge.

2. Promote Interdisciplinarity:

- Recognize interdisciplinary work in assessments.
- Implementing institutional accreditation to complete discipline-based programme accreditation.
- Facilitate interdisciplinary teaching and collaboration.

3. Strengthen Civic Engagement:

- Encourage academic contributions to public debates.
- Promote societal project participation and respect for diversity.
- Promote civic engagement acreoss the universtiy mission as a value.
- Reflect on European identity and global contributions.

Table B2.1: Factors for success and priorities for actions to enable EUA vision “universities without wall” (EUA, 2021)

B2.2 Trends and scenarios: insights from a group of MSc students

Between November 2023 and February 2024, forty-five TU Delft Master students in Real Estate Management were tasked with developing strategies for the future of Campus NL. These students formed groups of 3 to 4 members, each focusing on a specific university of the 14. Their objective was to create innovative and practical strategies that would ensure an inspiring, attractive, healthy, functional, feasible, resource-efficient, sustainable, and circular future for one of the 14 university campuses in the Netherlands under Campus NL.

The assignment required students to design real estate strategies that prioritized expansion without new buildings, alignment with the university's vision, improved functionality, resource efficiency, feasibility, and achieving net-zero CO2 emissions. Initially, students conducted a general assessment of their respective universities to define the current performance of existing real estate assets. They then performed a SWOT analysis to identify potential trends affecting the future of Dutch education, creating four scenarios per university.

The students presented their findings in reports specific to each university, with some groups conducting interviews with university contacts for better insights.

Main Trends mentioned by MSc Students:

- 1. Climate Change and Sustainability:**Climate change and sustainability emerged as primar trends influencing the future strategies for Campus NL. Already recoginsed in the SURF report on education for 2040 as fundamental driver for the future of education. Universities are increasingly focusing on sustainability to mitigate climate impact. The push towards net-zero CO2 emissions became fundamental and initiatives include adopting renewable energy sources, enhancing energy efficiency, and implementing waste reduction programs.
- 2. Technological Development:** Technological development is another major trend in higher education also underlined in the SURF report. The rise of online educational solutions and digital tools are growing for more flexible and accessible education models.
- 3. Mental Health Awareness:** Mental health awareness has gained attention due to increasing concerns regarding students’ well-being. Universities are also integrating mental health considerations into their programs, recognizing the importance of mental well-being in academic success and student satisfaction.
- 4. Hybrid Working:** The COVID-19 pandemic accelerated the adoption of hybrid working models, combining on-site and digital work. This trend has had an important on the organizational culture within universities. Universities are rethinking their physical spaces, creating more adaptable and multifunctional environments that support both activities.
- 5. Political Changes, Internationalization and funding models:** The politics significantly influences higher education, particularly in the context of internationalization and globalization. Political changes in the Netherlands during this assdginment influened the trends that the students took in to cosideration. Additionally, political polarization and funding models—whether private or public—are fundamental in shaping university strategies

Possible scenarios developed by MSc Students

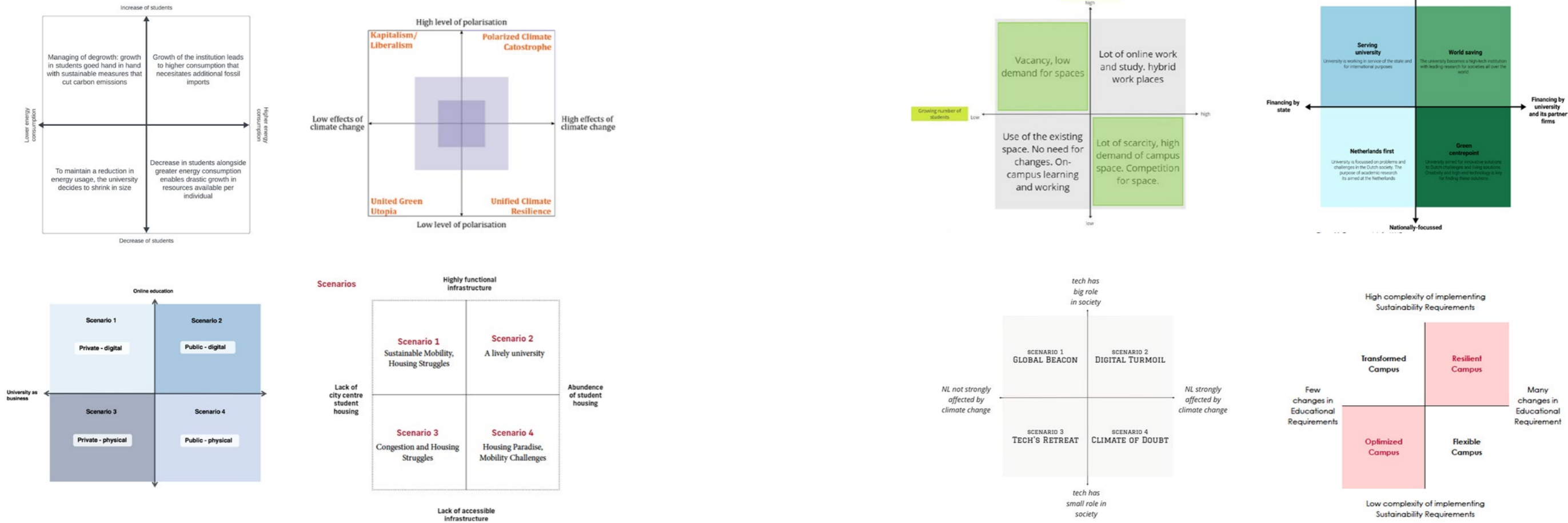
In 2023-2024, the group of forty-five MSc students developed a variety of scenarios to address the future challenges and opportunities for future university campuses in the Netherlands.

These scenarios included:

- 1. **Climate Change and Sustainability:** Six scenarios focused on climate change and sustainability.
- 2. **Growing Student Population:** Two scenarios combined the challenges of a growing student population with the need for sustainable and climate-conscious solutions.
- 3. **Technological Development and Hybrid Working:** These scenarios focused on the impact of technological innovation and the hybrid working models.
- 4. **Political Polarization, Internationalization, and Funding:** Scenarios in this category considered the effects of political polarization, increasing internationalization, globalization, and the private and public funding of university.
- 5. **Student Housing:** This scenario addressed the critical issue of student housing, examining the need for adequate accommodation options.

A series of scenario matrices that students made as a result of a 2-week study of literature and other media sources, are illustrated in Figure B2.1 shown in two pages.

Figure B2.1: (continued in next page)
Examples of scenarios made by students (Campus NL, 2024)



B3 - SURF Scenarios 2040 summary for Campus NL

This text is based on source: SURF (2023), Future Campus, Scenarios for the campus of 2040 (source: <https://futurecampus.nl/toekomst-onderwijs/>)

The campus is vital in the learning process of students, yet it has not always received the attention it deserves. With the increasing merger of virtual and physical worlds, SURF recognizes the campus's importance and initiated the 'Future Campus' project. The project focused on campuses in vocational, applied sciences, and academic education in 2040, considering both physical and virtual aspects. The project examined the characteristics of both campuses and education, as they are closely connected. In 2023, a report exploring four scenarios for secondary and higher education in 2040. These scenarios encompass a collaboration between physical and virtual learning and life experiences. Although they are a faraway prospect, the main objective is to guide innovative decisions towards creating the ideal campus.

To develop these scenarios, SURF identified stakeholders and conducted desk research to define key drivers and trends. Meetings with stakeholders facilitated discussions and the creation of conceptual scenarios, which were then presented to a panel of experts for feedback. The final scenarios were based by this feedback.

The scenarios were developed using the scenario archetypes methodology of Fergnani & Jackson (2019), including four archetypes: growth (optimistic, based on growth), discipline (better balance), transformation (new normal), and collapse (worst-case scenario, main system failure). Each archetype represents a different perspective on the future. These scenarios are neither exclusive nor predictive, not uniformly positive or negative, and may overlap and interact.

SURF has also developed a practical toolkit, which provides strategies to identify relevant desirable and undesirable elements from the scenarios. It enables everyone to devise strategic initiatives for campus development and innovation.

1. The Growth Scenario from SURF report

This is the most plausible scenario. In 2040, the campus is characterized by **physical and digital spaces**, and it embodies economic prosperity and technological progress, driven by significant investments and regional collaborations. Strategically positioned as a **hub**, the campus employs advanced smart technologies and emphasizes **blended learning**, creating **flexible and personalized educational experiences**. Personalized education allows students to customize their learning journeys. Further, **sustainability** and innovation are fundamental. However, technological advances represent challenges, especially concerning privacy due to extensive data collection.

Table B3.1: Basic assumption and extreme aspects of 'The Growth Scenario' (SURF, 2023)

BASIC ASSUMPTION:
1. Theory and practice are seamlessly integrated.
2. The campus acts as a connected knowledge hub.
3. It is a complete blend of the physical and digital worlds.
4. Education is flexible and tailor-made.
5. Sustainability and respect for the environment are core values.
6. The campus serves as a lively meeting place.
7. Public values have high priority in decision-making.
8. Lifelong learning is actively promoted.
9. The campus is at the forefront of innovation.
10. Technology is integrated into many aspects of education.

EXTREME ASPECTS:
1. Hyper-connectivity
2. Ultra-personalisation of learning journeys
3. Unprecedented technology integration
4. Core principle of sustainability
5. Utopian community culture
6. Education without boundaries

2. The Discipline Scenario from SURF report

In the Discipline scenario of 2040, education is highly structured and regulated, emphasizing public values, privacy, sustainability, and strict regulatory compliance. This scenario balances flexibility and standardization. Sustainability is mandatory, with campuses transformed into decentralized knowledge hubs focusing on carbon neutrality and integrating buildings with natural environments. Online learning environments are managed centrally, often at a national level, ensuring integration of online and offline activities. The government manages both educational content and processes, with lecturers remaining the core of education, using technology as a supportive tool. Inclusivity is a fundamental right, with strict standards ensuring an inclusive learning environment.

Table B3.2: Basic assumption and extreme aspects of 'The Discipline Scenario' (SURF, 2023)

BASIC ASSUMPTION:
1. Education shapes our identity and cultivates communities.
2. Strong standardisation enables flexibility.
3. Strict rules for privacy and the environment.
4. Sustainability is an obligation, not a choice.
5. Inclusivity is a fundamental right.
6. Human values are at the heart of all decisions.
7. The government heavily controls the processes and content.
8. Lecturers remain at the core of education and are supported by technology.
9. Seamless integration of online and offline learning.
10. Campus as an icon of sustainability.

EXTREME ASPECTS:
1. Hyper-connectivity
2. Ultra-personalisation of learning journeys
3. Unprecedented technology integration
4. Core principle of sustainability
5. Utopian community culture
6. Education without boundaries

3. The Transformation Scenario from SURF report

The Transformation scenario represents a radical shift in education by 2040, where traditional frameworks are replaced by a new normal, focussing extreme **flexibility and personalization**. The campus is no longer just a location, but a hub for learning and innovation accessible to everyone. Education levels integrate into a single flexible system, allowing **students to control their learning journeys. Lecturers act as designers, coaches, and facilitators, supported by artificial intelligence**, which provides instant access to customized knowledge clips. Education becomes **interdisciplinary**, breaking down barriers between vocational, professional, and academic education.

Table B3.3: Basic assumption and extreme aspects of 'The Transformation Scenario' (SURF, 2023)

BASIC ASSUMPTION:
1. Education is radically flexible and personalised.
2. Students manage and direct their own learning journey.
3. Lecturers act as coaches and mentors with AI support.
4. Creativity and innovation are crucial.
5. The campus is a hub for innovation.
6. Interdisciplinary collaboration is the norm.
7. The physical and virtual campus is infused with technology.
8. Theory and practice are no longer separate.
9. The campus has become an ecosystem for learning.
10. Sustainability and inclusion are (visible) core values.

EXTREME ASPECTS:
1. Brain-interface learning chips
2. Education without institutions
3. Inexhaustible energy source
4. Universal basic income
5. Hyper-immersive extended reality (XR)
6. Automatically adapted learning environments

4. The Collapse Scenario from SURF report

The Collapse scenario represents the worst-case scenario for education in 2040, where the system significantly declines or collapses. Technological advancements have led to digitalization and **heavy dependence on tech giants**, enhancing **social and economic inequality**. Indecision hampers innovation and progress, making virtual programs the norm and **reducing physical interactions**. Many **traditional institutions close due to funding cuts**. **Multinationals’ influence changes teaching** methods, creating disparities between wealthy tech companies’ facilities and others. **Mental health issues** among students rise, and trust between students and institutions diminishes.

BASIC ASSUMPTION: <ol style="list-style-type: none">1. Uncontrollable growth of technology and dependence.2. Increasing social and economic inequality.3. Loss of quality in education, due to issues such as insufficient resources.4. Personal involvement and connection have disappeared.5. Gap between rich tech companies and the rest.6. Physical campus very much obsolete and in disrepair.7. Power of the few is a threat to autonomy.8. Qualifications are losing their value and relevance.9. Virtual environments dominated by tech companies have become the norm.10. Wellbeing is under great pressure.	EXTREME ASPECTS: <ol style="list-style-type: none">1. Technological proliferation2. Social fragmentation3. Educational collapse4. Absence of privacy5. Economic nihilism6. Ecological crisis
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Table B3.4: Basic assumption and extreme aspects of 'The Collapse Scenario' (SURF, 2023)

Possible consequences of SURF scenarios for Campus NL

SURF presented four different scenarios, but what could they mean for the campus of the future? The Campus NL team elaborated upon the possible consequences, which are open for discussion in the next phase of the research project (2024-2025).

1. Growth Scenario

In the growth scenario, the campus maintains its role as a meeting hub, with education continuing as a combination of digital and physical. The campus remains a physical entity but must adapt its functions. Spaces need to be transformed to better accommodate meetings rather than solely traditional lessons. The new spaces will be flexible and multifunctional, including lecture halls. Technological advancements are crucial to adapting to new ICT and AI tools. Spaces for digital lessons should be provided, but the overall space might be reduced as academic personnel may choose to work from home for digital lessons. The campus will also become greener, with more natural spaces integrated into the design.

2. Discipline Scenario

The discipline scenario emphasizes structured education and adherence to regulations. The campus is designed as a healthy, green space prioritizing sustainability, integrating the natural environment, and achieving carbon neutrality. Inclusion is fundamental, and the campus should reflect this in its physical layout. Public institutions are preferred over private ones, resulting in more public funding. With education closely tied to the professional world, the campus will primarily serve as a hub for exchange and meetings, leading to a smaller campus with fewer educational spaces. A smart campus is central to education but remains under government control.

3. Transformation Scenario

The transformation scenario emphasizes flexibility and personalization. Advances in online education and technology, such as AI, have shown that some courses can be fully digital, reducing the need for a physical campus. Educational institutions become regional hubs of innovation and collaboration, with no separation between education and practice. The campus serves primarily as a meeting space rather than an educational one and is accessible to everyone due to the concept of lifelong learning. This results in campuses that are smaller and fundamentally different from those of today.

4. Collapse Scenario

In the collapse scenario, the campus, particularly public ones, loses its significance, rendering physical spaces outdated and unnecessary. Education is dominated by big tech companies, which control virtual learning. Meeting spaces become irrelevant, and public education receives minimal funding. Consequently, physical campuses almost cease to exist.

Lessons from SURF report campus visions

“Education is changing, and the campus is evolving with it. How are institutions currently approaching campus development and innovation? This question was answered by collecting and analyzing existing campus visions and accommodation strategies from MBO (secondary vocational education), HBO (universities of applied sciences), and wo (research universities) institutions. The analysis reveals that institutions strive for connection with their environment (businesses and region), internal cohesion, sustainability, digitalization, and flexibility.” (source: “Campus Innovation in the Netherlands” by SURF/Jet Bierman)

In the next year(s) of Campus NL, the team will elaborate upon these themes, scenarios and consequences for the future campus. This will also include (more) insights from a European perspective, with input from EUA: the European University Association.

References (B2, B3)

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B4 - Hybrid working policies on Campus NL

This chapter summarizes the findings from a study, which was conducted to examine the hybrid working policies across all 14 universities in the Netherlands.

B4.1 Introduction

The COVID-19 pandemic caused a substantial shift in working modalities globally. Before the pandemic, remote working was prevalent in certain sectors; however, the pandemic forced a transition to home-based work for office employees. These experienced an exclusive remote working scenario for over a year due to general restrictions.

Despite the official conclusion of the pandemic two years ago, a complete return to pre-pandemic working conditions showed resistance from the workforce. The hybrid working model, which combines remote and on-site work, has gained popularity and is increasingly being adopted across various sectors. This trend not only reflects the evolving needs of the workforce but also indicates a necessity for office adaptation to new working models.

Previous research indicates that the Netherlands had a higher adoption rate of hybrid working practices than before the pandemic. Given this context, the academic sector presents a particularly interesting case due to its traditionally conservative working models. Therefore, this study aims to investigate the adoption and implementation of hybrid working models within Dutch universities, exploring how these institutions are dealing with shift towards the hybrid working model.

B4.2 Methods

Data Collection

This study was conducted to examine the hybrid working policies across all 14 universities in the Netherlands. We systematically engaged with each university by securing a representative responsible (our "campus contacts") for providing insights into their university and campus. We contacted the campus contacts, requesting detailed information about their hybrid working models in their university. The data collection started in August 2023 with a first round of email and ended in April 2024. Approval for collection of data from human subject was requested and approved.


Response Rate and Data Availability

The first data collection was started in August 2023 and responses were from all 14 universities. A second round of data collection was set in January and April 2024. Out of these, nine universities (64%) provided the HR documents relevant to hybrid working policies. A closer examination revealed that eight of these document sets (57%) were complete.


Survey Instrument

Data collection was done via a structured questionnaire sent via email, addressing specific questions about the organizational, functional, and technical dimensions of hybrid working. Respondents were asked to answer these questions via email and to upload relevant documentation to a secure database (surfspot.nl).


The questions were the following:

**Organisational:**


- Are there existing Human Resources (HR) guidelines or strategic perspectives on hybrid working arrangements that cover both on-campus and off-campus work?
- What are the policies regarding the minimum required days for presence on-campus or off-campus?
- What guidance is provided on the intended use of campus facilities, specifically, does the policy aim to spread out or concentrate campus usage?

**Functional:**

- Have there been surveys or other sources that have investigated the current needs for on-/off-campus working?
- Are there occupancy measurements or indications of the use of office environments?

**Financial:**

- Is there a compensation system for remote working?
- Is there a vision or future policy regarding financial incentives for a changing balance between on-/off-campus work?

**Technical:**

- Have choices about hybrid working already led to changing space standards and/or other types of spaces, and if so, which?
- Are choices about hybrid working also linked to or mentioned in sustainability policy or mobility policy?

In the current chapter we focused on the organizational and financial aspects.

Data Documentation

Universities provide textual answers and/or policy documents related to hybrid working (Figure B4.1).

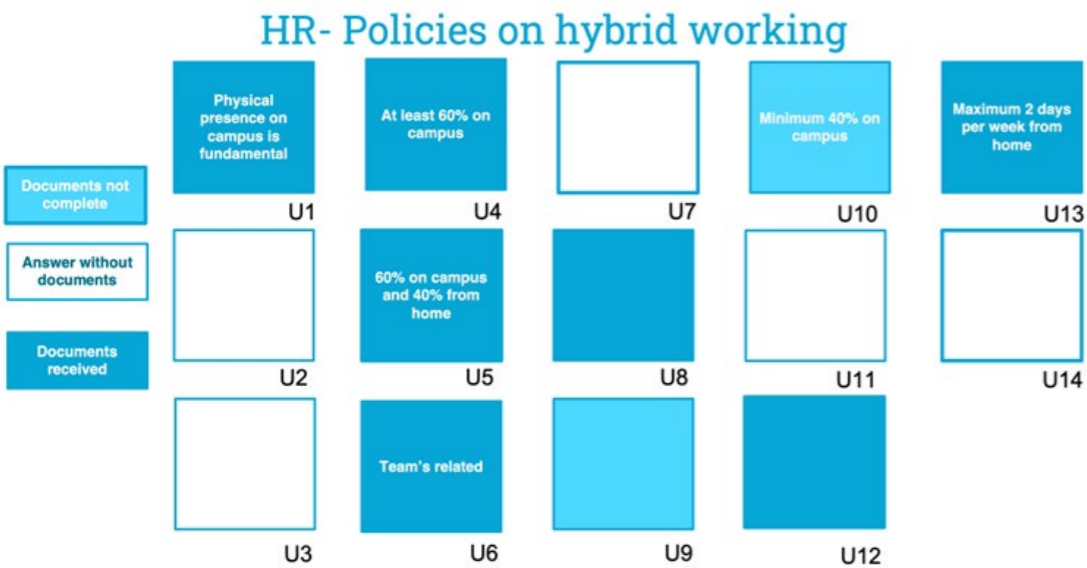
Definition of hybrid working:

From the Cambridge dictionary, hybrid working is defined as a method of working that involve employees being at the office of other employer place, and sometimes working from home or another place (source: https://dictionary.cambridge.org/dictionary/english/hybrid-working#google_vignette).

B4.3 Results

This study examined the policies of hybrid working across fourteen universities. It was found that all the universities had guidelines addressing hybrid working modalities. Detailed analysis of the available documents from eight of these institutions revealed diversity in the nomenclature used for these guidelines.

Specifically, one university labelled its document as a "policy." In contrast, four universities opted for the term "regulation," translated from the Dutch "regeling". The remaining three universities used terms that suggest a less formal approach: two referred to their documents as "guidance" (Dutch: "handreiking") and one as a "guideline" (Dutch: "leidraad").



The documents defined hybrid working in different ways as well. Hybrid working (in Dutch: “hybride werken”) was used by 5 universities. Whereas one used “blended werken” (blended work) and another one home working (in Dutch “thuiswerken”). One university used both hybrid working and blended werken.

Of all the documents, seven (7) reported that “hybrid working is an option and not a right”. The following text is a quote from one of the university’s hybrid working policy reports.

“Hybride werken is geen recht, maar een mogelijkheid (dus ook geen plicht).”(NL)
 “Hybrid working is not a right, but a possibility (therefore no obligation).”

All universities provided information regarding the minimum required days for presence on-campus or off-campus. Figure B4.2 depicts the required or desired number of days on and off campus. Only five of the universities stipulated a minimal number of days for staff to be physically present on campus. In contrast, the other institutions showed more flexibility by giving autonomy to teams and departments, thereby allowing for adaptive responses to department and team specific needs.

Figure B4.1: Policy documents on hybrid working of universities (Campus NL, 2024)

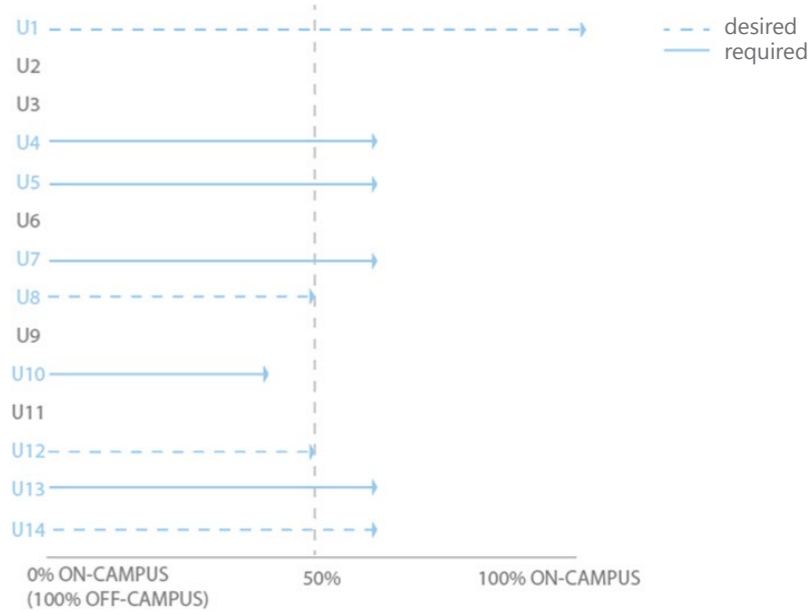


Figure B4.2: Required or desired on- and off-campus days by universities (Campus NL, 2024)

Answers to our survey showed different positions of the universities in this matter. The quote below demonstrates that some universities want their community to come to the campus and consider it their dominant workplace.

“Omdat we elkaar willen ontmoeten op de campus, is dit de voornaamste werkplek. We werken hier dan ook voor een belangrijk deel van de werktijd..” (NL)
 “Since we want to meet each other at the campus, this is the main place. We work here for the main part of our worktime.”

As a 180-degrees different and opposing approach, some universities cherish the hybrid reality for sustainability reasons. The quote below illustrates that.

“We hebben afgesproken dat we de CO2 uitstoot in 2030 met 50% verminderen t.o.v. 2016 dan is de randvoorwaarde dat we minimaal 50% blijven thuiswerken (gemiddeld)” (NL)
 “We agreed that we want to reduce by 50% the CO2 emission of 2030 compared to that of 2016. Therefore is necessary to stay home minimum the 50% of the time.”

Only two universities had explicit strategies documented. Of these, one university preferred concentrating usage of campus facilities, whereas the other promoted a strategy of spreading usage due to insufficient workspace. The remaining universities did not provide centralized guidance on this matter, leaving the directions to be determined by individual sections or departments.

Financial support to facilitate hybrid working

All 14 universities offer financial support for their remote workers. The documents reviewed showed that each institution provides some form of financial assistance for hybrid workers. This support typically includes a daily allowance, as well as funding for ICT and ergonomic workplace setups. However, the specifics vary by university. For instance, one university grants an allowance of up to 1,000 euros and allows employees to have ownership of any provided furniture. In contrast, another university retains ownership of the furniture provided.

Courses for managers for hybrid management

The agreement between a manager and an employee is fundamental for facilitating remote work arrangements. Personal circumstances significantly influence these decisions. To help in initiating these important discussions, one university offers dialogue starters to simplify the conversation. Additionally, two universities provide specialized leadership training for managers. This training focuses on improving managers’ skills in remote management.

B4.4 Conclusion

- All collected hybrid policy documents (whether they are called regulations or guidelines) still allow flexibility in the actual on-/off-campus ratio for campus staff: no document enforces a certain ratio
- Roles and personal circumstances are considered to influence the ratio - also as an opportunity to facilitate a healthier work-life-balance;
- According to the collected hybrid working policy documents, hybrid working is considered an option, not a right.
- Summarizing, 2023/2024 policies for hybrid working give centralised guidelines, which can be followed or overruled by decentralised decision making.
- Although the presence of central guidelines or regulations implies a centralised “hybrid working policy”, the actual decision making is decentralised to teams within the organisation.
- The actual on/off-campus ratio is mostly considered to be an agreement between manager and employee.

Consequently, this is an uncertainty for campus managers to plan the future office environment, since reality can still substantially differ from policy.

- If no regulation is found for “avoiding peak hours” (see part A3: peak days Tuesday and Thursday, peak hours 11:00 to 15:00) campus demand will remain dynamic, with high peaks but also (very) low utilisation.
- Hybrid working changes on-campus demand: requires more (small) spaces for (video) calls to accommodate hybrid teams / team work.

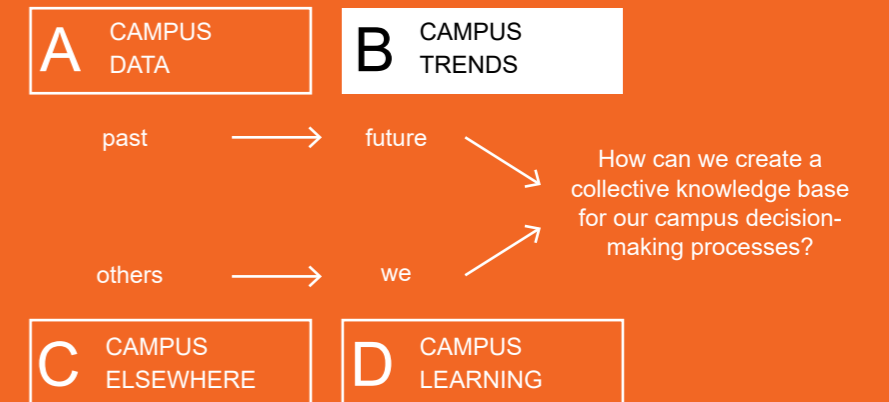
In other chapters of this report, both utilisation patterns and consequences for demand are elaborated upon. Chapter A3 contains insights from Campus NL practice and chapter B5 - including the matching appendix - summarizes insights from literature and a workshop with campus managers about hybrid working challenges.



CURIE Tilburg University
(photo TiU/Maurice van den Bosch)

Part II - Results 2023/2024

B5 Hybrid working literature study - summary and workshop (TUE)



Authors:

TU Eindhoven (TUE): Sophie Schuller,
Rianne Appel-Meulenbroek &
Lisanne Bergefurt

The literature review on “hybrid working” was conducted by a research team from TU Eindhoven: Sophie Schuller, Rianne Appel-Meulenbroek & Lianne Bergefurt. Their findings are based on an extensive and thorough analysis (in appendix H) and a workshop with delegates from Dutch universities (in chapter B5) and are summarized in (prioritized) challenges for campus decision makers.

B5.1 Executive Summary

In the wake of the COVID-19 pandemic, the concept of hybrid work has emerged as a predominant model in various sectors, reshaping traditional work environments. This shift has profoundly impacted university campuses, which function both as educational institutions and major employment centres. Despite their significance, the adaptation of hybrid work models within university settings has been notably under-explored in academic research.

This report aims to investigate the spatial challenges facing Dutch universities due to the adoption of hybrid work models. This was achieved through a combination of a narrative review and a collaborative workshop involving representatives from 12 (out of 14) universities across the Netherlands. A literature review was conducted to outline the current understanding of hybrid work and its spatial implications, primarily drawing from non-academic knowledge work to supplement the limited studies specific to academic environments. To address this gap in the literature, consideration is given to differences in production and spatial requirements of non-academic knowledge work and academic knowledge work, in order to contextualize findings with the narrative review. A full review of 77 papers highlights three key dimensions of challenges, including spatial challenges faced by planning the use of the campus from a real estate perspective, as well as psychosocial challenges faced by employees and organisational challenges; both of which may also influence the spatial challenges of hybrid work. As a result of this review, 12 key spatial challenges of hybrid work are identified and brought forward in the campus-representatives workshop to be explored in more detail.

Firstly, participants engaged in a review of the 12 challenges using the DELPHI method. This process encompassed three rounds of prioritization of the 12 challenges utilizing the online survey tool, Mentimeter. The objective was to assess consensus regarding the most significant challenges encountered by Dutch universities and the spatial implications of hybrid work. After the three rounds of DELPHI prioritization, five key challenges emerged as stable and consistent priorities among participants. Through discussion and noting their similarity, it was agreed that these five key challenges would be consolidated into three overarching challenges. These consolidated challenges would be the focus of further exploration during the subsequent workshop activities. The three challenges were:

- 1. Accommodating different work types and individual preferences combined with support both individual and group needs
- 2. Prevent resistance to the necessary changes
- 3. Determine optimum levels of autonomy/control’ combined with ‘deal with underutilisation of space without causing overcrowding

During the second half of the workshop, participants were placed into preassigned groups and discussed how these challenges relate to campuses, identified additional complexities, and assessed their interconnections. They also explored ways to address these challenges, including change management and resource considerations, and identified areas for future research.

Despite three groups discussing separate challenges, several key themes emerged. A major issue was resistance to moving away from fixed workspaces, as increased home working has left expensive office spaces underused. This calls for extended change management and deep stakeholder engagement. The workshops also highlighted the inadequacies of current academic spaces, which are less comfortable and adaptable than personalized home offices. The disparity in quality and arrangement between PhD students’ shared spaces and professors’ private offices was especially stark.

The need for spaces supporting both individual and collaborative work was emphasized, along with facilities management’s role in improving campus experiences. Aligning employee and spatial planning goals was seen as crucial, with a suggestion for university leadership to coordinate efforts. External factors like energy costs and societal views further complicate decisions, underscoring the interconnected challenges. These insights highlight the urgent need for targeted research and tailored strategies to manage the hybrid work transition in diverse university contexts.

B5.2 Introduction

In recent years, the landscape of work environments has significantly transformed, notably with the rise of hybrid work (Appel-Meulenbroek et al., 2022). This paradigm shift has not only impacted traditional work settings but has also influenced university campuses. Beyond their primary role in educating students, universities are also major employers. The universities in the Netherlands employ over 61,000 people (Universiteiten van Nederland, n.d), which is, for example, comparable to the employment figures of the Dutch real estate sector (Statista, 2020). Despite their importance as major employers, the influence of hybrid work on university workers is often overlooked and under-explored within the academic literature on hybrid work. Whilst hybrid work is establishing itself as a predominant way of working post-COVID-19 pandemic (Sailer et al., 2022), there is little unified insight into its influence on on-campus work and the subsequent effect on campus spatial planning.

Therefore, the purpose of this report is to identify the most important challenges for translating the hybrid work trend to the university campus context through literature review and a workshop with representatives of Dutch universities focussing on campus management and development, real estate, facilities management (for instance “FM-afdeling” or “Dienst Huisvesting”). It starts with an explanation of the features of knowledge work in general and academic work specifically, and the similarities and differences between them. Then, it introduces the concept of hybrid work, providing a definition and discussing how it relates to existing workplace models such as flexible work and activity-based working (ABW). It then offers a comprehensive summary of the current literature on the spatial challenges of hybrid work, including the psychological and organisational factors that may influence these challenges in the planning of university campuses. Since there are a limitation of studies evaluating the implications of hybrid working within the academic context, literature have been taken largely from the non-academic knowledge work field to inform insights in this report. Because of this limited availability of research on academic environments, this also includes the findings of a workshop. The aim of this workshop was threefold; to translate the challenges identified from literature to the university campus context, to identify potential additional challenges, and to prioritise the challenges on which ones to address first. The insights provided by this report could be used to optimize hybrid working policies for university campuses.

Challenge 1: Create a unified campus program	Challenge E: <i>Underutilisation of campus setting driven by diverse range of academic settings needed, resulting in increased cost</i>
	Challenge F: <i>Different working preferences between faculty</i>
	Challenge X: <i>Inconsistent or unclear hybrid policies</i>
Challenge 2: Support both individual and group needs	Challenge S: <i>Retaining team cohesion and connectivity</i>
	Challenge T: <i>Potential decrease in creativity and innovation due to less time spent together on campus.</i>
	Challenge U: <i>Hybrid can both increase and decrease employee engagement</i>
	Challenge M: <i>Decrease ‘water cooler’ moments as a result of unplanned ‘in-person’ days:</i>
	Challenge Q: <i>Equality issues and unintended outcomes:</i>
	Challenge O: <i>Different employee groups are impacted differently</i>
	Challenge Y: <i>Unclear impacts of hybrid on financial performance and organisational outcomes:</i>
	Challenge W: <i>Limited insights on the climate impact of hybrid work</i>
Challenge 3: Choose the right layout design for the offices	Challenge B: <i>High degree of variation exists in workplace design and quality across campus:</i>
	Challenge H: <i>Limitations of open-planned offices:</i>
Challenge 4: Deal with underutilization of space without causing overcrowding at certain moments	Challenge C: <i>Underutilisation of campus settings driven by increase in home working:</i>
	Challenge D: <i>Underutilisation largely condensed to Wednesday and Friday’s:</i>
Challenge 5: Accommodating different work types and individual preferences	Challenge A: <i>one-size-fits-no one:</i>
	Challenge Z: <i>Limited insights on attraction and retention of talent:</i>
Challenge 6: Prevent resistance to the necessary changes.	Challenge I: <i>unintended outcomes and behaviours associated with implementation of new workplace initiatives:</i>
	Challenge G: <i>Historical sensitivity regarding the future of private offices:</i>

Table B5.1: (continues in next page) Summarisation of challenges (source TUE for Campus NL 2024)

Challenge 7: Enhance on-campus experience to attract staff to campus	Challenge L: <i>Limited hospitality or facilities management strategy to entice employees:</i>
Challenge 8: Quality levels of the homework environment create inclusivity issues	Challenge J: <i>Home working not a universal option:</i>
	Challenge K: <i>Lack of suitable furniture and equipment to work from home:</i>
Challenge 9: Inclusion/access to third spaces, like coworking spaces	Challenge N: <i>Limited use of third or co-working spaces to accommodate flexible real estate needs:</i>
Challenge 10: Integrate the various physical work locations with the digital experience	Challenge ZZ: <i>Limited management of employee experience of the digital environment:</i>
Challenge 11: Experience, resources, and position of the Dienst Huisvesting in the organization	Challenge V: <i>New issues require multidisciplined skills to solve:</i>
	Challenge P: <i>Determining the optimum balance of autonomy and control:</i>
Challenge 12: Determine the best levels of autonomy and control	Challenge R: <i>Preventing isolation and burnout:</i>

B5.3 Summarisation of challenges

The following Chapter provides an overview of the summarisation of challenges (see Table B5.1) found within the literature and explanation as to how they were grouped for subsequent evaluation.

As a result of this literature review, we identified 25 challenges. To streamline the challenges into distinct groups, a thematic analysis was conducted to group similar challenges. The aim of grouping challenges was to ensure their distinctiveness for prioritization during the workshop, enabling university campuses to effectively address the identified challenges through collective insight and discussion. Please see Table 2 to show how challenges were grouped.

As a result of the thematic analysis, the following 12 distinct challenges were identified:

Challenge 1: Create a unified campus program.

The diversity of working practices and cultures, along with the variety of stakeholders and a decentralized leadership structure, complicates efforts to identify campus-wide challenges, pinpoint opportunities for improvements, and implement unified change programs on university campuses. Additionally, diverse preferences across university departments regarding the number of days employees wish to work from home create challenges in achieving optimal space utilisation within each department and present issues with establishing a cohesive university-wide strategy, accounting for different preferences between departments.

Challenge 2: Support both individual and group needs.

The emphasis on individual choice and needs in hybrid work models stands in

contrast to the collective ethos typically found in academic environments, revealing a tension between personal flexibility and the necessity for group collaboration. This divergence becomes more pronounced as hybrid work environments potentially reduce opportunities for socialization and collaboration, especially when employees’ office days do not align. This challenge is further compounded in the absence of high-quality, dedicated spaces for social interaction and teamwork, such as departmental break rooms. For instance, when teams work from home 2.5 days per week, there’s only a 19% chance they’ll encounter each other at the office within any given week. Moreover, employees who spend less time on-site may face fewer opportunities for development, learning, and career progression, leading to disparities in professional advancement. Further, there is a balance to be considered on what is good for the individual versus the organisation and society, in the case of climate change.

Challenge 3: Choose the right layout design for the offices

Noise and disturbances from colleagues frequently top the list of reasons for office dissatisfaction. The need for concentration work to be feasible in office settings, not just at home, challenges the suitability of common open-plan offices for tasks requiring focused attention. Identifying the appropriate quantity and variety of secluded spaces to support focused work and mitigate activities that disrupt others, such as impromptu conversations and online meetings, poses a current challenge for all office-based organizations.

Challenge 4: Deal with underutilisation of space without causing overcrowding at certain moments.

Dutch employees, on average, prefer working from home 2.1 days per week, which leads to office space underutilisation. The need for a variety of spaces is more pronounced in academic settings than in traditional offices due to the less standardized nature of academic work. This variety results in even greater underutilisation, especially as hybrid work decreases the overall use of space, thereby increasing real estate costs per employee while still requiring a range of workspaces without downsizing. Despite the potential to accommodate more people in existing spaces due to this reduced utilisation, the unpredictability of when employees will be present can cause overcrowding. Office use peaks on Tuesdays and Thursdays, leaving spaces particularly empty on Mondays, Fridays, and Wednesday afternoons, in the Netherlands. This (ir)regular occupancy creates a dilemma for Corporate Real Estate (CRE) managers over whether to prepare for peak or average occupancy. Moreover, the quality and design of workplace and spatial arrangements vary widely across office and university campuses, including within buildings, faculties, and departments. This variability often leads to employees working outside their own departmental spaces negating the benefits brought by working on campus together.

Challenge 5: Accommodating different work types and individual preferences.

A universal approach to where work should be done is not possible – one-size-fits-no one, given the range of personal preferences and desires. The hybrid model’s flexibility struggles to assign specific tasks, such as concentrated work, to preferred settings like home due to diverse individual work preferences. As a result, office spaces need to support various types of work, even though much of it happens away from the office. This situation results in fluctuating use of space, creating obstacles in managing resources efficiently and possibly leading to higher costs.

Challenge 6: Prevent resistance to the necessary changes.

Debates on modifying workplace design and spatial strategies at universities often become complex and sensitive, especially around the topic of private offices, slowing progress in other areas of workplace and spatial planning. Furthermore, adopting new

workplace strategies such as activity-based working (ABW) and activity-based offices (ABO) may encourage counterproductive behaviors when implemented unsuccessfully, such as increasing remote work or unauthorized desk personalization, and as a result obstructing the intended benefits of these real estate strategies.

Challenge 7: Enhance on-campus experience to attract staff to campus.

Many organizations are now placing a greater emphasis on enhancing hospitality and facilities management services for employees as a strategic approach to create a more inviting and enjoyable workplace experience. However, few organizations or campuses focus on hospitality or facilities management strategies aimed at improving the on-site experience for employees.

Challenge 8: Quality levels of the homework environment create inclusivity issues.

Not everyone has the ability to work from home, often due to limited space or competition from roommates and family members. Additionally, not all employees possess suitable furniture to work from home in a healthy and effective manner. In addition, universities ensure that all employees, whether on part-time or temporary contracts, are provided with a desk and similar access to campus work locations, where home-working may be more appropriate.

Challenge 9: Inclusion/access to third spaces, like coworking spaces.

In commercial settings, the growing utilisation of third spaces, such as coworking spaces, is addressing some operational challenges. Yet, this approach is often overlooked in university campus real estate strategies. Present strategies primarily concentrate on managing the traditional office or campus environment, neglecting the inclusion of additional hybrid locations that form part of the new ‘ecosystem of places,’ including coworking spaces and other third places.

Challenge 10: Integrate the various physical work locations with the digital experience.

Although there is clear evidence that a positive digital experience significantly influences employee satisfaction, surprisingly few organizations consider the digital workplace experience in their hybrid work planning.

Challenge 11: Experience, resources, and position of the Dienst Huisvesting in the organization.

Tackling current real estate challenges demands expertise across several domains, including human resources, facilities management, IT, organisational strategy, and change management. These are areas where many existing corporate real estate (CRE) teams may find themselves lacking in sufficient support, experience, resources, or organisational positioning to effect change and meet the needs of CRE.

Challenge 12: Determine the best levels of autonomy and control.

Employees in hybrid work environments often report improvements in various aspects of their job when they have the autonomy and choice between hybrid, fully remote, or on-site work models. Notably, they experience higher levels of engagement, productivity, well-being and work-life balance, concentration and focus, creativity, and socialization and collaboration. However, the increased autonomy and flexibility associated with hybrid work can also introduce mental health challenges, including burnout and stress, often due to the risk of working excessively long hours. Moreover, hybrid work might lead to feelings of isolation and a decrease in team cohesion, adversely affecting the positive outcomes listed above. It’s crucial to ensure that employees have the desire and opportunity to come to the office sufficiently to avoid feelings of isolation. The

greater autonomy in hybrid models can also cause unpredictable office space utilisation, potentially leading to overcrowded or underused office environments.

B5.4 The Workshop

The 12 challenges are the primary thematic challenges derived from literature review of the spatial implications of hybrid work. However, insights are largely derived from research on non-academic knowledge workers. Building upon these insights, these challenges had to be examined in the context of university campuses to determine their relevance, priority, and potential strategies for addressing them. The following section provides a summary of the workshop held for this purpose.

B5.4.1 Objectives and attendance

A workshop was conducted as a component of the Campus NL project, aiming to facilitate discussions regarding the outcomes of the literature review. The workshop sought to:

- 1. Discuss these findings from literature sourced largely from non-academic knowledge work contexts to evaluate their applicability to university campus environments and identify potential specific complexities of certain challenges and/or additional challenges specific to the university context.
- 2. Establish a consensus among participating Dutch universities regarding the prioritization of challenges related to the spatial implications of hybrid work. Utilizing the DELPHI method, which involves iterative rounds of surveys designed to build group consensus, the initial goal is to determine a baseline agreement on the prioritization of these challenges. Followed by two subsequent rounds of prioritization, each supplemented by discussions, to further assess and refine the consensus on how these universities prioritize the challenges they face with regards to the spatial implications of hybrid work.
- 3. Deliberate some first potential courses of action to tackle these identified challenges and necessary further knowledge for this.

On April 2nd, a meeting was convened at the Technical University of Eindhoven, extending invitations to all 14 Dutch universities. Notably, real estate and a few other representatives from 12 out of the 14 Dutch universities participated in the workshop, as depicted in Table B5.2.

University of Amsterdam	Radboud University Nijmegen
VU University Amsterdam	University of Twente
Leiden University	Wageningen University & Research
Delft University of Technology (TU Delft)	Eindhoven University of Technology (TU/e)
Erasmus University Rotterdam	Utrecht University
Tilburg University	
University of Groningen	
Absent:	Maastricht University Open University of the Netherlands

B5.4.2 Workshop summary

A presentation was prepared to fulfil the workshop objectives, a copy of which can be found in Appendix H. All participants sat together in a single lecture room, there was no remote attendance. The workshop was designed to address the objectives set out

in 4.1, which was achieved through the workshop steps set out below. The initial phase involved creating a presentation designed to serve several key objectives. These included the introduction of the workshop and a reintroduction to the Campus NL project, with a specific focus on its second theme.

Alexandra den Heijer, Professor Public Real Estate at TU Delft and Rianne Appel-Meulenbroek, Associate Professor Corporate Real Estate and Workplace at TU/e, opened proceedings. After welcoming participants, Alexandra den Heijer provided an overview of the Campus NL project, highlighting that it was in its second year and that the theme ‘hybrid work’ presented the second of four themes to be explored during this four-year research programme into the future of Dutch University Campuses.

B5.4.2.1 Summary of literature review and 12 challenges

A summary overview of findings from the literature review was given by Researchers at TU/e, followed by an in-depth overview of the 12 identified challenges within that literature. To ensure participants had a thorough understanding of each challenge’s basis and background, a deep dive was conducted into each challenge. Participants were then provided with a paper copy of the 12 challenges to use as an aid for the remainder of the workshop.

B5.4.2.2 DELPHI methods and Mentimeter engagement

To facilitate insight and evaluate consensus across the participating universities, the DELPHI method was employed. This involved asking participants to rank the twelve challenges in order of importance, three times. The DELPHI method, known for its iterative rounds of surveys or questionnaires with a panel of experts, aims to refine opinions on a specific topic until a consensus is reached (Von der Gracht, 2012).

The ranking process utilized Mentimeter, an interactive presentation software that allows for real-time participation through live surveys, polls, and word clouds, thus ensuring active engagement and feedback. Ranking is based on a ‘borda count’, a voting method where voters rank options in order of preference, and points are assigned based on position in the ranking, with the option accumulating the highest total points declared the winner. As this workshop included three rounds of voting with 12 possible choices in the first round and 15 possible choices in the second and third round (since 3 additional challenges were identified), ranking was based on a score allocation of 12 (or 15) to 1, with 12 (or 15) being awarded to the highest score. For a detailed summary of the scoring, please refer to the Appendix H.

Given that multiple universities brought more than one representative, only one submission to Mentimeter per university was allowed. The anonymity of the Mentimeter entries was maintained, with results hidden until all participating universities had voted. The voting process was structured into several activities, starting with an initial baseline prioritization of the challenges, followed by group discussions to identify any missed challenges, and culminating in a final ranking of up to fifteen challenges after potentially adding new ones based on feedback.

B5.4.2.3 Workshop – discussion on findings from literature review

After a lunch break, participants were assigned to three groups to delve into the top three challenges, with teams randomly assigned to foster diverse discussions. Teams were guided by a template encouraging them to consider the application of these challenges in campus settings, any linked challenges, opportunities for addressing them,

and necessary change management or resources. The template covered the following four considerations:

- **Relevance of findings to the Campus setting – defining the ‘real challenge’.**
The relevance of the identified challenges within the context of campus settings. This evaluation involved a thorough examination of how each challenge manifests in university environments, considering the unique dynamics and needs of these spaces. Participants were encouraged to discuss and identify any additional complexities that might not have been adequately captured in the existing literature, acknowledging that the theoretical understanding of these challenges might not fully encompass the practical realities faced by campuses. Furthermore, the group was asked to critically assess whether the challenges, as originally defined, needed to be reinterpreted or redefined to better suit the specific context of a campus setting. This process aimed to distil ‘the real challenge’ faced by universities, ensuring that solutions and strategies developed are genuinely applicable and effective in addressing the unique needs of academic institutions.
- **Related to, or dependent on other challenges?**
The group was also instructed to consider the interconnectedness of the challenges, exploring whether the challenge in question was linked to or dependent on other challenges identified. This part of the discussion aimed to uncover the relationships between various challenges, highlighting how addressing one issue might influence the ability to tackle another. Understanding these connections is crucial for developing comprehensive and effective strategies for improvement within campus settings, ensuring that solutions consider the broader ecosystem of challenges universities face.
- **Opportunities to address challenges?**
In their discussions, participants were encouraged to not only dissect the challenges but also to consider opportunities for addressing them. This step required a forward-looking approach, identifying potential strategies, interventions, and innovations that could mitigate or overcome the identified challenges within campus settings. By highlighting these opportunities, the group aimed to shift the conversation from problem identification towards proactive solution-building, focusing on practical and impactful ways to enhance the inclusivity and functionality of university campuses in the face of these challenges.
- **Next steps, change management and resources required**
In addressing the challenge, participants were tasked with considering the dynamics of change management, the resources necessary, and outlining the steps needed to forge a path forward. This included identifying the specific data or information required to fully understand and tackle the challenge, research gaps or unanswered questions, stakeholder engagement requirements and any additional resources that could support in next steps to address these challenges.

Each team was allotted 45 minutes for discussion, after which one member presented their findings to the entire group. Feedback and a short discussion within the wider group was permitted after each presentation. Participants were provided with a template to aid discussion and unify data capture (please refer to Appendix B). A facilitator, one of the authors who contributed to this report, was present in each group to guide the conversation. Their role was to assist participants in articulating their thoughts in writing, ensure discussions stayed on track, and provide answers to clarifying questions. While they primarily did not participate in the debates, they offered insights derived from the literature review when necessary.

B5.5 Workshop findings

This section provides a summary of the findings from the workshop, incorporating both the anonymous results from the Mentimeter polling and insights gathered during the workshop discussions.

B5.5.1 DELPHI Mentimeter polling results.

A total of 12 votes were expected to represent one vote from each of the 12 attending Universities. Findings from each of the mentimeter rounds is summarised below.

- **Activity one: Following deep dive into the definition and basis of the 12 challenges, an Initial baseline prioritization of 12 challenges.**
Participants ranked the challenges as follows:

The five most critical challenges identified for Dutch Universities in addressing the spatial aspects of hybrid work were:
 1. Prevent resistance to the necessary changes
 2. Accommodating different work types and individual preferences
 3. Support both individual and group needs
 4. Determine optimum levels of autonomy and control
 5. Deal with underutilisation of space without causing overcrowding
- **Activity two and three: In groups of 2-3 people participants were asked to discuss the initial ranked findings and to consider the following two questions, 1) did we miss any challenges, and 2) if so, what?**
Following a 15-minute discussion in small groups, participants were divided on whether all challenges were represented; six universities felt not all challenges were covered, while the rest believed there were no additional challenges to include.

Among the Seven universities that identified gaps, 15 responses were provided in the word cloud, summarised in Figure B5.1.

Through group discussion it was felt that a number of these submissions were either similar in nature or could be included within the existing 12 challenges. As a result, only the following three challenges were agreed upon as being additional:
 1. **Additional challenge one:** Determine the role of the manager
 2. **Additional challenge two:** The speed and agility as a result of external influence
 3. **Additional challenge three:** Matching the availability of existing resources and spatial capacity versus spatial needs and desires
These challenges were then added to the next voting round for activity four.

Figure B5.1: University workshop participants (source TUE for Campus NL 2024)



- **Activity four: Following the addition of any new challenges, participants would prioritise the 15 (12 plus 3 new challenges) via mentimeter.**

12 participants voted in the second round. Participants ranked the challenges as follows.

The five most critical challenges in the second round of prioritisation identified for Dutch Universities in addressing the spatial aspects of hybrid work were:

1. Prevent resistance to the necessary changes
2. Support both individual and group needs
3. Accommodating different work types and individual preferences
4. Determine optimum levels of autonomy and control
5. Additional challenge two: The speed and agility as a result of external influence

As visible, this is almost the same top 5, with a switch between numbers 2 and 3, plus the replacement of the underutilisations challenge with additional challenge two on speed and agility.

- **Activity five: After reviewing the change in rankings based on all participants, they would then prioritise the 15 challenges for the final time**

Only 11 out of 12 participants voted in the third round. Unfortunately, one University was not able to join the mentimeter platform and therefore failed to participate. Participants now in this final round ranked the challenges as summarised in Figure B5.2

Figure B5.2 illustrates that the top five challenges are prioritized significantly higher than subsequent challenges (6 to 11), with challenges 12-15 receiving even less priority from the participants. The three additional challenges identified in activity three fall within the 6-11 range and are thus not considered among the top five priorities. This ranking underscores a clear stratification in the priority and focus across all voting rounds, suggesting much consensus on priority given to the following five challenges:

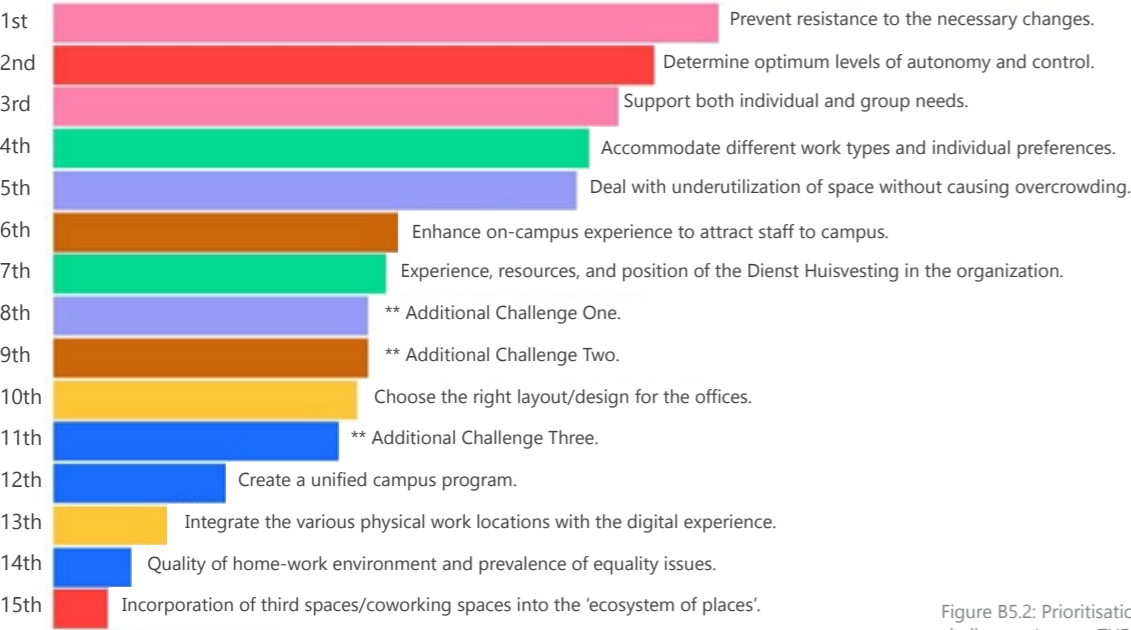


Figure B5.2: Prioritisation of challenges (source TUE for Campus NL 2024)

Deal with underutilization of space without causing overcrowding.
Enhance on-campus experience to attract staff to campus.
Experience, resources, and position of the Dienst Huisvesting in the organization.
Additional Challenge One.
Additional Challenge Two.
Choose the right layout/design for the offices.

Table B5.3: Group division to address challenges (source TUE for Campus NL 2024)

1. Prevent resistance to the necessary changes
2. Determine optimum levels of autonomy and control
3. Support both individual and group needs
4. Accommodating different work types and individual preferences
5. Deal with underutilisation of space without causing overcrowding.

Following discussion, the total scores are set out in Appendix H.

B5.5.2 Analysis of DELPHI Mentimeter polling results

From the analysis summarised in Appendix H we note the following:

- The top five challenges remaining consistently within the top five.
- Second, third, fourth and fifth place are extremely close.
- Prevent resistance to the necessary changes’ remained at the top of the priority list for all three rounds of scoring.
- Consideration for ‘off campus’ aspects of hybrid work, such as the home office, third/ co-working spaces or the employee experience of the digital environment remain consistently the lowest priority.
- Additional challenges identified in activity two and three did not appear in the final top five.

B5.5.3 Workshop discussions findings

As a result of the discussions and insights gained from the ranking process, participants suggested that the top five challenges, which exhibited a high degree of similarity and natural groupings, should be combined into three broader categories. Consequently, it was decided to consolidate these top five challenges into three distinct themes. These themes would then be the focus of discussion within three separate groups during the workshop, allowing for more targeted and productive conversations about the most pressing issues identified. Each of the three groups were separated onto three different tables to address each of the following challenges:

Group One	Accommodating different work types and individual preferences + support both individual and group needs
Group Two	Prevent resistance to the necessary changes
Group Three	Determine optimum levels of autonomy/control + deal with underutilization of space without causing overcrowding

1. Group one: accommodating different work types and individual preferences + support both individual and group needs

Group one was asked to discuss and present back on the challenge, ‘Accommodating different work types and individual preferences’ + ‘support both individual and group needs’. The following provides a summary of the discuss and presentation:

- **Relevance of findings to the Campus setting – defining the ‘real challenge’:**

During the workshop, participants delved into the complexities of implementing Activity Based Working (ABW) within university settings, a challenge compounded by the lack of scarcity of places due to the many vacant desks stemming from increased hybrid working. In the existing ABW offices on campuses, there is currently very little need to change seats during the day. They also noted the necessity of fixed spots for secretaries and support staff, along with the need for special dedicated ergonomic adjustments for some workers, which complicates ABW's implementation.

Universities, described as having a more diverse workforce than other knowledge organizations, face unique complexities within these two challenges. These include the impossibility of completing concentrated work solely from home due to its intertwinement with on-campus activities, such as teaching and the significant gap between current facilities and actual needs due to longstanding existing campus buildings. There are many inflexible buildings in university portfolios, with spaces that are rather ‘clinical’ and not ‘cosy’. Where changes have gone really fast, the buildings are not (able to) change/-ing fast. In addition, real estate costs have risen while real estate budgets remained the same, so less is possible.

Further complexities are introduced by the decentralized nature of decision-making authority within universities, hindering the central collection of end-user needs, introduction of ABW, and discussion for balancing between individual and group needs. New buildings or renovation of existing building provide the perfect opportunity to establish new ways of working, such as ABW or ABO. However, inhabitant tend to return to using these new spaces in the ‘old’ way assuming foxed work locations. These effects may be further existed as there is currently little discussion on group versus individual needs and when these conversations do take place, they tend to be left to lower levels of leadership. Additionally, challenges related to leadership culture, where every group prefers to make its own decisions on work arrangements, were discussed.

Participants also highlighted mentality, tradition, and perception issues, such as the lack of a clean-desk mentality, difficulties in depersonalizing spaces for inclusive use, and a decreased tolerance for crowdedness post-COVID-19. The discussion pointed out the need for a cultural shift towards a more flexible, shared use of space and a proper introduction of workplace concepts to address these challenges effectively. There is a larger difference in status at universities than in most other knowledge organisations. PhD’s are on-site the most and some full professors very little, but traditionally the latter have dedicated rooms and the former do not. Therefore they wonder how to de-personalise rooms of professors so that ‘lower-status- employees’ can use them when they are not in.

• **Related to, or dependent on their challenges?**

During the workshop, participants discussed several key challenges faced by universities in implementing Activity Based Working (ABW) and enhancing the campus experience:

Challenge 4 - Choosing the Right Layout Design: A significant hurdle is the desire of consultants and architects to involve users in the design process, clashing with the reality that scientists, who are crucial users of these spaces, are prone to debate extensively while simultaneously unwilling to dedicate time to these discussions. This tension complicates the collaborative design process necessary for effective ABW environments.

Challenge 7 - Enhancing On-campus Experience to Attract Staff: The dilemma between personalization of workspaces and the need for diversity and suitability of spaces for various functions presents another challenge. Striking a balance between creating spaces that cater to personal preferences and those that are versatile enough to serve a broad range of activities and users is crucial for attracting and retaining staff.

Challenge 9 - Resistance to Change: Implementing ABW to support a diversity of tasks and personal preferences faces resistance, partly due to misconceptions about ABW equating it with an undesired “office garden” layout. Overcoming this requires change management and education to dispel incorrect assumptions about ABW and convey its benefits clearly. Yet, engaging staff in educational sessions or courses on

workplace design is difficult due to their reluctance to participate in topics outside their expertise, compounded by high workloads.

These challenges underscore the complexities involved in transforming university campuses to support more flexible, inclusive, and efficient working environments. Addressing them necessitates a nuanced approach that considers the unique needs and perspectives of the academic community.

• **Opportunities to address challenges?**

In addressing these two challenges of hybrid working, workshop participants discussed the need for creating a supportive and efficient campus environment that caters to various hybrid working personas. This approach involves designing a layout that offers flexibility, thereby enhancing both support for individuals and overall efficiency. A key aspect of this strategy includes increasing the availability of spaces for consultation moments and meetings, incorporating more “phone booths” designed for laptop use in addition to calls, and creating additional “landing spots” for transient use, thus accommodating the modern mobile worker’s needs.

The discussion also acknowledged that implementing non-territorial working arrangements—where not everyone needs a dedicated workspace—could help solve space constraints. This would vary between universities and even between different buildings on the same campus, indicating a need for tailored solutions and not forcing everybody into a flexible seating solution. Regarding the design process, it was suggested to initially proceed without the involvement of scientists, due to their limited time or interest, to draft a structural design. However, involving users in the later detailed design stages within this framework is considered crucial, even though the early exclusion could foster reluctance towards the initial structure.

A policy proposition emerged to manage noise, where making noise would be permissible only in spaces with closable doors, thereby designating open spaces as quiet areas suitable for more types of work. This policy hinges on the absence of students to ensure quiet study or work areas are maintained, recognizing the noise students can generate.

Lastly, the role of external factors in facilitating change was acknowledged, hinting at the potential for broader environmental and societal shifts to influence the adoption and success of these new working models. This comprehensive discussion underscores the complexity of adapting university spaces to meet the demands of hybrid working, highlighting flexibility, inclusivity, and the necessity for thoughtful design and policy considerations.

• **Next steps, change management and resources required.**

In exploring the adaptability of university spaces to hybrid working models, several key questions emerged from the workshop discussions, reflecting a need for deeper understanding and engagement with the university community. Participants pondered whether students still prefer physical consultation moments or if online formats have become sufficiently acceptable in today’s digital age. This question underscores the evolving nature of student expectations and the potential for hybrid models to satisfy diverse preferences.

The workshop also highlighted a gap in understanding the psychological needs of the university community, emphasizing the importance of creating environments where individuals feel both territorially and socially safe. Insights from psychology literature could offer valuable guidance in designing spaces that cater to these needs, suggesting an interdisciplinary approach to workspace design.

Another critical area of inquiry involves the extent to which end-users desire to participate in decision-making processes and which groups are most interested in such involvement. This question touches on the broader theme of participatory design and its impact on user satisfaction, especially considering the transient nature of many university roles. Participants discussed whether engaging users in the design process leads to increased satisfaction, particularly in an environment where staff turnover, including researchers and other types of workers, may be higher than in other knowledge organizations.

These discussions point to a need for a more nuanced understanding of the desires and expectations of the university community regarding workspace design and usage. Engaging with these questions could lead to more inclusive, satisfying, and effective hybrid working models that reflect the unique dynamics of university settings.

2. Group two: prevent resistance to the necessary changes

Group two was asked to discuss and present back on the challenge, ‘Prevent resistance to the necessary changes’. The following provides a summary of the discuss and presentation:

• Relevance of findings to the Campus setting – defining the ‘real challenge’.

During the workshop, participants engaged in a comprehensive discussion, delving into the intricacies of implementing change within university environments to accommodate hybrid working models. The dialogue highlighted several key findings and complexities inherent in this process.

Participants emphasized the importance of addressing both resistance and motivation in fostering a conducive mindset for change. Drawing parallels with broader societal issues like climate change, they suggested incentivizing change through positive reinforcement (“carrots”) rather than punitive measures (“sticks”). Additionally, there was a call for a neutral term to describe the change, devoid of negative connotations, to facilitate acceptance. Understanding trade-offs and consequences of decisions emerged as crucial, as maintaining fixed locations may conflict with sustainability goals or renovation plans, which may be missed without explicit communication. The discussion underscored that change is not a one-time project but an ongoing process, necessitating continual evaluation and adaptation.

The need for tailored approaches to address resistance and motivation at the team or group level was emphasized, as one-size-fits-all mandates often prove ineffective. Creating a “burning platform,” such as new building projects or space limitations, was identified as a catalyst for change. However, implementing change in stable environments with minimal disruptions poses significant challenges. The disparity in change management timeframes between employees and corporate real estate (CRE) teams was highlighted, with CRE requiring quicker action than employees’ readiness for change. To reconcile this discrepancy, participants proposed a two-pronged strategic plan led by CRE and employees respectively, balancing efficiency with inclusivity and thorough decision-making. The discussion also acknowledged varying degrees of receptiveness to change among different departments, influenced by departmental culture. Lastly, the need for inclusive workplace environments detached from feelings of status was emphasized to foster acceptance and collaboration.

Major points of resistance identified included reluctance to give up fixed offices, adopt flexible working arrangements, desk sharing, and accept changes in office layout and design. While resistance was predominantly observed among tenured teaching staff and those with long-time fixed work locations, younger generations,

PhDs, and support staff demonstrated greater openness to change. However, it was noted that resistance is not uniform, and not all employees oppose change. Negative sentiments often receive more attention, overshadowing the willingness to adapt among certain groups. Nevertheless, it was acknowledged that some individuals require fixed locations due to specific needs, such as health and safety concerns or disabilities. Overall, the discussion illuminated the multifaceted nature of change management in university settings, highlighting the importance of addressing resistance, understanding motivations, and tailoring strategies to accommodate diverse needs and preferences within the campus community.

• Related to, or dependent on their challenges?

During the workshop, participant conversation centred on a central connected challenge faced by universities in preventing resistance to necessary changes. interestingly challenge 4 never appeared in the top 5 challenges but remained a key theme within group two discussion:

Challenge 4 - Workplace design and layout emerged as central factors influencing resistance to campus-wide change, with the reluctance to relinquish personal and fixed spaces being a primary obstacle. The discussion underscored how the perceived loss of individual workstations served as a focal point for resistance, highlighting the deep-rooted attachment to traditional notions of workspace ownership.

Participants recognized that contemporary work dynamics prioritize collaboration and interaction over individualized spaces. However, the entrenched mindset surrounding personal workstations continues to pose a significant barrier to embracing new ways of working. This observation underscores the pivotal role of workplace design in shaping attitudes and behaviors within university environments.

Addressing resistance to campus-wide change necessitates a holistic approach that not only considers the functional aspects of workspace design but also addresses the psychological and cultural factors at play. By reimagining workspace layouts to prioritize collaboration and flexibility while also addressing individual needs, universities can mitigate resistance and foster a more adaptive and inclusive work culture.

• Opportunities to address challenges?

The workshop discussions yielded several key strategies and considerations for addressing resistance to campus-wide change. Participants recognized the strategic importance of leveraging major events like new building projects or refurbishments as pivotal opportunities for enacting broader organisational change. The inception of a new building or the process of refurbishment was seen as an ideal moment for setting new behavioral norms, effectively representing a fresh start for the organization.

During these discussions, the adoption of group-level strategies emerged as a key recommendation. By involving multiple departments in collaborative efforts, comprehensive solutions could be developed. Although this method might be time-consuming, its potential to deliver superior outcomes was clear. Moreover, such collaborative efforts could potentially lead to a reorganization of campus structures, enhancing the overall functionality and efficiency of the institution.

Participants also stressed the importance of proactively addressing potential resistance by engaging stakeholders early in the change process, rather than waiting until the implementation stage. This early engagement is crucial for smoothing the path for change and ensuring broader support across the organization. Effective stakeholder engagement was identified as requiring significant time and a strategic

use of positive language and framing. Emphasizing collaboration over cost reduction, for instance, is vital for fostering cooperation and buy-in among all parties involved.

To generate momentum for these broad changes, phased change programs were suggested. Initiatives would initially target groups most motivated or least resistant to change, such as support staff or PhD students. This strategy was seen as a way to build enthusiasm and support for subsequent, broader change initiatives across the organization. Employing persona-based approaches, such as those provided by CfpB, to create tailored personas for specific employee groups was another strategy that was discussed. This approach helps in designing change programs and workplace environments that closely align with individual behaviors and preferences, thereby increasing engagement and personalization.

A novel approach to space allocation was also discussed, where each department would be provided with a predetermined space allocation budget. This budget would remain fixed regardless of fluctuations in headcount, encouraging strategic space utilisation and requiring clear guidance from the central university leadership.

Balancing the flexibility of workplace layouts was another key point. Designs that range from fully fixed to entirely flexible desks can accommodate the diverse working patterns and preferences of the organization's members, catering to various needs and enhancing overall workplace efficacy. Additionally, objective measures such as occupancy rates were highlighted as essential tools. These measures help bridge the gap between perceived and actual staff needs, enabling more informed decision-making in workspace design and allocation.

Ultimately, participants acknowledged the profound social significance of campus spaces and emphasized the necessity for thoughtful, collaborative approaches to navigating change in this context. Addressing resistance effectively requires a multifaceted strategy that accounts for organisational culture, individual needs, and broader institutional objectives, ensuring that the path to change is both progressive and inclusive.

- **Next steps, change management and resources required**

The workshop discussions identified several specific strategies and considerations for implementing campus-wide change. Adopting a department-by-department approach involves understanding each department's points of resistance and motivations, drawing insights from psychological literature, and identifying potential incentives ("carrots"). Starting with groups more receptive to change may facilitate broader adoption. Establishing a target percentage of satisfied individuals can serve as a measurable goal for assessing the success of change initiatives and gauging overall satisfaction levels.

Utilizing data to illustrate the gap between perceived and actual behaviors, such as where individuals prefer to sit versus where they think they sit, can help convince stakeholders of the need for change. Additionally, highlighting the consequences of excessive remote work for both individuals and the organization can underscore the importance of balanced workplace practices. Addressing data gaps, particularly in developing personas tailored to campus departments, is essential for informed decision-making and effective change management.

Finally, participants emphasized the need for stronger leadership from central university leaders to drive change initiatives forward. Clear directives, such as those related to carbon neutrality, can provide a compelling rationale for change without room for debate. These strategies underscore the importance of tailored approaches, data-driven decision-making, and strong leadership in successfully implementing campus-wide change initiatives. By addressing department-specific

needs, leveraging data to inform decision-making, and establishing clear leadership directives, universities can navigate resistance and drive meaningful transformation in their work environments.

3. Group three: determine optimum levels of autonomy/control + deal with underutilisation of space without causing overcrowding

Group three was asked to discuss and present back on the challenge, 'Determine optimum levels of autonomy/control' + 'deal with underutilisation of space without causing overcrowding'. The following provides a summary of the discuss and presentation:

- **Relevance of findings to the Campus setting – defining the 'real challenge'**

The challenge highlighted the impact of square meter pressure in balancing under- or overcrowding on campus. When space shrinks, implementing changes becomes significantly harder. Additional complexities arise from campus settings, where workplace distribution is often dictated by the College van Bestuur. Professors typically receive more space than PhDs, reflecting hierarchical norms. Space allocation among staff is frequently left to individual discretion, limiting managerial influence. This dynamic prioritizes individual over group interests, complicating efforts to ensure equitable workspace distribution.

- **Related to or dependent on their challenges?**

Several challenges identified in the workshop are interconnected:

Challenge 2: The distribution of workplace space should be democratized to consider both individual and team interests. However, individual autonomy often creates challenges at the team level.

Challenge 4: Group interests should be prioritized, necessitating discussions about office design.

Challenge 5: Individual preferences are closely tied to autonomy, further highlighting the need to balance individual and group needs.

Challenge 9: Change management is essential for addressing resistance to change.

Challenge 12: "Diensthuisvesting" holds decision-making authority regarding hybrid working, and managers must collaborate with them to ensure alignment.

Achieving consensus between group and individual interests is crucial for "beeldvorming" (perception shaping) and "oordeelvorming" (judgment forming), ultimately leading to effective "besluitvorming" (decision-making). This interconnectedness underscores the need for holistic approaches to address workplace challenges and foster organisational alignment.

- **Opportunities to address challenges?**

External factors, such as space constraints, escalating energy costs, or budgetary constraints, exert significant pressure on campus environments. Leadership within faculties plays a crucial role in balancing individual and team interests. Real estate departments should provide guidance and implement strategies formulated within the College van Bestuur. For instance, in the context of hybrid working, real estate should serve in an advisory capacity.

To address overcrowding, a dual approach is suggested: creating autonomous spaces tailored for specific teams while also establishing non-autonomous (shared) spaces to serve as a buffer during peak periods of overcrowding. This strategy aims to optimize space utilisation and alleviate pressure on campus resources.

• **Next steps, change management and resources required**

The College van Bestuur holds decision-making authority, yet effective implementation requires a robust framework to translate decisions into practice, which are not consistently implemented and adopted. Discussions also centered on democratizing the process of workplace choices, which remains a complex issue within the context of university campuses.

Workshop – key findings

Despite all three groups discussing three distinct challenges, several consistent themes emerged from the workshop.

- **Complexity of fixed versus shared space:** One of the most prevalent shared views is the complexity and sensitivity of discussions around fixed workplaces and private offices. Discussions across all three groups highlighted that resistance to move away from fixed work locations was a major blocker for change and that with the increase in home working, utilisation is low and therefore the space is expensive. This recurrent theme within both the literature and workshop discussions necessitates a longer time for change management, allowing sufficient time for all stakeholders to engage in discussions and be part of the change process. Group one and two highlighted that moving into a new building or a redevelopment may provide the necessary catalyst to redesign workplaces to accommodate more shared spaces; both highlighting the need for deep engagement and participation of affected stakeholders as critical to create successful change.
- **Limited or inconsistent quality of workplace design:** Group discussions also covered limitations in the quality and ‘cosy-ness’ of current workplace environments in providing suitable spaces for all types of work, such as concentration booths and private meeting rooms, highlighting a broader issue of adapting traditional academic spaces to meet modern demands effectively. Groups one and two discussed that this is particularly challenging when competing with home office environments, which may be more individualized to the needs of individuals and represent a better alternative than non-suitable office or campus locations. Further, both groups highlighted that over the last few years the expectations of employees on the quality and style of working environment may have increased and in older university buildings, the contracts may be impacting stakeholder satisfaction. This insight was particularly interesting as challenge 3 ‘Chose the right design and layout of offices’ was not selected within the top five challenges although it was consistently mentioned as a dependent or linked challenge for all challenges in the top 5.
- **The Dichotomy of Space and hierarchy between PhD Students and Professors:** All groups highlighted the dichotomy and hierarchy between PhD’s and Professors, with PhD’s occupying more time at their desks which are typically poorer quality locations, and shared or open-plan space. In contrast the discussions suggested that Professors tend to occupy private, fixed and higher quality space, despite not being present at their desk as much, although to the best of the authors’ knowledge, little research confirming desk utilisation between these groups exists. This contrast of hierarchy was discussed across all three groups as a key part of defining the ‘real’ challenges faced by Dutch Universities as a result of hybrid work.
- **Creating spaces for both individuals and teams:** Groups one and three both discussed the need to create spaces that would support both individual and group needs, highlighting the potential role of FM and hospitality services to support in this. Both groups discussed the need to support academic knowledge workers

more effectively when they come to campus and to further cultivate more positive collaborations and experiences. All three groups suggested that the increased focus on ‘me’ as a result of hybrid work, may be placing individual needs and wishes above the team’s and that space should be ‘democratised’ to facilitate more collaboration and group belonging.

Summary: Key Learnings

The following key learnings can be consolidated from these workshop discussions/presentations:

- Resistance to change is largely attributed to desire to retain fixed workplaces, necessitating thorough change management and stakeholder engagement for success.
- Traditional academic spaces struggle to meet modern demands or expectations, compared to home offices.
- PhDs and Professors face spatial hierarchies, which may be more pronounced as a result of hybrid work.
- Due to hybrid work, employee needs are becoming more individualistic, potentially neglecting collective considerations, which spatial strategies could support in addressing.
- Discussions revealed a gap in change management between employee and spatial planner timelines, emphasizing the need for a unified strategy to balance cost reduction and space utilization with hybrid work challenges.
- The role of Corporate Real Estate (CRE) teams in shaping hybrid working policies appears to be more about having permission to explore options with stakeholders rather than having a mandate to really effect change, which may lead to limitations in implementing change.
- University leadership required to unify motivations between autonomous and decentralised departments.
- University campus decisions are influenced by external factors and interconnected challenges, complicating isolated solutions, such as workplace design and layout.
- Many challenges overlap with others that are not considered priorities within the DELPHI mentimeter scoring process, suggesting connectivity and complexity of the challenges and the necessity of a holistic approach to solve the prioritised ones.
- Identifying the true challenges within a university setting still necessitates further research, with some research gaps remaining.

B5.5.4.5 The dichotomy of change between “Dienst huisvesting” and university stakeholders

There was a consistent discussion of the approach to change management whereby a gap was identified between the timeframes and motivation of employees versus those responsible for spatial planning strategies, (“Dienst Huisvesting”: estate management, facilities management). Discussions within all three groups focussed on the juxtaposition of having to reduce costs and increase utilisation during a period where more people are working from home more often, while simultaneously supporting fixed desk that are largely underutilised throughout the week. Aligning these needs and developing conducive methods from which to balance these priorities was highlighted as a critical component to the implementation of successful change management. Across all groups, there was a call for a unifying voice or mediating body to bring these two objectives together to form a single strategy. Some groups identified this body as university leadership and highlighted that aligning motivations may likely provide the alignment needed to make change successful. All groups also suggested that universal goals, such as tackling climate change, energy savings or creating more inclusive healthy environments could be used as unifying motivations to align interests across campuses and drive a central strategy to address both existing spatial planning issues of university campuses, which have been made more complex, obvious and pronounced by the adoption of hybrid work.

B5.5.4.6 Influence of external forces on university decision making

Finally, all groups emphasized that decisions regarding university campuses cannot be made in isolation and are influenced by external factors such as energy prices, funding sources, and the broader societal representation of universities. The addition of these external forces echoes the acknowledgement within all groups that many of the prioritized challenges being dependent on or linked to lower-ranked challenges, highlighting that spatial challenges associated with hybrid work are interconnected, complex and cannot be dealt with in isolation.

B5.6 Conclusions

The literature review reveals an extensive list of challenges facing all organisations and thus also Dutch Universities regarding the spatial implications of hybrid work. The most important challenges as prioritised by the university representatives in the workshop are:

- 1. preventing resistance to necessary changes,
- 2. determining optimal levels of autonomy and control,
- 3. supporting both individual and group needs,
- 4. accommodating different work types and individual preferences,
- 5. addressing underutilisation of space without causing overcrowding.

The workshop discussions highlight resistance to moving away from fixed workplaces, necessitating extensive change management and stakeholder engagement. The discussions also revealed that traditional academic spaces often fail to meet modern demands compared to home offices, creating pronounced spatial hierarchies between PhDs and Professors. As hybrid work evolves, employee needs have become more individualistic, potentially sidelining collective needs, which requires targeted spatial strategies to address. There is a noted gap between employee needs and spatial planning, calling for a unified strategy to balance cost reduction with effective space utilisation. The role of Corporate Real Estate (CRE) teams is often limited to exploring options rather than enforcing change, underscoring the need for university leadership to drive unified motivations across departments. Challenges within university settings are complex and interconnected, influenced by external factors such as economic conditions and societal expectations, complicating solutions like workplace design. Many issues are interlinked and not prioritized within traditional scoring processes, suggesting a need for a holistic approach and further research to identify and address the true challenges.

Given these insights, there is a clear need for targeted research on how hybrid work models are and/or should be reshaping the spatial dynamics of Dutch university campuses. As universities across the Netherlands vary greatly in terms of size, resources, architectural heritage, and strategic priorities, a bespoke approach to addressing these challenges appears necessary. Customized solutions that consider the unique characteristics of each university will be critical in effectively managing the transition to hybrid work environments and ensuring that these institutions continue to thrive in a rapidly changing hybrid landscape.

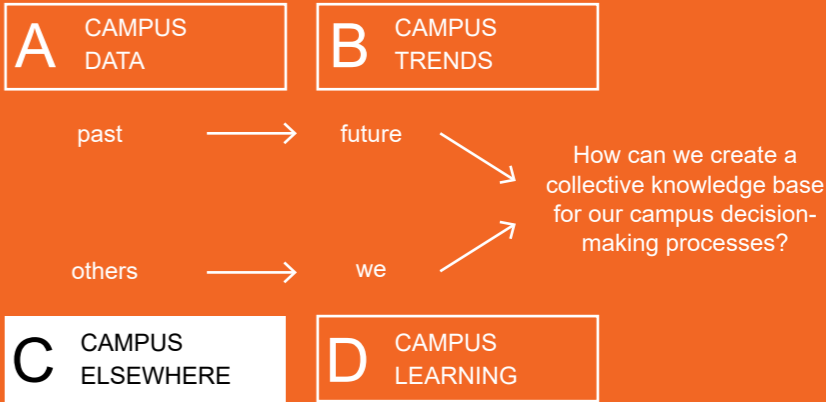
References (appendix H)



Rotterdam Business School
(photo Campus NL)

Part II - Results 2023/2024

C1 CfPB insights on the future of work(places)



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C1.1 Introduction

The following contributions are from the Center for People and Buildings (CfPB), in collaboration with TU Delft. The CfPB was established in 2001 to make knowledge about people, work, and working environments available to all organizations. The CfPB’s role is to bridge the gap between science and practice. This is achieved by conducting research, sharing knowledge, and developing tools and products. The CfPB does not provide direct advice for organisations; instead, through their independent research they enable management teams to make decisions in the context of their own organisation.

After the COVID-19 pandemic (and office lockdowns), CfPB launched a collaborative research program called ‘Werk in Transitie’ (Work in Transition - WiT) in partnership with TU Delft and TU Eindhoven. The program focuses on the transition in work practices (see Figure C1.1). During the pandemic, most knowledge workers worked predominantly from home. Since 2022, work is done in a ‘hybrid’ context. “Over 5 million people in the Netherlands worked from home sometimes or most of the time in 2023, representing 52 percent of all people in work.”, according to the Central Bureau of Statistics (2024, March 15). In 2023, around four-fifths (80%) of Dutch Government employees spend no more than two days a week in the office (Houtveen et al., forthcoming). This change in work locations has significant implications on the way in which employees work and how work is organized. The WiT programme aims to develop knowledge about hybrid working practices, with participation from over 15 public organizations.

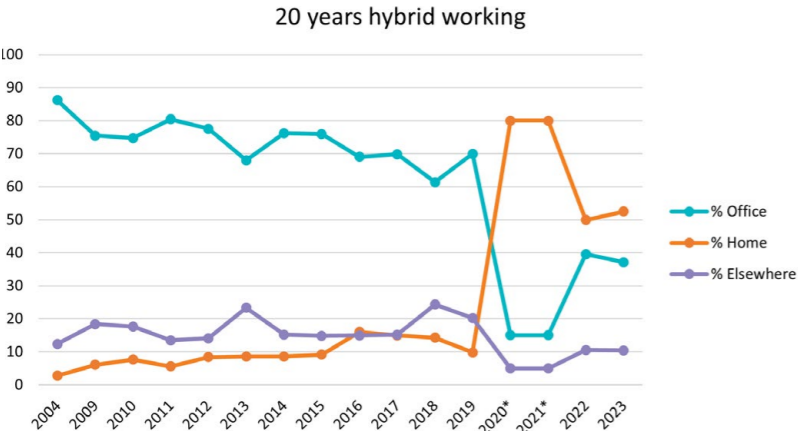


Figure C1.1: Historic overview of the relation between working at the office, at home and elsewhere between 2004 and 2023. Based on CfPB WODI data (2004-2019) and CfPB WiT Data (2022, 2023) *Data for 2020 and 2021 are estimations based on scientific results.

The WiT research program includes a knowledge platform, a monitoring tool, and in-depth studies on key topics related to hybrid work. The Werk in Transitie Monitor (WiT Monitor) is a scientifically validated questionnaire, serving as a primary resource for knowledge development on hybrid working. We annually collect data from participating organizations. The survey covers over 25 topics within five broader themes: ‘Employee & Organization,’ ‘Working Environment,’ ‘Collaboration,’ ‘Leadership,’ and ‘Health.’ In 2023, more than 17,000 employees from 10 organizations participated in the survey.

Based on CfPB’s research over the past years, three chapters can be found below. The first chapter focuses on the location choices of hybrid workers. It identifies six distinct clusters of work locations and describes the characteristics of the employees in each cluster. The second chapter discusses the difference between objectively measured occupancy and employees’ subjective perception of occupancy. It presents the results of an exploratory study on how the physical work environment influences perceived occupancy. The third chapter details the findings from a living lab that explored the evolving nature of knowledge-work offices. Micro-level insights gathered from users are translated into five key perspectives.

Authors Dutch hybrid workers’ location choice clusters and distinguishing characteristics: Houtveen, S., La Brijn, D., Gosselink, A.M.

More information about this study can be found here:

<https://www.cfpb.nl/kennis/publicaties/what-determines-the-differences-between-dutch-hybrid-workers-location-choice-clusters/>

C1.2 Dutch hybrid workers’ location choice clusters and distinguishing characteristics

During and after the corona pandemic, the Center for People & Buildings conducted large-scale research into changing work patterns among the office-based knowledge workers in several (public) organisations, including the central government and the Police Netherlands. In mid-March, we published the latest research results, which were presented to representatives of Dutch universities during the Campus NL hybrid working workshop on April, 2nd , 2024.

C1.2.1 Introduction – Identifying various patterns in hybrid working

After the COVID-19 pandemic, hybrid working has become the norm. The pandemic catalysed a longer teleworking trend, where work is increasingly conducted outside the office. Hybrid working differs from previous teleworking arrangements: greater significance on individual preferences for work locations (Nenonen & Sankari, 2022) and a larger number of employees now able to work remotely (Babapour Chafi et al., 2022).

While hybrid working receives significant attention in both popular discourse and academic literature, there is still a lot unclear about individual work locations preferences. Who works from home, and who works in the office (Appel-Meulenbroek et al., 2022)? And why do employees have certain preferences?

In 2023, CfPB identified patterns in the choices made by Dutch hybrid workers. We identified six distinct location of work clusters and found several distinguishing characteristics between them. Further details on our methodology and findings are available in Houtveen et al., (forthcoming). The findings presented below could assist practitioners in shaping hybrid working practices within their organization.

C1.2.2 Six types of hybrid workers

To identify unique location of work clusters a cluster analysis was used. These clusters represent the distribution of time employees spend at various locations during an average workweek. Five specific locations were considered in the analysis: the primary office location, home, while traveling, at other offices of the same organisation and at external locations (including client sites and public spaces). The distinct locations of work clusters are described below:

1. Mainly homeworker (28%)
This worker prefers working from home and spends around one day per week in the office.
2. Regular homeworker (22%)
This worker prefers working from home and spends 26% of its work time at the office.
3. Traveling worker (14%)
This worker works at various locations. This worker spends one-third of its work time at the office and one-fifth at home. A significant portion of worktime is spent traveling and working at other locations.
4. Half home / Half office worker (20%)
This worker divides their work time evenly between working from home and working at the office.
5. Regular office worker (12%)
This worker prefers working at the office and spends a quarter of their work time

- from home.
- 6. Mainly office worker (4%)
This worker prefers to work almost exclusively at the office.

Although the various clusters exhibit unique characteristics, the motives for working in the office are surprisingly consistent. Most employees prefer to go to the office on Tuesdays and Thursdays (see Figure C1.2). On Wednesdays and Fridays, the office is significantly less busy. The primary motives for office attendance are related to working with or alongside colleagues.

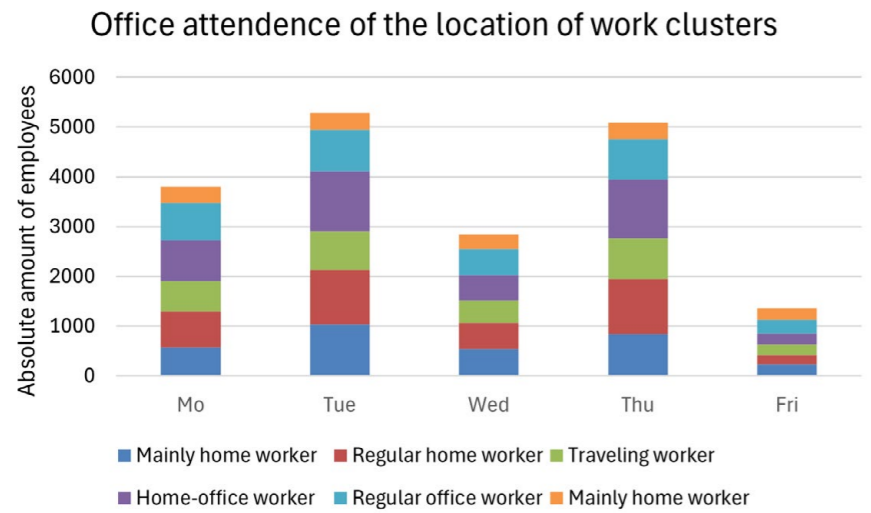


Figure C1.2: Daily office attendance in an average work week. The values in this graph are normalised for the purpose of comparison between days, with the highest value set at 100% on the most popular day. Source: CfPB Werk in Transitie data (2023)

C1.2.3 Distinguishing characteristics between workers

Previous studies suggest that numerous aspects influence individual work location choices. For instance, the theory of activity-based working suggests that workers align their activities with the most suitable workplace (Duffy, 1997; van Meel, 2019). Research also shows that dissatisfaction with certain aspects of the office work environment influences location preferences (Babapour Chafi et al., 2022). Recent studies have found that having a suitable home workspace can increase the likelihood of working from home (Nakrošiene et al., 2019; Peñarroja, 2024). Additionally, work-related aspects as commuting time (Ollo-López et al., 2020) and job function (Stassen et al., 2016) can influence work location choices. Personal characteristics, like gender (Singh et al. 2013) or age (Nakrošiene et al., 2019), also influence location choices.

The six location of work clusters differ in their distribution of working hours across locations. To test for significant differences between the clusters, Chi-square tests and ANOVAs were conducted.

What did we find as the distinguishing characteristics between workers?

- **Work activities:** all work activities from the CfPB activity taxonomy are represented within the location of work clusters (see Niekel et al., 2022). Significant differences are observed in “focused individual work” and “active collaboration with colleagues”. The results indicate that employees in the “Mainly home worker” and “Regular home worker” clusters spend more time on activities that require uninterrupted focused individual work. In contrast, employees who spend most of their time in the office are

more involved in collaborative tasks. Employees in the “Traveling” and “Home-office” clusters perform both “active collaboration with colleagues” and more individual focussed work, equally from both home and office environments.

- **Satisfaction with aspects of the work environment:** difference in satisfaction (measured with the WODI Light questionnaire, see Maarleveld et al., 2009) is predominantly related to psychosocial factors. These factors include concentration and communication options, perceived privacy, the openness of the work environment, and control over the indoor climate. Employees in the “mainly home worker” and “regular home worker” clusters report higher levels of satisfaction with psychosocial aspects of their home environment compared to their office environment. Employees in most clusters typically have a well-equipped home office, whereas those in the “mainly office worker” cluster generally work with less equipped setups.
- **Work related characteristics:** most employees in this study have an average commuting time between 15 to 60 minutes. Significant differences in location of work clusters are observed among those with very short commute times (< 30 minutes) and very long commute times (> 60 minutes). Whether someone is a manager also plays a significant role in work location preferences. Employees in the “Mainly home worker” and “Regular home worker” clusters have on average a longer commuting time to the office, with times exceeding 45, 60 or even 90 minutes. In contrast, employees in the “Mainly office worker” and “Regular office worker” clusters predominantly have between 15 to 30 minutes commuting time. Employees in the “Mainly office worker”, “Regular office worker” and “Traveling worker” clusters are significantly more often in a managerial position within the organization compared to employees that work mostly at home.
- **Demographic characteristics:** for most demographic characteristics the differences between the location of work clusters were not significant. There are some noticeable differences between age-groups and their work location preferences. Young employees (18-30 years) are more frequently represented in the office-based clusters, while the oldest employees (over 60 years) are more commonly found in the home-based clusters.

C1.2.4 Who chooses to work from home, who prefers the office?

With hybrid working, most employees in our research population have a high degree of flexibility in choosing work locations. We identified six location clusters which reflect the diverse choices employees currently make. Broadly, these can be categorized into three types of hybrid workers:

- Home-based workers (44%)
- Mixed workers (34%)
- Office-based workers (16%)

This shows that 78% of all employees spend at least half of their time outside the office in an average workweek. The results also highlight that employees predominantly work at the office on Tuesdays and Thursdays. While in the office, employees engage in a diverse range of activities.

C1.2.5 How should you utilize these insights?

The location of work clusters are not an absolute representation of reality but facilitate discussions on work location preferences within the context of hybrid working. The key-takeaways for organisations:

1. Provide an appropriate range of workspaces and facilities in the office.

Focus on how to best support different types of employees when they are in the office. Our results indicate that employees desire to continue performing portions of all their work activities on-site. This involves creating a balanced mix of open and enclosed spaces (for concentration and collaboration activities) to accommodate both remote and office-oriented employees.

2. Establish formal agreement on office attendance with both current and new employees at the organisational and team levels.

Use the clusters as a tool to facilitate discussions within the organization and teams. These clusters raise awareness of the different choices individuals make regarding work locations. Discussing motives can enhance understanding and knowledge sharing within teams. Additionally, the clusters can help clarify acceptable hybrid working choices for new employees.

3. Evaluate the distribution of location of work clusters within your own organisation and determine whether it aligns with organisational goals.

For policymakers, categorizing employees based on their work location usage can provide valuable insights for developing general accommodation policy. This approach supports new work arrangements for hiring new staff and accommodating current employees. Organizations can use the location of work clusters as a framework to facilitate team discussion.

Authors *Exploring the mismatch between objectively measured occupancy in the office and occupancy as perceived by employees*: Brouwers, G.G., Niekel, M., Arkesteijn, M.H., Gosselink, A.M.

C1.2 Exploring the mismatch between objectively measured occupancy in the office and occupancy as perceived by employees

In the spring of 2023, the Center for People and Building conducted an **exploratory study into the influence of occupancy on the perception of the working environment** at two different Dutch government offices. The research focused on one floor in each building which were both occupied by employees from one department of a Dutch governmental organisation. As an experiment, an attempt was made to achieve successive occupancy levels of 25%, 50% and 75% in both buildings on three different days. Results showed that higher occupancies did have different effects on employees’ satisfaction in the two buildings. Before discussing the results in more detail, we will first describe the theoretical background of differences between objective occupancy and perceived occupancy.

C1.3.1 Theoretical background

In workplace design and management, often standards for square meters per person and average occupancy of workstations are used to assess the fit between the number of employees and the availability of workspace and workstations. Similarly to the results in the exploratory study, research tells us that levels of occupancy may be experienced differently by individuals depending on the situation. Why do office workers experience similar levels of occupancy differently in the workplace? **The experience of occupancy is not exclusively caused by the number of people in a space and the availability of workstations, but also by factors from the physical work environment, the social work environment, and personal factors** (Desor, 1972; Gifford, 2014; Stokols et al., 1973). These three types of factors, alongside the level of occupancy, yield a desired level of space that ultimately determines the experience of occupancy in workspaces (Altman, 1975).

Depending on environmental factors, social factors, and personal factors, levels of occupancy may lead to diverse effects. When a workplace has a high occupancy rate, employees may experience crowding (Bell et al., 2001). The term **crowding is used to describe a negative evaluation of high density** (Altman, 1975; Bell et al., 2001; Stokols, 1972). This definition excludes positive effects of high occupancy rates in the workplace, which are also found in studies (e.g. Fried et al., 2001; Szilagyi & Holland, 1980) besides the negative effects of highly occupied workspaces. (Aries et al., 2010; Oldham et al., 1995). Next to that, **too quiet workspaces may also have adverse effects on individuals causing feelings of isolation** (Altman, 1975) (Baumeister & Leary, 1995; Golden et al., 2008).

Instead of using the terms crowding or isolation, Brouwers et al. (forthcoming) choose to use **perceived occupancy which is the perception and estimation of the number of people present in the work environment, available space, and workplaces** (Bechtel & Churchman, 2002) **which might cause a perceived (mis)fit between the personal demand and the availability of space** (Altman, 1975).

To depict the relationship between the objective occupancy, influencing factors, the perception of occupancy, and consequential psychological responses (crowding and isolation) Brouwers et al. (2024) made a model inspired first and foremost by Bell et al.’s (2001) **environment-behaviour model** (see Figure C1.3). Occupancy refers to the factual amount of people in a work environment; it is a form of density and is defined as the ratio of the number of occupied workstations in the work environment to the total number of available (Bechtel & Churchman, 2002; Brunia & Pullen, 2014). In this paper, we refer to occupancy as ‘objective occupancy’ not due to linguistic necessity, but to emphasize the distinction from perceived occupancy. Perceived occupancy is

used because this is the accepted terminology in the field, however could also be called subjective occupancy as opposite of the objective occupancy. The influencing factors are (1) environmental factors: physical features of the situation (e.g., layout, furniture, colours), (2) social factors: stimulation from social sources (e.g., coordination, cohesion), and (3) personal factors: individual differences between individuals (gender, age, expectations) (Altman, 1975; Desor, 1972; Stokols et al., 1973). The perceived occupancy can either be a perceived fit or misfit where the misfit can either be crowding or isolation.

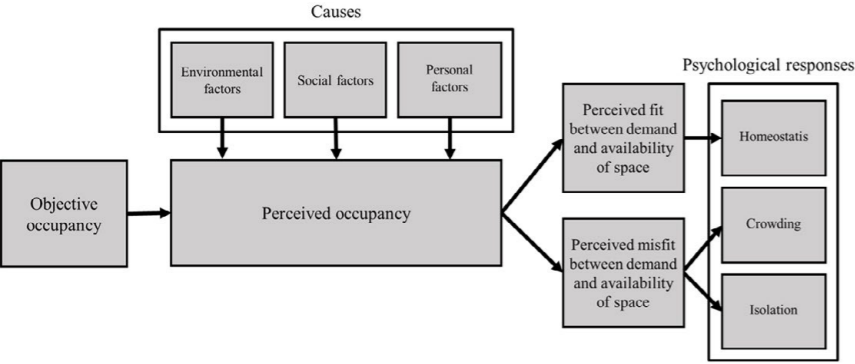


Figure C1.3: Partial and adjusted eclectic environment-behaviour model Brouwers et al. (2024, p. 11) based on Bell et al. (2001)

In the model a distinction is made between objective occupancy and perceived occupancy, which is often not made, although the difference between both has been known for a long time (Stokols, 1972). Therefore, Brouwers et al. (forthcoming) were surprised that their review demonstrated that **objective occupancy or perceived occupancy was barely the central theme in the analysed studies – and how it was measured was often not clearly described**. One exception is the study of Zoghbi-Manrique-de-Lara & Sharifiatashgah (2019) who measured the perception of crowding. In all other studies, several theoretical concepts that relate to perceived occupancy were measured (Stokols, 1976): ability to work concentrated, acoustics, distractions, privacy, territoriality, and occupancy. In their preliminary review, Brouwers et al (forthcoming)¹, found that these concepts are often measured, while the connection with (perceived) occupancy is barely made.

The studies that distinguished between occupancy and perceived occupancy, studied the negative effects of high perceived occupancies in workspaces, which is in line with research on crowding in environmental psychology (Brouwers et al., forthcoming). However, some studies showed positive effects of high occupancy, which are often ignored in environmental psychology (Bechtel & Churchman, 2002). Similarly, none of the analysed papers discussed the negative effects of low occupancies, as suggested by Altman (1975).

There are multiple influencing factors that determine how the objective occupancy is perceived by the users of the space (Brouwers et al., forthcoming). Environmental factors, social factors, and personal factors that have an impact on (related concepts of) perceived occupancy in workspaces. Environmental factors are openness of workspaces, acoustics, plants, workspaces, personalization of workspace, and outside view. Openness of the workspace is often specifically studied in relation to perceived occupancy. Social factors are territoriality, personal space, and culture. Personal factors are work pressure, stimulus screening, inhibitory ability, task complexity, and employee needs.

Note 1: The preliminary results of Brouwers, et al. (forthcoming) have limitations because various environmental, social, and personal factors known to influence crowding outside the context of workspaces were not included. The investigation is still ongoing, and more references will be added in the future and due to practical reasons, their search strategy did not include isolation as a search term.

C1.3.2 Exploratory study

In this study, the Center of People and Buildings (Brouwers & Niekel (2023)) conducted research in two government offices on one floor in each building. **Building A was commissioned in (2007) and has a more traditional working environment** in which most rooms are located on the facade (see fig. C1.4). This working environment has 52 office workstations and 40 seats in meeting rooms. Two-thirds of the desks are in an enclosed space, of which six single rooms, five double rooms and four five-person rooms. Two-thirds of the meeting chairs are situated in different configurations in the open workspace. There are two enclosed meeting rooms. Upon arrival, in general, employees first choose a single room in this office and occupy this room for the whole day - the workplaces in the open space are a ‘second-choice’ workplace. Because of this ‘claiming-behaviour’, employees working in the open space have no alternative space when they receive a phone call or have an online meeting. Consequently, with higher levels of occupancy, general office work, concentrated work and communication activities all take place in the open space.

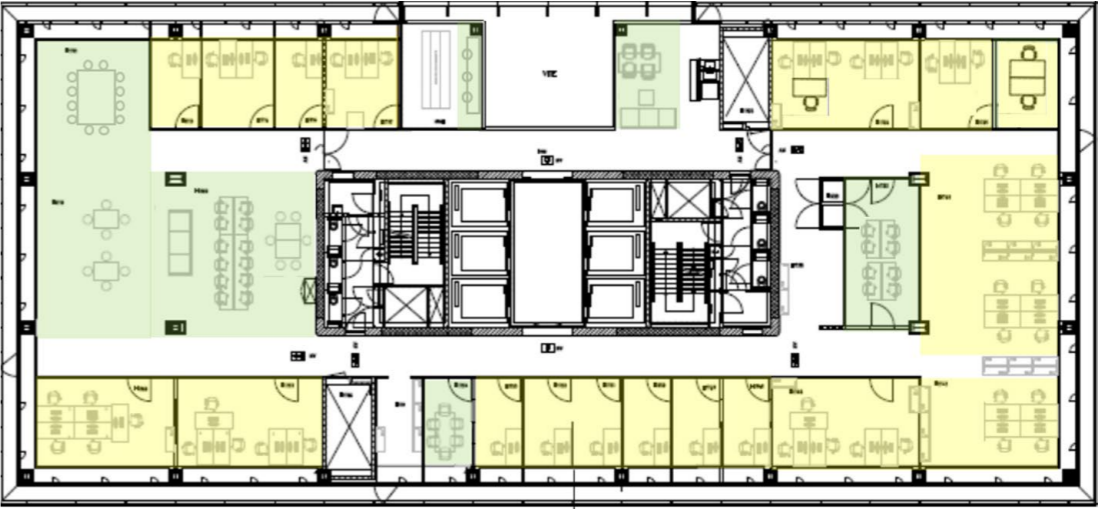


Figure C1.4: Floorplan of Building A (green areas indicate meeting spaces and yellow workplaces)

(With permission to use image anonymously from the relevant Dutch governmental organisation)

The construction of **Building B’s hybrid working environment** was finished in 2022 (see fig. C1.5). There is a combination of open and enclosed workplaces in a varied mix across the floors. The working environment on the floor that has been part of the research has 54 office workstations, 10 seats in small collaboration spaces and 23 seats in meeting rooms. Almost half of the desks (45%) are in an enclosed space, of which six single rooms, two double rooms, two four-person rooms and one six-persons room. 80% of the meeting chairs are in small meeting rooms (up to 8 people). In addition, there are 4 small collaboration rooms for 2 people. In this office, employees usually choose a workplace in the open space upon arrival. This means that the single rooms and small meeting rooms remain available for telephone calls, (online) meetings and concentrated work.



Figure C1.5: Floorplan of Building B
(With permission to use anonymously from the relevant Dutch governmental organisation)

In this study, as an experiment, an attempt was made to achieve successive occupancy levels of 25%, 50% and 75% in both buildings on three different days. In practice, this has not been possible. The maximum occupancy in building A was 53% and in building B 70%. At these levels of occupancy, employees were leaving the floor looking for workspaces elsewhere in the buildings. Brouwers & Niel (2023) measured the satisfaction with the availability of workspaces and the perceived support of the work environment to explore how occupancy was perceived.

We found that the **employees in building A are significantly less satisfied with the availability of workplaces and the perceived support from the work environment than in Building B**. This was true at every measured level of occupancy. In building A the satisfaction with the work environment was lower at higher levels of occupancy. This was not the case in Building B. In terms of the availability of workspaces in building A, employees were most dissatisfied with the availability of meeting rooms. Employees missed facilities for making telephone calls and (online) meetings. Similarly, employees in building A also found the working environment less supportive for concentration work, unplanned meetings, telephone calls and online meetings. Employees who worked in their own 1- or 2-person room in building A were an exception; they were generally satisfied with the support for concentration work, telephone calls and online meetings.

In building B, employees were generally satisfied with the work environment, even at 70% occupancy (which is relatively high) Brouwers & Niel (2023). The differences in satisfaction with the work environment between building A and B seem primarily caused by the layout of the work environments and the types of workspaces:

1. Enclosed meeting rooms ensure noise management: In building B, there are four times more enclosed meeting rooms in relation to the workplaces than in building A. With higher levels of occupancy in building A, meetings occur in the open workspace, creating distractions for employees engaged in focused work in the same area.
2. Enclosed collaboration spaces facilitate unplanned meetings: In Building B there are four small, enclosed collaboration spaces in the working environment, while Building A does not have such workspaces. When levels of occupancy are high, small meetings or spontaneous unplanned meetings in building B often take place in these small collaboration spaces, whereas in building A these meetings take place in the open workspace. Again, causing a distraction for employees doing focused work in the same area.
3. Individual (small) work rooms not suitable for all-day use, encourage activity-specific use: Building B has slightly fewer enclosed workrooms with desks, but there

are proportionately more small work rooms than large ones and there is more diversity in types of enclosed spaces with desks. The comfortable 1- and 2- persons workspaces with outside view in building A led to 'claiming behaviour' (whole day occupation by one user). This resulted in dissatisfaction among employees working in open workspaces, having to conduct multiple conflicting work activities in the open workspace. In building B, some of the small work rooms are not suitable for all-day work (due to ventilation or ergonomic design). Therefore, even when occupancy is high, some of these rooms remained available for use by others.

This explorative study indicated that occupancy is experienced differently in two different buildings: building A with a traditional work environment and building B with a hybrid working environment. This means that experience of occupancy is not exclusively caused by the number of people in a space and the availability of workstations, as Stokols et al. (1973) and others suggested. This study provided insights on two environmental factors on the perceived occupancy in workspaces: the openness of the workspace and the types of workspaces:

1. Openness of workspaces: the study indicated that large open spaces are experienced as unpleasant when occupancy is high, especially as different activities, such as focussed work and meetings, are (necessarily) conducted within the same space. Meetings in open spaces where focussed work is also done are a source of nuisance. This finding is in line with results from previous studies on this topic (e.g., Bodin Danielsson & Bodin, 2009; Been & Beijer, 2014).
2. Types of workspaces: there should be a good fit between work activities and the type of workspace offered. Enough spaces should be provided for (online) meetings to prevent that those activities take place at regular workstations. Similar to the findings of Haapakangas et al. (2018) this study showed that for employee satisfaction and wellbeing it is necessary to provide 'quiet workspaces'.

C1.3.3 Lessons for other organisations

- Distinction between occupancy (objective) and perceived occupancy. However, be sure to study them at the same time.
- An occupancy of 70% in the office is possible and can result in high levels of satisfied employees, however, lower occupancy rates of 50% can also cause dissatisfaction amongst employees. If the occupancy is too low, employees may experience feelings of isolation. Office design can contribute to the difference between satisfied and dissatisfied employees in the office.
- When striving for a higher occupancy rate in an activity-based working work environment, focus not only on the physical environment but also the behaviour of employees. Examples are:
 - divide noisy activities such as meetings, and collaboration from activities that require concentration and silence;
 - offer a diverse workplace concept that provides a sufficient quantity enclosed meeting and collaboration rooms;
 - use open spaces for activities that require concentration, as was done in this study, and closed spaces for activities that involve noise/sound. Invite employees to start their on-site working day in the open workspaces because 1-person rooms may provoke claiming behaviour, especially when alternative workspaces are very open and there are no other spaces for (online) meetings.
 - ensure employees switch to a workplace matching the activity they perform. In general, this means walking to an enclosed space when there are telephone calls or online meetings.

C1.4 The hybrid-work office: Exploring the changing knowledge- work office in a living lab

C1.4.1 What is a Living Lab?

A Living Lab is defined as an open innovation environment that prioritizes user involvement and co-creation.

In 2023, CfPB was actively involved in researching new hybrid working environments within a Living Lab in Amsterdam (LLA). Established by a large Dutch governmental organisation, LLA aimed to explore hybrid working practices and ultimately enhance the organisation’s ability to facilitate hybrid working effectively. The objectives of the Living Lab were twofold: 1) to locally gather lessons about hybrid working, and 2) to translate the lessons into general insights and implications for other locations.

Between February and December 2023, researchers from CfPB periodically monitored office-users experience in LLA. The comprehensive and individual-oriented data was placed in a broader context with various stakeholders, including end-users, facility management and Living Lab management. Subsequently, CfPB developed a framework to translate these experiences into implications for hybrid working strategies. In this chapter we share the lessons of and methodology for a Living Lab. Further details of our methodology and findings are available in [Du Preez et al \(2024\)](#).

C1.4.2 A framework for translating micro-learning

Fuglsang et al. (2021) refer to the outcomes from a Living Lab as “micro-level” learnings. Given the emphasis on user experience in real-world settings, these outcomes are often detailed, diverse, individual-orientated and situation specific. This makes it challenging to apply the micro-level outcomes of a living lab into a broader context, for example into generic academic knowledge or practical insights for practitioners.

In collaboration with LLA-stakeholders, CfPB developed a practical framework to categorize the micro-level learnings. The framework consists of five perspectives:

- 1. Social perspective:** Behavioural norms and agreements regarding the use of the work environment.
- 2. Facilities and services perspective:** Physical components, furniture, and equipment within the workplace, along with services and service packages that influence its use.
- 3. Building and infrastructure perspective:** Building and infrastructure with impact on the work environment.
- 4. Organizational perspective:** Policies and guiding principles for the use of the work environment.
- 5. Monitoring and evaluation aspects of the LLA:** Procedures, methods, and communication related to the research process in the work environment.

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More information about this study can be found here:

<https://www.cfpb.nl/kennis/publicaties/the-hybrid-work-office-exploring-the-changing-knowledge-work-office-in-a-living-lab/>

Table C1.1 Lesson 1: Living Lab increased participation, facilitated meaningful conversations and built trust between various stakeholders. (source CfPB for Campus NL 2024)

C1.4.3 From micro-level learning to broader lessons for hybrid work strategy and facilities

This framework facilitated the structuring of end-user feedback for facility managers and strategic managers, enabling them to accurately respond on these insights and to translate them into strategic implications for other locations. Thanks to the framework, the micro-level learnings from the LLA were categorized and summarized into three broader lessons for hybrid work strategy and facilities. In the corresponding tables you’ll find a few examples of micro-level learnings and the translation into implications for hybrid work strategy and facilities. Key findings of the study of Du Preez et al. (2024) are described below:

C1.4.4 Lesson 1: Living Lab increased participation, facilitated meaningful conversations and built trust between various stakeholders.

The continuous feedback on end-users’ input and minor workplace adjustments created in a living lab, helped build trust with end-users and improved the work environment with minimal effort. The co-creation process was instrumental in gathering support for the behavioural changes needed for hybrid working. Small adjustments in the workplace made by FM as a result of the input from users earned their trust and created a better work environment with minimal effort.

Perspective	Micro-learning	Implications for hybrid work strategy and facilities
<i>Organizational</i>	Setting up a Living Lab for safe experimentation helped the Facility Managers at the LLA to better empathize with the user.	Hybrid working requires some adjustments to facilities, services and social agreements in the office. A Living Lab is an appropriate method to identify and develop these adjustments
<i>Monitoring and evaluation</i>	Co-creation contributed to an engaged user in the LLA.	The method can help developing support for the behaviour changes in hybrid working.

C1.4.5 Lesson 2: hybrid working has not fundamentally altered work processes or activities. LLA demonstrated that the work environment still needs to support both focused and collaborative tasks.

Users still expect to find all facilities necessary to complete all work-related tasks at the office. Users of the LLA noted that the primary function of the office is to facilitate their work; and secondly to meet facilitate meetings with their colleagues. This is in line with academic findings (Colenberg et al., 2022). Consequently, all work-related activities should therefore be facilitated in the office, focused activities as well as collaborative activities.

Perspective	Micro-learning from the LLA	Implications for hybrid work strategy and facilities
<i>Social</i>	For employees working at the LLA, the primary purpose of coming to the office is to perform <i>concentrated work activities</i> .	The primary activities necessary to complete work, i.e. the work process, has not changed due to hybrid working. All work-related activities still take place in the office, although the proportions have changed.
	For employees working at the LLA, the secondary purpose of coming to the office is to <i>work nearby colleagues</i> and to <i>engage in informal meetings</i> .	Facilities that support collegial and teamwork is used very frequently – employees want to work in the vicinity of each other.
<i>Organizational</i>	When a large proportion of the work floor is dedicated to a specific work activity (for instance informal meeting), which does not align with the work processes, it leads to user dissatisfaction.	All work-related activities should be facilitated in appropriate proportions.
<i>Facilities, facility management and services</i>	Activities like “concentrated work” and “informal meeting at the desk” cause friction when they happen in the vicinity of each other.	Hybrid work accentuates the difference between concentrated work (in a quiet area) and interaction with others - also online.

Table C1.2 Lesson 2: hybrid working has not fundamentally altered work processes or activities. LLA demonstrated that the work environment still needs to support both focused and collaborative tasks. (source CfPB for Campus NL 2024)

C1.4.6 Lesson 3: the work environment should be designed to support flexible usage to enhance efficiency.

Due to lower occupancy rates (Mosteiro-Romero et al., 2023), it is recommended for efficiency to make flexible use of the office. The idea of more flexibility in the work environment is not new. However, the LLA exposes several aspects that can be implemented to ensure flexible use of the work environment:

1. Provide diverse typologies of facilities that support hybrid working (for example, phone booths, short-term discussion seats, desks and a variety of meeting spaces).
2. For each typology, provide a standardized option (for example, all 1-person phone booths are the same).
3. Provide enough personal storage space to prevent users from ‘claiming’ specific workplaces.
4. Increase awareness, access and knowledge of available spaces to ensure optimal use.
5. Facilitate methods to discuss office norms and behaviour for office environment use.

Perspective	Micro-learning from the LLA	Implications for hybrid work strategy and facilities
<i>Facilities, facility management and services</i>	Custom options on some desks (such as in-desk wireless chargers / docking stations / screens) created preference patterns in desk-selection.	Diverse desk configurations with custom options constrain flexible use of the office environment.
	Users from the LLA have limited knowledge of facilities available for their use in the building (beyond their own floor).	Lack of awareness of available spaces constrains flexible use of the office building.
	Phone booths in the LLA are frequently used for online meetings.	Facilities to support hybrid work are often used in the workplace.
	Small lockers and lack of coat racks result in occupied workplaces, even when not in use.	Providing personal space (such as small lockers or coat racks) discourages claiming behaviour.
<i>Building aspects</i>	Strict building opening hours in the LLA (7:00 a.m. - 6:00 p.m.) prevent an early start or working late.	Strict opening and closing times constrain flexible use of office buildings.
<i>Social</i>	Social agreements are not the preferred method of addressing problems in the work environment	This could indicate that there is a preference for more formalized ways for addressing problems in the work environment.

C1.4.7 Lessons for other organisations

The strategic implications for hybrid working learned from the LLA can be summarized into four key lessons:

- The exploration of hybrid working through a Living Lab promoted participation, conversation and trust between the end-users, the facility managers and the strategic hybrid working managers.
- Hybrid working has not changed work processes or activities, but it has highlighted the need to support both focused and collaborative tasks in the office.
- To make efficient use of office space with hybrid working, non-territoriality could be supported and promoted through different measures that encourage flexible use of the work environment.
- It is important to note two conflicting needs of hybrid working. Hybrid working leads to lower occupancy in the office and therefore, to ensure efficiency, require non-territorial use of the office. On the other hand, employees primarily come to the office to work in the vicinity of their colleagues, creating a need for belonging and desire for team areas. In practice these two needs – non-territorial use and recognisable team areas (territory) – stand in conflict with one another.

Micro-learning from Living Labs can be effectively translated into broader implications for hybrid working strategies and facilities. In the study of Du Preez et al., (forthcoming) this was achieved through developing a framework in collaboration with the stakeholders from LLA. By applying this framework to categorize micro-learning, general lessons could be defined. These insights are also valuable for other organisations aiming to experiment with hybrid working, particularly those considering small-scale experimentation in a Living Lab setting.

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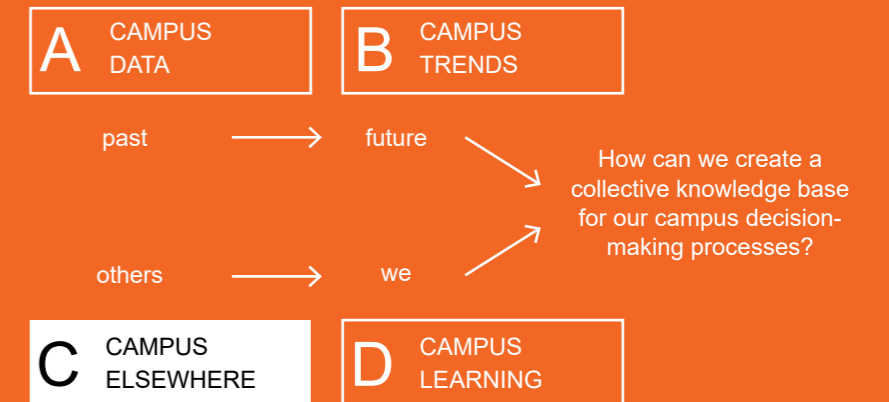
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Campus Vrije Universiteit Amsterdam
(photo VU/Too van Velzen)

Part II - Results 2023/2024

C2 Insights from other sectors



Authors:

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C2 Insights from other sectors

During the year 2023-2024 the Campus NL team gathered media items about the campus of the future in general or hybrid working specifically. Campus news can be found through our Flipboard Campus NL. Besides that, team members also browsed other media for hybrid working items. With more focus, the Dutch national government policy on hybrid working was studied. Additionally, this chapter also includes results from a relevant Master thesis by Sanjana John: “Reconfiguring workspace configurations for a sustainable future” (2024).

C2.1 Hybrid working news from the media

To provide references of hybrid working strategies, the Campus NL team frequently browsed the media for relevant items. Below, the selection of foreign media reports on ‘hybrid working’ also shows the ambivalence between back-to-office strategies and strategies “embracing autonomy”.

Office culture’ as we know it is dead. Workers have other ideas
<https://www.bbc.com/worklife/article/20240229-office-culture-is-dead>

Working from home: NI Civil Service to cut office estate by 40%
<https://www.bbc.com/news/uk-northern-ireland-68358234>

Remote work isn’t killing business travel – it’s transforming it
<https://www.bbc.com/worklife/article/20240103-remote-work-business-travel>

How empty office space became the new bogeyman on Wall Street
<https://edition.cnn.com/2024/02/09/business/commercial-real-estate-banks/index.html>

Opinion: The absurdity of the return-to-office movement
<https://edition.cnn.com/2024/01/22/opinions/remote-work-jobs-bergen/index.html>

And yet, some corporate titans are still pushing for their employees to return to their offices. Banks like Goldman Sachs and JPMorgan Chase and tech giants like Meta are demanding that their staff be back at the office several days a week.

JPMorgan ends remote work for senior bankers
<https://edition.cnn.com/2023/04/12/business/jpmorgan-return-to-office-five-days/index.html>

Goldman Is Cracking Down on Employees That Aren’t in Office Five Days a Week
<https://www.bloomberg.com/news/articles/2023-08-22/goldman-sachs-pressures-staff-to-return-to-office-5-days-a-week>

Meta asks office workers to return to in-person work
<https://edition.cnn.com/2023/06/01/business/meta-return-to-office/index.html>

Here’s how companies are getting people back to the office
<https://www.thepost.co.nz/business/350133686/heres-how-companies-are-getting-people-back-office>

‘Never again’: is Britain finally ready to return to the office?
<https://www.theguardian.com/business/2023/aug/12/never-again-is-britain-finally-ready-to-return-to-the-office>

Forcing workers back to the office may be backfiring: Flexible workplaces are hiring talent twice as fast as those requiring full-time attendance
<https://fortune.com/2023/08/07/forcing-workers-return-to-office-backfiring-flexible-workplaces-hiring-talent-twice-fast-full-time-attendance/>

Hybrid And Remote Work And The Decline Of Serendipity In The Workplace
<https://www.forbes.com/sites/joemckendrick/2022/11/18/hybrid-and-remote-work-and-the-decline-of-serendipity-in-the-workplace/?sh=43040bc26b95>

Serendipity Lost, Serendipity Gained? Virtual Work Actually Spurs More Innovation
<https://www.forbes.com/sites/joemckendrick/2021/12/31/serendipity-lost-serendipity-gained-virtual-work-actually-spurs-more-innovation/?sh=5df0a83b7c4c>

The Campus NL team also browsed media closer to home. As already covered in another chapter by the Center for People & Buildings (also see cfpb.nl), there are also many developments in Dutch organisations towards working from home a substantial amount of time. The following links refer to Dutch media, also highlighting both the positive and negative side effects of hybrid working.

Rising of vacancy due to hybrid working
<https://nltimes.nl/2024/03/01/office-vacancy-rising-due-hybrid-working>

Thuiswerkbedrijf Zoom haalt eigen personeel terug naar kantoor
<https://nos.nl/artikel/2485871-thuiswerkbedrijf-zoom-haalt-eigen-personeel-terug-naar-kantoor>

Nederland kampioen thuiswerken: goede ontwikkeling? (Uit de data van het CBS)
<https://www.nporadio1.nl/fragmenten/dit-is-de-dag/e574f44f-2bf3-4c61-99bf-e549bad4d0ed/2024-03-18-nederland-kampioen-thuiswerken-goede-ontwikkeling>

Rijksambtenaren hoeven niet meer naar Den Haag: werken kan vanaf nu bij de rijkshub Assen
<https://www.rtvddrenthe.nl/nieuws/16120096/rijksambtenaren-hoeven-niet-meer-naar-den-haag-werken-kan-vanaf-nu-bij-de-rijkshub-assen>

Hybride werken wordt norm voor rijksambtenaren
<https://www.binnenlandsbestuur.nl/digitaal/rijksoverheid-wil-met-40-procent-minder-gebouwen-af-kunnen>

“In 2027 werken we vanzelfsprekend hybride samen” (Rijksoverheid)
<https://watwerktvooronsrijk.nl/onze-visie-voor-2027/>

Media reports confirm the contradictory strategies for the future of offices. Some reports show that various (and often private) organizations are seeking solutions – “carrots and sticks” – to get employees back to the office. Other reports, however, highlight the opposite: some (and often public) organizations aim to offer (future) employees more autonomy and attract or retain them with favorable working conditions to combine work and personal life, even allowing them to live further from the traditional workplace.

C2.2 Hybrid working policies at the Dutch Government Real Estate Agency

As a very relevant reference, the Campus NL team closely follows the hybrid working policy of the Dutch government. For this purpose, they browsed the website of “Rijksvastgoedbedrijf”, which is responsible for all government buildings in the Netherlands (in total millions of square meters):

“The Central Government Real Estate Agency maintains and manages real estate like buildings, nature areas and agricultural land. Our agency is part of the Ministry of the Interior and Kingdom Relations (BZK) and is the biggest real estate organisation in the Netherlands, which includes the Caribbean Netherlands.” (rijksvastgoedbedrijf.nl)

Notably, reports on ‘hybrid working policy’ at the central government may be for inspiration from Dutch universities and Campus NL (translated from source: https://watwerktvooronsrijk.nl/onze-visie-voor-2027). With a €60 million investment in software for hybrid working, the central government strives for fewer buildings. By 2027, it is common for civil servants to work hybrid if possible. The majority of civil servants works about 50% of the time at home and 50% in the office or elsewhere.” Additional figures (from the same source): 75% of employees want to go to the office for a maximum of 50% of working hours, 90% feel skilled in hybrid working and the (current) utilisation rate is of offices is between 20% and 45%. The central government wants to be and remain visible in society.

Therefore, lively and attractive offices will continue to be open in 2027, where colleagues, citizens and organisations meet in person or hybrid. A national network of accessible government hubs will be created. Offices, but also special buildings such as courts, prisons and laboratories, are increasingly equipped for hybrid working. By 2027, there will be a national network of government hubs with “rijksontmoetingspleinen”: market squares as places to meet colleagues. So, civil servants can meet close to home or at any other convenient place in the country. Right now, a number of those “rijksontmoetingspleinen” have already opened. With a “government pass”, civil servants can enter (more and more) places and get easy access via an app. In 2027, they will also be able to use an app with all information about the government offices and to reserve a workplace.

Summarizing, the following conclusions that are very relevant as a reference for Campus NL and other universities:

- **The Dutch government expressed hope in mid-2023 to eventually need fewer buildings due to hybrid working.** While other media reports mention possible reductions of 20% to 40%, the Ministry of the Interior and Kingdom Relations (BZK) indicates that the use of their offices has (permanently) changed after the pandemic, lockdowns, and the rise of hybrid working.
- **At the Dutch government, the largest employer in the Netherlands, hybrid working is becoming the standard.** This is outlined in their vision for the future of work. Hybrid working is defined by the government as a way of working where employees have the flexibility to make conscious choices about how, when, with whom, and where they collaborate.
- **In the Dutch government’s vision for 2027, alongside home offices, a nationwide network of government hubs and government meeting spaces is mentioned.** This will allow civil servants to gather near their homes or at other convenient locations across the country. As of 2024, several government meeting spaces have already been opened. By 2027, it is planned to have an app with all the information about government offices and reserving a workspace (source: https://watwerktvooronsrijk.nl/onze-visie-voor-2027/).



More information regarding the study by Sanjana John to be found here:

<https://repository.tudelft.nl/record/uuid:a958c210-edf8-4655-9dcd-08f0e2e825ae>

C2.3 Energy consumption in times of hybrid work

All the results and conclusions in this paragraph are derived or cited from Sanjana M. John's Master thesis “Reconfiguring workspace configurations for a sustainable future”, 2024 (see weblink at the end of this section). Campus NL team member Chiara Pelosi also paraphrased some of the conclusions for the purpose of this research.

In 2024, Sanjana John, MSc student in Management in the Built Environment (MBE) at the Faculty of Architecture at TU Delft, studied the impact of hybrid working on energy consumption in workspace environments for her Master’s thesis. Her research utilized data from a literature review, synthetic data simulations, and actual occupancy and energy data from two case studies.

Key findings from her case study of the ING Bank offices include:

- As of 2023, over 77% of ING employees work hybrid schedules, spending one to four days in the office (ING, 2023). A significant challenge for ING over the past two years has been aligning their real estate portfolio with employee demand, as highlighted by Peter Mostien (VergeSense, 2023).
- Daily occupancy trends show a nearly uniform presence from 9:00 AM to 3:00 PM, with peaks between 10:00-11:00 AM and 2:00-3:00 PM.
- Over a 10-month period, the average occupancy was 30%, with a peak of 63%, leaving a substantial portion of space unused.
- Despite the flexibility of hybrid working, consistent occupancy trends were observed, with hourly peaks between 10:00 AM-12:00 PM and 2:00-3:00 PM, and weekly peaks on Tuesdays and Thursdays. Fridays consistently had the lowest attendance.

Additional findings from the study of Building 28 at TU Delft include:

- Pre-pandemic data from 2018 showed an annual energy demand of 73 kWh/m², with no lockdown restrictions and minimal hybrid working. In recent years, hybrid policies have significantly reduced energy usage, with a decrease of 23 kWh/m² in Building 28 compared to pre-pandemic levels.

Main conclusions applicable to Campus NL:

- **Commute Time Savings:** A significant benefit of working from home (WFH) is the reduction in commute time, averaging 68 minutes per week per worker, which equates to 2.8% of a 40-hour workweek (Barrero et al., 2023).
- **Occupancy Levels and Energy Usage:** Over the past ten months, average occupancy levels for ING Belgium have been around 30%, with a peak of approximately 60%, leaving a considerable amount of space unoccupied. Without synchronized energy usage, this could result in 70% of the space being heated, cooled, and lit unnecessarily. Open-plan workspaces and dynamic occupancy patterns complicate isolating energy demands to occupied areas, potentially overstating the energy benefits of hybrid working unless there is a significant reduction in occupied space.
- **Rebound Effect:** There is a rebound effect to consider, as noted by Pérez et al. (2005). Reduced office occupancy can lead to increased energy use at home. Synthetic simulations confirm that households with fewer occupants bear the largest burden. While the increase at an individual level is not exponential, the collective impact across the hybrid workforce could be substantial, disproportionately affecting economically and socially disadvantaged groups.

- Mobility and Environmental Impact: The energy footprint of a hybrid worker is also influenced by mobility. Hybrid working can reduce car use, but employees may choose to live further from the office due to less frequent commutes, potentially increasing private transport use. Studies indicate this could shift transportation modes to private cars, biking, micromobility, and walking (Christidis et al., 2021). These changes affect urban geographies, leading to increased suburbanization. While hybrid working could improve job accessibility through workforce dispersion, benefits are more significant with robust public transport. Without adequate infrastructure, reduced commutes may not lead to energy savings.
- Inequities in Hybrid Working: Hybrid working trends reveal inequities. Employees in smaller households bear the largest burden, highlighting financial and social disparities. Marginalized groups are less likely to benefit from these trends.
- Evidence-Based Analysis: Tagliaro & Migliore (2022) advocate for evidence-based analysis to profile workers' requirements, noting differences across gender and age groups regarding the impacts of remote working.
- Distributed Campus Model: Future academic campuses should adopt a distributed campus model, incorporating private and public spaces as university facilities, as suggested by Migliore et al. (2022). This model benefits modern workspaces by integrating satellite offices and co-working spaces, minimizing energy excesses, supporting remote workers, and fostering organizational culture. This approach addresses additional demand rather than replacing existing structures.
- Rethinking Workspaces: Hybrid environments blend physical and virtual workspaces. Real estate leaders have an opportunity to rethink organizational roles, operational structures, financial models, and environments due to shifts in working trends and workforce distribution. Emphasizing diversity, adaptability, and flexibility over uniformity at neighborhood, building, and floor levels can help cities thrive (Den Heijer, 2021).

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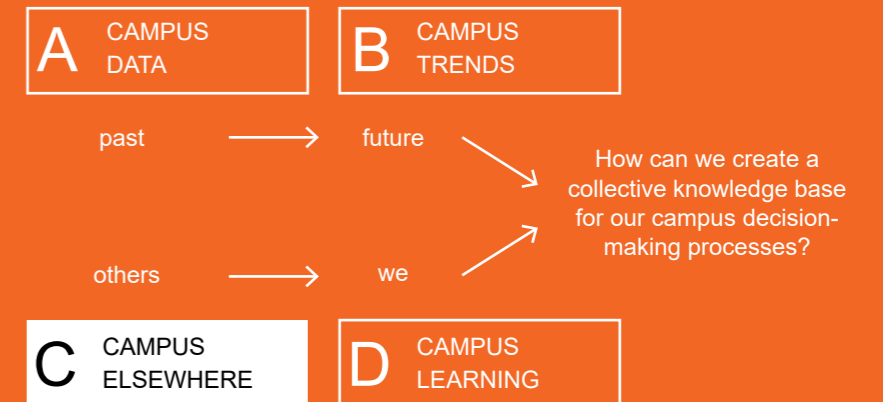
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University of Oxford
(photo Unsplash/Sidharth Bhatia)

Part II - Results 2023/2024

C3 Lessons learned from international knowledge exchange models



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Jasmine Bacani, Monique Arkesteijn & Alexandra den Heijer

C3.1 Introduction

On university campuses today, influenced by large-scale trends and challenges, knowledge exchange is important because universities pursue similar goals and can solve common challenges with each other’s help. In addition, “learning from each other” and “data collection for knowledge generation” fit the education and research functions of the institutions. As university campuses face similar challenges in different locations, knowledge exchange enables campus managers to draw on shared experiences and best practices, promoting cooperation and innovation between universities.

Knowledge is information that has been processed, understood and integrated into an individual’s mental framework. It serves as a vital resource for making informed decisions and solving complex problems. Nonaka & Takeuchi (1985) distinguished two fundamental types of knowledge: tacit and explicit knowledge. **Tacit knowledge** includes intangible insights such as personal wisdom, know-how and experiences, while **explicit knowledge** can be documented and transmitted through formal channels such as data, manuals and guidelines. Sharing tacit knowledge is more challenging because it involves embedded understanding that is difficult to articulate and convey to others, while explicit knowledge is more easily transferable because of its codified nature (Argote & Fahrenkopf, 2016).

Knowledge exchange is the dynamic process of transferring knowledge between organisations through the interactive involvement of individuals and groups (Institute for Health & Work, 2012). Tacit and explicit knowledge exchange use different methods, with tacit knowledge directly requiring face-to-face or distant interaction and explicit knowledge requiring platforms for data exchange and understanding.

In this report, we study the exchange of knowledge within (other) European campus/ university networks through a preliminary desk analysis. A distinction is made between **campus networks** which focus on the management of campus real estate and properties, and **university networks** which manage a broad spectrum of university activities including education, research, and campus management. In her dissertation on ‘Managing the University Campus’, den Heijer (2011) provides an overview of numerous international networks of campus managers or university associations, which ensure the dissemination of information on trends and strategies to policymakers and campus managers.



Of these networks, AUDE in the UK, HIS in Germany, SYK in Finland and Akademiska HUS in Sweden (Figure C3.1) were selected as potential best practices for the Netherlands because of their well-established and developed models of knowledge exchange that provide valuable insights for UNL and Dutch campus managers.

This report summarises the history, organisational structure and knowledge exchange services offered by these foreign networks, drawing comparisons between them and with the Dutch context. Through the analysis of these networks, valuable lessons are learned, taking into account the results of the Campus NL baseline measurement which showed that facilitation and platforms for knowledge exchange between universities could be enhanced. More information on the organisations can be found via their respective websites (see hyperlinks underlined).

C3.2 Universities of the Netherlands (UNL)

Universities of The Netherlands }

Figure C3.2: UNL logo (source: https://factcards.nl/decks/dutch-research-universities/unl/) (UNL, n.d.)

To serve as a lens to analyse knowledge exchange in campus/university networks abroad, knowledge exchange in [Universities of the Netherlands \(UNL\)](#) was analysed. UNL is a university network which supports the 14 universities in the Netherlands. The results of the preliminary desk research (i.e. findings from the UNL webpage) found that the organisation is responsible for spending (public) funds and providing broad insights into the university sector. Its main roles are to make figures and data on the university sector available and bridging universities to support education and research, by:

- Providing a platform for knowledge exchange
 - UNL organises a conference where staff from all universities come together and participate in consultations on various topics
 - Figures, data, updates and news are published on UNL’s website to keep members informed
- Lobbying towards national politics
 - UNL lobbies in the House of Representatives, in ministries, and in Brussels. This role includes activities such as seeking collaborations, negotiating with policymakers, publishing information on the sector and positions, and issuing press releases and lobbying.
- Fulfilling the employer role
 - UNL announces good governance code and social safety statement

The UNL office consists of three steering committees that meet five times a year. These are the Education & Research Steering Group (Stuurgroep Onderwijs & Onderzoek (SOO) in Dutch), the Business and Finance Steering Group (Stuurgroep Bedrijfsvoering en Financiën (SBF) in Dutch), and the Strategy, Public Affairs & Governance and Valorisation Steering Group (Strategie, Public Affairs & Governance en Valorisatie (SSPG) in Dutch), in which the 14 members from each university are represented. Each steering committee has a chair and vice-chair who make up the UNL Board, which meets 10 times a year and receives advice from the steering committees.

UNL also coordinates and participates in official working groups where colleagues from different universities jointly exchange knowledge to strengthen the university sector. These official networks focus on teaching and research, internationalisation, student affairs, strategy, finance and HR.

Furthermore, among others, UNL is also part of the [European University Association](#) (EUA), an organisation representing over 850 universities and umbrella associations which plays a crucial role in influencing EU policy on higher education, research, and innovation. As a member of the EUA, UNL takes active participation in a forum for exchange of ideas and good practice among universities.

Despite the role that UNL already plays in supporting and bringing Dutch universities together, knowledge exchange on campus management specifically can still be strengthened. Focusing on this topic, the HOI and DFB networks were established as bottom-up networks (i.e. collaborative networks originating from campus/facilities management directors rather than imposed by the university institution) to discuss emerging opportunities and challenges in university campuses.

Following on from Campus NL 2016, Campus NL 2023- 2027 aims to explore opportunities for knowledge collection and knowledge exchange in close cooperation with UNL, HOI, DFB, and other inter-university networks already facilitated by UNL.



Figure C3.3: EUA logo (source: https://www.tudelft.nl/en/about-tu-delft/strategy/cooperation-of-universities/european-university-association) (EUA, n.d.)

C3.3 AUDE, United Kingdom (UK)

The [Association of University Directors of Estates](#) (AUDE) is a campus network/organisation that works with property and facilities management professionals from UK universities, and increasingly from overseas universities. There are currently more than 2,800 members from more than 200 higher education institutions (HEI). Membership is offered to universities at a tiered pricing structure based on turnover, meaning that universities with higher turnover at AUDE pay lower prices. Rates vary for non-university organisations.

AUDE provides support on relevant issues by facilitating conversations and developing intellectual capital through discussions and networking among members, industry, government and the wider community.

C3.3.1 History of AUDE

After World War II, a national strategy was implemented to massively increase the number of students in the UK. To oversee this expansion, specialised development managers and construction officers became important roles in senior management. This expansion also had financial implications. Sector expansion was granted by the University Grants Committee (UGC) and the Universities Funding Council (UFC).

After this time, it became government policy to drastically reduce the number of students, creating a surplus of university buildings. During this period, meetings between building officials were common, but no official network was established. At a regional meeting, initial ideas emerged for an association of building officials with a national executive committee and president. The ideas for an association were then approved at the next annual conference. Universities focused on long-term plans for (campus) development, as well as management and maintenance. The term ‘Directors of Estates’ emerged, as the term ‘building officers’ no longer reflected the activities involved.

In the 1990s, Polytechnics were integrated into the university sector, leading to the need for new “funding councils” to seek professional contacts across all professional services. In response, AUDE was formed as an association. Today, AUDE is incorporated into Professional Higher Education Services (PHES), an umbrella organisation of seven different HEI Special Interest Organisations (SIO) wholly owned by universities. AUDE is a non-profit organisation funded mainly by membership fees in addition to commercial partners, sponsorship and exhibition opportunities. All universities in the UK are autonomous and legally independent of the state, but are still regulated by the government.

C3.3.2 Organisational structure of AUDE

AUDE consists of 10 geographical areas in the UK and Republic of Ireland: London, South-West, East Midlands, Scotland, North, North-West, West Midlands, Ireland, Wales, and South-East (Figure C3.5). Each region has its own chair, made up of campus directors who sit on AUDE’s executive committee and represent the needs of members within their region.



- London
- South-West
- East Midlands
- Scotland
- North
- North-West
- West Midlands
- Ireland
- Wales
- South-East

Figure C3.5: AUDE member universities per region (source: <https://www.aude.ac.uk/the-aude-network/he-map/>) (AUDE, n.d.)



Figure C3.4: AUDE logo (source: <https://www.aude.ac.uk/>) (AUDE, n.d.)

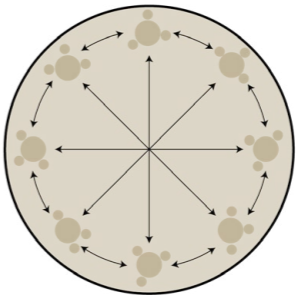


Figure C3.6: AUDE organisational structure conceptual diagram (Campus NL, 2024)

AUDE does not have a traditional board of directors, but instead has an executive group and chairs of regional and special interest groups. AUDE’s executive group forms the organisation’s steering committee. It consists of university representatives - Campus Directors - who perform expert and advisory functions for the organisation. The executive group meets four times a year and organises an annual conference. Regional chairs organise local networking meetings for all directors in their region. Because there is no board of directors and university representatives act as regional or special interest group chairs, knowledge is exchanged directly between universities rather than through the organisation (Figure C3.6).

C3.3.3 Services offered at AUDE

A key goal of AUDE is to provide opportunities for members to develop their knowledge and skills. To facilitate this, professional development is central to its activities. These include events, coaching, work shadowing, e-learning, webinars, the Development Fund and the Professional Development Group.

C3.3.3.1 Events

AUDE organises larger events four times a year: the Annual Conference (Figure C3.7), the Big Conversation, the Summer school and the AUDE Awards. These events allow members to meet and learn from each other, as well as collectively gain new skills. Unlike the annual conference, the Summer school and the AUDE Awards, the Big Conversation is a more intimate event, where up to 100 people have the opportunity for plenty of networking.

Events can be in person or online via webinars. They are both organised by the organisation, with several events each week on different topics. Members can find their area of interest and register for an event online. The Special Interest Groups are categorised by capital, property management, professional development, institution size, space management, strategic facilities management and sustainability. The events cover these topics but are not limited to them and include topics ranging from wellbeing and mental health to productivity and wider economic impact.



Figure C3.7: AUDE conference (source: <https://www.aude.ac.uk/professional-development/e-learning/>) (AUDE, n.d.)

C3.3.3.2 Coaching

The coaching programme provides an opportunity for career development through workplace learning. Property and facilities management professionals in the UK and Republic of Ireland can volunteer their time to help another member or sign up as a coach/supporter. This can take place either in person or virtually via:

- Short intensive periods of 1:1 contact, ideally outside the participants’ workplace
- A series of meetings, usually every 4-6 weeks
- A personalised development activity
- A confidential environment in which issues can be explored
- Using real work problems as learning materials

C3.3.3.3 Work shadowing

Work shadowing aims to support and improve succession planning within the sector (i.e. taking on the role of a leaving employee). It involves a participant receiving a host. This depends on the availability of hosts who volunteer their time to shadow a participant. Different types of work shadowing include:

- Observation - “fly on the wall” involves continuous observations of what the host does on a daily basis
- Regular briefings - “burst interactions” are passive observations of the host for specific activities preceded by a mini-briefing and a follow-up debriefing.
- Hands-on - “job sharing” is an extension of the observation model where participants perform some observed tasks.

C3.3.3.4 E-learning

AUDE offers an e-learning platform with a range of free courses for members. These courses are a selection of procurement and finance courses, more of which will be developed over time.

C3.3.3.5 Development Fund

The Development Fund aims to allocate resources to AUDE members and member-led projects for ongoing professional development. The funds can be used to support activities such as participation in AUDE events/courses, external events and international conferences. Members can complete an application form online no later than 4 months prior to the event. A maximum of £4,000 can be allocated per application.

C3.3.3.6 Professional Development Group

This is a subgroup within AUDE for higher education professionals who want to develop programmes based on: knowledge sharing, staffing/skills development, identification of opportunities and commitment to continuous development.

C3.3.3.7 News and blogs

AUDE has an extensive and regularly updated news and blog space where newsletters, blogs, videos, media, publications (Figure C3.8) and reports are added and archived. In this context, publications and reports from events provide a summary of key learning points for members who could not attend. There is also an annual Estates Management Report (EMR), which is the most valued document for members to inform their long-term strategic decision-making for property management.

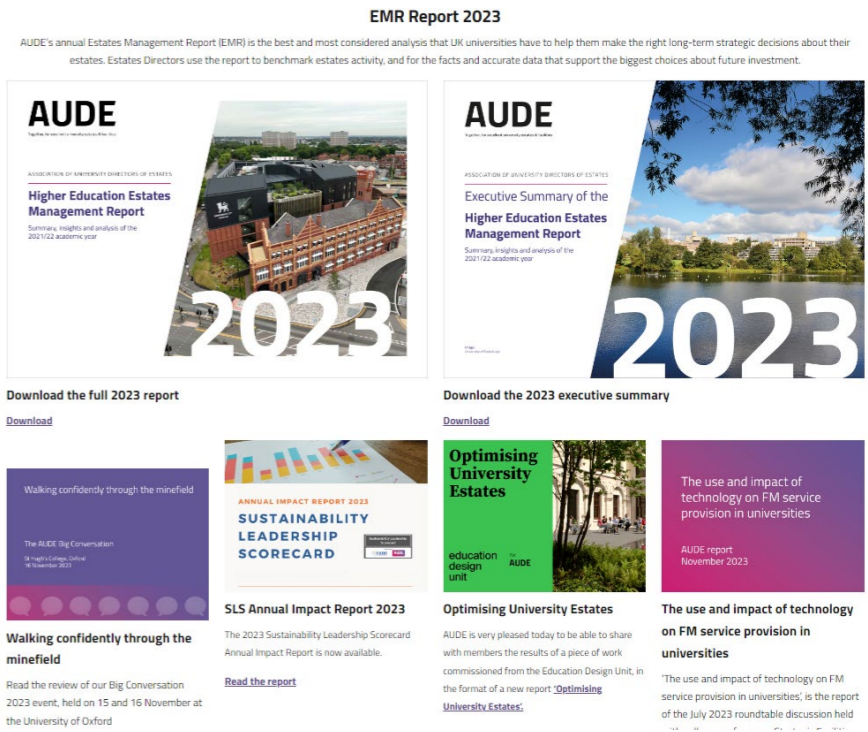


Figure C3.8: AUDE publications (source: <https://www.aude.ac.uk/news-and-blogs/publications/>) (AUDE, n.d.)

C3.3.3.8 Knowledge hub

The Knowledge Hub consists of pages and special tools for members of each of the SIOs. Here, for example, a Sustainability Leadership Scorecard was created to build a picture of an institution’s sustainability performance. There are also special toolkits and templates to reduce the time needed for decision-making.

C3.3.4 Comparison with the Netherlands

While both organisations aim to bring universities together to exchange knowledge, AUDE is specifically focused on campus management, while UNL covers a wide range of activities for universities including education and research. AUDE’s focus on connecting and supporting property and facilities management professionals in the UK is more similar to HOI and DFB networks in the Netherlands, but with a much larger and systematic organisational structure, as well as more members and services to connect workers from different universities.

In the Netherlands, real estate and facilities management professionals are part of many networks focusing on various topics related to campus management. This is similar to AUDE’s special interest groups. However, many of these Dutch networks are initiated from the bottom up and are not organised into one network where employees can easily connect with counterparts or other relevant employees from other universities.

UNL and Dutch universities can learn from the extensive list of professional development activities carried out by AUDE. Creating an organisational structure for the existing networks in the Netherlands that is able to manage knowledge exchange through direct exchanges such as events, coaching, work shadowing and e-learning can improve collaboration (and learning for informed decision-making).

C3.4 HIS, Germany

Hochschul-Informationen-System (HIS eG, henceforth referred to as HIS) has supported German universities as a software company for more than 50 years. As a successful university network and cooperative model, cooperation between HIS and the universities was expanded by staffing the bodies and committees with representatives from the universities. The organisation now comprises 300 employees with members from more than 300 universities. HIS software supports institutions with a total of more than 2 million students.

HIS provides solutions for all areas of the university. This includes University Enterprise Resource Planning (ERP), HISinOne campus, HISinOne research, business intelligence, and HIS software-as-a-service.

C3.4.1 History of HIS

HIS GmbH was founded by the Volkswagenwerk Foundation in 1969. In 1971, the Higher Education Statistics Act came into force and ordered official statistics on university data to be collected for planning purposes and to create a national database. HIS GmbH was developed as an advisory centre for building and resource planning for universities. Federal states and governments took over HIS GmbH in 1976 when it became a public organisation.

By 1982, the data of more than 400,000 students in Germany were managed by HIS systems. With the creation of personal computers in the late 1980s, the need arose to further process data managed by HIS systems, giving HIS the confidence of government and universities. HISQIS was officially introduced as a web-based software in 1999, with data from more than 80% of German students. HISinOne was introduced in 2006 as a web-based fully integrated system that bundles all HIS competences into one software. It was also integrated into universities as a campus management system in 2009. Focusing on their software, HIS GmbH made the transition to a new state-cooperative model in 2014 - HIS eG. As a state-run non-profit university cooperative where members can actively participate in its strategy and developments, all committees in the cooperative are staffed by university representatives. In Germany, public universities are owned (and managed) by the state, while private universities are owned by private organisations.

C3.4.2 Organisational structure of HIS

All members of the cooperative have equal voting rights and take joint decisions at an annual general meeting. Members elect the group of supervisors and advisory groups. The supervisors is the controlling body of HIS eG that appoints the board of directors/executive board and oversees its activities. The advisory group consists of university representatives (Figure C3.10) who advise the board on business and product strategy and development planning, making them an important link between universities and the HIS office. HIS products are developed and made available to universities based on the board's final decisions.

The working areas of HIS eG are divided into 2 directorates: Product Management and

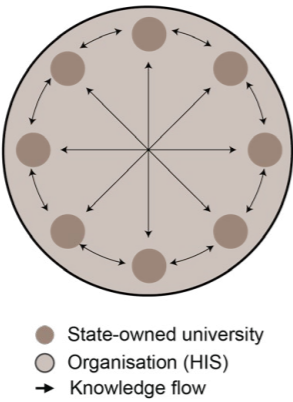
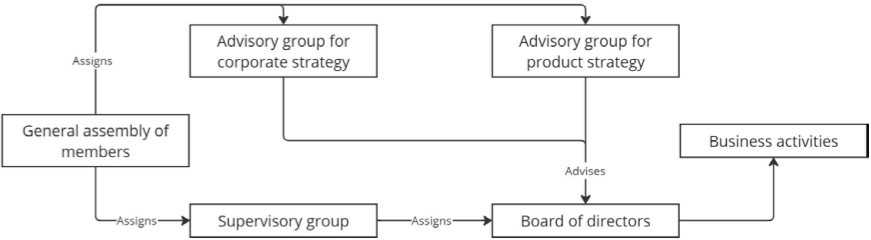


Figure C3.9: HIS logo (source: <https://www.his.de/>) (HIS, n.d.)

Figure C3.12: HIS organisational structure (source: <https://www.his.de/his-eg/genossenschaft>) (HIS, n.d.)

Development on the one hand, and Projects and Commercial Services on the other. There is also a newly created Strategic Development Staff Department, which directly supports the board on strategic issues and is in direct contact with the universities (Figure C3.12).



C3.4.3 Services offered at HIS

HIS eG aims to support members with software, IT services and technical advice for business processes. They develop products and services with the active involvement of university members, enabling a relationship of trust with customers.

C3.4.3.1 General Assembly

The HIS User Conference NUTA (Figure C3.13) is an annual three-day conference where the HIS eG office and university members work together to explore various aspects and opportunities for university and campus management. It is an opportunity for HIS users and HIS experts to exchange ideas intensively and constructively. Numerous workshops and lectures on the various applications of HIS products are held during NUTA.



Figure C3.13: HIS NUTA conference (source: <https://www.his.de/nuta>) (HIS, n.d.)

C3.4.3.2 Events

HIS offers online events through its open-source software 'Big Blue Button'. These events were initially developed in response to Covid pandemic restrictions, but have now grown into a successful format that is an integral part of HIS's services. The events ensure that members are aware of news about software updates and that there are opportunities for members to exchange ideas with other users. Some recurring event themes include:

- Cost and performance accounting
- Experience reports
- Financial management
- Staff management
- GC/QIS

C3.4.3.3 Training

HIS offers training courses for members to learn how to use HIS software. More than 2,000 employees from different university areas attend these courses. The format of the training can be online, on site at the Hanover office, and externally where representatives of the organisation visit a university to deliver the training course. Topics in the training courses include:

- Personal services and directories (HISinOne-PSV) and system infrastructure (HISinOne-SYS)
- Registration and admission (HISinOne APP)
- Student management (HISinOne-STU)
- Business intelligence (HISinOne-BI)
- Exam and course management (HISinOne-EXA)
- Illustration of examination arrangements (HISinOne-EXA)

C3.4.3.4 HISlive

HISlive is a platform to keep up to date with all the news about HIS eG and its products. It includes news articles, publications (Figure C3.14) and reports on events and other developments.

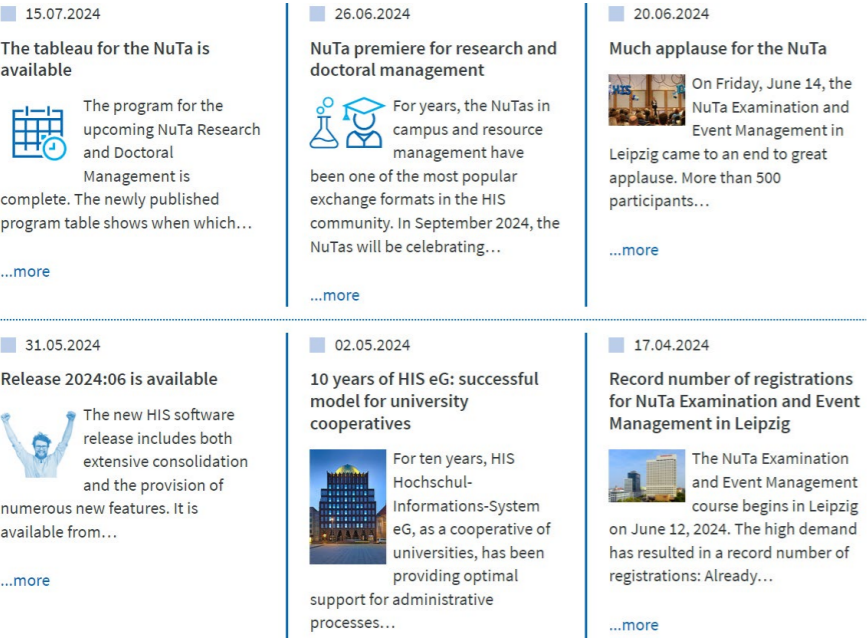


Figure C3.14: HIS publications (source: <https://www.his.de/hislive>) (HIS, n.d.)

C3.4.3.5 Release special

There is a page on the organisation's website where all the major highlights of each year can be found. These highlights are easily accessible summaries of various topics, from campus management to research management, and from financial management to human resources management.

C3.4.3.6 Topic news

Specific topics that affect all universities will have their own pages to keep members informed about regulations and how HIS systems deal with new changes. This provides subject-specific information on:

- Energy law for students
- Student reporting procedure (SMV)
- Online Access Act (OZG)
- DoSV and multiple training
- General Data Protection Regulation (GDPR)

C3.4.3.7 HIS up2date

HIS up2date is the membership magazine of HIS eG. It contains regular reports on events and topics related to the university cooperative. Recently released and archived songs are available for download online.

C3.4.3.8 University ERP

HIS eG maps all university resources into an integrated system. By connecting to HIS systems, universities can benefit from shared data and consistent processes. The university ERP is formed by the financial and HR management modules of HIS. The financial module combines topics such as fund management and financial accounting, procurement and materials management, as well as inventory and asset accounting. The HR module is human resources management precisely tailored to universities.

C3.4.3.9 HISinOne campus

This service maps a university's core processes related to campus and research management, from admission application to graduation. This increases the efficiency and transparency. HISinOne campus (Figure C3.15) provides a variety of tools to manage campus and research by creating a central access point that can be integrated into existing IT interfaces. HISinOne campus tools can also be used to manage documents, provide access to individual results and summary lists, and identify management and directory services in an AVG-compliant manner.

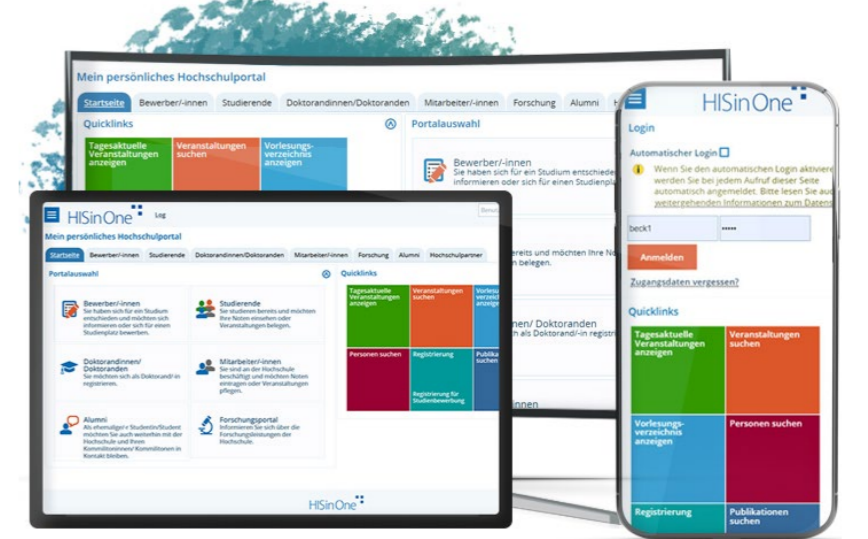


Figure C3.15: HISinOne (source: <https://www.his.de/hisinone>) (HIS, n.d.)

C3.4.3.10 HISinOne research

HISinOne research is used to manage research processes and metadata to add value to administration and scientists. It provides a set of core research data, which facilitates the exchange of information between universities. It also stores information on external funding and funding ads online for decision-making processes. HISinOne research provides tools for successful analysis, communication and integration of research.

C3.4.3.11 HISinOne - Business Intelligence (BI)

This service offers the ability to oversee the entire university. It includes reports, documents, and key figures that can answer questions about a university's status and development - both strategic and operational. With HISinOne - BI, graphical evaluations can be made to provide a quick overview and a solid basis for decision-making.

C3.4.3.12 HIS software-as-a-service (HIS-SaaS)

HIS-SaaS provides cloud solutions to take care of all administrative tasks, from server installation and maintenance to updates and configuration. The aim is to provide universities with the current version of HIS software.

C3.4.4 Comparison with the Netherlands

HIS focuses on bringing universities together on a single platform through digitisation. Its structure and operation is most similar to SURF in the Netherlands. SURF is also a cooperative association of 100 Dutch education and research institutions working together to develop digital services and knowledge exchange. It was founded by the 14 Dutch universities and is now also used by universities of applied sciences, University medical centres, research institutes, and secondary schools.

The members own SURF and are represented by a member council that appoints the board of directors. This board determines SURF's policy and strategy. A Supervisory Board and the Scientific Technical Council (WTR) are also part of the organisational structure with the members of the WTR being appointed by the Members' Council. Each SURF-member institution appoints a Coordinating SURF Contact Person (CSC), and various SIOs are active within SURF.

In the same way that HIS offers training courses and events on the use of their IT applications, SURF academy also offers workshops, master classes, courses, seminars and training on various IT and education/research topics. SURF's main services are identity and access management, procurement and contract management, IT security, network connectivity, educational logistics, data storage and management, publishing and computing power.

Dutch universities can learn from the way German universities manage, store and exchange data and knowledge using HIS applications. Universities can then easily make comparisons and retrieve relevant information from other universities through a central access point where all data is stored, using the way HIS and in the Netherlands also SURF enable the rapid generation of figures and results.



Figure C3.16: SYK logo (source: <https://sykoy.fi/en/home/>) (SYK, n.d.)

C3.5 SYK (Oy), Finland

[Suomen Yliopistokiinteistöt Oy](#) (SYK) is a campus network/organisation owned by 8 universities (also called owner universities) and the Finnish state. These 8 universities include Tampere University, University of Turku, University of Oulu, University of Eastern Finland, University of Jyväskylä, Åbo Akademi University, LUT University and University of Lapland (Figure C3.17). SYK owns and develops higher education campuses used by the owner universities, and also leases real estate to companies and other educational institutions in 10 Finnish university towns apart from the owner universities. In this way, the owner-universities exchange knowledge through SYK as the property manager. The company's real estate portfolio also includes properties in other locations, such as research sites where universities were located, but which are now leased to third parties.

Its main objective is to become a strategic facilities partner of universities by providing them access to affordable spaces needed for their operations, bringing space solutions, providing high-quality customer service, adding value and secure owner benefits. Their campuses have facilities for different users:

- 8 owner universities, including university teacher training schools
- 4 colleges
- 3 primary schools
- 3 welfare services
- 2 private nurseries
- 92 corporate tenants

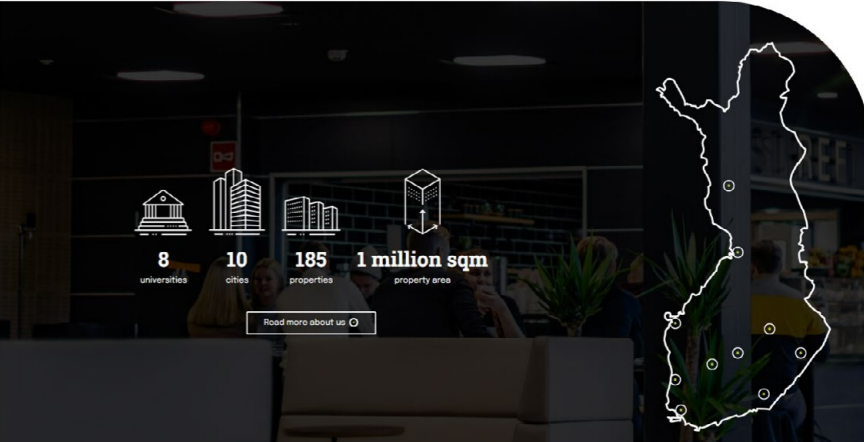


Figure C3.17: SYK location and properties (source: <https://sykoy.fi/en/home/>) (SYK, n.d.)

C3.5.1 History of SYK

SYK was founded in 2009 as part of a nationwide university reform in Finland. This reform aimed to give Finnish universities more financial and administrative autonomy, which led to the transfer of campuses and buildings owned by Senate Properties Ltd and leased by the owner universities. These were transferred to SYK. After the ownership transfer, SYK's business focus shifted to cost-effective space solutions for the owner universities, allowing them to develop their own space use on campuses.

Following changes in the use of space by universities, leases were concluded between SYK and colleges, cities and municipalities, welfare service regions and individual companies. This resulted in multi-user campuses where universities and other users benefit from proximity to each other and where the spaces can support new and different forms of collaboration.

C3.5.2 Organisational structure of SYK

SYK is an organisation with about 40 employees including site-specific campus teams. The core of the organisation consists of a chairman, vice-chairman and board members elected at an annual general meeting. The board consists of a minimum of five and a maximum of seven members who appoint and dismiss the CEO. An executive team is appointed by the CEO to jointly manage business operations and participate in decision-making for the implementation of strategy and risk management (Figure C3.18).

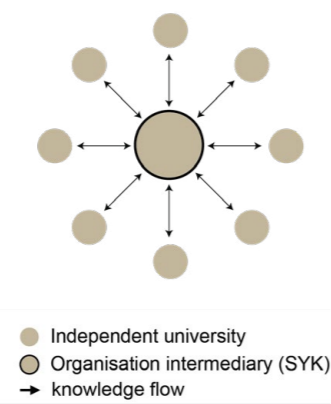


Figure C3.18: SYK organisational structure conceptual diagram (Campus NL, 2024)

The division of roles between SYK and owner-universities stipulates that SYK, as property owner, is responsible for property management. Meanwhile, the universities, as owners and users, are responsible for facilities management. Property management includes ensuring the usability, value development, and preservation of a property; therefore, SYK is responsible for fixed structures, equipment and other systems of the building. On the other hand, facilities management organises the user’s perspective and services. It consists of usability and behaviour management, facility operations management, facility planning, and facility service management. These services often include space planning, furnishing, cleaning, security and restaurant services.

C3.5.3 Services offered at SYK

The aim of SYK’s operations is to be the best campus partner for its own universities and other customers operating in their premises. To this end, they ensure that their premises remain attractive for the activities of universities and other customers through consistent collaboration with stakeholders.

C3.5.3.1 Campus-specific team

To ensure effective collaboration with various stakeholders, SYK’s experts work together from different locations. Day-to-day work is carried out by a site-specific campus team consisting of a customer relationship manager, a technical manager and a development manager. The campus teams also communicate with other actors and stakeholders such as service providers, users of public spaces, visitors, and the media.

C3.5.3.2 Campus “Safety” Day

SYK organises an annual Campus Safety Day to provide participants with insights into how the organisation prepares for and stays abreast of changes at the campus level, emphasising the importance of collaboration, roles and predefined processes. This event addresses exceptional and unprecedented circumstances such as the war in Ukraine and focuses on risk management in general, not just campus safety. The programme consists of lectures and presentations by experts leading to discussions among participants.

C3.5.3.3 DEMO

DEMO is a demonstration of joint R&D activities and pilot operations of small-scale constructions carried out with different faculties within universities or with other parties. These R&D activities are used to explore space solutions and how they affect on-site activities and users’ enthusiasm and comfort - “where prototypes of future spaces

and culture are created”. Universities participate in the assessment of the DEMO and share lessons learned, information and solutions with other universities and SYK. The university may also award research and order studies related to the DEMO project aimed at joint development, joint funding (SYK and the university invest 50% of the total cost) and joint evaluation. DEMO project descriptions can be downloaded in PDF format from SYK’s website.

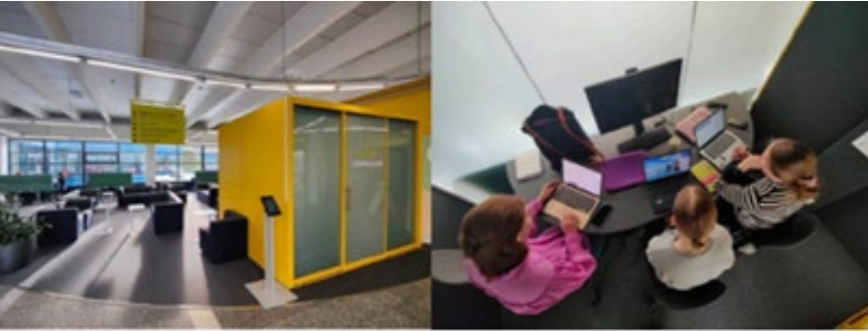


Figure C3.19 DEMO cube formats for hybrid working (source: <https://sykoy.fi/materiaalipankki/>) (SYK, n.d.)

An example of a DEMO project was the result of the ‘hybrid collaboration month’ at the University of Oulu (Figure C3.19), carried out in collaboration between the Faculty of Education and Psychology, Campus Services and the Architecture Unit of the Faculty of Engineering, adapting pre-existing commercial solutions and making use of the know-how accumulated in the university’s ICT services in developing hybrid spaces. In this project, fully scalable cube formats were designed and produced, supporting multi-site teamwork and media production. The cubes are equipped with video and podcast mixers that students and staff can use to create various audio, video or hybrid productions that are also compatible with hybrid lecture rooms and group classes. For private work, the cubes are soundproofed with glass walls that can be dimmed using a smart film. The reservation status of the cubes was monitored in the initial phase from reservation calendars while the user experience and realisation of the intended activities were measured using surveys conducted by students.

Another example is the flexible optimisation of space use on campus, carried out in cooperation with Lappeenranta University of Technology and Indoor Informatics Oy (a private company that tracks property occupancy rates using surveillance cameras). The idea was to use imaging and pattern recognition to determine the average number of users in educational spaces. The system dynamically adjusts reservations and updates changes in reservations for users, such as students and teachers. In this way, the number of users and space reservations can be more optimised and available spaces can be used by others. The DEMO included spatial changes related to camera installations implemented by Indoor Informatics Oy.

C3.5.3.3 Knowledge base

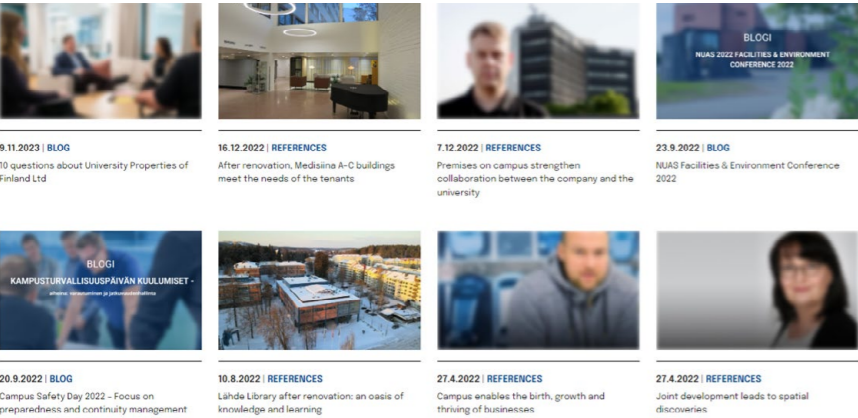
SYK has a comprehensive knowledge base consisting of reports, instructions, project briefings, templates and more that can be downloaded in PDF format. In the organisational context, a knowledge base refers to a centralised repository or database where knowledge or resources are stored, organised and made accessible to users. SYK’s material bank provides a space where information can be gathered to guide strategic operations. The material bank includes:

- Demo library - project descriptions
- Administration materials - policies, reports, guidelines and financial statements
- Publications - R&D publications and brochures

- Construction manuals - BEM project bank instructions, CAD instructions, project cost management instructions, final document handover instructions, construction instructions, design instructions and information management instructions.
- Communications and logos - graphic instructions
- Maintenance manuals - energy management and environmental instructions, KIRJO system, indoor environment instructions

C.3.5.3.4 News and blogs

SYK has a webpage (Figure C3.20) for references, news and blogs that are updated regularly. References are short articles about lessons learned after a project or renovation and general spatial discoveries. News and blogs are short reports on events and conferences, as well as an opportunity for SYK to answer recurring questions raised by members and external organisations.



C3.5.4 Comparison with the Netherlands

Compared to Finland, the Netherlands does not have an organisation that centrally manages university and campus property. Instead, property management is carried out per university in the Netherlands. Since SYK owns the combined properties of eight universities, it is easier to have an overview of different university properties and compare “best practices” to see what would work best for each university. The organisational structure that makes this possible is less relevant to the Netherlands, but may contain lessons for the Netherlands.

Despite the differences between campus management structures in Finland and the Netherlands, UNL and Dutch universities can still learn from the joint R&D activities facilitated by SYK. Through joint development, funding and evaluation between universities for small-scale space solutions, campuses can act as “living labs” to test innovation, and joint projects can be a systematic way to exchange knowledge by bringing together the expertise of different universities.



Figure C3.21: Akademiska HUS logo (source: <https://www.liveinlab.kth.se/en/nyheter/aktuellt/akademiska-hus-satsar-pa-utveckling-och-pa-att-framja-innovationer-1.683028>) (Akademiska HUS, n.d.)

C3.6 Akademiska HUS, Sweden

Akademiska HUS is one of the largest state-owned enterprises in Sweden. As a campus network/organisation, they build, develop and manage environments for education, research and innovation in cooperation with universities and colleges. Currently, about 300,000 people study and work in Akademiska HUS properties.

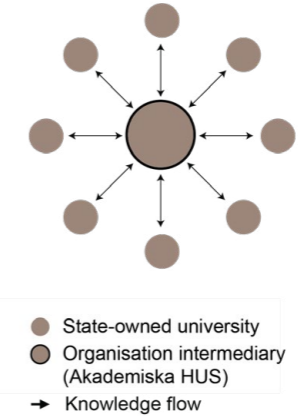
As an organisation, Akademiska HUS focuses primarily on education and research activities and the sustainable long-term development of campuses, conducting operations in a business-like manner and achieving competitive profits. With 51 education centres in 29 Swedish cities, Akademiska HUS has a 60% market share of the total floor space.

C3.6.1 History of Akademiska HUS

In connection with the restructuring of state-run property management in the early 1990s and the Provision Premium Reform in Sweden, it was stipulated that property management should be separated from the use of land and buildings, providing a more accurate picture of costs in the state budget. It was also stipulated that property management should be carried out at a market rate of return and that the Swedish state should have an ownership role. To make this possible, education centres received subsidies from the state to cover rental costs.

Akademiska HUS was founded in 1993, along with other companies such as Vasakronan and the National Property Board of Sweden as a result of the splitting of the National Public Buildings Board into several smaller units. Over the years, the organisation has expanded its portfolio and undertaken several projects to meet the changing needs of the academic community. This includes new construction, renovations and a major focus on sustainable design principles. With their services, they charge rent to universities on market terms. Akademiska HUS now manages more than 3.4 million square metres of rentable space, consisting of teaching spaces (45%), laboratories (35%) and other spaces (20%).

C3.6.2 Organisational structure of Akademiska HUS



Akademiska HUS bases its governance on the Swedish law. At their Annual General Meeting, shareholders elect the chairman of the board of directors, the board of directors and the auditors. The board of directors consists of a minimum of 3 and a maximum of 10 members without alternates and appoints a CEO and the members of the audit and finance committee, the remuneration committee and the investment committee (Figure C3.22). The CEO manages the company's 3 main units: the project unit, the real estate unit and the technology and services unit. These 3 units work with university tenants to manage their properties and create creative environments (Figure C3.23).

The organisation brings together research, business and entrepreneurship by creating active meeting points for people and ideas. They also work with municipalities to ensure needs are met close to campus, such as with student accommodation. Collaboration with municipalities enables the organisation to coordinate internal and external infrastructures in the form of cycle paths, parking facilities and other service facilities.

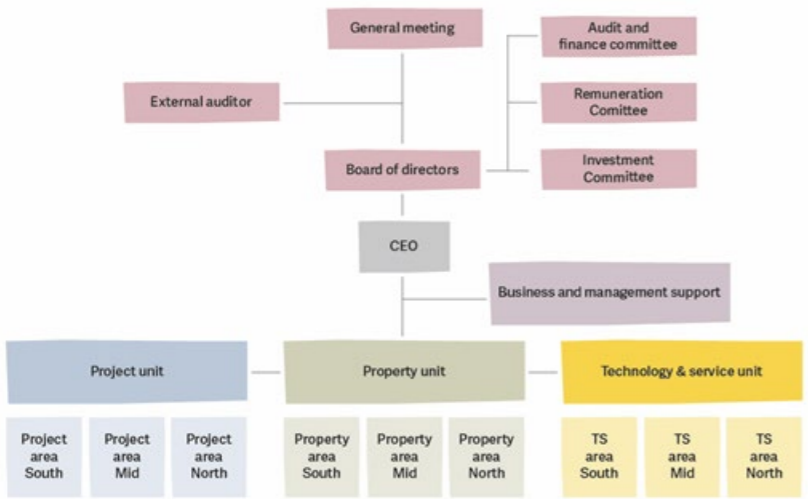


Figure C3.23: Akademiska HUS organisational structure (source: <https://www.akademiskahus.se/en/about-us/CorporateGovernance/>) (Akademiska HUS, n.d.)

C3.6.3 Services offered at Akademiska HUS

Akademiska HUS is committed to high-quality property management with a focus on resource efficiency and sustainability. This includes all technical and financial operations that are carried out over the lifetime of a building. Apart from this, the organisation also has initiatives that facilitate knowledge exchange between client universities.

C3.6.3.1 Mitt Campus app

This free app (Figure C3.24) is designed to easily find information about the campus and buildings where a person is located. This includes maps, contact details, news, and ongoing breakdowns. The Mitt Campus app is complemented by pages on akademiskahus.se to allow people to easily search, find and store contact details for each campus and building, making it easy to ask questions or report outages. Using the app, maintenance requests can be made and tracked in real-time.



Figure C3.24: Mitt campus app (source: <https://www.akademiskahus.se/vara-kunskapsmiljoer/forvaltning/mitt-campus/>)

C3.6.3.2 Social media

Akademiska HUS has an active Instagram feed with the latest posts and updates on property construction, renovation and management, as well as events, lectures and conferences in which employees participate. Updates on agreements between Akademiska HUS and universities are also posted on their social media channels.

C3.6.3.3 Newsroom

Besides collecting the latest news about the organisation's properties, the newsroom also archives the reports Akademiska HUS publishes for their client universities and other stakeholders. This includes interim, annual, and sustainability reports. Any changes in the organisational structure of Akademiska HUS are also announced via the newsroom. To facilitate searching, news items can be filtered by topics (such as architecture, collaboration, energy, finance, student housing, etc.) and university campus.

C3.6.3.4 Press room

Mynewsdesk.com collects all Swedish press releases and related materials such as documents, publications (Figure C3.25), reports, illustrations and photos created by Akademiska HUS. This press room is managed by a press manager and communications director. Experts at Akademiska HUS can also be contacted via the press room to answer questions.

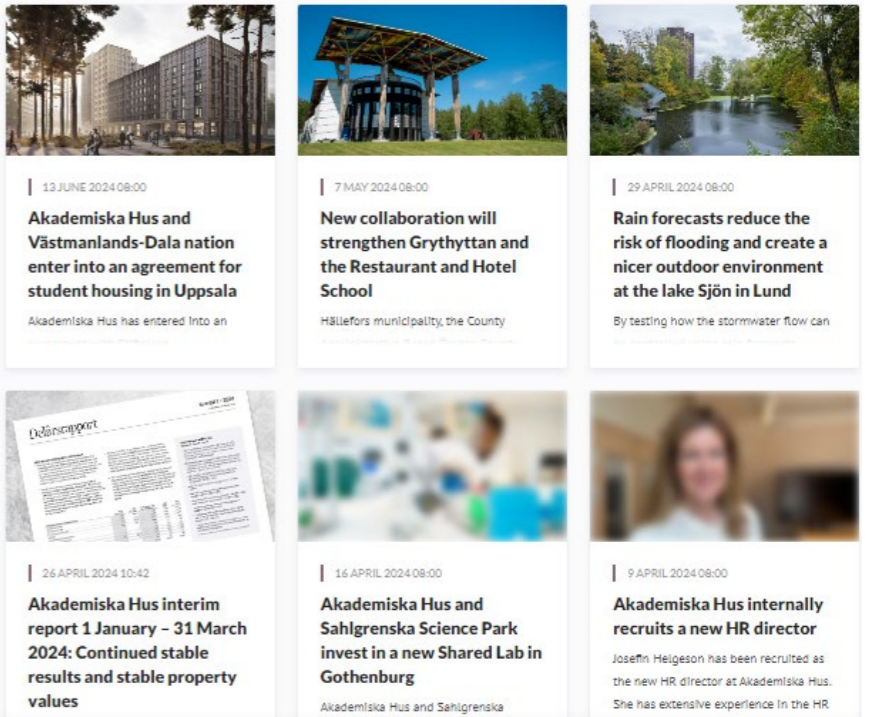
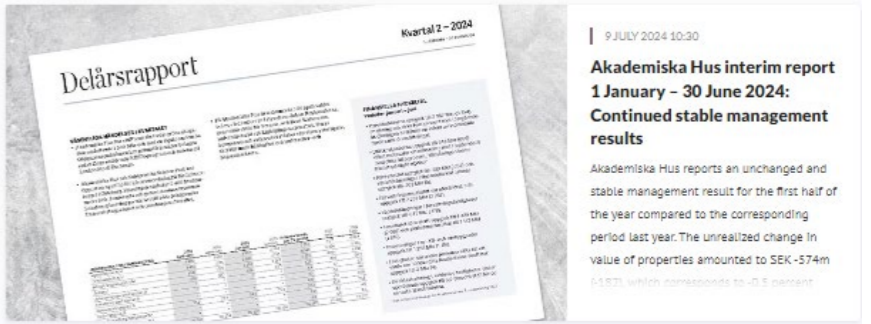


Figure C3.25: Akademiska HUS publications (source: https://www.mynewsdesk.com/se/akademiska_hus_ab) (Akademiska HUS, n.d.)

C3.6.4 Comparison with the Netherlands

Like SYK, Akademiska HUS also owns university and campus buildings, which in the case of Sweden are owned by the state. Compared to other foreign networks and the Netherlands, the organisation focuses more on its business model and the management of premises it rents out to universities. Therefore, the organisation's business model is not transferable to the Netherlands. However, the convenience and ability to contact relevant people through the Mitt Campus app and press room for questions related to campuses and buildings, as well as press releases, publications and other documents, enables rapid exchange of information that can help strengthen knowledge sharing between Dutch universities.

C3.4 Universities abroad and the Netherlands

Studying the foreign networks, it was found that AUDE and HIS focus on bringing universities together, through cooperation and providing a central platform. SYK and Akademiska HUS are more focused on property management and ensuring the highest quality of campuses for their tenants or owner-universities, with some services facilitating knowledge exchange. Moreover, the knowledge exchange services of the foreign networks are much more comprehensive, systematic, and focused on campus or facilities management compared to UNL or the HOI and DFB networks.

In terms of organisational structure (Figure C3.26), it can be seen that each network has its own dedicated executive board that facilitates and oversees cooperation and property management between universities. One exception is AUDE, which instead of having an executive board has a steering committee and regional and SIG chairs. Similarly, SYK has experts working specifically on different campus locations. Both AUDE and SYK therefore manage universities at regional and interregional level, unlike other foreign networks and UNL which manage universities only at interregional level. Following the organisational structure, there is also a difference in the flows of knowledge between the organisation and their member or client universities. In AUDE and HIS, knowledge is exchanged directly between universities because university representatives sit on the organisations’ committees. In SYK and Akademiska HUS, which are not staffed by university representatives, independent employees act as intermediaries who facilitate the exchange of knowledge between universities.

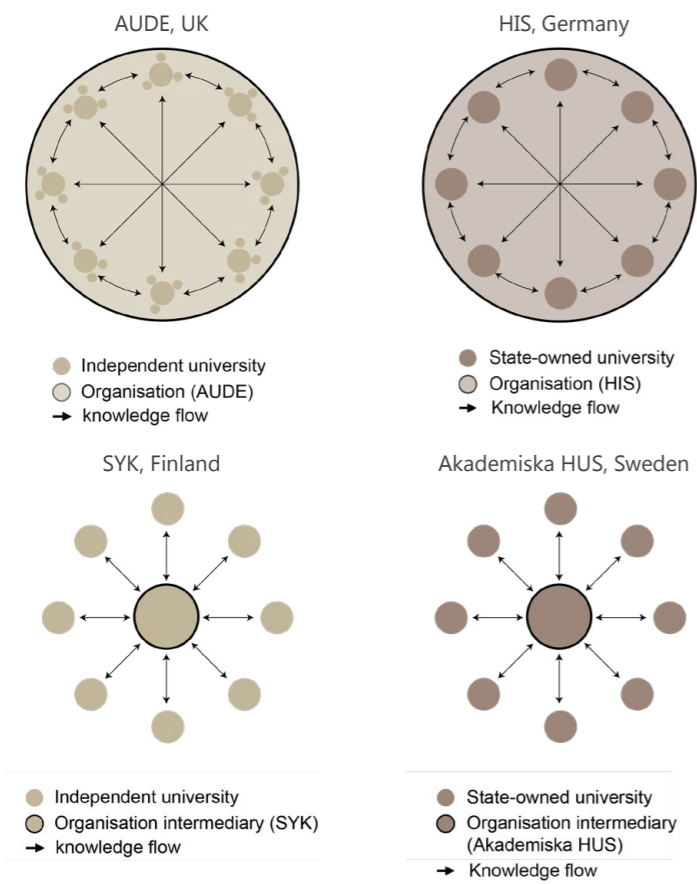


Figure C3.26: Organisational structure conceptual diagrams of foreign university /campus networks (Campus NL, 2024)

Because of similar organisational structures and knowledge exchange processes relevant to the Netherlands, AUDE and HIS are more relevant examples of knowledge exchange networks to aim for compared to SYK and Akademiska HUS. When learning from AUDE and HIS, the aim is not to copy the networks as a whole, but to extract and apply relevant knowledge exchange processes.

When it comes to knowledge exchange processes by network, Table 1 summarises the different types of processes found during the literature review phase conducted in Campus NL and which processes are used in each foreign network. The findings show that AUDE, HIS, SYK and Akademiska HUS function as central governing bodies that facilitate knowledge exchange between universities in their respective countries. At the same time, the organisations also act as knowledge brokers connecting universities with their expertise in campus management. Universities can turn to the organisations at their headquarters as physical centres to facilitate knowledge exchange.

Comparing the types of knowledge exchange processes per network (Table C3.1), it is clear that AUDE offers more services to facilitate knowledge exchange, with a strong focus on educational activities for tacit knowledge exchange. In contrast, HIS emphasises the creation of an integrated digital system centralising data from different universities to promote explicit knowledge exchange. Unlike AUDE and HIS, both SYK and Akademiska HUS do not show a strong tendency towards tacit or explicit knowledge exchange. However, SYK stands out for facilitating joint projects. In addition, Akademiska HUS offers a campus app, which streamlines access to campus information and relevant contacts, enhancing opportunities for tacit knowledge exchange.

Knowledge exchange processes per foreign network					
Knowledge exchange processes in literature		United Kingdom	Germany	Finland	Sweden
	Central governing body	AUDE	HIS	SYK	Akademiska HUS
	Knowledge brokers				
	Joint project			DEMO joint R&D	
	Employee relocation	Work shadowing	Training courses		
	Physical center	Loughborough	Hanover	Tampere	Göteborg
	Educational activities	- Annual large-scale events (Annual conference, Big Conversation, Summer school, AUDE awards) - Online events or webinars - Coaching - E-learning courses - Professional development fund	- NUTA conference/Annual general meeting - Online events - Training courses	Annual campus safety day	
	In-person conversations	- Meetings - Discussions	- Meetings - Discussions	- Meetings - Discussions	- Meetings - Discussions
	Document sharing	- Knowledge hub - News and blogs	HISinOne	- News and blogs - Material bank	
	Technology sharing	Knowledge hub			Mitt campus app
Electronic communication				- Mitt campus app - Press room	
Online database	News and blogs	- HISinOne - News platforms	- News and blogs - Material bank	- Social feed - News room - Press room	

Table C3.1: Knowledge exchange processes per foreign university/campus network (Campus NL, 2024)

The preliminary findings from this desk analysis of foreign campus and university networks provides potential models and practices for knowledge exchange in the Dutch context. In the following research phase of Campus NL, the campus network of AUDE and the university network of HIS as more comparable to the Dutch context, along with the university network of EUA and more relevant networks will be (further) explored to inform knowledge exchange in Campus NL.

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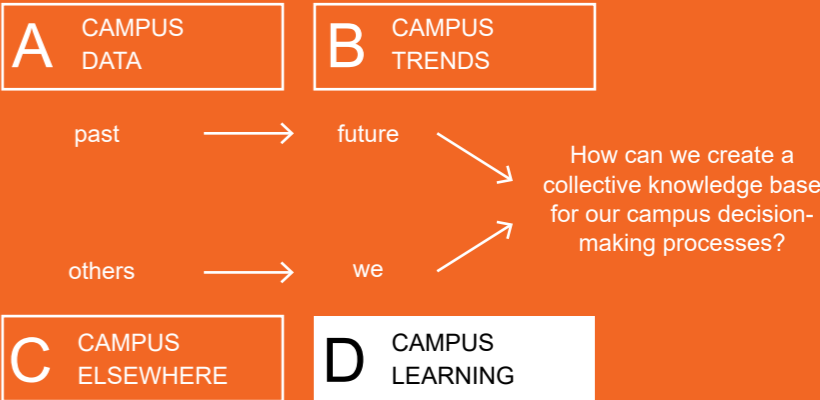
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Survey Spreadsheet
(photo Pexels/Lukas)

Part II - Results 2023/2024

D1 Survey “baseline measurement” knowledge exchange



Authors:

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D1.1 Introduction

Universities experience similar challenges related to hybrid working, climate change, student accommodation, and so on. One of the aims of Campus NL is to pool the resources and knowledge of the 14 Dutch universities to solve these problems jointly and efficiently. This requires learning from others rather than reinventing the wheel or solving individual challenges. To facilitate this process, Campus NL will closely link science and practice to make inter-university learning easier.

Part of Campus NL’s research (Part C) is dedicated to studying how other foreign universities and other industries/sectors with similar real estate and campus management as Dutch universities exchange knowledge. We study them to find relevant solutions to improve the situation in the Netherlands. To know which interventions are applicable and which might be successful, we first analyse the knowledge exchange between Dutch universities.

To measure knowledge exchange, a literature review was conducted in summer 2023 to identify relevant elements for measuring knowledge exchange. These are: (1) the organisational context, (2) drivers and barriers of knowledge exchange, (3) processes of knowledge exchange, and (4) outcomes. As shown in Figure D1.1, each element has different variables that are measured. The questions used to measure these variables are based on both the literature review (from science) and meetings with campus contacts/directors (from practice). Figure D1.1 summarises these elements and forms the basis for the questions this survey attempts to answer:

- 1. How and to what extent do employees exchange knowledge between universities? Knowledge exchange processes include written text, formal and informal communication.
- 2. What organisational factors influence knowledge exchange between universities? Organisational factors include both facilitating conditions and social influences.
- 3. What individual factors influence knowledge exchange between universities? Individual factors include both intrinsic (personal motivation) and extrinsic (motivation through external rewards) influences.
- 4. What are the existing networks and partnerships between universities?
- 5. Has the Covid pandemic led to more (or less) knowledge exchange?
- 6. What benefits do employees expect from knowledge exchange? The outcomes of knowledge exchange include conceptual, instrumental, strategic and process use of knowledge.

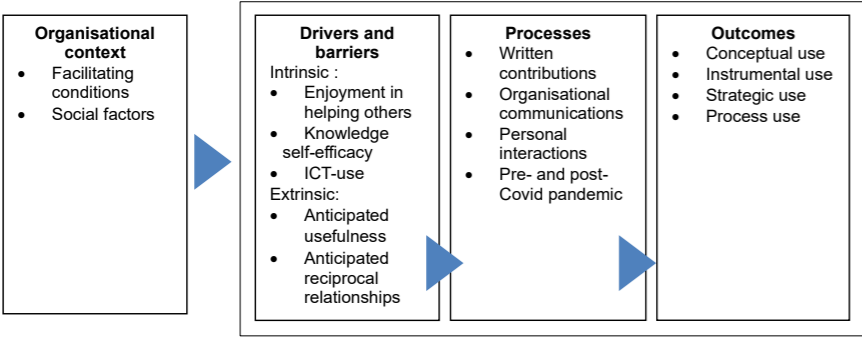


Figure D1.1: Survey elements resulting from the literature review (Campus NL, 2024)

The survey (“knowledge exchange baseline measurement”) was distributed in November/ December 2023 by campus contacts in their respective universities. Target respondents were around 300 employees of Campus Real Estate (CRE) and Facilities Management (FM) departments, with priority given to team/department leaders. With 183 surveys completed in about a month (excluding Christmas holidays), the final response rate of the baseline measurement was 61%. The characteristics and distribution of respondents are shown below with more information in the appendix E. Campus contacts were asked to select participants based on a list (see appendix G) of roles provided by the research team to ensure that participants had diverse backgrounds.

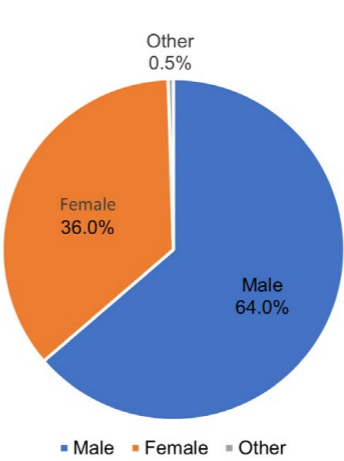


Figure D1.2: Gender distribution of survey respondents (Campus NL, 2024)

Notable in the profile of the respondents is the higher percentage of men (64%) compared to women (36%) in CRE & FM departments (see fig. D1.2). Furthermore, the majority of the respondents are 50 years and older (43.7%), as shown in Figure 4. With regards to their years of working experience, it can be seen that there is no big difference between the categories in figure D.4. Interestingly, a small proportion (8.2%) of the respondents indicated that they have no experience in campus management and thus have a different type of job. These respondents may be working in positions related to campus management but are not directly employed in the CRE & FM department.

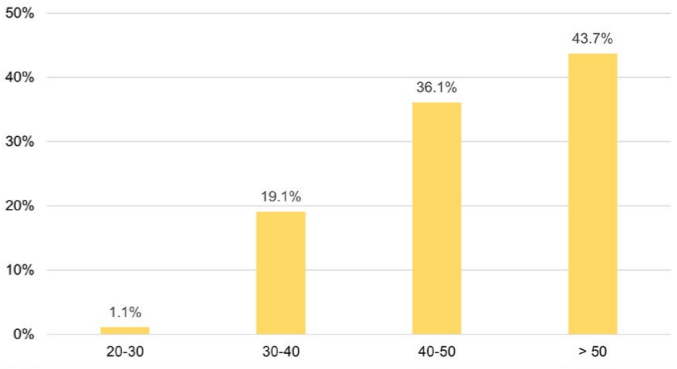


Figure D1.3: Age distribution of survey respondents (Campus NL, 2024)

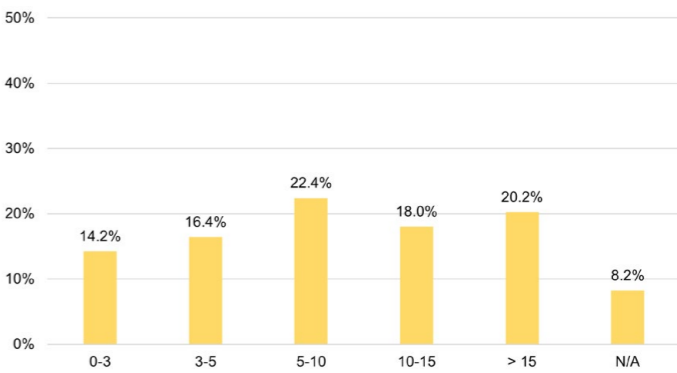


Figure D1.4: Work experience years of survey respondents (Campus NL, 2024)

D1.2 Knowledge exchange processes

Knowledge can be exchanged through various means. In the baseline measurement, knowledge exchange was measured through three processes, as shown in Figure D1.5. The results show that respondents exchange knowledge most often through organisational communication (19.8%), followed by personal interactions (12.2%), and written text (5.7%) as the least used process. This ranking is based on the total proportion of respondents who said they exchange knowledge with the frequency of ‘often’ and ‘always’ per process.

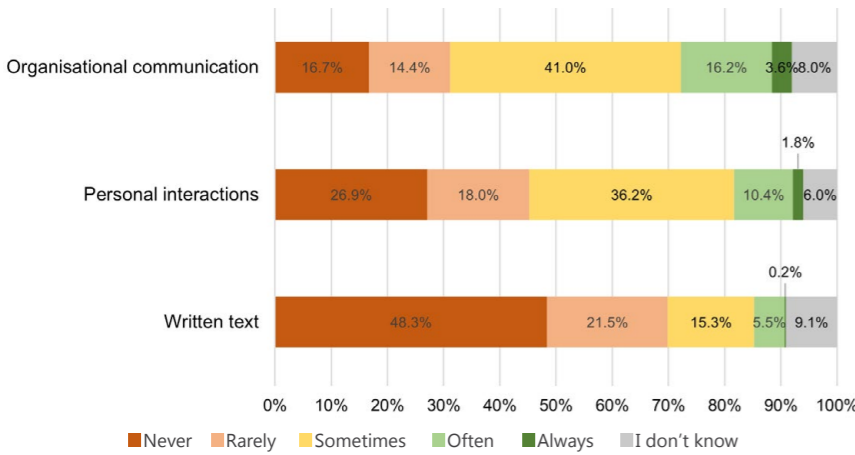


Figure D1.5: Knowledge exchange processes (Campus NL, 2024)

Looking at all knowledge exchange processes together (Figure D1.6), it can be seen that about a third of people exchange knowledge with a frequency of “sometimes”, in addition to a collective 12.6% who do so with a frequency of “often” or “always”. For knowledge exchange between universities - as a nuance – exchanging knowledge “sometimes” may suffice for those in the field of campus management. Since knowledge exchange need not happen every day to benefit organisations, “sometimes” may be a sufficient frequency for some employees. Figure D1.6 also indicates that knowledge is exchanged between universities, but not routinely or systematically. Nevertheless, the results show that for the nearly 50% of respondents who “never” or “rarely” exchange knowledge, there is room for improvement.

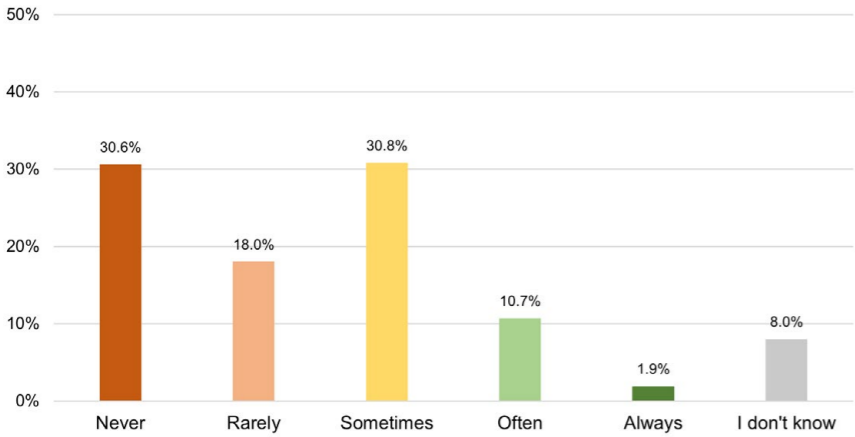


Figure D1.6: Knowledge exchange frequency (Campus NL, 2024)

D1.2.1 Organisational communication

For the most commonly used method of exchanging knowledge, an average of 41% of respondents indicated that organisational communication, such as meetings and brainstorming sessions between universities, takes place with a frequency of ‘sometimes’. This may indicate too little routine knowledge exchange. Furthermore, the responses to the questions in Figure D1.7 show that both positive and negative experiences and ideas are shared between universities, allowing them to learn from one another.

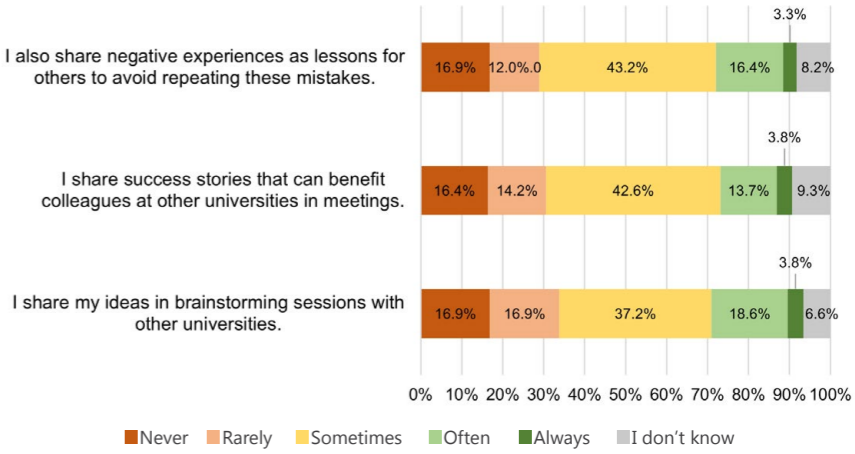


Figure D1.7 : Organisational communication (Campus NL, 2024)

With regard to specific barriers of exchanging knowledge through organisational communication, the majority (40%) of respondents say that nothing prevents them from exchanging knowledge, while 28% cite time as the biggest barrier and 14.3% say a lack of incentives is a barrier (Figure D1.8). An analysis of the responses of respondents who answered “other barriers” shows that 14.3% believe that few formal meetings are organised with other universities and that they do not know who the right person to contact is at the other universities.

Q: What prevents me from exchanging knowlege sometimes? (Organisational communication)

A: “unfortunately, consultations with colleagues from other universities are rare.”

A: “unfamiliarity with who holds my position at other universities.”

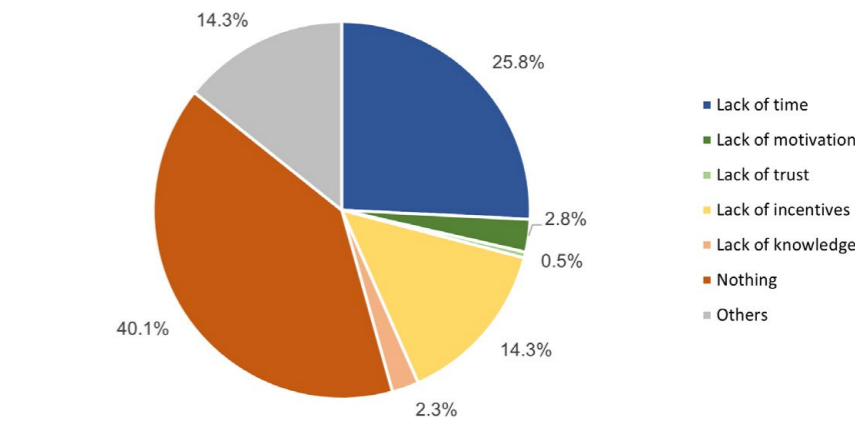


Figure D1.8: Organisational communication barriers (Campus NL, 2024)

D1.2.2 Personal interactions

As with knowledge exchange through organisational communication, the majority of personal interactions also happens with a frequency of “sometimes”. Figure D1.9 shows that employees help each other through these personal interactions.

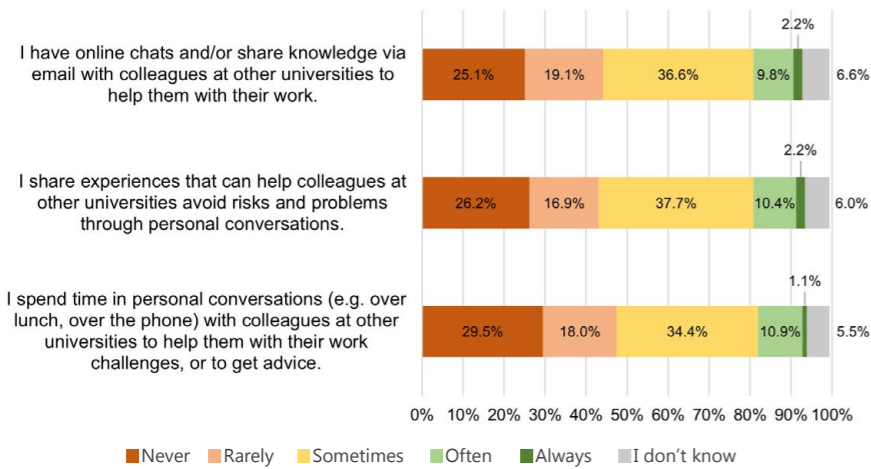


Figure D1.9: Personal interactions (Campus NL, 2024)

Again, the majority of respondents (39.3%) do not mention any specific barriers, while 26.6% mention time as the main barrier (Figure D1.10). Moreover, lack of incentives at 16.8% is a slightly bigger barrier to personal interactions than organisational communication at 14.3%. Analysis of responses from 12.6% of respondents who answered “other barriers” shows that another barrier is not having contact information of counterparts from other universities or not knowing about platforms where interactions can take place.

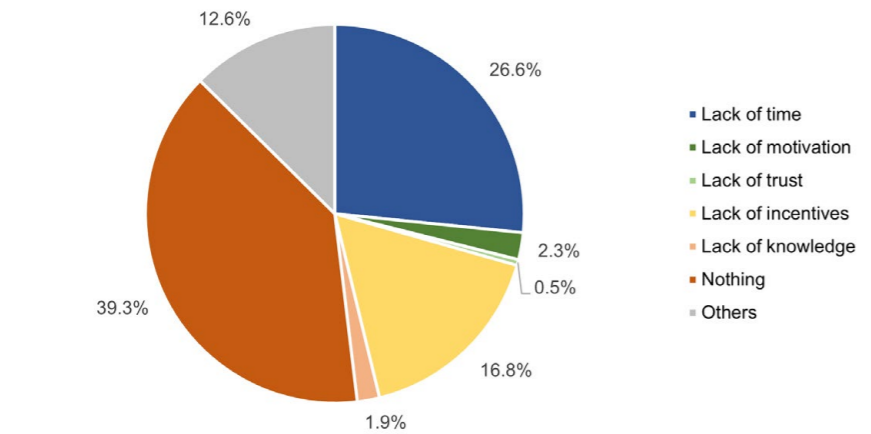


Figure D1.10: Personal interactions barriers (Campus NL, 2024)

Q: What prevents me from exchanging knowlege sometimes? (Personal Interactions)
A: "I have no contact with colleagues from other universities at the moment."
A: "I am not in a network within which this is possible."

D1.2.3 Written text

Written text (contributions/pieces/data etc.) was found to be the least used method of knowledge exchange, with a significantly higher percentage of respondents indicating that they never use this method. The results of the questions in Figure D1.11 show that a high proportion of respondents “never” publish articles and and/or written pieces (60.1%), share ideas (44.8%), or add documents (39.9%) to online databases.

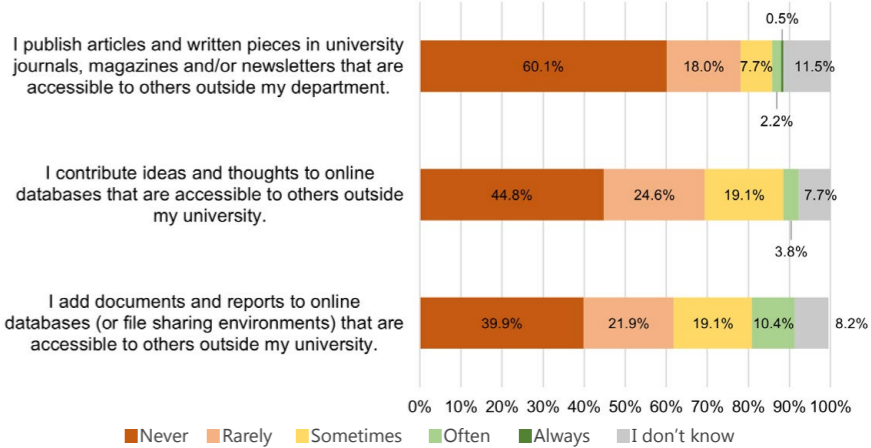


Figure D1.11: Written text (Campus NL, 2024)

The main barriers to exchanging knowledge through written text are lack of time (32.3%), followed by lack of incentive (20.2%); however, there are also those who experience no barriers (20.2%) (Figure D1.12). Analysis of respondents who answered “other barriers” shows that respondents (14.1%) do not know of any platforms where knowledge can be exchanged through written documents or online databases.

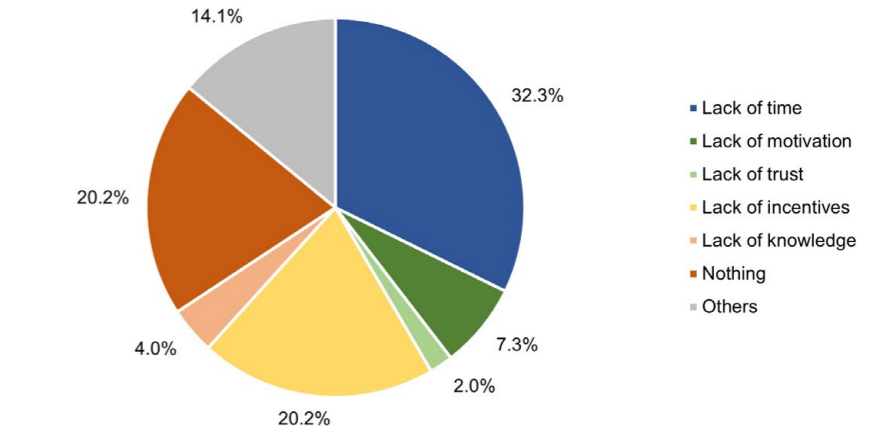


Figure D1.12: Written text barriers (Campus NL, 2024)

These results show that most respondents exchange knowledge through formal and informal interactions rather than through written text. Without sufficient contacts and platforms/channels, this cannot be done systematically or frequently either. This could explain the large number of respondents who indicated that ‘nothing’ prevents them from exchanging knowledge, while perhaps the lack of a platform to do so is the (biggest) cause. The following sections discusses possible barriers and incentives to knowledge exchange.

Q: What prevents me from exchanging knowlege sometimes? (Written Text)
A: "Ignorance about which environments are used for this and which environments" are safe for this."

D1.3 Organisational context

Organisational context measures the working culture and environment that enables and encourages knowledge exchange. This is measured by general facilitating conditions related to the organisational structure and social climate between universities. The results also indicate what can be improved within universities to enhance knowledge exchange. The organisational context was measured using positive and negative statements to indicate potential enabling and impeding factors. The results were analysed by looking at the proportion of respondents who answered “neutral”, “agree”, “strongly agree” and “I don’t know”.

D1.3.1 Facilitating conditions

The results show that more respondents ‘strongly agree’ or ‘agree’ with statements on barriers such as the lack of UNL involvement (54.1%) and the need for more coordination between universities (49.8%) than on facilitating factors such as existing networks (42.6%) and existing agreements for knowledge exchange (29%) (Figure D1.13). Considering that only 8.8% of respondents ‘strongly agreed’ or ‘agreed’ that their immediate supervisor regularly organises meetings with other universities, this shows that more facilitating conditions are needed to improve knowledge exchange between universities.

The high percentage of respondents answering “I don’t know” to questions on existing knowledge exchange arrangements (41%) and appropriate means of obtaining data (38.3%) is in line with the “lack of platforms or opportunities” raised by respondents in questions on knowledge exchange through written text, organisational communication and personal interactions.

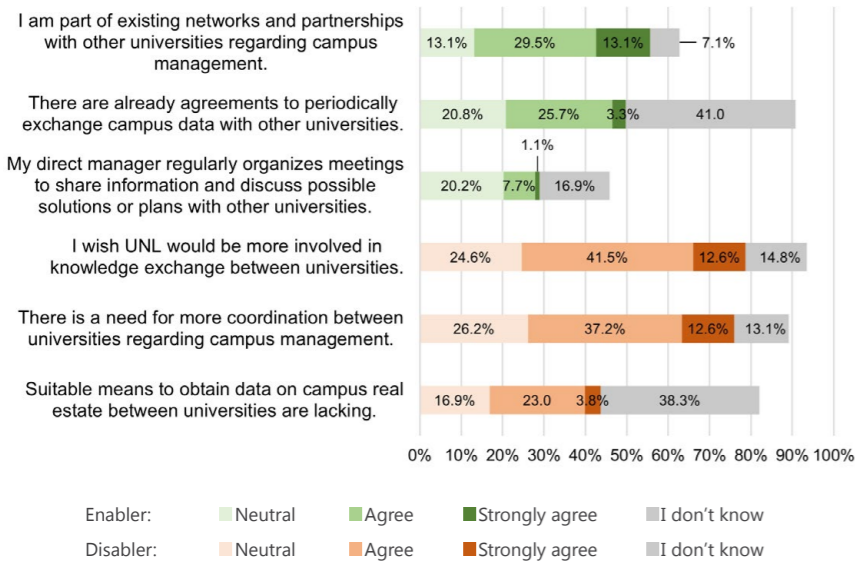
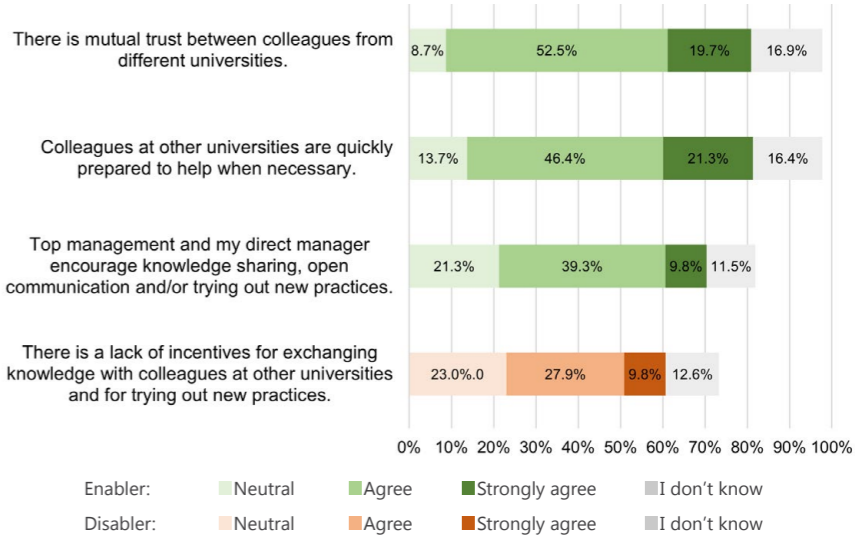


Figure D1.13: Facilitating conditions (Campus NL, 2024)

D1.3.2 Social factors

In terms of social factors, the results show that the majority of respondents (who answered ‘strongly agree’ or ‘agree’) perceived a high level of trust between universities (72.4%), willingness to receive help from other universities (67.7%) and encouragement from top management and immediate manager to exchange knowledge with others (49.1%) (Figure D1.14). This indicates that respondents view the social climate between employees as more positive than facilitating conditions or organisational structure. Nevertheless, 37.7% of respondents also felt that there is a lack of encouragement to exchange knowledge with other universities.

Figure D1.14: Social factors (Campus NL, 2024)



The high proportion (~20%) of respondents who answered “I don’t know” to questions on both incentive conditions and social factors could indicate that some employees are not very familiar with the initiatives (e.g. networks) and employees at other universities and therefore may not have an opinion. The next section discusses possible individual factors that could influence knowledge exchange.

D1.4 Individual factors

The individual factors measure respondents’ internal and external motivation to exchange knowledge. These intrinsic factors include questions on enjoyment in helping others, knowledge self-efficacy, and ICT use, while extrinsic factors include questions on anticipated usefulness and anticipated reciprocal relationships from knowledge exchange.

D1.4.1 Intrinsic factors

Intrinsic factors measure the potential drivers and barriers of knowledge exchange caused by personal beliefs. The results show that the majority of respondents have the necessary intrinsic motivation to exchange knowledge with others (Figure D1.15). The main intrinsic motivators have to do with enjoyment in exchanging their knowledge (94%) and confidence in the relevance and value of their knowledge for other universities (89%). Similarly, only a small proportion of respondents (< 20%) ‘strongly agree’ or

‘agree’ with statements such as lack of time (18%) and difficulty in using technology (13.7%) for knowledge exchange. Similar to the results of the chapter on knowledge exchange processes, intrinsic factors were found not to be barriers to knowledge exchange. In contrast, some open text responses did mention lack of time as a barrier and that knowledge exchange is unnecessary to perform tasks.

“It is encouraged by universities, but at the same time it is often the first thing to be dropped when there is a lack of time. You could manage it more in time allocation.”

“You don’t need the relationships between universities to do your work on a daily basis. As a result, there is no need to actively build a network at other universities.”

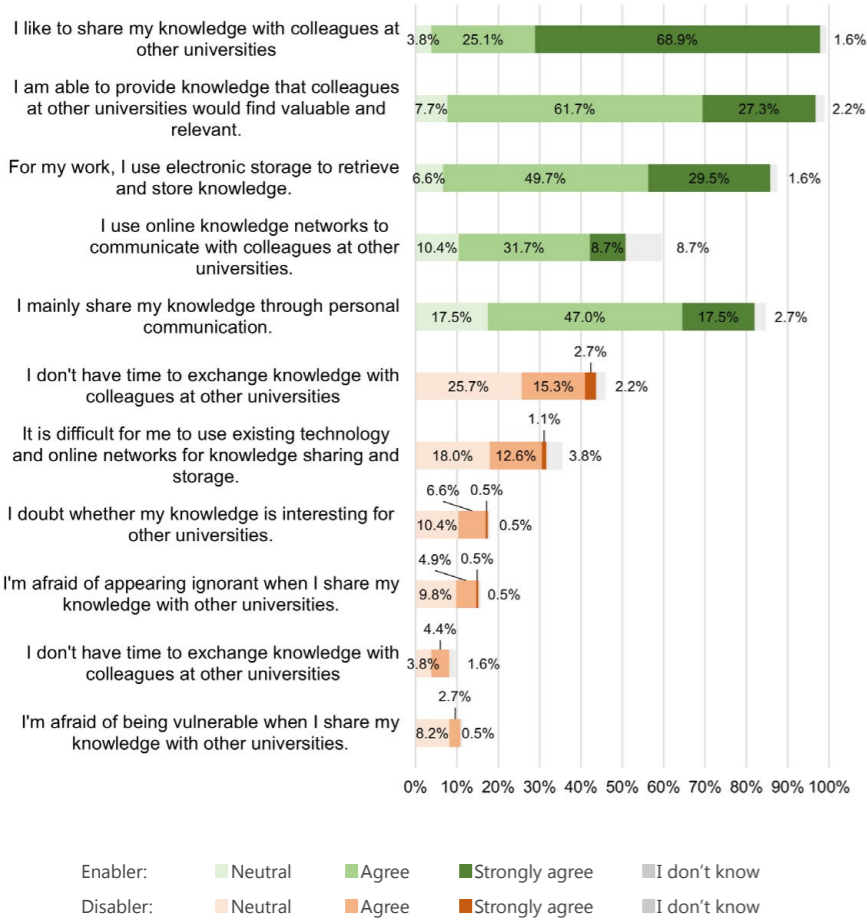


Figure D1.15: Individual intrinsic factors (Campus NL, 2024)

D1.4.2 Extrinsic factors

Extrinsic factors measure motivation to exchange knowledge based on expectations of rewards and benefits. The results show that the majority of respondents believe that they would benefit from exchanging knowledge with other universities and that this knowledge would be relevant to their university (Figure D1.16). There is also a higher percentage of respondents (39.9%) who ‘strongly agree’ or ‘agree’ with the statement that knowledge exchange reduces the time they need to complete their tasks. In any case, the low percentage of respondents who agree with the statement that time would be better spent on something other than knowledge sharing (4.4%) indicates the high presence of external motivation among employees who could bring about reciprocal knowledge exchange.

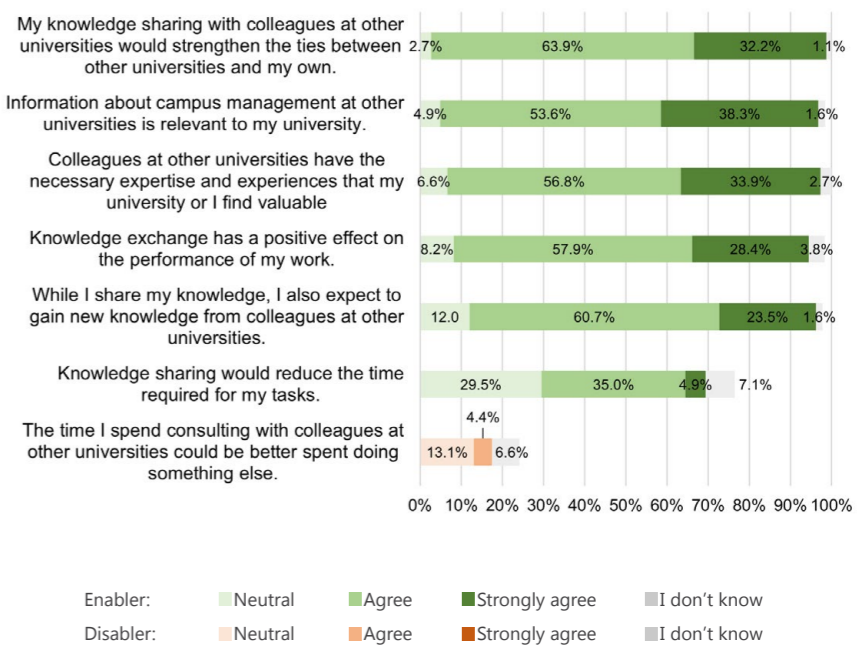


Figure D1.16: Individual extrinsic factors (Campus NL, 2024)

The results on the intrinsic and extrinsic factors show that there is a strong motivation to exchange knowledge between employees, whether internally motivated or by the expectation of benefits from exchanging with other universities.

However, if we look at the correlation between answers about individual factors and organisational context, with those about knowledge exchange processes (see appendix F), then it can be seen that there is a higher correlation between organisational context - both facilitating conditions and social factors - and knowledge exchange. The results show that compared to other factors, the existence of networks, encouragement by top management, and incentives have a higher correlation with the use of knowledge exchange processes. This indicates that the organisational context has a greater influence on whether employees exchange knowledge with other universities compared to individual motivation/factors.

D1.5 Existing networks

Respondents were asked to list the networks they are part of to identify existing connections between universities. 68 different networks were found and they were classified into 9 categories discussing the following topics: Energy & Sustainability, Waste & Catering, Education, Contract & Procurement, Management & Maintenance, Safety, Information Management, Real Estate & Development, and General Campus Management topics (e.g. HOI & DFB). See the detailed list of networks in the Appendix G. Figure D1.17 shows that most networks discuss Real estate & Development (15), General Campus Management topics (11), Energy & Sustainability (10), and Information Management (10)),

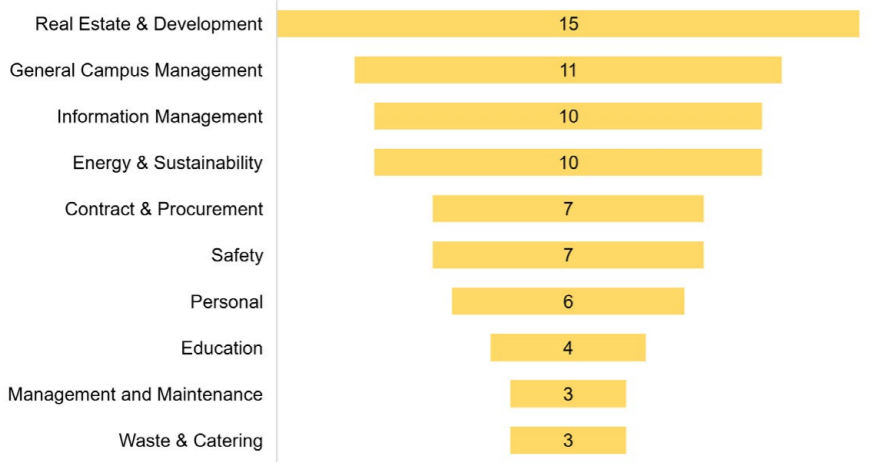


Figure D1.17: Number of networks per category (Campus NL, 2024)

The results show that 106 respondents were members of at least one network. Of these 106 respondents, almost half (46.2%) belong to 2 networks, 17.9% to 3 networks, 7.5% to 4 networks and 3.8% to 5 networks. There are also 6 respondents who communicate with employees from other universities through their own personal networks. Figure D1.18 shows the number of respondents per network category, where respondents could belong to more than one network. It shows that General Campus Management networks (50) where multiple topics are discussed have the most members, followed by Energy & Sustainability (32), and Real Estate & Development (31).

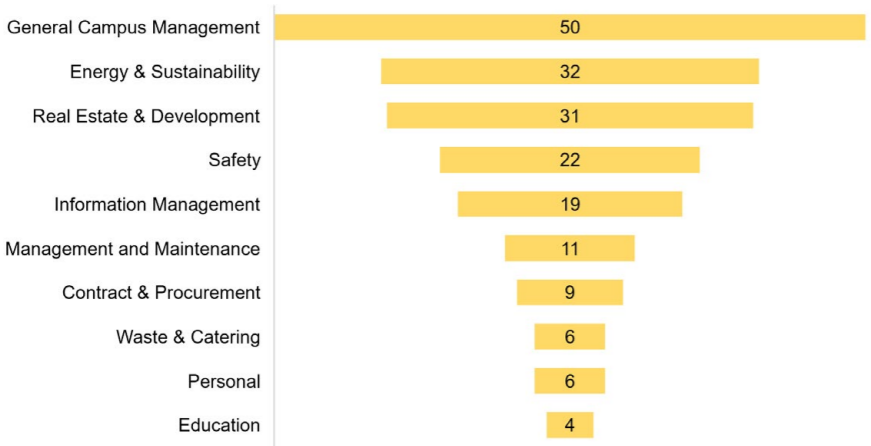


Figure D1.18: Number of survey respondents per network category (Campus NL, 2024)

D1.6 Pre- and post-Covid pandemic

The Covid pandemic may have had a major impact on knowledge exchange as communication became easier with the advent of online platforms. The effects of Covid on knowledge exchange were measured using three statements, as shown in Figure D1.19. The results show that Covid did not have a major impact on knowledge exchange in terms of improvement or urgency, while 38.3% of respondents ‘strongly agreed’ or ‘agreed’ that knowledge exchange was already happening regularly with other universities, even before Covid. This might explain why most respondents were neutral about the improvement of knowledge exchange (36.6%) and the urgency of knowing colleagues from other universities (30.6%) since the Covid pandemic. Nevertheless, the open-ended responses made it clear that some respondents felt that digital opportunities for knowledge sharing became easier during the pandemic, while some respondents felt that meetings requiring face-to-face interaction were not picked up since the pandemic.

“Before the Corona pandemic, we did an annual exchange day (HOI Project Leaders Day) where Projects colleagues visited each other’s university campus. We then had content exchange sessions or case studies that we discussed with our own experiences. That hasn’t been picked up since Corona, the last one was in February 2020.”

“Meeting digitally has taken off though, as a result you see colleague universities more often because travel time is then no longer an issue.”

“There are arguments for and against [digital knowledge sharing]. Teams has made it easier to meet up with people outside your own institution. At the same time, it makes consultations more formal, there is less (personal) interaction.”

Interestingly, a large proportion of respondents (~30%) answered “I don’t know” to all the questions asked. This can be attributed to the proportion of respondents who were not working at their universities before or during the pandemic.

“I was not yet working for the Uni during the corona pandemic.”

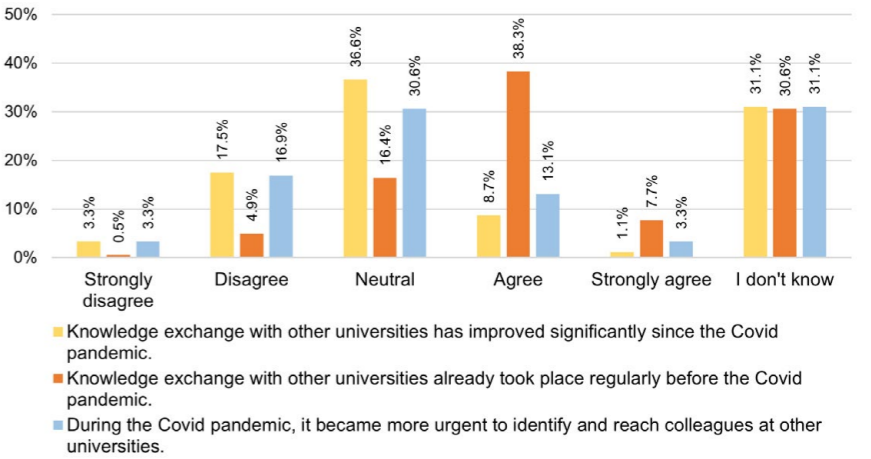


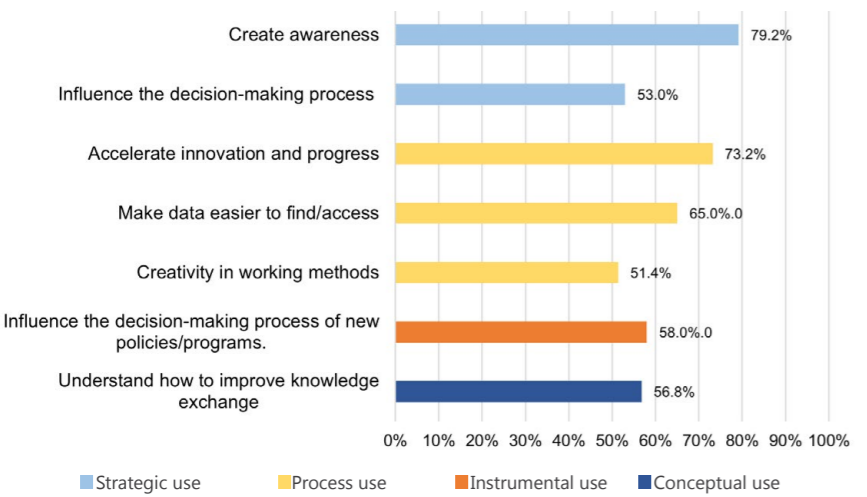
Figure D1.19: Pre- and post Covid pandemic (Campus NL, 2024)

D1.7 Expected outcomes (benefits of knowledge exchange)

Outcome expectations were measured based on different types of knowledge use. These expectations deal with changes in how to make informed decisions (strategic use), changes in organisational practices (process use), changes in organisational structure (instrumental use), and changes in understanding how to use and benefit from knowledge exchange, especially regarding the role of Campus NL in facilitating this (conceptual use). Each expected outcome was measured through multiple questions per outcome that related to the same use.

The results show that “strategic use” is on average the most important goal of knowledge exchange (56.7%), followed by process use (50.5%), conceptual use (45.4%) and instrumental use (33.7%). Figure shows which specific statements more than 50% of respondents ‘agreed’ or ‘strongly agreed’ with. The most expected outcomes are creating awareness through knowledge sharing (79.2%) and accelerating innovation and progress by learning from other universities (73.2%). Analysis of the open-ended responses shows that some respondents’ expectations depend on the form of knowledge exchange and the extent to which facilitation matches employees’ needs.

“How big the role of CampusNL and knowledge sharing in general is depends very much on the form how this is set up. The knowledge should be easily accessible, and relevant to the employee in question.”



It is striking that, on average, some 15% of the respondents answered with “I don’t know” about the role of Campus NL in the process of knowledge exchange. The open answers show that a number of respondents do not know Campus NL and therefore cannot predict what role this (new) research project might play as a facilitator of knowledge exchange. For a baseline measurement, this seems a logical result, as Campus NL has only just started and still has little familiarity. At the same time, in open answers, some stress that (besides new) also long-standing knowledge exchange initiatives (and networks) could be better facilitated. So, also further improving what is already going well.

“A coordinating role does not always lead to better cooperation, often it increases the number of interfaces. [I] think people only need to be encouraged. Coordination is not necessary.”

D1.8 Conclusions

Results describe both the goals and means of knowledge exchange on campus management: from motivations to perceived barriers, from the types of knowledge exchange processes to the different networks respondents know or belong to. This provides an initial basis for discussion, improvement and further research in coming years.

For now, it is clear that knowledge exchange occurs through both formal interactions (e.g. meetings and brainstorming sessions) and informal interactions (e.g. online chats, phone and at lunch) via online or in-person means. An analysis of the factors that enable or hinder knowledge exchange reveals that employees already have a strong personal motivation to exchange knowledge, both intrinsically (through enjoyment in helping others, knowledge self-efficacy, and ICT skills) as well as extrinsic (through expected usefulness and mutual relationships). The social climate between employees in different universities is also perceived as very positive. In contrast, the organisational structure and facilitating conditions of universities are perceived to require improvement by a large number of respondents, while we know that this organisational context has a greater influence on how (frequently) employees exchange knowledge with other universities compared to individual motivational factors. The results show that respondents want more UNL involvement, regular meetings and appropriate data processing and exchange tools to learn from each other.

These findings indicate that a perceived lack of facilitating conditions (e.g., UNL involvement and coordination between universities) could be the main barrier to knowledge exchange, while personal motivations and a positive social climate between universities are the main drivers. The results show that encouragement by top management and incentives from the organisation have a higher correlation with knowledge exchange than other factors; thus, these factors play an even more important role in facilitating knowledge exchange, especially for those who do not currently do so. There should therefore be a balance between systematic support and providing incentives for knowledge exchange, not only making current exchange methods more systematic, but also strengthening current reasons for knowledge exchange. To this end, existing networks offer platforms to learn from and test new initiatives to strengthen current knowledge exchange and encourage new methods, taking into account individual expectations.

Finally, interviewing respondents on the effects of the Covid pandemic on knowledge exchange shows that there are advantages and disadvantages to digital versus physical communication where one method is not necessarily better than the other. Supporting knowledge exchange will depend on the needs of network members.

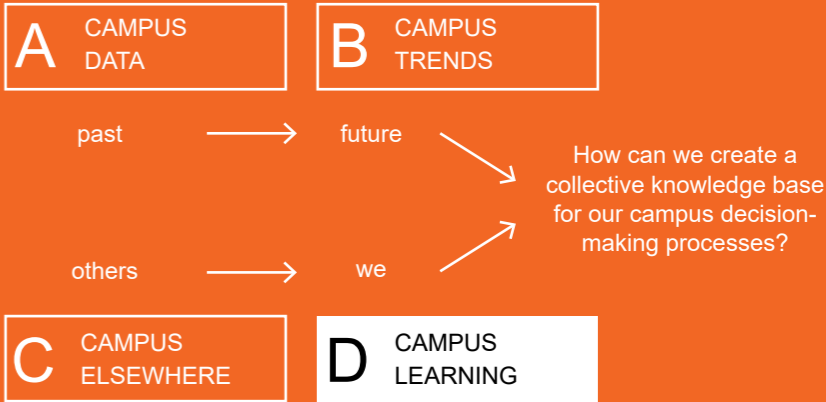
In summary, therefore, the glass is both half-full (there are already many networks and the willingness is there among many) and half-empty (there is still much to improve in the effectiveness of knowledge exchange and actually storing and retrieving knowledge). The “collective campus memory” can be better captured and there is certainly fertile ground (motivation) for this, but also an urgency, as the new generation of “campus managers” changes jobs more quickly and also depends on the knowledge sharing of the older generation with decades of campus expertise (who sooner or later will retire or perhaps leave otherwise). Campus NL will work closely with campus managers in the coming years to suggest improvements for more effective knowledge sharing.



Campus NL conference May 2024
(photo Campus NL)

Part II - Results 2023/2024

D2 Starting up knowledge exchange in 2023/2024



Authors:
Alexandra den Heijer & Mansur Karadavut

D2 - Starting up knowledge exchange in 2023/2024

The four-year goal of part D “Campus Learning” is disseminating campus knowledge (with input from A, B, and C), resulting in an annual conference (“knowledge day”), an online platform for knowledge exchange, infographics for various target groups within the university, workshops on important themes, and ‘on-demand learning’ for campus staff.

The intended goal after four years is that we have strengthened the knowledge function for campus management with insights from collective campus practice and the expertise of (our own) scientists. We will also test a collaboration model that serves as a steppingstone for the future or a living lab. Year by year, we will evaluate the progress with our networks.

Starting up networks, filesharing and news sharing

In year 2023/2024 the team already initiated knowledge sharing on a relatively small scale, which will be the foundation for larger steps and ultimately building a Campus NL platform with both public and private modes of file sharing:

- Through [Flipboard Campus NL](#), we already keep track of campus news: with various labels, we aim to extract more patterns from it, also linked to our [2023 FAIR data campus research](#) which browses architecture databases for [new university projects world-wide](#).
- Through MS Teams and Surfdrive, we exchange data with the 14 universities’ campus contacts in a closed network or completely confidential, respectively.
- In the next year, we will also make a link to the “Campus of the future” [4TU FAIR data project, with a datalink](#) to new university projects worldwide (updated automatically). We will start collecting data of new Campus NL project, to identify trends.

The first annual Campus NL conference: Tuesday May 24, 2024

The very first CampusNL conference took place on Friday, May 24, 2024 in Delft. Location was the heritage building of TU Delft’s Faculty of Architecture. This event provided an opportunity for executive board members, administrators, policy officers and researchers to come together and gain in-depth insights, as well as engage in interactive discussions about the future of Campus NL. This first year (2023/2024) and annual conference focused on the theme of “Hybrid Working.”

he conference was divided into two parts. The morning program focused on discussing the results from the (draft) Annual Report 2023. Participants were actively involved in interpreting the results and solving common challenges, with interactive sessions aimed at exploring solution directions. During the afternoon program, the focus shifted to follow-up actions for the “hybrid working” theme and an exploration of future campus development and pressing issues. What topics deserve attention and what are the key areas to explore in future research? This exploration served as a guide for the future direction of CampusNL and provided an opportunity for participants to actively contribute to the shaping of the project. This also led to the selection of a new theme for 2024/2025. The conference concluded with informal drinks, where participants had the opportunity to make informal contact and continue further discussions.

Tijd	Onderdeel	Locatie	Toelichting
09.30 – 10.00	Ontvangst met koffie en thee	Berlagezaal 2	
10.00 – 10.30	Presentatie onderzoeksresultaten 2023/2024 met focus op "hybride werken"	Plenair – Berlagezaal 1	Het Campus NL onderzoeksteam zal de onderzoeksresultaten 2023/2024 presenteren, waaronder kantoorgebruik van 100 gebouwen.
10.30 – 11.15	Interactieve presentatie met stellingen en vragen over de onderzoeksresultaten, en mogelijke toekomststrategieën en oplossingen.	Plenair – Berlagezaal 1	Via menti.com vragen over onderzoeksresultaat en de toekomst van de campus. Hierbij ook discussie over twee extreme strategieën.
11.15 – 12.00	Discussies in groepen over oplossingsrichtingen.	Break-out rooms	Zijn wij (1) een campus-universiteit of (2) omarmen wij de hybride werkelijkheid? (Waar staan we nu en waar willen we heen?) Deelnemers gaan in break-out rooms met elkaar in gesprek over oplossingsrichtingen en extreme strategieën.
12.00 – 13.00	Lunch	Berlagezaal 2	Met mogelijkheid voor wandeling door gebouw.
13.00 – 13.45	Terugkoppeling oplossingsrichtingen uit break-out rooms: lessen voor toekomst. Vervolgacties voor thema "hybride werken" en kennisdelen: discussie met zaal.	Plenair – Berlagezaal 1	In het nieuwe collegejaar zal er een nieuw thema onderzocht worden door Campus NL. Maar hoe zorgen we ervoor dat we kennis over het oude thema blijven delen of vastleggen?
13.45 – 14.15	Introductie over mogelijk volgend thema.	Plenair – Berlagezaal 1	
14.15 – 15.00	Groepsdiscussie over mogelijk volgend thema	Break-out rooms	De deelnemers zullen in break-out rooms in gesprek gaan over de volgende vragen. - Welke thema's zijn urgent? - Welke vragen horen bij het thema? - Welke data verzamelen? Is dat haalbaar?
15.00 – 15:30	Paneldiscussie toekomst Campus NL, inclusief terugkoppeling break-out rooms	Plenair – Berlagezaal 1	Vanuit elke break-out room zal 1 lid vooraf gevraagd worden om deel te nemen aan de paneldiscussie.
15:30 – 16:00	Afsluitende conclusies en toelichting over het vervolg	Plenair – Berlagezaal 1	
16.00 – 16.30	Napraten met (borrel)hapje en drankje	Berlagezaal 2	

Table D2.1 Annual conference: programme (only available in Dutch) (Campus NL, 2024)

During the day, illustrator Mark van Huystee made a visual report, both during the plenary sessions and the break-out rooms. Some of the images (in Dutch) are demonstrated in this chapter, others in part III to illustrate conclusions, strategies and next steps. All other written reflections and photos are available for internal use and can be found in the Campus NL Teams folder.

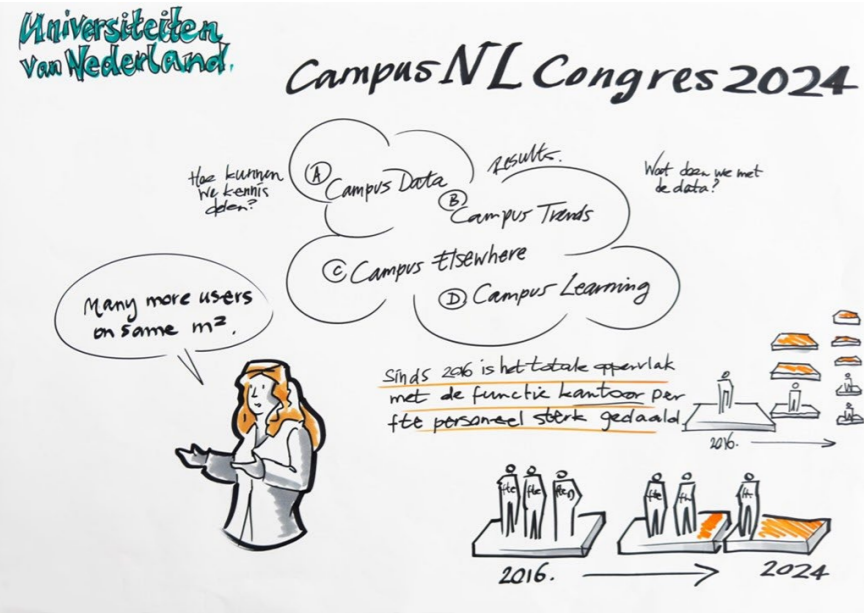


Figure D2.1: Presenting the Campus NL results in the morning of the annual conference (24 May 2024), visualisation by Mark van Huystee

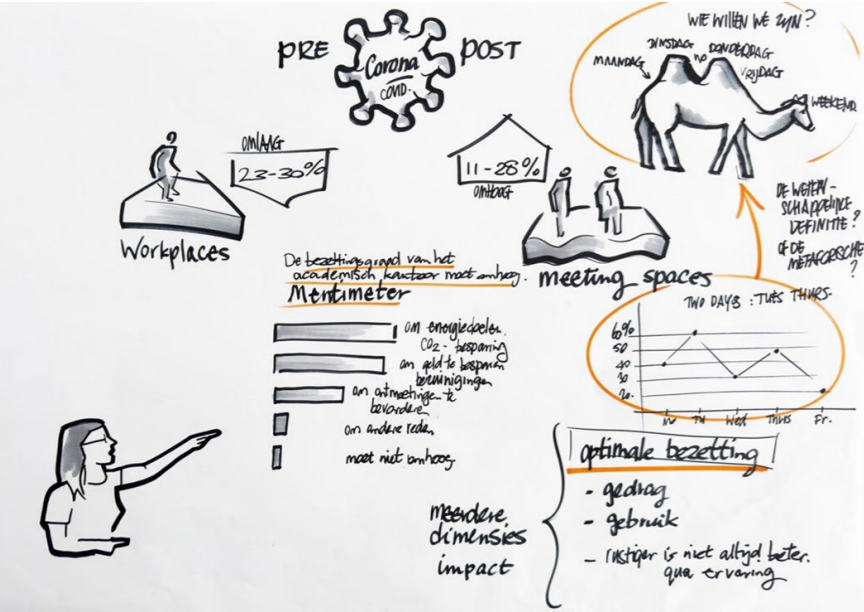


Figure D2.2: Presenting and discussing the Campus NL utilization studies in the morning of the annual conference (24 May 2024), visualisation by Mark van Huystee

References

Campus NL Teams folder (internal, members only): Detailed conference programme.

Campus NL Teams folder (internal, members only): Workshop report.

Campus NL Teams folder (internal, members only): Meeting notes.

Campus NL Teams folder (internal, members only): More than 50 photos of the conference.

Campus NL Teams folder (internal, members only): Illustrations by Mark van Huystee.



Campus Tilburg University
(photo TiU)

Part III

CONCLUSIONS, STRATEGIES & NEXT STEPS

Summary of conclusions

This part summarizes the conclusions of part II of this annual research report and also serves as an extensive summary of the Campus NL project in 2023-2024. During this first year of Campus NL (2023-2027), the emphasis was placed on the theme of “hybrid working” across all research components (ABCD). At the same time, efforts were initiated to build generic management information. The conclusions for each research component are summarized below.

Part A - Campus DATA

Part A involves the inventory of campus data, covering both the existing campus in relation to the past and current projects that indicate future changes. First, some preliminary statements that define the context of the conclusions:

- **Campus NL is not a benchmark between universities; it provides an overall picture.** As in 2016, the research goal is to present a representative view of the past, present, and future of (all of) Campus NL. A complete picture is not necessary and would demand much more effort from the universities. The focus is on national-level figures: all universities combined. The collected data are underlying; the more complete the data, the more representative the picture, but it is not intended as an individual assessment.
- **University names are coded to prevent benchmarking.** In line with the previous statement, the overall picture is more important than analyzing (and judging) the differences between universities. Of course, the Campus NL team understands that individual universities want to recognize their own data. Therefore, decision-makers have been provided with information about their own coding.
- **Campus NL figures are provided by universities and may differ from other sources.** This study collected data on square meters, users, and euros (sometimes via the Colliers 2022 or 2024 benchmark). Differences in definitions and the exact timing of the inventory may result in discrepancies with figures in annual reports, administrative records, or other research reports. When drawing conclusions, this “noise” has been accounted for, either by adjusting the number of significant figures or by noting the causes of discrepancies. Over the past ten years, it has become more challenging to inventory data using consistent definitions, as universities have increasingly become network organizations (with shared personnel, physical, and financial resources).
- **University/campus data is used to illustrate strategic choices for Campus NL.** Data collection is not an end in itself but serves to support and justify strategic choices. This means that precision is not the goal; rather, the focus is on figures that align with the (in)accuracy of the measurement, such as ranges of space usage, building conditions, and cost levels. This is more than sufficient to support possible future models and decisions about the future of Campus NL.

Part A focuses on the theme of “hybrid working,” placing the university office environment at the center. In September 2023, it was already decided (by SBF, HOI, and DFB) that space usage figures were important, particularly actual occupancy and utilization. This became the most important aspect of Part A.

Before sharing the findings on the occupancy and utilization of office spaces, several other (preliminary) conclusions can be drawn about the space utilization of Campus NL, starting with office space. Note that the preliminary conclusions use 2021 data collected by Colliers in their biennial benchmark of Dutch universities. The 2023 data will be released in June/July 2024, and the conclusions will be updated accordingly.

Since 2016, the total office space per FTE (full-time equivalent) staff has significantly decreased.

According to the Colliers 2022 benchmark report, “on average, 12.5 m² of office space per FTE is available at universities. This is a decrease from the 13.5 m² in their previous benchmark from 2018. Due to the sharp increase in staff numbers, the ratio of m² office space per employee has decreased at most institutions. Hybrid working has partially offset the decline in available m² of office space.”

In the Campus NL 2016 report, the average office space usage (reference year 2015) was just above 20m² per FTE, with a range of 15.7 m² to 27.5 m². This suggests that office usage has become much more efficient within six years, not only through repurposing (or reducing) m² but also due to the growth in the number of FTE university staff. The 2023 data (Colliers 2024) - which were published in the summer of 2024 - show that the footprint per fte has decreased even more, to 11,0 m2 on average. This means that office use has even become more efficient in the last two years. Colliers also concludes that both increasing staff numbers and hybrid working have contributed to the reduction of the university office footprint.

Over the past few decades, Campus NL has seen little growth in m², while the community has grown significantly: space utilization has intensified or changed (on-/off-campus).

A key conclusion from the Campus NL 2016 report was that universities accommodated a (significantly) growing university population—students and staff—on an almost unchanged campus area. This conclusion was also drawn in the 2022 Colliers report for the five to six years following Campus NL 2016: according to the data they collected from universities and UNL, the number of students increased by about 21% between 2016 and 2021, and the number of staff by about 16%, while the area of university buildings increased by only a few percent. Note that these figures were estimated by reading the graph (see chapter A2); the actual data should refine this conclusion, and the 2023 data could alter it.It is clear that a rapidly growing university community was housed “on-campus” ever more efficiently, at least until 2021 (during the COVID-19 pandemic), partly because the community was increasingly “off-campus.”

Zooming in on the ratio between the “education” function and the “office” function (besides “other”), the share of “office” seems to have decreased proportionally: in Campus NL, it was still 1/3 of the usable area (UA). However, because the Colliers report uses a different unit (NLA: net lettable area), this is difficult to determine. It’s important to realize that in practice, meeting rooms within the “office” function can also be used for educational purposes, such as group guidance and student exams. Conversely, staff also use instructional spaces as meeting rooms.

In September 2023, it was decided (by SBF, HOI, and DFB) that figures on space utilization were important, especially actual occupancy and utilization. In the first months of 2024, campus contacts were asked to provide their occupancy and utilization measurements from recent years. Ultimately, the research team received a large number of studies, dating from 2012 to 2024.

The Campus NL team is proud of the collectively gathered data: over 100 buildings encompassing nearly 33,000 workspaces. This has allowed Dutch universities to collectively build a database that can be expanded in the (near) future. De vergelijking in deze studie is gebaseerd op de data uit de rapporten. For the expansion of the database, we see two possibilities: on the one hand, we aim to aggregate the underlying source data in a joint data warehouse, this will make more data available at measurement level for additional analyses (the quantity of data increases). On the other hand, we want to include more (explanatory) data in the database: what characteristics of accommodation solutions lead to low or high occupancy and what can we collectively learn from them? The universities are also considering giving new studies the same format to increase comparability - which was not optimal now.

Naturally, many conclusions can already be drawn from the current database, which are summarized below:

The current working practices of universities are reflected in the occupancy rates of buildings. These practices include individual choices about why and when people come to the office, as well as how scheduled meetings and educational activities are planned.

The average occupancy rate of office spaces is clearly lower post-COVID than pre-COVID, ranging from 23% to 30% (post-COVID) compared to 32% to 43% (pre-COVID) (see table III.1). This is a decrease of 9 to 15 percentage points, meaning the post-COVID occupancy is 2/3 of the pre-COVID occupancy. Looking at the post-lockdown studies that took many measurements per day (8 to 9 measurements), the average occupancy per day is 27% compared to 42% pre-lockdown. This is post-lockdown slightly lower than in the study with 4 measurements per day where occupancy was 30%. We study the seat occupancy of the workplaces, because universities aim to provide their employees with a sufficient capacity of workplaces. Therefore, from a capacity point of view it does not matter how many workplaces (i.e. seats) a room has; the workplaces can always be used if they are “free”.

In order to have sufficient workplaces available, campus managers also study peak occupancy because not all days are equally busy. **When looking at the highest measured values, the “average” peak load is 45% (post-COVID) across 44 buildings. The busiest times are between 11:00 and 12:00 and between 14:00 and 15:00.** At the same time, many occupancy measurements count a workspace as “occupied” if there is a coat, bag, or laptop present as a “sign of life.” Studies that noted this separately show that this can lower the occupancy by a factor of 0.2 to 0,25.

Table III.1: Changes in seat occupancy rate of workplaces (weighted mean) pre- and post-lockdown in the same measurements cohorts (Campus NL, 2024)

	Pre lockdown	Post lockdown	Difference and Factor
#8/9	42%	27%	27/42 = 0,64 Minus 15 percentage points
#5/6	32%	23%	23/32 = 0,72 Minus 9 percentage points
#4	43%	30%	30/43 = 0,70 Minus 13 percentage points

Unlike workspaces, meeting spaces were better utilized post-COVID. Here, there is a wide range from 11% to 40%. note that this measures if the meeting room is “used”: this is also the case when only one person uses a meeting room with a small, medium or large capacity). The so-called “camel” (Tuesday-Thursday peak in space usage) is also observed in the academic office, but only in 1/5th of the buildings. Together with another two-day pattern (Monday-Thursday) 1/4 of the buildings have a two-day peak. At universities, we observed four patterns: besides the two-day pattern, there were also patterns with a peak on 3 or 4 days or only on 1 day of the week. All patterns have around ¼ of the buildings: 1/4 of the buildings had a four-day pattern (Monday-Tuesday-Wednesday-Thursday), and 1/4 had the three-day or one-day pattern (1/4). The days when it is busy differ. Monday is also relatively busy at the university. Based on the information available in the space utilisation studies, we cannot conclude what causes these differences, but teaching alongside doing research certainly contributes to it. Universities that reported all their buildings separately also show divers patterns. These more diverse patterns can be caused by the different tasks that are performed at universities: education, research and valorisation.

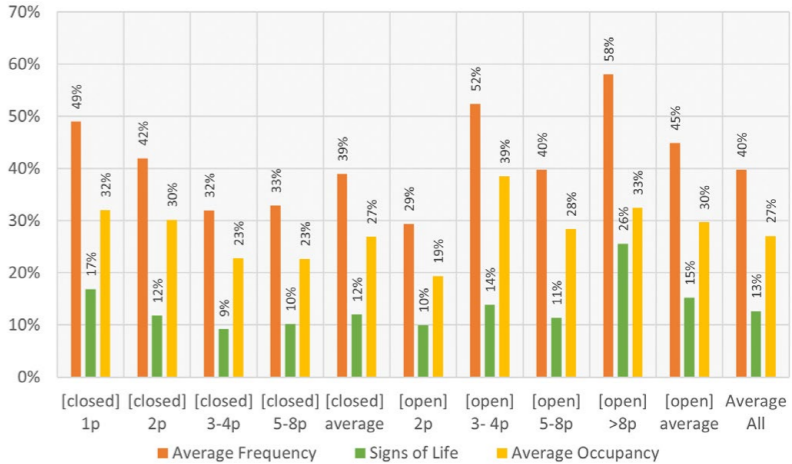
Four universities examined post-lockdown the occupancy and utilisation of specific spaces, but because the number of measurements varies from university to university, not all data can be compared one-to-one. Most universities also do not know whether the workplaces are shared or not, how the spaces are furnished and whether they have been recently upgraded or not. Nevertheless, we provide some insights from these studies to get a picture of how spaces are used. This information can be used -by a university- to determine whether they have the right mix of workplaces.

- Room frequency is higher at U13 in open spaces (45%) than in closed spaces (39%), this is the same at U9. Looking at room occupancy does not give an unambiguous picture, at U13 the difference is very small (open workspaces 30% and the closed workspaces 27%. and U9 has just the opposite picture (open workspaces19% and closed workspaces 27%).
- At U13, for the closed spaces it was found that ‘the less capacity in a space, the higher the occupancy’: the individual workstation has the highest room frequency at 49%. This is higher than the average of the open spaces (45%), but lower than the room frequency of the >8 person spaces (58%) and the 3-4 person spaces of the open spaces (52%).
- U13 has an room occupancy rate of 30% in open work places compared to the average room frequency rate of 45%, with only room frequency in 3-4 person spaces being higher than the average (38%). At another University (U10), the difference between room frequency and room occupancy is less pronounced, and the average room frequency rate (19%) is lower.
- At U12, individual workstations are on average the most occupied (33%), followed by multi-person work places(27%). ‘Landing’ work places and the ‘phone boots’ are the least occupied here. This is not entirely comparable with U13 and U9 because in this study the distinction between open or closed places is not made; the multi-person places can therefore be either open or closed.

Occupancy is higher in organizational units that are accommodated according to a provisional space norm, as shown in a study by U8. In the future they aim to determine a space norm.



Figure III.1: Average frequency, signs of life and room occupancy per room type for U13 (Campus NL, 2024)



Discussion: Making (at least) a 30% Reduction Theoretically Possible

The current way of working and planning at universities leads to occupancy rates between 23% and 30% including signs of life. The average seat occupancy shows that the space can be used more efficiently, next to the average campus managers also study peak-occupancy in order to provide sufficient work places also on the more busy days and hours. For government offices a target value of 75% is used. With an average peak occupancy of 45% post-lockdown, with the lowest peak seat occupancy of 24% and an exceptional highest average occupancy of 100% which is caused because in this building only 2 workplaces were studied. It can be cautiously concluded that universities can aim for 70% as a target value for capacity planning. More than 90% of buildings have a lower peak occupancy than this 70This conclusion is on the ‘safe side’ for two reasons: (1) the peak seat occupancy includes the signs of life and (2) for capacity planning organisations will not only study the highest peak seat occupancy. . . It is most effective to first improve occupancy for all days by further exploring the possibilities for flexible working if universities choose – taking everything into consideration (see other sections of the book– to change the space use.

Discussion: “Space Use and Utilization Also Allows for Peak Shaving”

Additionally, universities can use peak shaving. Although, this is not the most effective measure they can take, it can still be interesting from a mobility point of view to avoid the hyper rush hours. Peak shaving is possible by intensifying the use in the (early) mornings or spread the usage over more days, as the weekly patterns show. This needs to be based on specific measurements for a building as the patterns differ greatly. This requires a different way of space planning and scheduling (of meeting rooms).

There is certainly room—literally and figuratively—to increase occupancy on all days of the week. The demand can also be better spread over the hours of the days and the days of the week.

Summary

The occupancy/utilization figures indicate that a “repurposing” of up to 30% of office space is feasible. This “repurposing” could mean not constructing additional buildings despite growth, facilitating more educational activities in office spaces, or even selling, (circular) demolition, or transforming spaces into housing. See Part III of this report for (extreme) strategies and other solutions.

Universities can use this management information to make informed decisions. This will always be done in combination with the results from other parts of this study, such as trends impacting the size of universities, sustainability goals, and available resources.

Next steps

This first comparative analysis has provided valuable results and discussion points for universities which they can use in combination with the results of the other perspectives (organisational, functional, financial). For the space utilisation study, the next step is to determine in a workshop with the campus managers and/or campus contacts, if this information is sufficient for decision making. This will provide input for the next steps in this study and will guide the expansion of the database.

Part B - Campus TRENDS

This part of the study describes future scenarios and campus trends, based on the changing context and the policy choices (including specific policies on hybrid working) that universities may or must make within that context, linked to insights from academic research. The following components are summarized, which define the context for strategic campus choices: reference estimates (scenarios for the size of the student population), trends and scenario variables (from student reports), and scenarios for higher education, including those from SURF.

Next, the focus shifts to hybrid working, drawing conclusions from both practice and theory, specifically from the policy frameworks on “hybrid working” provided by universities for Campus NL, and the literature review on “hybrid working” and lessons for universities, conducted by a research team from TU Eindhoven.

B1 - Forecasting student numbers: insights from reference projections

Based on scenario studies of UNL (Universiteiten van Nederland: see www.unl.nl), the following conclusions can be drawn, which determine the context of campus management:

- **Scientific education is expected not to grow in the coming years. In the past, the number of students in scientific education grew significantly:** from 242,800 students in 2010 to 342,100 students in 2021 (+41% in 11 years). However, since 2022, the number of students has remained virtually unchanged, and it is expected to remain relatively stable in the future as well.
- **The widely varying long-term forecasts for the number of students in scientific education complicate the strategic housing agenda.** In just two years, the forecast for 2030 has decreased by approximately 60,000 students. That is nearly one-fifth of the current number of students. Considering the time involved in developing and implementing construction programs, 2030 is not the distant future but rather ‘today.’ Decisions are currently required, focusing on the level of facilities needed in 2030. Simply waiting to see how things develop is not a form of good governance. But with what student volume should we plan? What level of flexibility is desirable, and what specific facilities or composition of the real estate portfolio promote that flexibility, and what is the cost of this? Estimates of construction cost developments and sustainability considerations only complicate this puzzle further.
-

B2/B3 - Trends and Scenarios for the Future

While this part of the research was only initiated in 2023-2024 and will be explored in the next year, the conclusions in this part are still general. The challenges on today's campus seem to be growing when it comes to meeting the dynamic space needs (significant growth, hybrid learning/working, speed of innovations) with scarce resources (energy, space, labor, finances). The energy transition, post-COVID hybrid work environment, climate adaptation, and collaboration between university and city (campus and city), also as a living lab using academic knowledge from the universities themselves, are current trends often mentioned.

“Education is changing, and the campus is evolving with it. How are institutions currently approaching campus development and innovation? This question was answered by collecting and analyzing existing campus visions and accommodation strategies from MBO (secondary vocational education), HBO (universities of applied sciences), and WO (research universities) institutions. The analysis reveals that institutions strive for connection with their environment (businesses and region), internal cohesion, sustainability, digitalization, and flexibility.” (source: “Campus Innovation in the Netherlands” by SURF/Jet Bierman) In the next year(s) of Campus NL, the team will elaborate upon these themes. This will also include insights from a European perspective, with input from EUA: the European University Association.

B4 - Hybrid working policies Campus NL

In 2023, hybrid working policy documents (if available) were collected from Dutch universities. Some conclusions from the data collection and content of the documents:

- All collected hybrid policy documents (whether they are called regulations or guidelines) still allow flexibility in the actual on-/off-campus ratio for campus staff: no document enforces a certain ratio
- Roles and personal circumstances are considered to influence the ratio - also as an opportunity to facilitate a healthier work-life-balance;
- According to the collected hybrid working policy documents, hybrid working is considered an option, not a right.
- Although the presence of central guidelines or regulations implies a centralised “hybrid working policy”, the actual decision making is decentralised to teams within the organisation. The actual on/off-campus ratio is mostly considered to be an agreement between manager and employee.
- Consequently, this is an uncertainty for campus managers to plan the future office environment, since reality can still substantially differ from policy.
- If no regulation is found for “avoiding peak hours” (see part A3: peak days Tuesday and Thursday, peak hours 11:00 to 15:00) campus demand will remain dynamic, with high peaks but also (very) low utilization.
- Hybrid working changes on-campus demand: requires more (small) spaces for (video) calls to accommodate hybrid teams / team work.

The literature review on “hybrid working” was conducted by a research team from TU Eindhoven. Their findings are based on an extensive and thorough analysis (in appendix H) and a workshop with delegates from Dutch universities (in chapter B5) and are summarized in (prioritized) challenges for campus decision makers:

- “In a recent survey among academics from over 50 global universities, it was found that **2.9 days is the average amount of time academics want to spend on campus in the future, down from 3.8 days pre-pandemic (Hassell, 2023)**. Furthermore, there are differences in the time academics spend working at the office, with academics at engineering-based departments being more likely to work at the campus and those at social sciences and humanities reporting fewest days in the office. This highlights that there is significant variability across departments on planned presenteeism, potentially driven by the requirement for access to specialised equipment, resources, and areas such as labs.” (more info: <https://www.hassellstudio.com/research/an-uncomfortable-truth-the-empty-academic-office>)
- **“Organizations are transitioning towards long-term hybrid policies rather than reverting entirely to pre-pandemic office setups.”**
- Different models of hybrid work exist, including mandatory office with flex days, office-first with remote options, 50/50 split, remote-first with office visits, and primarily home-based work.
- Dimensions of hybrid working include spatial aspects like location and design, psychosocial aspects like autonomy and well-being, and organizational factors like talent retention and technology use.
- “Many organizations are choosing to keep their existing footprint while **condensing desk space into fewer square meters**. The freed-up space is then used to enhance workplace amenities and services, creating areas for relaxation, play, and socialization to provide a more enriching experience. This approach has been described by Leesman (2022) as **“half the space, twice the experience.”** This strategy focuses on transforming the office into a destination by offering employee-centric services and a variety of workspaces, including additional meeting rooms, breakout areas, coffee points, and socialization spaces (Leesman, 2022). Consequently, this increase in workplace experience is anticipated to drive higher attendance and employee satisfaction (n.d).”
- “While nearly half of all academics express the desire for their own campus workspace, a significant portion of **those with private offices are open to sharing in exchange for increased flexibility in remote work. This presents a compelling opportunity** for universities to enhance space utilisation while accommodating the needs of academics seeking greater flexibility in their work arrangements. (Hassell 2023)”
- **Key challenges for Campus NL, identified during the “hybrid working” workshop** on April 2, 2024 (selected from or in addition to the challenges from the literature review):
 - Preventing resistance to necessary changes
 - Determining optimal levels of autonomy and control
 - Supporting both individual and group needs
 - Accommodating different work types and individual preferences
 - Addressing underutilization of space without causing overcrowding.
 - “Several consistent themes emerged from the workshop, including **the complexity and sensitivity of discussions around fixed workplaces and private offices**, as well as the inadequacy of current workplace environments in providing suitable spaces for all types of work, such as concentration booths and private meeting rooms. Additionally, all groups emphasized that decisions regarding university campuses cannot be made in isolation and are influenced

by external factors such as energy prices, funding sources, and the broader societal representation of universities.”

In addition to the TU Eindhoven report, which extensively covers and supports the organizational and social/functional perspectives with sources, it is also important to consider the financial and (energy) technical aspects and conditions of hybrid working when making decisions. These aspects will also be taken into account when formulating strategies in Part III of the report.

This part of the research involves exploring the practice and theory of knowledge sharing: what can we learn from other (public) organizations and how do other countries organize knowledge sharing (whether specifically in the field of campus management or not)?

The conclusions below first include the substantive findings related to the theme of “hybrid working” and then the (preliminary) organizational findings: what can we learn from how (foreign) networks of universities facilitate knowledge sharing?

Part C - Campus ELSEWHERE

C1 - CfPB insights on the future of work(places)

During and after the COVID-19 pandemic, the Center for People & Buildings (CFPB) conducted extensive research on changing work patterns among various (public) organizations, including the Dutch government and the Dutch police [further details in the main text]. In mid-March, they published their most recent research results, which they also presented during a Campus NL hybrid working workshop to representatives from Dutch universities. Some conclusions from their research:

- “In 2023, more than five million people worked from home sometimes or most of the time, which corresponds to 52 percent of all workers, according to Statistics Netherlands. The data from the Work in Transition Monitor shows a similar picture. **In 2023, more than half of Dutch knowledge workers spent more than half of their working hours at home.** Our in-depth analysis has revealed six location usage profiles. This data even shows that 80% of Dutch knowledge workers worked fewer than 2 days a week at their primary workplace (office) in 2023. The rest of the time was spent working from home or elsewhere.” (Source: LinkedIn, March 2024)
- **The Netherlands is a leader in remote work in the EU** (also reported by CBS 2024).
- Concluding from the study about “the experience of occupancy” next to the actual utilization rates, there is a difference between actual busyness and perceived busyness. Crowding at the office is not necessarily a negative experience: it also adds to community building and sense to belonging to a vibrant team. It can easily be too quiet as well. More conclusions can be found in the corresponding chapter. Findings suggest the need to simultaneously measure both actual busyness and perceived busyness.
- VU researchers are also studying the topic of hybrid work and specifically “academic personas in hybrid working environments” with the title “How Can Hybrid Working 'Work'?”; once the results are public, they will be incorporated into our Campus NL research.

Media reports confirm the contradictory strategies for the future of offices. Some reports show that various (often private?) organizations are seeking solutions – “carrots and sticks” [provide examples] – to get employees back to the office. Other reports, however, highlight the opposite: some (often public?) organizations aim to offer (future) employees more autonomy and attract or retain them with favorable working conditions to combine work and personal life, even allowing them to live further from the traditional workplace.

The Dutch government expressed hope in mid-2023 to eventually need fewer buildings due to hybrid working. While other media reports mention possible reductions of 20% to 40%, the Ministry of the Interior and Kingdom Relations (BZK) indicates that the use of their offices has (permanently) changed after the pandemic, lockdowns, and the rise of hybrid working

At the Dutch government, the largest employer in the Netherlands, hybrid working is becoming the standard. This is outlined in their vision for the future of work. Hybrid working is defined by the government as a way of working where employees have the flexibility to make conscious choices about how, when, with whom, and where they collaborate.

In the Dutch government’s vision for 2027, alongside home offices, a nationwide network of government hubs and government meeting spaces is mentioned. This will allow civil servants to gather near their homes or at other convenient locations across the country. As of 2024, several government meeting spaces have already been opened. By 2027, it is planned to have an app with all the information about government offices and reserving a workspace (source: https://watwerktvooronsrijk.nl/onze-visie-voor-2027/).

From a recent Master thesis (John 2024), merging insights from literature and cases, there are conclusions about the impact of hybrid working on sustainability (and other goals), about:

- **Commute Time Savings:** A significant benefit of working from home (WFH) is the reduction in commute time, averaging 68 minutes per week per worker, which equates to 2.8% of a 40-hour workweek (Barrero et al., 2023).
- **Occupancy Levels and Energy Usage** (based on cases, see chapter C2): Over the past ten months, average occupancy levels have been around 30%, with a peak of approximately 60%, leaving a considerable amount of space unoccupied. Without synchronized energy usage, this could result in 70% of the space being heated, cooled, and lit unnecessarily. Open-plan workspaces and dynamic occupancy patterns complicate isolating energy demands to occupied areas, potentially overstating the energy benefits of hybrid working unless there is a significant reduction in occupied space.
- **Rebound Effect:** There is a rebound effect to consider, as noted by Pérez et al. (2005). Reduced office occupancy can lead to increased energy use at home. Synthetic simulations confirm that households with fewer occupants bear the largest burden. While the increase at an individual level is not exponential, the collective impact across the hybrid workforce could be substantial, disproportionately affecting economically and socially disadvantaged groups.
- **Mobility and Environmental Impact:** The energy footprint of a hybrid worker is also influenced by mobility. Hybrid working can reduce car use, but employees may choose to live further from the office due to less frequent commutes, potentially

increasing private transport use. Studies indicate this could shift transportation modes to private cars, biking, micromobility, and walking (Christidis et al., 2021). These changes affect urban geographies, leading to increased suburbanization. While hybrid working could improve job accessibility through workforce dispersion, benefits are more significant with robust public transport. Without adequate infrastructure, reduced commutes may not lead to energy savings.

- **Inequities in Hybrid Working:** Hybrid working trends reveal inequities. Employees in smaller households bear the largest burden, highlighting financial and social disparities. Marginalized groups are less likely to benefit from these trends.
- **Evidence-Based Analysis:** Tagliaro & Migliore (2022) advocate for evidence-based analysis to profile workers’ requirements, noting differences across gender and age groups regarding the impacts of remote working.

C3 - Lessons learned from international knowledge exchange models

In studying the foreign networks EUA, HIS, AUDE, Akademiska Hus, and Syk Oy, which respectively represent or bring together European, German, British, Swedish, and Finnish universities, an examination of their policies on hybrid working or future strategies that include this aspect was conducted.

What can be learned, however, is how these organizations bring universities together and facilitate knowledge exchange (about campuses). Studying knowledge exchange at foreign universities – as part of a doctoral research focusing on knowledge exchange systems – aims to support Dutch universities in improving their knowledge exchange practices: what solutions from abroad can we learn from, and conversely, what can they learn from us?

Apart from specific lessons on hybrid working or the future of universities and campuses, these foreign networks are also studied during the Campus NL project to learn from their methods and techniques for bringing universities and their knowledge together and preserving the “collective campus management memory.” More research will be conducted on this in the coming years. What the Netherlands can learn from the United Kingdom (AUDE), Germany (HIS), Sweden (Akademiska Hus) and Finland (Sykoy)? Preliminary conclusions can be found in section C3.

Part D - Campus LEARNING

This part of the research involves disseminating campus knowledge (with input from A, B, and C), resulting in an annual knowledge day and the development of an online platform for knowledge exchange, infographics for various university audiences, workshops on key themes, and ‘on-demand learning’ for campus staff up to and including 2026/2027.

In the first annual report, it is still too early to draw conclusions about the first year of knowledge exchange for Campus NL. However, a “baseline measurement of knowledge sharing,” or a survey, was conducted among nearly 200 campus management staff in November and December 2023.

D1 - Survey “baseline measurement” knowledge exchange

Firstly, as the Campus NL team, we are pleased with the number of respondents, which provides a representative picture for a “baseline measurement.” The results describe both the goals and means of knowledge exchange regarding campus management: from motivations to experienced barriers, from types of knowledge to the various networks known or participated in by the respondents. This forms an initial basis for discussion, improvement, and further research in the coming years.

The detailed analyses of the survey questions can be found in a separate appendix F: Correlations between organisational context, drivers and barriers, and knowledge exchange. Below are the conclusions.

It is clear that knowledge exchange occurs through both formal interactions (e.g., meetings and brainstorming sessions) and informal interactions (e.g., phone calls, online chats, and during lunch) via online or personal means. An analysis of the factors that enable or hinder knowledge exchange reveals that employees already have strong personal motivation to exchange knowledge, both intrinsically (through pleasure in helping others, knowledge self-efficacy, and ICT skills) and extrinsically (through anticipated usefulness and mutual relationships). The social climate among employees at different universities is also experienced as very positive. In contrast, the organizational structure and facilitating conditions of universities are considered lacking by many employees, even though we know that this organizational context has a greater influence on how employees exchange knowledge with other universities than individual motivational factors. The results show that respondents desire more involvement from UNL, regular meetings, and suitable tools for data processing and exchange to learn from each other.

These findings suggest that a lack of facilitating conditions (e.g., UNL involvement and coordination between universities) could be the main barrier to knowledge exchange, while personal motivations and a positive social climate between universities are the main drivers. The results indicate that encouragement from top management and incentives from the organization have a higher correlation with knowledge exchange than other factors; thus, these factors play an even more significant role in facilitating knowledge exchange, especially for those who do not currently engage in it. Therefore, there needs to be a balance between systematic support and providing incentives for knowledge exchange, where not only current exchange methods are systematized but also current reasons for knowledge exchange are strengthened. Existing networks offer platforms for learning and testing new initiatives to enhance current knowledge exchange and stimulate new methods, considering employee expectations.

Finally, from questioning respondents about the effects of the COVID-19 pandemic on knowledge exchange, it is evident that there are pros and cons to digital versus physical communication, with neither method being inherently better than the other. Supporting knowledge exchange will depend on the needs of employees in networks.

In summary, the glass is both half full (there are already many networks and willingness among many) and half empty (there is still much to improve in the effectiveness of knowledge sharing and the actual storage and retrieval of knowledge). The “collective campus memory” can be better recorded, and there is certainly a fertile ground (motivation) for this, as well as urgency, because the new generation of “campus managers” changes jobs more quickly and also relies on knowledge sharing from the older generation with decades of campus expertise (who will eventually retire or otherwise leave). Campus NL will suggest improvements for more efficient knowledge sharing in close collaboration with campus managers in the coming years.

D2 - Starting up knowledge exchange in 2023/2024

In year 2023/2024 the team already initiated knowledge sharing on a relatively small scale, which will be the foundation for larger steps and ultimately building a Campus NL platform with both public and private modes of file sharing:

- Through [Flipboard Campus NL](#), we already keep track of campus news: with various labels, we aim to extract more patterns from it, also linked to our 2023 FAIR data campus research which browses architecture databases for new university projects world-wide.
- Through **MS Teams and Surfdrive**, we exchange data with the 14 universities’ campus contacts in a closed network or completely confidential, respectively.
- The very first **Campus NL congress** took place on Friday, May 24, 2024 in Delft. Location was the heritage building of TU Delft’s Faculty of Architecture. This event provided an opportunity for executive board members, administrators, policy officers and researchers to come together and gain in-depth insights, as well as engage in interactive discussions about the future of Campus NL. This conference also provided additional input for the strategies and next steps of this research.


Conclusions about hybrid working

The final Part III of the report focuses on the possible implications of the knowledge gathered on policy and solution directions. It also suggests themes for a subsequent research year.


Two opposing strategies for hybrid working

To facilitate the discussion on potential solutions, two contrasting strategies for the university of the future—often reflecting opposing trends—have been formulated. These strategies are based on a review of relevant literature, an analysis of university policy documents on hybrid working, examples from other (public) organisations, and broader trends. A detailed explanation is provided below, with a comparative table on the following pages that highlights the differences more clearly.


Future questions on which the strategies differ:

**Organisational:**


- who do we want to be as a university (organizational culture, including community versus autonomy)?
- what is important for our primary processes: education & research?
- how do we want to collaborate?

**Functional/Social:**

- what weighs more heavily: collective (team) goals or individual needs?
- what contributes to employee productivity and (mental) health?

**Financial:**

- what may accommodation cost (% total)?
- what is the influence of accommodation choices on other costs (HR, ICT, etc.)?

**Energy/Technical:**

- what impact does the strategy have on sustainable ambitions university?
- and what impact on society, for example on mobility or choice of residence?

Figure III.2: Visualisation by Mark van Huystee of the challenge to accommodate both group needs and individual needs, made based on discussions during the annual conference Campus NL (24 May 2024)

Based on conflicting images of the future, two 180-degree-different strategies can also be outlined with corresponding choices for the working environment:

1. Strategy 1: “we are a campus university” counts on the commitment of employees to be physically present on campus more frequently, while fostering an on-campus community and teamwork. The underlying vision is that teaching and research require physical presence; innovation cannot occur without chance encounters or cross-fertilisation. Presence is considered essential for team building and fostering employee loyalty to the university, faculty, and colleagues. This approach prioritises the importance of community over individual autonomy.

Office space can remain similar to the current situation, providing territory for those who are regularly present. Accommodation costs may remain relatively high (as a percentage of total costs), but potential savings on HR costs could be assumed, such as reduced staff turnover and improved mental health. While energy and infrastructure costs are also high, campus occupancy and utilisation are increased, offering greater efficiency from the available space (in m²). Sustainability benefits could arise from reduced territorial claims and smaller individual workspaces (in m² per FTE).

2. Strategy 2: “embrace the hybrid reality” assumes an increase in off-campus working, whether from home or other locations, and positions this as a strategy to better support individual employees. This approach is particularly relevant at a time when personnel is scarce and many staff members live—or have moved—further away from traditional work locations. The premise is that education and research, particularly since the COVID-19 pandemic (and even before), have evolved into hybrid, location-independent processes.

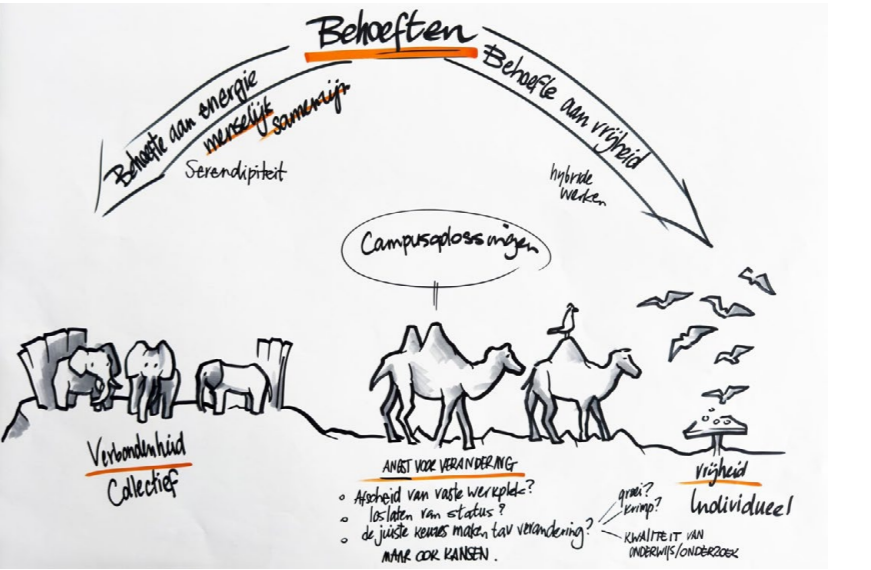
According to this vision, innovation often occurs in collaboration with external partners rather than solely within the campus. Furthermore, this strategy prioritises to enable diverse work-life balance preferences for employees (on/off-campus), making it possible for a wider range of individuals to work flexibly for the university. This approach places the interests of the individual above those of the group.

Office space requirements could be significantly reduced (in m² per FTE), leading to lower energy and infrastructure costs, including reduced commuting. Does this signal the inevitable end of the private workplace?

Accommodation costs could decrease as a percentage of total costs. However, this may be offset by potential increases in HR costs, a need for greater focus on fostering innovation, and investments required for managing efficiency and leading hybrid teaching and research teams

- Potential Reduction in Office Space:
- Utilization studies indicate that a reallocation of at least 30% of office areas is feasible.
 - Reallocation could include: refraining from building additional spaces for growth, repurposing office areas for educational use, or pursuing options such as selling, circular demolition, or transforming spaces into residential housing.

Refer to the tables on the next page for a comparative analysis of the two opposing strategies, along with the positive and negative associations of a more traditional approach (“back to campus: solid”) versus the hybrid reality of the post-pandemic era (“increasingly away from campus: gas”).



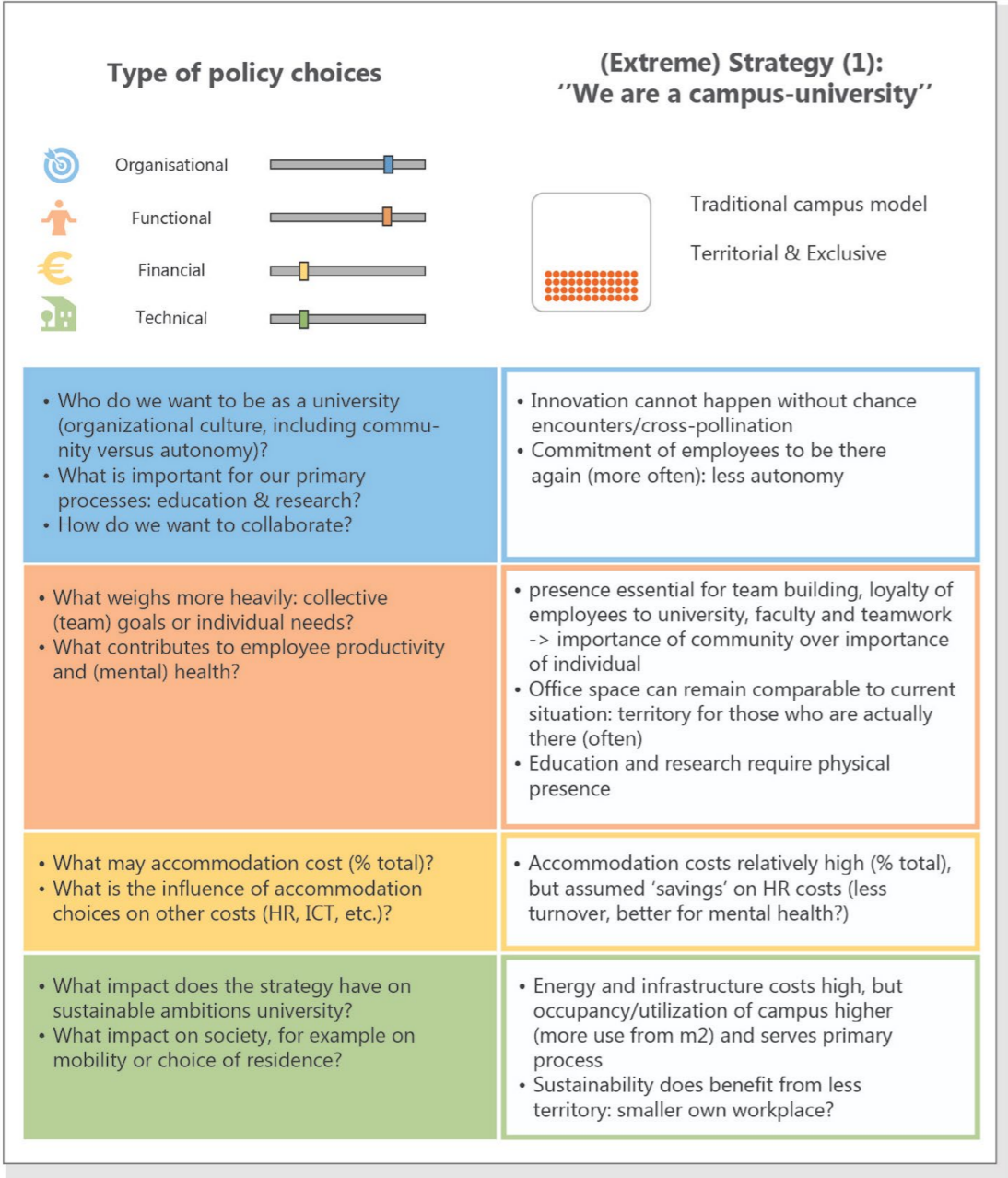


Table III.2: Extreme strategy 1: “we are a campus-university” (Campus NL, 2024)

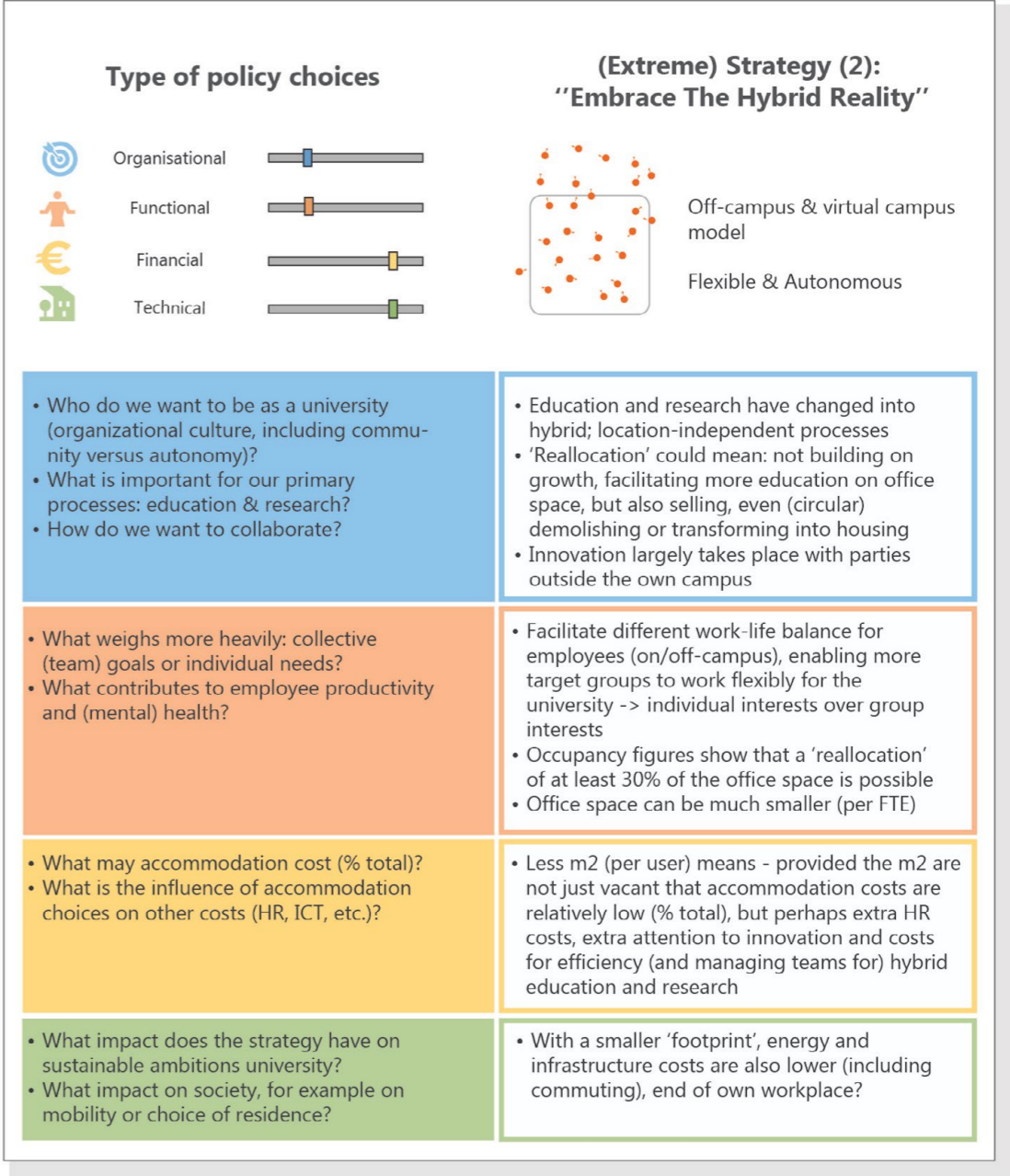

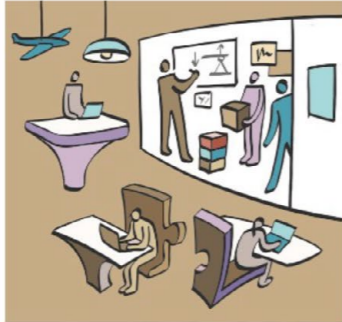






Table III.3: Extreme strategy 2: “embrace the hybrid reality” (Campus NL, 2024)

The two contrasting strategies, “we are a campus university” and “embrace the hybrid reality”, can be likened to the concepts of “back to traditional” (solid) and “off-campus/virtual” (gas), as introduced in Campus NL 2016 and further developed in subsequent publications by TU Delft’s Campus Research Team, such as “Campus of the Future - Managing a Matter of Solid, Liquid and Gas” (Den Heijer, 2021). Below are the associated positive and negative attributes of these campus models, which are equally applicable to the two outlined strategies.

summary positive and negative associations

model A - solid traditional	model B - liquid network	model C - gas virtual
<ul style="list-style-type: none">+ traditions, rituals+ loyalty, belonging+ “members only”+ exclusive, unique+ home, territory	<ul style="list-style-type: none">+ interdisciplinary, innovative+ > 1 boss+ serendipity, place to meet+ open, more visible+ campus costs lower than A	<ul style="list-style-type: none">+ accessible for many+ autonomy of individuals+ paperless+ very flexible+ campus costs < 5% total
		
<ul style="list-style-type: none">- territoriality, vacancy- closed doors- island culture- campus costs > 20%- high footprint user	<ul style="list-style-type: none">- anonymous- everyone’s workplace is nobody’s workplace- crowded- more mobility on campus	<ul style="list-style-type: none">- lonely- social isolation- less connected to colleagues- less loyal to university- lower course completion rates
		

Den Heijer, Alexandra (2021) “Campus of the future – managing a matter of solid, liquid and gas”, TU Delft Open, 2021
page 69/200 – illustrations by Mark van Huystee for/with AdH

A third, passive strategy for hybrid working “just wait and see”

In April 2024, during an HOI/DFB meeting, it was highlighted that “just wait and see” represents a third strategy, which also has its own set of advantages and disadvantages. The current situation at Campus NL already reflects some of these, summarised as follows:

“Relatively low occupancy of office space leads to a decline in employee interactions and weakens cohesion within teams, sections, or departments. Additionally, energy and financial resources are spent on underutilised facilities, which, in times of budget cuts, could be reallocated more efficiently to support teaching and research.”

Creative campus solutions: combinations of “solid-liquid-gas”

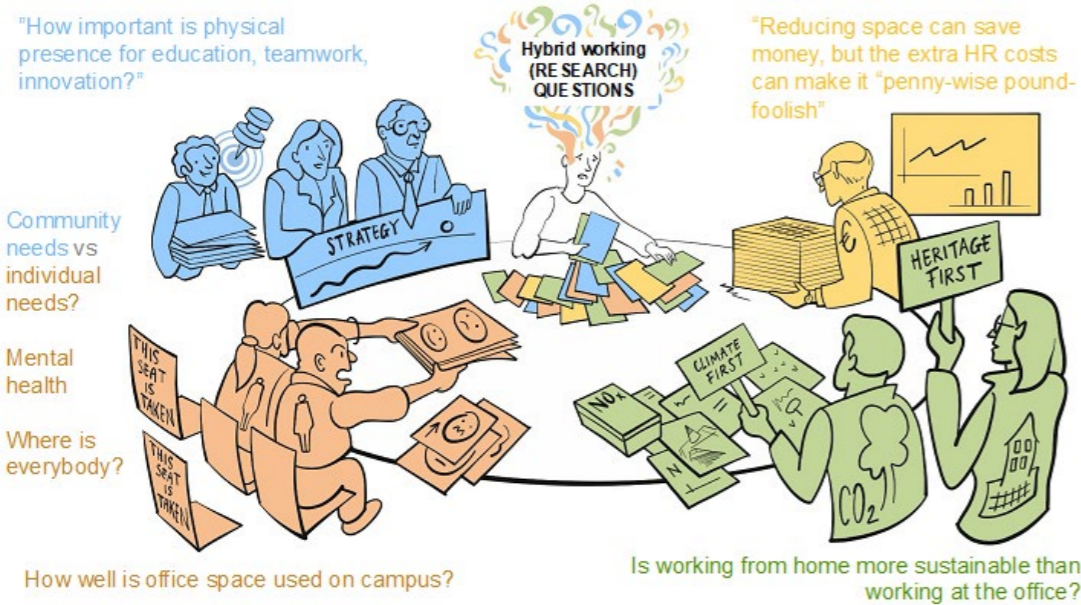
During a brainstorming session at an HOI/DFB meeting (mid-April 2024), some small and large solutions were also already outlined that combine the advantages of the (strategy) “we are a campus university” (“on-campus community” in English) with the advantages of “cherish the hybrid reality” (“embrace the hybrid reality” in English) and tries to avoid the disadvantages.

Some examples that fueled the discussion:

- Rediscover the “**teacher’s lounge**” - The experience, supported by Campus NL research (see Part A), is that many workstations are used for putting down belongings or hanging coats, while an employee is actually teaching dayparts in front of the lecture room or instructional space or has a series of meetings and appointments elsewhere or uses video calling areas. Dedicating/transforming (more) office space as “faculty rooms” and “team spaces” can take the pressure off individual workplaces, while providing more interaction opportunities for the teaching team or research team. This solution assumes less territorial use (“solid”) and more shared use (“liquid”). Or even stronger: **reconsider individual territory**.
- At the same time as making the work environment more flexible, solutions are sought for the easy reservation of “workplaces elsewhere.” The central government is investing tens of millions in such a **workplace management (reservation) system**, but then thinks it can save tens of percent on office space. Such a solution can also be explored within universities and is in line with previous “**smart campus tools**” research (Valks et al. 2016, 2018, 2021). It can also be applied to the traditional office environment and thus can be combined with both extreme strategies.
- Increasing the occupancy rate of the office environment can be done in several ways, including **adding more flex spaces**, spreading them better over the days of the week or spreading them better over the hours of the day.
- A more important question in increasing occupancy rates is not whether it can be done - and by how much percent - but how it could be done (e.g. partial use for teaching) and “whether it should be done.” This again depends on strategic choices: do we go “back to campus” more often or “embrace hybrid remote working”? Deciding on this given the organizational, social, functional, financial, physical and (energy) technical consequences will be a **responsibility of the entire university community**.

Summarising recommendations for next year

While the focus will shift to another Campus NL subject, the team will also keep track of new insights from theory and practice on “hybrid working”. In line with campus management theory, decision making about “hybrid working” needs to combine organisational, financial, functional and (energy)technical aspects. This is also illustrated in figure III.3. Further research will use the Campus NL platform to upload new literature and experiences, which answer the (research) questions from each of these perspectives.



Research focus for ABCD

- For part A - CAMPUS DATA (portfolio level) - the team will use the most recent benchmark study (Colliers 2024) to analyse developments in m2, users and costs related to university goals. This will be the first step to build a campus dashboard. The office data that were collected in 2023-2024 will be added to that dashboard.
- For part A - CAMPUS DATA (building level) - the accumulated database of more than 100 university buildings and their (office) space use, including occupancy and utilization, can be expanded for more analysis. The goal is to generate more knowledge about the future of the academic office.
- For part B - CAMPUS TRENDS - we will collect insights about the political context, more scenario studies and international trends that determine the context of the campus of the future.
- For part C - CAMPUS ELSEWHERE - we will strengthen cooperation with foreign networks - present Campus NL at their (annual) conferences, with or without a delegation of campus contacts; we will also join research networks and disseminate the content of this 2023-2024 Campus NL report.
- For part D - CAMPUS LEARNING - we will launch an online platform with the components the team collected in the first year; we will also publish in academic journals and media for professionals.

Figure III.3: Approaching the subject “hybrid working” both on-campus and off-campus, from four different perspectives - considering organisational, financial, functional and (energy)technical aspects - illustration Mark van Huystee (for Den Heijer 2019).

New theme Campus NL 2024-2025 focuses on “education”: the learning environment

In June 2024, a new theme was selected for Campus NL 2024/2025: EDUCATION. This decision was based on an open discussion with university representatives during the 24 May conference, where participants shared their perspectives in seven breakout rooms. The most frequently mentioned topics were: (1) education, (2) valorisation within the community, and (3) change management—how to handle shrinkage, flexibility, and adaptability. Following this input, the Campus NL steering group decided on the new theme, aligning with the advice provided.

Since “education” emerged as the most frequently mentioned topic, “innovations in and the use of the learning environment” will be the focus for 2024-2025. The team will conduct an inventory of innovative educational concepts (including recent and upcoming projects, as well as study and exam spaces) and examine changing patterns in the use of educational spaces. Similar to the prior study of office spaces, the team will gather data on occupancy and utilisation.

Building on the results of this 2023-2024 report, the exploration of educational spaces will offer fresh insights into how the current campus is evolving and what will be required in the future. Furthermore, the team will identify innovative and creative solutions that can gradually transform today’s campus into the campus of the future.

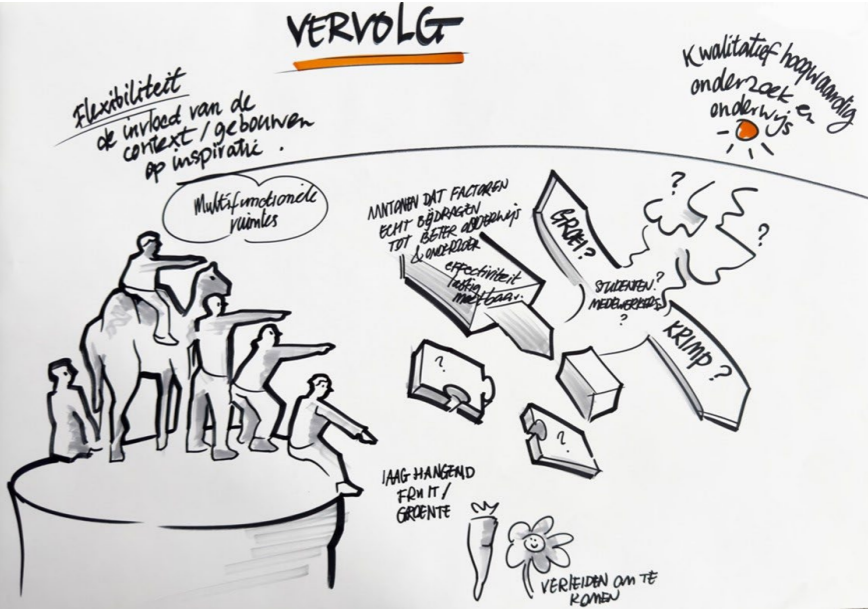


Figure III.4: Visualisation by Mark van Huystee of next steps on the Dutch campus and for the Campus NL project, based on discussions during the annual conference Campus NL (24 May 2024)



Appendices

- Appendix A (chapter A3):** Overview of utilisation studies
- Appendix B (chapter A3):** Measurements per report and allocation to a time cohort
- Appendix C (chapter A3):** Core times which occur less than 5 times
- Appendix D (chapter A3):** Types of workplaces and meeting spaces
- Appendix E (chapter D1):** Profile of respondents
- Appendix F (chapter D1):** Correlations between organisational context, drivers and barriers, and
- Appendix G (chapter D1):** List of networks
- Appendix H (chapter B5):** Hybrid working literature study - analysis (TUE)

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210 Campus NL Knowledge sharing and hybrid working

Campus NL Knowledge sharing and hybrid working 211



core times	Monday	Tuesday	Wednesday	Thursday	Friday	tot
9 to 10	1		2			3
9 to 14.30			1			1
9 to 15		1				1
9 to 15.30		1			1	2
9 to 16		1		1	2	4
10 to 11		1				1
10 to 12	1					1
10 to 14.30		1	1	1		3
10 to 15	1					1
10 tot 16	1	1	1			3
10.30 to 16.30	1	1	1	1		4
11 to 14.30		1	1			2
11 to 15	1				1	2
11 to 15.30	1	2				3
11 to 16		1			1	2
11 to 16.30				1	1	2
11.30 to 16.30					1	1
12 to 16			1			1
12 tot 17	2					2
13 tot 17			1			1
13.30 to 14.30	1					1
13.30 to 15.30	1					1
14 to 15			1			1
14 to 17			1	1		2
14.30 to 15.30	1		1			2
15 to 16	1					1
15.30 to 16.30				1		1

CATEGORY	OPEN/CLOSED	TYPE
Workplaces	ALL	Basis workplaces
		Desk workplaces
		Fixed desk
		Flexible workplaces
		Individual
		Places
		Standard workplaces
		Touchdown spot (temporary workplace)
		Focus Booth
		Phone Booth
		Workplace 1 person (with or without consulting table)
		Workplace 2 persons (with or without consulting table)
		Workplace 3 (with or without consulting table)
		Workplace 3-4 persons
		Workplace 4 persons (with or without consulting table)
		Workplace 5 persons (with or without consulting table)
	OPEN	Workplace 5-8 persons
		Places
		Workplace 1 person
		Workplace 2 persons
		Workplace 3-4 persons
		Workplace 5-8 persons
		Workplace 6 persons (with or without consulting table)
		Workplace 8 persons (with or without consulting table)
		Workplace >9 persons (with or without consulting table)
MEETING SPACES	ALL	1 person discussion space
		2 persons discussion space
		3 persons discussion space
		Chairs at the consulting table
		Consulting table
		Discussion facility
		Discussion spot
		Group seats
		Group spaces
		Meeting seats
		Meeting space
	CLOSED	Booth
		Chairs in meeting rooms
		Conference room
		Discussion room
		Discussion room for 2-4 persons
		Discussion room for 5-8 persons
		Meeting rooms
	OPEN	Consulting table (office space)
		Open discussion space 2-4 persons
		Open discussion space 9-12 persons

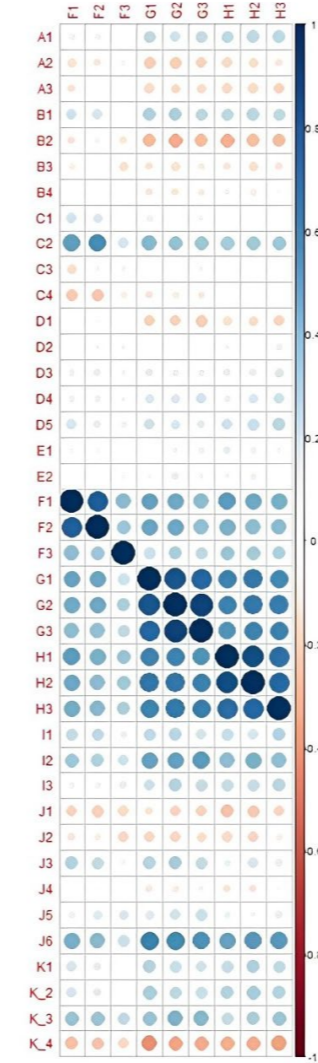
Gender	%
Man	63.4
Woman	35.5
Others	0.5
Age	
20 to 30	1.1
30 to 40	19.1
40 to 50	36.1
> 50	43.7
Education level	
MBO	3.3
HBO	41.5
WO or higher	54.6
University	
TUD	8.7
TU/e	5.5
EUR	7.1
LEI	4.9
UM	6.6
OU	0.5
RU	13.1
TiU	7.1
UvA	8.2
RUG	7.7
UT	2.7
UU	8.7
VU	11.5
WUR	7.7
Employment	
Employed by the university	97.8
Employed by an external company	1.6
Employment relationship	
Employed for a fixed period	7.7
Employed indefinitely	88.5
Hired by assignment	1.1
Work experience in campus management	
0 to 3	14.2
3 to 5	16.4
5 to 10	22.4
10 to 15	18
> 15	20.2
N /A	8.2
Function	
Campus or FM director	11.5
Campus contact	8.2
Employee	79.8

To further analyse the correlation between drivers, barriers and knowledge exchange processes, a correlation matrix was used. This matrix shows the results of a statistical analysis where a value of 1 indicates a strong positive correlation and a value of -1 indicates a strong negative correlation, as indicated by the colour and size of the circle. Survey questions included both positive and negative statements representing drivers and barriers, indicated by the colour in the matrix. Blue dots indicate a positive correlation between a driver and knowledge exchange, while red dots indicate a positive correlation between a barrier and knowledge exchange.

The list below shows which questions correspond to each value in the survey. Questions from A to E deal with individual motivations, while those from F to H relate to knowledge exchange processes and those from J to K to organisational context. This matrix shows that the more respondents agree with certain questions from A to E and J to K (whether positive statements measuring drivers or negative statements measuring barriers), the more likely they are to agree with statements about knowledge exchange processes from question F to H. The matrix indicates that there is a stronger correlation/influence between questions about organisational factors and knowledge exchange processes than individual motivations. In other words, people who are positive about organisational factors are more likely to share knowledge through the three knowledge exchange processes (written text, organisational communication or personal interaction).

Survey questions in matrix (with the four topics that are most correlated highlighted in bold colour):

- A. Enjoyment in helping others**
 1. I like to share my knowledge with colleagues at other universities.
 2. I don't have time to exchange knowledge with colleagues at other universities.
 3. I don't have the motivation to share my knowledge with colleagues at other universities.
- B. Knowledge self-efficacy**
 1. I am able to provide knowledge that colleagues at other universities would find valuable and relevant.
 2. I doubt whether my knowledge is interesting for other universities.
 3. I'm afraid of appearing ignorant when I share my knowledge with other universities.
 4. I'm afraid of being vulnerable when I share my knowledge with other universities.
- C. ICT use**
 1. For my work, I use electronic storage (such as online databases, file sharing platforms such as Surfdrive or Google Docs) to retrieve and store knowledge.
 2. I use online knowledge networks (such as intranet, file sharing platforms, etc.) to communicate with colleagues at other universities.
 3. It is difficult for me to use existing technology and online networks for knowledge sharing and storage.
 4. I mainly share my knowledge through personal communication.
- D. Anticipated usefulness**
 1. The time I spend consulting with colleagues at other universities could be better spent doing something else.
 2. Knowledge sharing would reduce the time required for my tasks.
 3. Information about campus management at other universities is relevant to my university.
 4. Colleagues at other universities have the necessary expertise and experiences that my university or I find valuable.



Matrix shows statistical analysis with level of correlation between drivers and barriers with knowledge exchange processes.

- 5. Knowledge exchange has a positive effect on the performance of my work.
- E. Anticipated reciprocal relationships**
- 1. My knowledge sharing with colleagues at other universities would strengthen the ties between other universities and my own.
 - 2. While I share my knowledge, I also expect to gain new knowledge from colleagues at other universities.
- F. Written contributions**
- 1. I add documents and reports to online databases (or file sharing environments) that are accessible to others outside my university.
 - 2. I contribute ideas and thoughts to online databases that are accessible to others outside my university.
 - 3. I publish articles and written pieces in university journals, magazines and/or newsletters that are accessible to others outside my department.
- G. Organisational communication**
- 1. I share my ideas in brainstorming sessions with other universities.
 - 2. I share success stories that can benefit colleagues at other universities in meetings.
 - 3. I also share negative experiences as lessons for others to avoid repeating these mistakes.
- H. Personal interactions**
- 1. I spend time in personal conversations (e.g. over lunch, over the phone) with colleagues at other universities to help them with their work challenges, or to get advice.
 - 2. I share experiences that can help colleagues at other universities avoid risks and problems through personal conversations.
 - 3. I have online chats and/or share knowledge via email with colleagues at other universities to help them with their work.
- I. Pre- and post-Covid pandemic**
- 1. Knowledge exchange with other universities has improved significantly since the corona pandemic.
 - 2. Knowledge exchange with other universities already took place regularly before the corona pandemic.
 - 3. During the Corona pandemic, it became more urgent to identify and reach colleagues at other universities.
- J. Facilitating Conditions**
- 1. I wish UNL would be more involved in knowledge exchange between universities.
 - 2. There is a need for more coordination between universities regarding campus management.
 - 3. There are already agreements to periodically exchange campus data with other universities.
 - 4. Suitable means to obtain data on campus real estate between universities are lacking.
 - 5. My direct manager regularly organizes meetings to share information and discuss possible solutions or plans with other universities.
 - 6. I am part of existing networks and partnerships with other universities regarding campus management.
- K. Social factors**
- 1. Colleagues at other universities are quickly prepared to help when necessary.
 - 2. There is mutual trust between colleagues from different universities.
 - 3. Top management and my direct manager encourage knowledge sharing, open communication and/or trying out new practices.
 - 4. There is a lack of incentives for exchanging knowledge with colleagues at other universities and for trying out new practices.

- L. Conceptual use**
- 1. I expect that the Campus NL network can help me understand how I can improve knowledge exchange.
 - 2. I expect Campus NL to better understand why knowledge exchange is beneficial for campus management and the decision-making process.
 - 3. I expect Campus NL to develop a more positive attitude towards knowledge exchange.
 - 4. I expect Campus NL to know how I can use knowledge exchange to improve the decision-making process.
- M. Instrumental use**
- 1. I expect that Campus NL will play a role in organizational and operational changes to improve the decision-making process.
 - 2. I expect that knowledge exchange will influence the decision-making process when implementing new policies and/or programs.
 - 3. I expect to do my work differently after gaining new knowledge.
 - 4. I expect that changes will be made in the physical structure of the university to improve the decision-making process after exchanging knowledge with other universities.
 - 5. I expect time savings in decision-making processes through knowledge exchange with other universities.
- N. Strategic use**
- 1. I expect to use the information I have gained from knowledge sharing to make informed decisions about a task that I would not have dared to undertake without that information.
 - 2. I expect to use knowledge exchange to create awareness.
 - 3. I expect decision-making processes to be influenced by what other universities do.
- O. Process use**
- 1. I expect that knowledge exchange with colleagues at other universities will accelerate innovation and progress.
 - 2. I expect that our working methods will change after knowledge exchange with colleagues at other universities.
 - 3. I expect that the university will be more creative in its working methods after exchanging knowledge with other universities.
 - 4. Without knowledge exchange, the decision-making process will be less effective/efficient.
 - 5. I expect that Campus NL will play a role in making data and information easy to find and accessible.

Appendix G (chapter D1): List of networks

Main theme/category	Network name	Reported by #
General campus management	HOI	15
	DFB	12
	Platform Kennisdeling Vastgoed Universiteiten en Hogescholen (PKVUH)	9
	CampusNL	6
	colliers	1
	VU- UVA, kennisuitwisseling over campusontwikkeling	1
	(eenmalige) uitwisseling met Wageningen universiteit	1
	4TU	1
	Convergentie	1
	OnePlanet Research	1
	LSH / health holland	1
Real Estate & Development	SAAZunie	4
	Projectleidersdag	5
	Studentenhuisvesting	2
	Smart Campus	4
	ECIO	2
	UU	2
	Landelijk Hoofden Overleg Universitaire Sportcentra (LHO)	2
	CfPB	1
	UKB	1
	WorkWire Masterclass Universiteiten	1
	Gezamenlijk Project Den Haag	1
	informele bijeenkomsten huisvestingsmedewerkers (voor 2015)	1
	Kennissessie bereikbare campus	1
	Campus Day	1
	NCO	3
Information management	UVIP	6
	Overleg BIMlink	2
	Surf	2
	WOTIB	2
	UFP	2
	Usergroup TimeEdit	1
	DigiGO	1
	Gebruik DMS	1
	Overleg GIS	1
	klein av netwerk	1
Safety	Platform beveiliging nederlandse universiteiten (PBNU)	8
	IV-HO	7
	Brandveiligheid	3
	UNL - Kennisveiligheid	1
	UNL - Sociale veiligheid	1
	UNL - Integrale veiligheid	1
	Elektrische veiligheid	1
Management & Maintenance	Overleg hoofden Beheer & Onderhoud	9
	SG SBF	1
	Radboud	1

Main theme/category	Network name	Reported by #
Contract & Procurement	Contractmanagersoverleg	2
	Inkoopconsortium energie	2
	controllers netwerk UNL	1
	Sectorale routekaart	1
	UPI (Beleidsadviseur internationalisering)	1
	OGF	1
	stuurgroepen UNL	1
Education	Intercollegiaal rooster overleg	1
	Digitaal toetsen	1
	Canon exams	1
	Comenius	1
Energy & Sustainability	Duurzaamheidscoördinatorenoverleg	13
	UNL duurzaamheid	3
	Energiecoördinatorenoverleg	9
	Sessie kennis delen	1
	kennisdeling CSRD	1
	MJA	1
	CBE hud	1
	Eurotech	1
	Rotterdams Klimaatakkoord	1
	SustainaBul	1
Waste & Catering	Catering verduurzamen	2
	Kringbijeenkomst Afval	3
	Milieubarometer	1
Personal	persoonlijk contact/netwerk	6

Appendix H (chapter B5): Hybrid working literature study - analysis (TUE)

The literature review on “hybrid working” was conducted by a research team from TU Eindhoven: Sophie Schuller, Rianne Appel- Meulenbroek & Lisanne Bergefurt. Their findings are based on an extensive and thorough analysis (in appendix H) and a workshop with delegates from Dutch universities (in chapter B5) and are summarized in (prioritized) challenges for campus decision makers.

B5.1 Introduction

In recent years, the landscape of work environments has significantly transformed, notably with the rise of hybrid work (Appel-Meulenbroek et al., 2022). This paradigm shift has not only impacted traditional work settings but has also influenced university campuses. Beyond their primary role in educating students, universities are also major employers. The universities in the Netherlands employ over 61,000 people (Universiteiten van Nederland, n.d), which is, for example, comparable to the employment figures of the Dutch real estate sector (Statista, 2020). Despite their importance as major employers, the influence of hybrid work on university workers is often overlooked and under-explored within the academic literature on hybrid work. Whilst hybrid work is establishing itself as a predominant way of working post-COVID-19 pandemic (Sailer et al., 2022), there is little unified insight into its influence on on-campus work and the subsequent effect on campus spatial planning.

Therefore, the purpose of this report is to identify the most important challenges for translating the hybrid work trend to the university campus context through literature review and a workshop with representatives of Dutch universities focussing on campus management and development, real estate, facilities management (for instance “FM-afdeling” or “Dienst Huisvesting”). It starts with an explanation of the features of knowledge work in general and academic work specifically, and the similarities and differences between them. Then, it introduces the concept of hybrid work, providing a definition and discussing how it relates to existing workplace models such as flexible work and activity-based working (ABW). It then offers a comprehensive summary of the current literature on the spatial challenges of hybrid work, including the psychological and organizational factors that may influence these challenges in the planning of university campuses. Since there are a limitation of studies evaluating the implications of hybrid working within the academic context, literature have been taken largely from the non-academic knowledge work field to inform insights in this report. Because of this limited availability of research on academic environments, this also includes the findings of a workshop. The aim of this workshop was threefold; to translate the challenges identified from literature to the university campus context, to identify potential additional challenges, and to prioritise the challenges on which ones to address first. The insights provided by this report could be used to optimize hybrid working policies for university campuses.

B5.2 Method

For the literature review, a narrative approach has been used, meaning that careful selection of the most important and relevant works has led to the list of studies analysed in this report, excluding less relevant or similar works by others. Papers were collected from Scopus and Google Scholar databases, based on the inclusion of keywords relating

Authors Hybrid working literature study (TUE): Schuller, S., Appel-Meulenbroek, R., Bergefurt, L.

to 1) hybrid work, 2) modes of work that may be delivered within a hybrid construct, such as ‘remote work’ and ‘in-person work’, and/or 3) university campus settings. Papers were limited to those published between 2000 and 2024 and written in English. Papers published before 2000 were omitted due to the substantial transformations in office design resulting from the widespread adoption of increased work outside of the main office environment (Liao, 2011). Paper searchers were conducted between January and February 2024, resulting in 77 studies for review.

B5.3 What is (campus) work?

This section provides an overview of both non-academic and academic knowledge work, emphasizing their similarities and differences. To understand the implications of hybrid work on university campuses, it is essential to review the literature related to both types of knowledge work. However, when applying findings from the broader knowledge work literature to academic settings, caution is advised due to the nuanced differences and distinct cultural contexts.

B5.3.1 Knowledge work and its spatial context

Knowledge work refers to tasks and activities primarily driven by cognitive processes such as problem-solving, critical thinking, analysis, and innovation, often requiring creativity and non-linear thinking (Reinhardt et al., 2011). Field and Chan (2018) defined it as manipulating and transmitting ideas, as opposed to goods, particularly using digital technologies. This builds on the findings from Bailey and colleagues (2010), who highlighted that knowledge work is characterized by its reliance on technology, making it synonymous not only with specific work outputs, such as creative problem solving, but also with the physical infrastructure of the office needed to support the requisite technology, namely the computer or laptop. In contemporary definitions of work, knowledge work is synonymous with computer-based work and activities. As a result, it could be considered that knowledge work as a profession has, over the last few decades, adopted a specific set of physical environmental ‘norms’, such as a reliance on desks, chairs and meeting rooms to accommodate predominantly computer-based activities (Green & Myerson, 2011).

Summary of non-academic knowledge work

- Encompasses tasks driven by cognitive processes and mental energy.
- Requires protection of the cognitive capabilities of workers, including elements that can influence cognition, such as emotion, mood and mental health.
- Is becoming synonymous with digital/computer-based work.
- Examples:
 - Reading
 - Research
 - Idea generation (email, meetings)
 - Communication
 - Collaboration
 - Research and development
 - Strategic planning
 - Data analysis
 - Software development
 - Decision-making

Examples of knowledge work include reading, research, and idea generation, alongside routine duties like communication through calls and emails, research and development activities, strategic planning, data analysis, software development, content creation, and decision-making processes in various professional fields such as academia, business, healthcare, and technology (van der Berg et al., 2020). Collaboration, interaction, and peer networking are integral to knowledge work (Heerwagen et al., 2004). As for knowledge work rather people’s mental than their physical energy is used (Heerwagen et al., 2004), it is important to safeguard their cognitive capacities and well-being. Safeguarding knowledge workers also necessitates the consideration of factors that can impact cognitive capabilities, such as mental health, emotions, and mood.

B5.3.2 Academic knowledge work and its spatial context

Academic work refers to the activities carried out by employees in a university or higher education setting, primarily focused on generating, preserving, and disseminating systematic knowledge and learning-related activities (Indergård et al., 2022). This includes academic knowledge work and supporting roles, such as student support, IT, finance, and campus operations professionals. As a result of encompassing these positions, academic work includes various tasks, such as teaching, research, supervision, administrative duties, and committee work (Macfarlane, 2011). Nevertheless, there seems to be a lack of consensus on what academic knowledge work exactly is. For instance, van Sprang (2012) shows that there is no unified vision on the role of research within academic work. This also creates unclarity in spatial planning needs, as it is uncertain how different spaces (e.g., shared or private offices) will be used.

Contrary to the assumption that academics primarily work in solitary office settings, knowledge creation often occurs across multiple interfaces, such as interactions with colleagues, students, fieldwork, and laboratory work (Macfarlane, 2011; Teichler et al., 2013). Huhtelin and Nenonen (2019) reveal that many academics require concentrated work and interactive engagement in their research endeavours. Academics typically spend only 30-40% of their workday in their offices, otherwise engaging in activities such as lecturing, attending meetings, supervising students, travelling, and participating in conferences (NTNU, 2018; Häne et al., 2020). Moreover, academic disciplines vary in their modes of operation, with some conducting research primarily within office spaces while others utilise laboratories, studios, fieldwork locations, or workshops (NTNU, 2018; Häne et al., 2020). Furthermore, academics usually spend their days working across the campus, resulting in low occupancy rates (Knoll, 2023).

Summary of academic knowledge work

– The private academic office is a complex historical, functional and social construct, clearly distinct from non-academic knowledge work environment.

– Examples of tasks:

• Writing (papers, grant funding)

• Research - desk-based (i.e., library and archive)

• Research – specialist (i.e., lab, studio, multimedia)

• Teaching

• Collaboration and inter-disciplinary projects

• Fieldwork

• Presentations

• Mentoring/1-2-1 discussions

	Non-academic knowledge Work	Non-academic support work	Academic knowledge work	Academic support work
Focus on cognitive and mental capabilities	●	●	●	●
Reading, writing, concentration	●	●	●	●
Research (desk-based)	●	●	●	●
Idea generation (email, meetings)	●	●	●	●
Communication	●	●	●	●
Collaboration	●	●	●	●
Research and development	●	●	●	●
Strategic planning	●	●	●	●
Data analysis	●	●	●	●
Software development	●	●	●	●
Decision-making	●	●	●	●
Large meetings > 10 people	●	●	●	●
Interdisciplinary projects with external collaborators	●	●	●	●
Heavily reliance on presence for others	●	●	●	●
Utilisation of sensitive data or materials	●	●	●	●
Teaching, supervision	●	●	●	●
Special functions - labs, studios	●	●	●	●
Field work	●	●	●	●
Frequent presentations, reciprocal student presentations	●	●	●	●

B5.3.3 Key differences and similarities

- In general, the following four types of knowledge work can be found on campuses:
1.

Non-academic knowledge work: includes routine activities, project management, and coordination efforts.
2.

Academic knowledge work: includes reading, research, and idea generation, and routine duties like communication, research and development activities, strategic planning, data analysis, software development, content creation, and decision-making processes.
3.

Non-academic support work: includes administrative tasks, support functions, and operational responsibilities.
4.

Academic support work: includes administrative tasks, support functions, and operational responsibilities, such as student support, accounts procurement or campus services.

The following table summarises the main differences and similarities between these types of work, which are further explained in the continuation of this section.

B5.3.3.1 (Academic) support work has similarities to non-academic knowledge work

Academic support work and non-academic knowledge work have several similar characteristics, such as administrative tasks, support functions, and operational responsibilities. This often entails routine activities, project management, and coordination efforts. In contrast, academic knowledge work can be characterised by the addition of teaching obligations and/ or research and, as a result, has a more varied spatial pattern that requires access to more specialised spaces, such as labs, research environments, and auditoriums. From this perspective, support work may represent greater alignment with non-academic knowledge work findings from literature than academic knowledge work.

B5.3.3.2 Non-academic knowledge work is based around a computer and is more open to standardisation

Non-academic knowledge work often involves computer-based tasks, leading to relatively standardised spatial design and infrastructure needs (Bailey et al., 2010; Field & Chan, 2018). However, academic work is far more diverse and interdisciplinary, resulting in significant challenges in standardising spatial design for academic settings. For instance, calculating sales and financial accounts on books or consulting services may require similar spatial requirements, while academic endeavours, such as studying women’s working rights versus investigating the plasticity of materials under heat and pressure, entail vastly different processes, tools, resources, and spatial planning needs (Macfarlane, 2011; Teichler et al., 2013). This diversity in academic output underscores the complexity of designing spaces that can effectively accommodate the varied requirements of academic work across different disciplines and faculties.

B5.3.3.3 Academic work is interdisciplinary with a wide range of stakeholders

Academic knowledge work tends to be interdisciplinary and collaborative, involving interactions with peers from other universities, students, and external stakeholders. In contrast, non-academic office knowledge work may involve collaboration within specific departments or teams typically within the same organisation and location (Reich & Reich, 2006).

B5.3.3.4 The output of deliverables is more defined and unitised in non-academic knowledge work

The output of non-academic office knowledge work typically consists of tangible products or services directly related to business objectives, such as reports, presentations, or financial analyses, whereas academic knowledge work results in scholarly outputs, including research papers, books, conference presentations, and educational materials, which contributes to the advancement of knowledge in specific fields (Reich & Reich, 2006; Macfarlane, 2011).

B5.3.3.5 Culture of leadership is more decentralised in academic knowledge work

Leadership styles and organisational structures in non-academic office settings are often hierarchical, with clear chains of command and decision-making processes, while academic environments may exhibit a mix of hierarchical, decentralised and autonomous leadership styles influenced by disciplinary cultures and departmental traditions (Martin, 2016). In academia, departments often have the autonomy to shape

their research and teaching agendas based on the expertise and interests of their faculty members. This decentralised approach allows individual departments to define their scholarly priorities, fostering a culture of autonomy and collaboration (Martin, 2016). Unlike hierarchical organisations, where research agendas are typically dictated from the top down, academic departments encourage a more egalitarian environment where faculty members have a say in shaping the direction of research initiatives (Martin, 2016). This egalitarian ethos promotes interdisciplinary collaboration, knowledge sharing, and open dialogue among researchers, contributing to a dynamic and inclusive culture of academic knowledge work. However, this decentralised nature can also increase the complexity of change programmes or implementation of central strategies owing to a lack of singular leadership or decision-making unification across departments.

B5.3.3.6 High rates of variation exist between departments and universities

High rates of variation in work, culture and working practices exist between different departments in the same university and the same departments in different universities. The landscape of academic knowledge work is marked by significant cultural and hierarchical diversity across departments and institutions. This inherent variability presents a considerable challenge in formulating consistent, campus-wide, or national strategies for spatial planning and hybrid working practices within universities. Unlike the standardised nature of corporate functions in non-academic knowledge work, academic departments operate with varying levels of autonomy, cultural norms, and disciplinary practices, resulting in distinct spatial needs and preferences (Martin, 2016). Consequently, strategies aimed at optimising campus spatial planning must navigate this intricate web of cultural, hierarchical, and disciplinary differences to ensure inclusivity, functionality, and efficiency across diverse academic settings. The same may also be true for the implementation of hybrid working policies. Moreover, different disciplines are subject to different growth rates, both in terms of number of students and societal relevance. For example, Hossler (1999) highlights that the number of students studying a particular subject can change over time due changes in societal trends, technological advancements, economic conditions, and shifts in workforce demands. Additionally, factors like introducing new programs or courses, changes in educational policies, and fluctuations in the popularity or perceived importance of certain fields can also influence the number of students enrolled in specific subjects. Due to the growth or shrinkage of faculties, the spatial needs may change considerably.

B5.3.3.7 Academic work has less focus on individual workers’ needs

In the post-pandemic landscape, with the widespread adoption of remote and hybrid work models, there has been a notable shift in focus towards enhancing the individual employee experience within corporate environments. Employers are increasingly recognising the importance of catering to the diverse needs and preferences of their workforce to foster engagement, satisfaction, and well-being (Gensler Research Institute, 2023). This “me-centric” approach emphasises personalised work arrangements, flexible schedules, and support for work-life balance, reflecting a broader trend towards prioritising individual autonomy and empowerment in the workplace. In contrast, academia operates within a different framework, where the primary responsibility of academic knowledge workers extends beyond individual needs to encompass collective obligations to students, colleagues, and the institution as a whole (Blessinger & Bliss, 2016). While academic knowledge workers may seek to optimise their own work experiences, their professional roles require a “we-centric” perspective, prioritising student support, collaboration with colleagues, and contributions to the academic community.

B5.3.3.8 Academic work is more flexible in time allocation

In non-academic office settings, employees often adhere to standard working hours and schedules, with tasks assigned based on project deadlines and organisational priorities. In academia, time allocation is more flexible and may vary depending on teaching responsibilities, research commitments, and administrative duties. For example, a university professor may balance teaching classes, conducting research, mentoring students, and serving on academic committees, with the flexibility to adjust their schedule according to academic calendar events and research milestones.

B5.3.3.9 Academic work focuses on depth of knowledge instead of on profit-maximalization

In non-academic knowledge work settings, the primary focus often revolves around delivering products or services to clients in a timely manner to maximise profitability and maintain competitive advantage (Brown & Eisenhardt, 1998). Speed to market is paramount, with an emphasis on efficiency, productivity, and meeting client deadlines (Krishnan & Ulrich, 2001). In contrast, academia operates on a different timescale, where the focus is on the depth of understanding, quality of research, and scholarly rigour (Brennan et al., 2014). Researchers and scholars invest considerable time and effort in conducting thorough literature reviews, designing rigorous experiments, and analysing data to generate new knowledge and advance the frontiers of their respective fields accumulatively over time (Kuhn, 1962). The academic pursuit of knowledge often requires patience, perseverance, and attention to detail, with research projects spanning months or even years to achieve meaningful results. Thus, while both non-academic knowledge work and academic knowledge work share common objectives of creating value and solving problems, the timelines and priorities differ significantly.

Summary: Key Learnings

- Academic work encompasses more diverse tasks such as teaching, research, and administrative duties.
- While all knowledge work involves cognitive tasks, academic work is more interdisciplinary and collaborative, involving more varied stakeholders.
- Academic work output includes scholarly outputs contributing to knowledge advancement, whereas non-academic work outputs are often tangible products, services, or deliverables.
- Leadership in academia is characterised by a mix of hierarchical and egalitarian styles, fostering autonomy and collaboration.
- Cultural variations exist within academic departments, influencing spatial preferences and organisational dynamics.
- Academia prioritises collective obligations over individual needs, reflecting a "we-centric" approach.
- Flexibility in academic work schedules contrasts with the fixed hours of non-academic office settings.
- Academic work focuses on depth of knowledge rather than timely utilisation for profitability.

B5.4 Hybrid work and related concepts

Hybrid work can be defined as the combination of traditional in-office work with so-called telework (Cook et al., 2020). It allows employees the flexibility to work from either an office setting or any remote location, such as home, coffee shops, or coworking spaces, with or without the use of information and communication technologies (ICTs). In a Harvard Business Review article, Gratton (2021) emphasises how organisations have embraced hybrid work models. Millions of workers worldwide have transitioned from being place-constrained (office-bound) to being place-unconstrained (able to work from anywhere). Notably, there has also been a shift along the time axis, with many workers moving from being time-constrained (working synchronously) to being time-unconstrained (able to work asynchronously at their convenience) (see Figure 1).

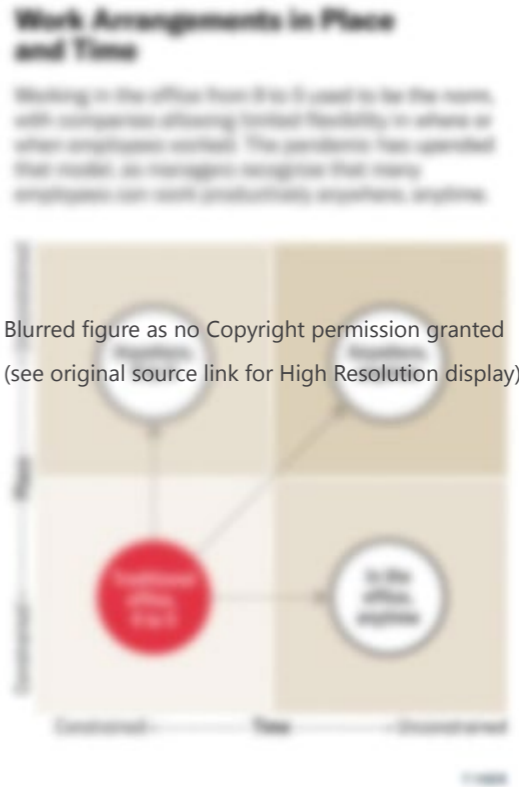


Figure 1: Work arrangements now more fluid across place and time

(source: please refer to Gratton, L. (2021, May 1). How to do hybrid right. Harvard Business Review. <https://hbr.org/2021/05/how-to-do-hybrid-right>)

B5.4.1 Hybrid work

Hybrid work refers to a flexible work arrangement that seamlessly integrates both remote work and in-person work (Krajcik et al., 2023). Traditional definitions of hybrid work often focus on the locational or physical design of work environments, contextualising hybrid as a purely real estate issue. The origins of the term ‘hybrid work’ can be traced back to 1994, when it emerged in the academic literature in the context of distributed work. Initially, hybrid work referred to a growing interest in satellite offices, rural telework centres, and other hybrid work sites intermediate between the home and the central office (National et al., 1994). However, no mention of the home environment was included. Increasing references to hybrid, including home environments, began around 2005 (Halford, 2005) and, of course, became the predominant hybrid dyad during the COVID-19 pandemic (Appel-Meulenbroek et al., 2022). As a result, hybrid work is typically contextualised as binary presentism as either being ‘on’ or ‘off’ corporate sites.

Against this backdrop, hybrid work sits within the same genre as wider modes of work, such as activity-based-working (ABW), telework, remote, flexible, and distributed work (Krajcik et al., 2023). Sailer et al. (2023) demonstrates that over the past few years, the definition of hybrid has expanded to accommodate a shift towards hybrid work as a tool to support investment in employees, namely a ‘socio-spatial’ lens of hybrid work, to deliver positive organisational outcomes. As a result, hybrid work has expanded its meaning to focus not only on where work is done but also on the experience and organisation of work for both organisations and employees. Technology-enablement is also seen as increasingly central to the implementation of hybrid solutions (Field & Chan, 2018).

Nevertheless, the definition of hybrid working is still evolving and in a state of flux, which may account for the conflicting findings regarding opportunities and challenges of hybrid work (Sailer et al., 2023). This may also contribute to the interchangeable use of terms, leading to confusion and lack of clarity, especially in developing cohesive workplace and hybrid strategies.

B5.4.1.1 Home-office balance

In a recent survey among academics from over 50 global universities, it was found that 2.9 days is the average amount of time academics want to spend on campus in the future, down from 3.8 days pre-pandemic (Hassell, 2023). Furthermore, there are differences in the time academics spend working at the office, with academics at engineering-based departments being more likely to work at the campus and those at social sciences and humanities reporting fewest days in the office. This highlights that there is significant variability across departments on planned presenteeism, potentially driven by the requirement for access to specialised equipment, resources, and areas such as labs.

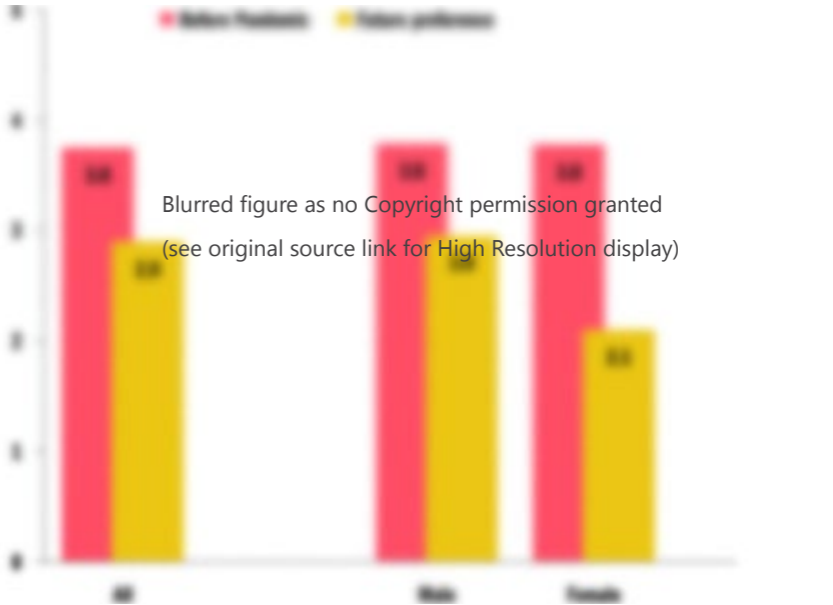
Recent literature on workplace preferences in the Netherlands also suggests a shift towards hybrid work models, with employees expressing a desire for a balance between working from home and office presence. On average, Dutch employees prefer to work from home for 2.1 days per week, indicating a growing acceptance of remote work arrangements (CBS, 2024). Similarly, employees were found to favour a combination of office and home-based work, with a preference for spending around 2 to 3 days per week in the office (ISE, 2021).

Dutch employees expressed a preference for remote work on Mondays, Wednesdays, and Fridays. They cite avoiding peaking commuting times, managing childcare responsibilities, and achieving a better work-life balance as key reasons for favouring these days (NU.nl, 2023). Similar results were found by the Central Bureau of Statistics (CBS), which identifies Mondays and Fridays as the most favoured days for remote work, while Tuesdays through Thursdays are preferred for office attendance. Wednesday, alongside Friday, is a half-day for children at primary schools (basisschool). This makes Wednesday a preferred day for working from home, catering to part-time workers who either have free time or work a half-day schedule.

Nevertheless, the preferred remote workdays may mainly reflect non-academic knowledge work settings, where people have greater autonomy over work arrangements. For faculty members, it is important to consider the unique scheduling constraints, dictated by teaching commitments and lab sessions, limiting their flexibility in choosing on-site days. In addition, teaching obligations vary across semesters/quartiles/trimesters, and thus also the preferred days in the office might not be consistent throughout the year. Therefore, while these findings may apply to academic supporting staff, faculty schedules of academic knowledge workers are typically structured around these specific teaching and lab requirements.

Figure 2: On-campus working preference, before and after pandemic, by gender

(source: please refer to “People work” on campus, “Paper work” at home (Hassell, 2024, p. 11, Figures 7 & 8), <https://www.hassellstudio.com/research/an-uncomfortable-truth-the-empty-academic-office>)



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(see original source link for High Resolution display)

Figure 3: On-campus working preference, before and after pandemic, by University Department

(source: please refer to “People work” on campus, “Paper work” at home (Hassell, 2024, p. 11, Figure 9), <https://www.hassellstudio.com/research/an-uncomfortable-truth-the-empty-academic-office>)



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B5.4.4.2 Additional hybrid-related terms

Due to the lack of a consistent definition for “hybrid work,” the following workplace terms are often utilized interchangeably or as part of hybrid work-related discussions.

B5.4.2.1 Flexible work

Flexible work encompasses a broader spectrum of arrangements, including flextime, compressed workweeks, job sharing, and remote work, allowing employees greater control over when, where, and how they work (Kelliher & Anderson, 2010). However, as employee choice is arguably at the centre of hybrid working policies (Appel-Meulenbroek et al., 2022), these terms are increasingly used interchangeably to reflect flexibility of choice over location of work; thus, the definitions of hybrid and flexible work overlap.

B5.4.2.2 Activity-based work

Activity-based working (ABW) is a workplace strategy that provides employees with a variety of spaces designed for different tasks or activities without assigning fixed desks or workstations, typically requiring a ‘clear desk policy’ (Oygür et al., 2022). Employees have the flexibility to choose from a range of environments optimised for specific work functions, such as focused work, collaboration, or relaxation (Appel-Meulenbroek et al., 2015). ABW can be incorporated into office design and, therefore, form a part of the hybrid ecosystem. Some authors have also started to refer to non-office locations that provide alternative affordances to the office, such as the ability to concentrate when working from home, as one of the ABW locations (Oygür et al., 2022). Thus, a hybrid approach to work may also provide different activity-based work environments.

B5.4.2.3 Telework, remote work, and work from home

The term telework, as defined by Nilles (1994), encompasses work conducted from home or any alternative workplace locations besides the office, utilising personal electronic devices, and is a subset of remote work. Moreover, remote work refers to the execution of work (fully or partly) in a destination alternative to the default place (Sostero et al.,2020). The COVID-19 pandemic increased the rate of remote work models, which appears to have shifted the use of the term telework to remote work (Pulido-Martos et al., 2021). Third, work from home refers to work that is conducted at home, and unlike remote work and telework, not at third locations (Sostero et al.,2020). Due to the absence of a unified global definition, countries often employ slightly different operational definitions for these terms (ILO, 2020a). However, Krajcik and colleagues (2023) define telework to include the terms remote work, telework, home office, and working from home (WFH). Another related concept is distributed work, which only includes organically related locations, such as the office, satellite office, or rural centres, while excluding the home and personal/public spaces (Kraut, 1994).

B5.4.2.4 Coworking

Sailer and colleagues (2023) define coworking as third spaces, providing alternative work locations to homes or offices known as first and second locations, respectively. Coworking is a style of work characterised by a shared working environment where individuals from different organisations or professions work alongside each other (Gerdenitsch et al., 2016). It offers a flexible and collaborative setting that promotes networking, community building, and productivity. Unlike in traditional office environments, coworkers in these spaces are typically not employed by the same organisation. The concept of coworking emphasises independence, collaboration, and the exchange of ideas among diverse individuals sharing a common workspace. As a result, coworking environments may be included in hybrid work ecosystems alongside first (office) and second (home) locations.

Summary: Definition of hybrid work

- Hybrid work blends remote work and in-person work, offering flexibility in work location.
- It has evolved over time and encompasses various related constructs like remote work, teleworking, activity based working and flexible work.
- Hybrid work definition is subject to constant change, leading to inconsistent application and use within the literature

B5.4.3 The diversity of hybrid working models

Whilst the COVID-19 pandemic has been over for the past 18 months, the concept of a return to office is still under discussion. Policies implemented as adjustments to the mandates of work-from-home policy have arguably been subsumed as long-term hybrid policies. Organisations have focused on getting their staff back into the office, and campuses are initially now accepting the long-termism of hybrid work and seeking to try and find a suitable solution for all. There are a number of ways that hybrid work environments can be adopted, including (please see Figure 4):

- 1. Mandatory office with a few flex days:** Companies emphasize working in the office as the primary mode, while still allowing for occasional remote work opportunities.
- 2. Office-first with optional remote work:** Company culture revolves around working primarily from the office, with employees given the choice or requirement to work remotely on occasion.
- 3. Hybrid (or 50/50 split):** Companies offer a balance between in-office and remote work, allowing employees to divide their time evenly between the two environments.
- 4. Remote-first with optional office visits:** Remote work is the default mode, but the office remains accessible for employees, with optional or scheduled visits as per company policy.
- 5. Only from home with few onsite days:** Employees primarily work from home, with occasional visit to the office for specific events or meetings.

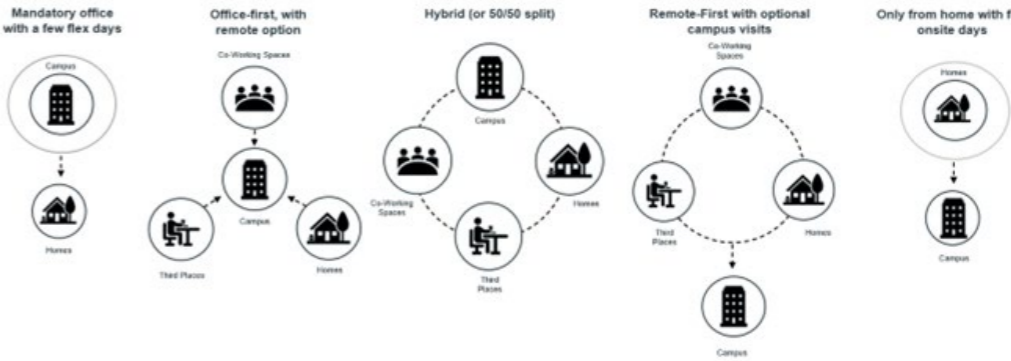


Figure 4: Models of hybrid work (source: Cushman & Wakefield, used with permission to authors)

B5.4.4 Dimensions of hybrid working

In general, three dimensions of hybrid working can be identified (see Figure 5), namely:

- 1. Spatial:** including spatial planning, location, and design.
- 2. Psychosocial:** concerning aspects of hybrid work that affect individuals, including experience, choice autonomy, and well-being.
- 3. Organisational:** concerning aspects of hybrid work that affect organisations and teams, including talent attraction and retention, organizational (dis)enablement, technology-enabled work and ecological response to climate change.

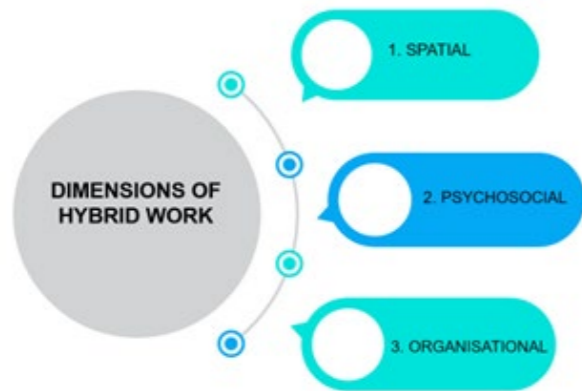


Figure 5: Multidimensional definition and dimensions of hybrid work (original work TUE)

Summary: Key Learnings

- Hybrid work combines traditional office work with remote work, offering flexibility in location.
- Its definition has evolved to include various related terms like remote work, teleworking, and flexible work, although consensus on a consistent definition is still missing.
- The definition of hybrid work is subject to constant change, leading to inconsistent use within the literature, increasingly the complexity of applying a definition and comparing similar work modes
- Organizations are transitioning towards long-term hybrid policies rather than reverting entirely to pre-pandemic office setups.
- Different models of hybrid work exist, including mandatory office with flex days, office-first with remote options, 50/50 split, remote-first with office visits, and primarily home-based work.
- The diversity of hybrid working models reflects varying degrees of office and remote work integration.
- Dimensions of hybrid working include spatial aspects like location and design, psychosocial aspects like autonomy and well-being, and organizational factors like talent retention and technology use.

B5.5 Spatial, psychosocial, and organisational dimensions of hybrid work

The following section summarizes findings from the literature review on the spatial, psychosocial, and organizational dimensions of hybrid work. While the spatial dimensions are discussed as outcomes, the psychosocial and organizational dimensions are presented as influencing factors that contribute to and shape the spatial challenges associated with hybrid work. Finally, the challenges identified as part of this literature review are summarized at the end of each section.

B5.5.1 Spatial dimension

Hybrid work arrangements have accelerated a paradigm shift in the perception of work, transitioning it from ‘somewhere we go’ to a ‘something we do’ agnostic of location. This shift underscores the emergence of an ecosystem of workspaces (see Figure 6), ranging from traditional offices to home offices, coworking spaces, and remote work hubs. Wessel and Christensen (2019) illustrate this evolution, emphasising the importance of flexibility in defining work environments. Similarly, Grant and Parker (2009) emphasise the need for organisations to adapt to this changing landscape by embracing a variety of work settings to accommodate diverse employee needs and preferences. These locations should be effectively managed, which involves, amongst others, resource

allocation, technology infrastructure, and design elements tailored to support different work modes and tasks (Appel-Meulenbroek et al., 2022). In essence, hybrid workplace strategies require organisations to adopt a holistic approach to real estate management, integrating various locations into a cohesive and adaptable portfolio that reflects the evolving nature of work in the digital age.

Many organizations are choosing to keep their existing footprint while condensing desk space into fewer square meters. The freed-up space is then used to enhance workplace amenities and services, creating areas for relaxation, play, and socialization to provide a more enriching experience. This approach has been described by Leesman (2022) as “half the space, twice the experience.” This strategy focuses on transforming the office into a destination by offering employee-centric services and a variety of workspaces, including additional meeting rooms, breakout areas, coffee points, and socialization spaces (Leesman, 2022). Consequently, this increase in workplace experience is anticipated to drive higher attendance and employee satisfaction (n.d).

Van Marrewijk and Van den Ende (2018) underscore the importance of future workspace design in accommodating the evolving nature of work, particularly in hybrid models. This includes creating collaborative spaces, flexible workstations, and technology-enabled meeting areas to facilitate both in-person and virtual collaboration.

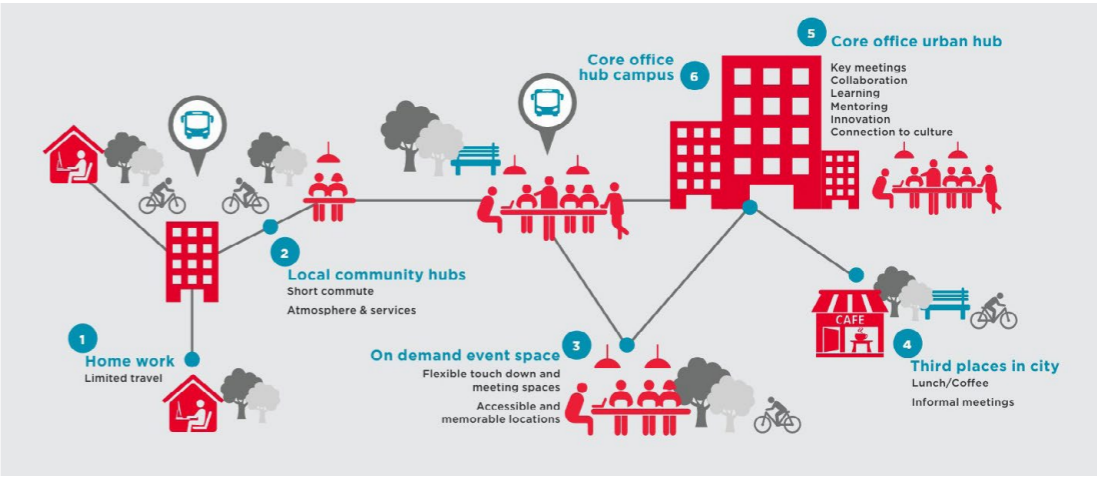


Figure 6: Ecosystem of hybrid places (source: Cushman & Wakefield, used with permission to authors)

5.1.1 Physical characteristics of the workplace

Challenge A: one-size-fits-no one:

The physical characteristics of both the office and the home-workplace may influence employees’ preferences and behaviours regarding where they choose to work. In general, it is assumed that concentration work is best suited for the homework environment and communicative tasks are more conducive to the office setting. However, Appel-Meulenbroek et al. (2022) argue that there is no one-size-fits-all solution, as their study within one large organisation shows that individuals exhibit diverse inclinations based on their specific work activities and personal characteristics. It is therefore important to design diverse office workspaces to accommodate varying employee needs, with workspace characteristics such as noise perception, layout, and desk positioning influencing employee workspace choices.

However, to the best of our knowledge, no research on the drivers for employee choice for academic knowledge workers exists, including the spatial requirement that might best influence their choice. This research would be welcomed, owing to the additional drivers for work location, such as the requirement to teach, proximity to students or access to specialist services, such as technical lab environments.

Challenge B: High degree of variation exists in workplace design and quality across campus:

Variation in workplace design and quality across campus presents a challenge as well, particularly in the context of hybrid work environments. This inconsistency can discourage collaboration, as team members may find themselves physically separated due to the differing conditions of available workspaces. If employees perceive that they cannot sit next to their team members, it might influence their decision to work remotely rather than come into the office (van Marrewijk and van den Ende, 2018). This can exacerbate the challenges of hybrid work, where maintaining team cohesion is already complex. Additionally, the disparity in workspace quality can lead to tension between different faculties, as distinct differences in workplace experiences may lead to perceptions of inequality and favouritism, undermining morale, and productivity.

B5.5.1.2 The office

Spatial arrangement and utilisation rates of the academic campus

As Figure 7 shows, only about 20% of campus locations comprise office settings, with the rest accommodating diverse uses, such as residential accommodation, labs, and storage (Knoll, 2022). Private offices occupy a large portion of this space at various institutions: 22% at Stanford University, 34% at the University of Utah, and 20% at Portland State University. In all cases, the percentage of space dedicated to offices surpasses that allocated for classrooms and labs combined. For example, offices account for 17% of space at Stanford, 13% at the University of Utah, and 19% at Portland State University (Knoll, 2023).

Challenge C: Underutilisation of campus settings driven by increase in home working:

Academic offices suffer from low utilisation rates, with occupancy even before the pandemic already typically ranging from 30 to 40% of a typical week and approximately 30 weeks per year (Serrato & Carlson, 2018). The pandemic prompted an even more significant decrease in office occupancy rates, from 50-70% to sometimes rates around 20-30% (Hesslink, 2023) as a result of increased home working. Some studies have even reported utilisation rates as low as 20% (e.g., Knoll, 2022). According to global real estate provider Savills (2023), current office occupancy rates are between 55% - 57%, reflecting that hybrid working has changed occupancy and utilisation of offices and campus settings, although no figures are available for the Netherlands specifically. On average, employees in the Netherlands favour working remotely for approximately 2.1 days each week (CBS, 2024), rending the office (campus) underutilised during the remainder of the week.

Challenge D: Underutilisation largely condensed to Wednesday and Friday's:

Dutch employees prefer to work from home on Mondays, Wednesdays, and Fridays to avoid peak commute times, manage childcare, and improve work-life balance (NU. nl, 2023). The Central Bureau of Statistics (CBS) also notes that Mondays and Fridays are popular for remote work, while Tuesdays to Thursdays are common for office work. Additionally, since Wednesday is a half-day in primary schools, it is ideal for those working part-time or having free afternoons.

Figure 7: Spatial composition of university campuses

(source: please refer to Knoll, (n.d.), Reimagining the Academic Work Environment, <https://www.knoll.com/knollnewsdetail/reimagining-academic-work-environment>)



Challenge E: Underutilisation of campus setting driven by diverse range of academic settings needed, resulting in increased cost:

The underutilization of academic spaces is exacerbated by the diverse nature of academic work, as discussed in section 1. Different types of spaces are needed on campus to support a variety of academic activities, but they often have low utilization rates as a result of their specialised, but infrequent need (Macfarlane, 2011; Teichler et al., 2013). This underutilisation poses environmental and financial challenges, as faculty spaces are costly to construct, maintain, and operate in terms of heating, cooling, and energy consumption. Hybrid work could nonetheless lead to reduced operating costs for organisations as a result of reduced office space utilisation (Aksamija and Milosevic, 2023). With various and often rotating schedules and a generally lower number of employees in the office for their hybrid work mode, there are opportunities for both reduced space needs and reduced operation costs and other expenses associated with maintaining a physical office. Sailer et al. (2023) note that office redesign was made possible because office occupancy had dropped due to hybrid working practices. Nevertheless, due to the diverse and varied work settings present on university campuses (e.g., specialised labs),

repurposing of space for alternative uses may not be so easy. This inflexibility means that even when assets are underutilised, they cannot be readily adapted for other purposes.

Challenge F: Different working preferences between faculty:

Finally, the literature demonstrates distinct working preferences between faculties, in the time academics spend working at the office, with academics in engineering and physical science-based departments being more likely to work on campus those at social sciences and humanities reporting fewest days in the office (please refer to Figure 3) (Hassell, 2023). This highlights that there is significant variability across departments on planned presenteeism, potentially driven by faculty culture, work-environment needs or the requirement for access to specialised equipment, resources, and areas such as labs.

The private academic office setting

Challenge G: Historical sensitivity regarding the future of private offices:

The private office serves as a symbol of status and identity (Dale, 2005). According to Dale, the spatial and material aspects of university environments cannot be divorced from their social context. This perspective, known as socio-materiality, underscores the interplay between social processes and material structures, wherein both influence and shape one another (Dale, 2005). A majority of international academics (72%) typically work from private offices, with variations observed globally, ranging from 55% in the UK to 83% in the US (Hassell, 2023).

The functional, historical, and social contexts of private offices in legal firms and university campuses share similarities in their role as spaces for privacy, focused work, and professional autonomy (CSMM, n.d; Van Marrewijk & Can den Ende, 2018). A recent report into the future of private offices within law firms by Gensler (2023) highlights that with the rise in hybrid working, many law firms are taking the opportunity to reimagine the office with a reduced number of private offices or increasing the sharing of offices to meet both financial and HR objectives. There may also be opportunities for academic environments to reimagine the future of the office provision on campus, with an increase in sharing or an overall reduction of private office space (Knoll, 2022). However, the relinquishing of private offices in academia must consider the multifaceted nature of academic work and historical-cultural factors that shape workplace dynamics within universities. It is therefore not surprising that academic office space allocation is a delicate and much-debated topic (Loughborough University, 2009), where spatial, social, and cultural influences are highly intertwined (Wilhoit, 2016). This means that a change in the spatial design will have a significant influence on the social and cultural fabric of the university. Research exploring the transition from traditional assigned offices to flexible workspaces has yielded mixed results. Van der Voordt and van der Klooster (2008) conducted post-occupancy evaluations at Avans Hogeschool and Delft University of Technology as both institutions transitioned from fixed office spaces to open-plan offices with shared or rotating desks. Their findings indicated that when these transitions were integrated into new building projects, employees noted enhancements in workplace design and IT infrastructure. Furthermore, the changes led to increased openness, more space to display research, and greater opportunities for students to collaborate closely. However, the same study also documented considerable downsides, including a lack of privacy and diminished concentration (van der Voordt & van der Klooster, 2008). During a post-occupancy evaluation at Vrije Universiteit Amsterdam, Van Marrewijk and van den Ende (2018) found that employees increased their remote work after moving from traditional offices to an open-plan layout. This change was primarily due to dissatisfaction with the new work environments.

Nevertheless, research shows that academics with a private office tend to spend less time

on campus (Hassell, 2023). While nearly half of all academics express the desire for their own campus workspace, a significant portion of those with private offices are open to sharing in exchange for increased flexibility in remote work. This presents a compelling opportunity for universities to enhance space utilisation while accommodating the needs of academics seeking greater flexibility in their work arrangements. This inclination also aligns with the nature of academic duties, where research and administrative tasks could be carried out at home, combined with teaching obligations and meetings at the campus. The challenge for universities lies in reconciling staff preferences for remote and on-site work, while upholding an active campus atmosphere and ensuring equitable distribution of the workspace (Hassell, 2023).

The open-plan academic office setting

Challenge H: Limitations of open-plan offices:

Open-plan offices and innovative workplace redesign concepts like flexible and alternative workspaces, hot desking, and office landscaping have gained traction in organisational studies a long time ago (McElroy and Morrow, 2010). Some studies suggest that open-plan offices facilitate communication, knowledge sharing, and collaboration among employees by promoting spontaneous encounters (Boutellier et al., 2008; Fayard & Weeks, 2007). They are intended to enhance productivity, efficiency, and collaboration while reducing costs. But research suggests that the outcomes of spatial interventions can be complex, unpredictable, and even adverse (Irving, 2016; Wilhoit et al., 2016). James et al. (2021) show that open-plan office environments may cause negative outcomes across various metrics, including health, satisfaction, productivity, and social relationships. Notably, adverse health effects, such as increased stress and reduced overall health, are attributed to environmental factors like noise, distractions, poor privacy, lighting, and temperature control. Moreover, the majority of the studies reviewed indicate negative impacts on social relationships and interactions within open-plan settings (Bektas, 2013; Irving, 2016). For instance, employees’ self-modification of spatial settings within open-plan offices can result in territorial divisions that hinder collaboration (Brown et al., 2005; Pepper, 2008).

As academic offices are intended to fulfil two functions, namely concentration and consultation, some office designs might not be suitable to perform both these tasks. For instance, several universities have introduced open-plan offices to accommodate academic and support staff (Wilhoit et al., 2016; Lancione & Clegg, 2013; Gastelaars, 2010). Van Marrewijk and Van den Ende (2018) explored the implementation of open-office practices within a Dutch University context specifically, revealing a spectrum of responses and adaptations among staff members. Facility managers sought to integrate physical settings, information technology, and social organisation, fostering collective facility management, flexible work arrangements, digitalisation, and open communication. Several spatial interventions were incorporated to promote collaboration, flexibility, and efficient resource utilisation among faculty staff and students:

- Creation of Different Spaces: The design included different types of rooms, open workplaces, and lounge settings in catering to diverse work practices and foster collaboration.
- Transparent Glass Walls: Glass walls were constructed to provide transparency while delineating workspaces, maintaining an open and connected environment.
- Zoning for Staff and Students: A mixed zone was created where staff and students could interact, comprising a cafeteria, student service desk, meeting rooms, and other amenities.
- Clean Desk Policy: A policy was introduced requiring employees to maintain clean

desks, promoting flexible and shared use of workspaces.

- Varied Workplaces: The floor plan included various work areas, such as one-person and two-person rooms for concentration work, open spaces for group collaboration and knowledge exchange, and lounge areas for informal meetings and discussions.
- Access Control: Staff members were granted access via special chip cards, restricting entry to students and ensuring a focused work environment.
- Time-Zoned Work Practices: Employees were encouraged to divide their workday into time zones and select appropriate workspaces, accordingly, promoting efficient use of resources.
- Limited Book Storage: A restriction was placed on book storage, allowing each academic only a 2m cabinet for books, encouraging digitisation and minimalism.

Generally, academic employees preferred to work in one-person rooms for concentration work (e.g., research-related activities), two-person rooms for teaching or working with colleagues, and open-plan workplaces for teaching or meetings. They tended to avoid busy passageways and areas with high movement to minimise distractions and chose locations close to their study books. Limitations on book access due to spatial distance reduced productivity and comfort and increased people's reliance on digital resources. Moreover, most employees tended to stick to fixed workplaces, with minimum migrations to other work spots, although personalization of workspaces was limited, complying to clean desk policy.

In general, the spatial interventions at the workplace resulted in the emergence of new work practices, changes in old practices, and the persistence of some existing practices:

1. New work practices: employees adopted new practices (e.g., selecting specific workspaces and negotiating over rooms, which were not prevalent in the previous setup). The open-plan layout led to increased visibility among colleagues, fostering spontaneous encounters and a stronger sense of faculty identity.
2. Changes in old work practices: employees adapted their behaviour to accommodate the perceived lack of privacy, resulting in both intended (e.g., reduced idle chatter) and unintended (e.g., increased staff-student interactions) changes.
3. Persistence of old work practices: hierarchical practices, such as the allocation of private rooms based on rank, persisted and reflected organisational values and social order.

Nevertheless, the introduction of open-plan offices did not fully align with the preferences and needs of academic staff, who valued autonomy and privacy. It is therefore important to consider the cultural and experiential aspects of the workplace design in addition to pragmatic outcomes (van Marrewijk and van den Ende, 2018). It is also important to realize that there is no one-size-fits-all solution and that the application of open plans within campus settings is highly context-specific (Pinder et al., 2019). This highlights that the impact of spatial interventions extends beyond physical layout to affect social relations, human experience, behaviour, and identity within the workplace (Dale & Burrell, 2010), what Sailer (2023) refers to as the 'socio-spatial' lens of workplace environments. Thus, designing effective hybrid workspaces requires a nuanced understanding of how spatial arrangements shape employee interactions and organisational dynamics.

Activity-based working in the academic context

Another workplace strategy is activity-based working (ABW), which provides employees with a variety of spaces designed for different tasks or activities without assigning fixed desks or workstations, typically requiring a 'clean desk policy' (Oygür et al., 2022). Employees have the flexibility to choose from a range of environments optimised for

specific work functions, such as focused work, collaboration, or relaxation (Appel-Meulenbroek et al., 2015). This flexibility is said to not only enhance productivity, but also to foster creativity and innovation, as employees have the freedom to work in environments that best support their needs (Van der Voordt et al., 2013). ABW may also encourage interaction and knowledge sharing among employees from different departments and hierarchical levels, leading to improved communication and collaboration across the organization (Been et al., 2015). Furthermore, some studies also highlighted cost reduction and increased functionality as outcomes of ABW (Häne et al., 2020; Candido et al., 2021).

Challenge I: Unintended outcomes and behaviors associated with implementation of new workplace initiatives:

Paradoxically, positive outcomes in one study were sometimes reported as negative in others. For example, communication and collaboration were reported to both increase and decrease across different studies (Engelen et al., 2019; Häne et al., 2020; Berthelsen et al., 2018; Parkin et al., 2011; Vitasovich et al., 2016).

Some studies also regarded the introduction of ABW in the academic environment, and found that it can promote flexibility, collaboration, and employee satisfaction (van Marrewijk & van den Ende, 2018). Nooij et al. (2023) conducted a systematic review revealing a range of outcomes associated with ABW adoption. While some studies focused on collaboration outcomes, others examined satisfaction or communication, leading to varied research findings. Among the commonly reported negative effects of ABW were adverse concentration effects, lack of privacy, reduced productivity, increased student-teacher distance, and decreasing autonomy (Baldry & Barnes, 2012; Engelen et al., 2019; Gorgievski et al., 2010; Parkin et al., 2011; Vitasovich et al., 2016; Berthelsen et al., 2018; Muhonen & Berthelsen, 2020; Sandström & Nevgi, 2020).

Toivanen et al. (2023) even show that, after relocating academic employees to an ABW, an increased tendency to work from home as well as reduced job satisfaction was found. Despite expectations of ABWs fostering collaboration, employees favoured working from home or elsewhere over their office workspace. After relocating to the ABWs, academic staff was also found to have fewer social interactions and rated their sense of community to be lower, potentially resulting in feelings of loneliness, reduced opportunities for development and job satisfaction. Overall, while some positive effects were noted, the majority of studies (Häne et al., 2020; Candido et al., 2021; Vitasovich et al., 2016) identified negative consequences of ABW implementation in the academic context, highlighting the need for further research to understand its nuanced impacts on various organisational outcomes.

B5.5.1.3 The home

The ability to work from home.

Challenge J: Home working not a universal option:

Although the COVID-19 pandemic has altered the importance of the home-work environment, not all employees have the ability to work from home. For instance, the physical characteristics of the home-work environment may limit the opportunities for working from home (Ipsen et al., 2021). Spatial constraints within the home-work environment could hinder employees' productivity and comfort, such as noise and having a small desk (Bergefurt et al., 2023). Another important finding is that the absence of having a dedicated, enclosed workspace at home could influence employees' health. Especially when employees have competing needs within the household, such as caring for children, accommodating flatmates, or sharing spaces with family members,

further complications of the work-from-home dynamic could occur (Gutman, 2023). Nevertheless, there are lacking insights into specific physical home-office requirements among academic workers.

Inclusive and equal access to equipment at home

Challenge K: Lack of suitable furniture and equipment to work from home:

The ergonomic suitability of the workstation is important for the success of working from home (Seva et al., 2021). However, issues around the health, safety, security, and environment (HSSE) regulations and organisational policies remain unresolved, particularly regarding the responsibility for furnishing home offices and covering operational costs such as electricity and Wi-Fi (CMS, n.d). The ambiguity in these areas poses challenges for both employers and employees, as clear guidelines are needed to ensure a fair and equitable home working environment. Financial assistance for establishing and maintaining a home office, as well as subscriptions to co-working spaces, can contribute to increased productivity and a stronger sense of connection among hot desk users (Adikesavan & Ramasubramanian, 2023). During the COVID-19 pandemic, many organisations provided employees with a budget from which to purchase HSSE-compliant desks and chairs to work safely and healthily from home.

B5.5.1.4 Support services

Increase in office services, facilities, and experiences.

The downfall of organisations mandating a return to the office is the “great resignation”, which is the significant increase in employees leaving their job or threatening to leave, and also the “great resistance”, which is the resistance of employees to return to perceived poor quality work environments (McKinsey, 2022). Figure 8 shows that there are key differences in what employers think employees value at their work versus what they actually want, which highlights the need for significant stakeholder engagement in designing hybrid working policies.

Instead, it is suggested to adopt a thoughtful, transparent, and data-driven approach to designing workplace and workday options, to simplify employee decisions and foster meaningful collaboration. Utilising techniques like nudging or providing employees with access to services and amenities (see Figure 9. On campus/office amenities desired by employees), organisations can subtly influence employee decisions without imposing restrictions. These strategies may promote autonomy and informed decision-making. By identifying key moments for collaboration through data analysis and experimentation, organisations can design prompts that encourage participation while empowering employees to choose when and how to engage (McKinsey, 2023).

Challenge L: Limited hospitality or facilities management strategy to entice employees:

Several organisations aimed at attracting employees back to the office by increasing experiences, facilities, and services, such as activities focusing on employee engagement and socialisation, access to enhanced services such as dry cleaning, yoga lessons or language lessons, and a higher quality of workplace design. Furthermore, there seems to be an increased emphasis on creating a destination for employee experience, although limited research exists on how this applies to university facilities.

Facilities management plays a crucial role in this, by ensuring that physical spaces are not only conducive to work but also foster a sense of community and belonging. This includes implementing enhanced cleaning protocols to maintain hygiene standards and providing hospitality services that cater the diverse needs of faculty and staff

Blurred figure as no Copyright permission granted
(see original source link for High Resolution display)

Figure 8: Employee need vs Employer perception of employee needs

(source: please refer to McKinsey, de Smet, A., Dowling, B., (2021), ‘Great Attrition’ or ‘Great Attraction’? The choice is yours, Exhibit 5, McKinsey Quarterly, <https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/great-attrition-or-great-attraction-the-choice-is-yours>)



Figure 9: On campus/office amenities desired by employees
(source: Cushman & Wakefield, used with permission to authors)

members. A recent study shows that the role of FM managers to satisfy the hygiene and safety needs of employees, together with hospitality services (i.e., refreshments), was central to employee satisfaction (Fenton-Jarvis & Bull, 2022). This aligns with research underscoring the role of FM in ensuring that physical spaces align with user needs, emphasising connection, community, and communication (Nanayakkara et al., 2021).

By creating inviting and well-maintained spaces, facilities management can encourage onsite presence and boost employee engagement. Amenities, such as cafes, recreational areas, and collaborative workspaces, may also contribute to making the campus environment more appealing, which may further promote a sense of belonging and connection among employees. These efforts by FM contribute to the overall employee experience and may support the implementation of hybrid working models within university settings. To the best of the authors’ knowledge, no research has been performed yet within the university-specific context. This lack of insight underscores the need for further research, as facilities and hospitality management could serve as effective tools to support campus workers while they are on campus.

Reservation and booking systems

Challenge M: Decrease ‘water cooler’ moments as a result of unplanned ‘in-person’ days:

The requirement to plan demand for office space in a hybrid work environment poses challenges too, as fluctuations in employee attendance and work patterns can make it difficult to predict space utilisation needs accurately. For instance, Monday and Friday are usually the lowest occupancy days, while Tuesday through Thursday are the highest occupancy days. As a result, Corporate Real Estate (CRE) managers face the challenge of planning for either peak or average occupancy levels (Cushman & Wakefield, 2022). Furthermore, people who come into the office on peak days expect that the office is too crowded, leading them to choose to stay at home even more. However, this perception is often due to a lack of scheduling rather than an actual over-occupancy rate (Cushman & Wakefield, 2022).

Although scheduling within university may be slightly easier to plan for those with teaching schedules when these days are set, it says nothing about where on the campus they will be working. So, this still poses a logistical challenge for access to other resources, such as private offices, workstations, meeting rooms and specialist locations, such as lab and research spaces.

Due to a lack of scheduling, employees are less likely to bump into their colleagues. The chance of any two employees seeing each other on a given day drops dramatically with an increase in the organisation’s remote work policy. For instance, as illustrated in Figure 10, at 2.5 days per week of remote work, a manager and an employee would only have a 19% chance of seeing one another when accounting for remote work, vacation time, and other leave (Cushman & Wakefield, 2022). This is further exasperated for getting teams together, as shown in Figure 11. Chance of 50% of a team being in the office at the same time, where working from home even one day a week will limit the likelihood of being together as a team to between 0% – 37% depending on the size of the team. As a result, the reduction in ‘water cooler’ moments due to decreased in-person interactions can lead to lower rates of innovation, collaboration, and socialisation (Schuller & Casanova, 2023), which are critical elements for knowledge worker outcomes and employee experience.

Therefore, scheduling tools, such as desk booking and team scheduling apps are increasing in popularity, to optimise space allocation, especially in case of more agile/flexible use of workspaces (Adikesavan & Ramasubramanian, 2023). Adikesavan and Ramasubramanian (2023) conducted a study revealing that participants adopted various

strategies, such as adjusting their work hours, utilising alternative locations for important tasks, and incurring additional costs for co-working spaces and home offices, in response to the challenges of uncertainty, lack of control, and workspace discontinuity associated with hotdesking. Their research suggests that implementing workspace reservation systems, providing storage lockers, and offering diverse task-oriented workspaces on campus can enhance the flexible (also called hotdesking) experience.

Figure 10: Chance of two employees being in the office at the same time (source: Cushman & Wakefield, used with permission to authors)

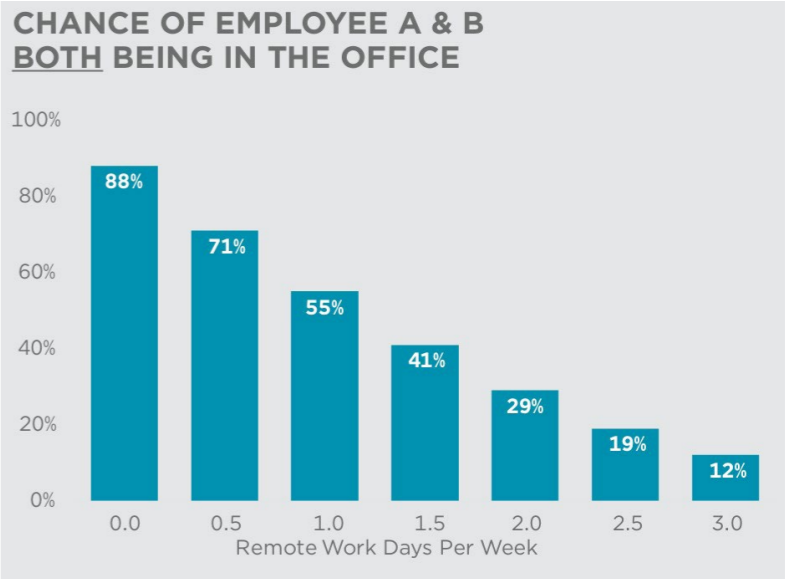
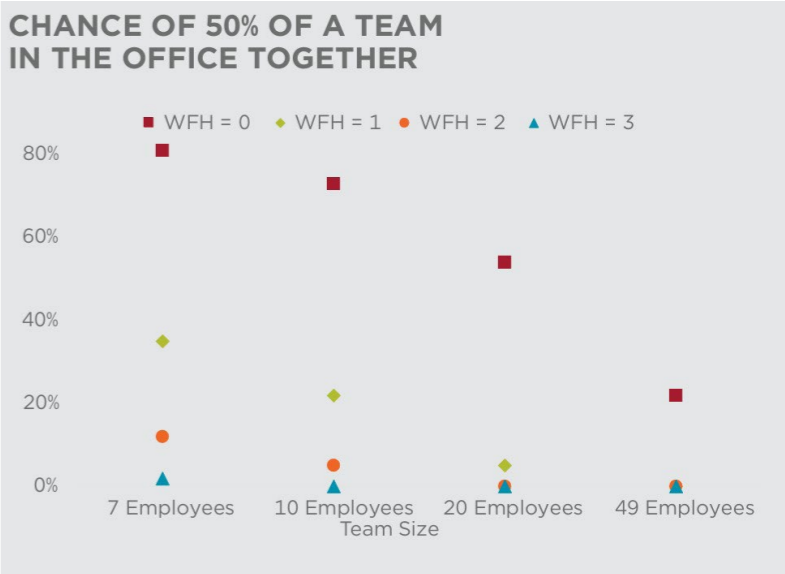


Figure 11: Chance of 50% of a team being in the office at the same time (source: Cushman & Wakefield, used with permission to authors)



Access to third and co-working spaces

Challenge N: Limited use of third or co-working spaces to accommodate flexible real estate needs:

While third spaces are well understood in non-academic knowledge work literature (WEF, 2021; Brouwer et al., 2022), their utilisation for academic work remains relatively unexplored. These spaces typically encompass environments like libraries, cafes, and co-working spaces but are also evolving to include specialised groups and resources such as innovation hubs and think tanks. Research indicates that bringing together like-minded individuals from various organisations in a single location fosters increased rates of innovation (Brouwer et al., 2022; Nagayama, 2023). Additionally, third spaces have been recognised as valuable tools for managing the utilisation of real estate assets, particularly in addressing headcount growth, occupancy and commuting challenges within existing buildings (Jones Lang La Salle, 2022; de Silva, 2021). As such, third spaces might be an interesting opportunity to explore campus spatial planning. But as currently they are not seen as such, they are not discussed further in this report.

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As a result of the above literature review, the following challenges have been identified:	
Challenge A: one-size-fits-no one:	Individual preferences vary widely regarding where and how people want to work, even changing from one day to the next for the same individual. A one-size-fits-all approach to work location does not exist due to the infinite possibilities shaped by personal preferences and desires.
Challenge B: High degree of variation exists in workplace design and quality across campus:	Workplace/spatial design and quality is often very varied across office/university campuses, buildings, and departments, resulting in people working outside of their own department.
Challenge C: Underutilisation of campus settings driven by increase in home working:	On average, Dutch employees preferred to work from home for approximately 2.1 days per week leading to underutilisation of office space.
Challenge D: Underutilisation largely condensed to Wednesday and Friday's:	Usage of office space peaks on Tuesdays and Thursdays, while Mondays, Fridays, and Wednesday afternoons (in the Netherlands) see much lower occupancy, leading to uncertainty about whether to prepare for maximum or average occupancy. Although hybrid work seems to make room for more employees in the existing space, the unpredictability of when employees come in can cause overcrowding due to a lack of precise information on their office presence.
Challenge E: Underutilisation of campus setting driven by diverse range of academic settings needed, resulting in increased cost:	On average, Dutch employees preferred to work from home for approximately 2.1 days per week leading to underutilisation of office space, resulting in increased office costs per employee.
Challenge F: Different working preferences between faculty:	Different departments within universities have varying preferences for how many days employees wish to work from home, creating challenges in 1) using space efficiently within each department and 2) forming a unified strategy for the whole university. For example, departments focused on engineering might want more work done on campus, whereas social sciences and humanities departments might prefer working from home more often (Hassell, 2023).
Challenge G: Historical sensitivity regarding the future of private offices:	Debates on changing workplace design and spatial strategies on campuses often become complex and sensitive, especially regarding the future of private

	offices. This can slow down progress in other areas of workplace and spatial planning on campus.	
Challenge H: Limitations of open-planned offices:	Concentration work needs to be supported in office environments, not just at home, making typical open-plan offices unsuitable for focus-intensive tasks. Identifying the appropriate quantity and variety of secluded spaces is crucial to facilitate concentrated work and contain activities that disrupt others, such as impromptu conversations and online meetings.	
Challenge I: unintended outcomes and behaviours associated with implementation of new workplace initiatives:	Introducing new workplace strategies such as activity-based working (ABW) and activity-based offices (ABO) on university campuses may result in unintended behaviours like more remote work or unauthorized actions like personalizing desks. These behaviours can prevent achieving the intended real estate benefits.	
Challenge J: Home working not a universal option:	Not everyone can work from home due to limited space, competition from roommates/family members.	
Challenge K: Lack of suitable furniture and equipment to work from home:	Not all employees have suitable furniture to work from home healthily and effectively, potentially posing a risk to occupation health and safety at work.	
Challenge L: Limited hospitality or facilities management strategy to entice employees:	Research and effective strategies to enhance the on-site employee experience through hospitality or facilities management are notably lacking, particularly on university campuses. This contrasts sharply with non-academic knowledge work organizations, which are increasingly focusing on this aspect as a critical component of enhancing employee experience.	
Challenge M: Decrease ‘water cooler’ moments as a result of unplanned ‘in-person’ days:	Hybrid work environments decrease the chances for socialization and collaboration when employees are not present in the office on the same days. This issue is exacerbated when there is no, or only poor-quality, dedicated space for socialization or collaboration in the office, i.e., departmental break rooms. When teams work from home 2.5 days a week, they only have a 19% chance to see one another during the week	
Challenge N: Limited use of third or co-working spaces to accommodate flexible real estate needs:	In commercial settings, using third spaces like coworking areas addresses challenges, but universities rarely include these in campus planning or research. Current real estate strategies mainly manage the office/campus environment without considering additional hybrid locations in the new 'ecosystem of places,' like coworking and third spaces.	

B5.5.2 Employee psychosocial dimension

The following section provides an overview of the literature relating to the psychosocial factors that may influence the spatial implications of hybrid working environments.

B5.5.2.1 Demographics

Challenge O: Different employee groups are impacted differently:

Demographic characteristics were found to be associated with employees’ hybrid working preferences (Appel-Meulenbroek et al., 2022). For instance, personality traits (e.g., extraversion and conscientiousness) may influence employees’ attitudes and behaviours (Kawakubo & Arata, 2022). Extroverted individuals may thrive in environments with more social interaction, while conscientious individuals may excel in structured and autonomous work settings. Moreover, age was found to be associated with employees’ adaptation to hybrid work, with younger generations showing greater comfort and proficiency with technology and remote collaboration tools (Twenge et al., 2020). Generational demographics, such as Baby Boomers, Generation X, Millennials, and Generation Z, bring diverse perspectives and expectations regarding work-life balance, career advancement, and technological proficiency in hybrid work contexts (Kelly, 2022).

Gender differences also play a role, as women tend to shoulder more household and caregiving responsibilities, which may influence their preferences and challenges in hybrid work arrangements (Twenge et al., 2020). Moreover, research on the preference for workspace location (Appel-Meulenbroek et al., 2022) shows that worker segments that prefer working in the office are comprised of mostly male, highly educated, full-time employees with communication-intensive roles and short commutes (under 15 minutes). In contrast, worker segment that prefer to work from home a lot consisted predominantly of females, part-time workers, and those in administrative roles, engaging in individually focussed tasks with longer commutes (over 60 minutes).

B5.5.2.2 Employee choice and autonomy

Challenge P: Determining the optimum balance of autonomy and control:

One of the defining features of the post-pandemic “return to office” discourse and contemporary discussion of hybrid work has been the prominence of employee choice regarding work location and its positive implications for both employees and organisations (Gibson et al., 2023). Employee choice over hybrid work arrangements has also been identified as one of the main drivers of employee engagement, productivity, retention, and satisfaction (Cushman & Wakefield, 2022). This emphasis on employee choice aligns with studies that highlight the importance of autonomy in work arrangements for enhancing job satisfaction and engagement (Appel-Meulenbroek et al., 2022; Pattnaik & Sahoo, 2021).

Knoll (2022) reports that more than 60% of university workers may be contingent or part-time (see Figure 12), implying that their space needs could be temporary or that they might have access to additional workspace elsewhere. Although spatial requirements cannot be solely determined based on employment status, this observation could serve as a valuable discussion point, particularly in environments where campus space is both costly and constrained.



B5.5.2.3 Inequality and unintended outcomes

Challenge Q: Equality issues and unintended outcomes:

Because of personal differences, hybrid work could also create unintended inequality. For instance, people with lower-income jobs, such as canteen workers, cleaners, and maintenance staff, are less likely to work off-campus, which may exacerbate socioeconomic inequalities (Brynjolfsson et al., 2020). This phenomenon highlights the privilege of individuals with jobs that allow hybrid work, contributing to disparities in income and career advancement opportunities. Moreover, hybrid work may inadvertently perpetuate inequalities in promotions and career progression, as individuals working from home may have fewer opportunities for visibility and networking, thus being overlooked for promotions (Mas & Pallais, 2017). Women, in particular, are disproportionately affected by this dynamic due to caregiving responsibilities that often accompany remote work arrangements (Konovalova et al., 2022). Furthermore, remote work can hinder learning and skill development for more junior or less tenured staff who rely on the presence and guidance of more experienced colleagues in the office setting (Schuller & Casanova, 2023). This reliance on informal learning opportunities in the workplace exacerbates inequalities in skill acquisition and career advancement.

B5.5.2.4 Well-being and work-life balance

Hybrid work might influence employee well-being, including mental health and work-life balance, highlighting both benefits and challenges (Gallup, 2023; Grobelny, 2023). Benefits include greater flexibility to manage work schedules, which may result in higher well-being and work-life balance (Grobelny, 2023). Similarly, hybrid work may result in higher job satisfaction and lower isolation from colleagues (Choudhury et al., 2022). Employees may also be able to spend more time with family, engage in leisure activities, and reduce commuting time, which could all contribute to their overall well-being (RSM, 2023). Nevertheless, employees may need specific skills and traits to enhance the experience of working from home and hybrid, including the ability to manage their time and deliver work on schedule, and to work well without supervision (Allen, 2024). Clear communication, boundary-setting, and sufficient organisational support are necessary to mitigate hybrid work challenges (Gallup, 2023).

Figure 12: University employee employment status

(source: please refer to Knoll, (n.d.), Reimagining the Academic Work Environment, <https://www.knoll.com/knollnewsdetail/reimagining-academic-work-environment>)

Challenge R: Preventing isolation and burnout:

Challenges relate to the increase in distractions at home (Gallup, 2023), blurring boundaries between work and family life, social isolation, overwork, and unintended discrimination (Sailer et al., 2023; Babapour Chafi, 2021). For instance, the blurring of work boundaries in hybrid work setups may lead to feelings of isolation and difficulty disconnecting from work (WHO & ILO, 2022). This could eventually lead to mental health issues, including stress, depression, and burnout (Bodner et al., 2022). Another finding is that hybrid work may have created the so-called ‘always on’ culture (Gensler, 2023). This is strengthened by the surge in online meetings and prolonged computer usage, leading to a phenomenon known as “Zoom fatigue” (Fauville et al., 2021). This phenomenon is often attributed to the heightened cognitive load associated with remote work and the absence of in-person human connection, which could exacerbate feelings of fatigue and emotional exhaustion (Fauville et al., 2021).

As the future of work evolves, research suggests that knowledge workers are particularly vulnerable to burnout due to excessive technology use, which amplifies workloads and places their cognitive health at risk (Fernandes et al., 2020). These findings underscore the importance of addressing the psychological and cognitive implications of technology-mediated work to mitigate the risk of burnout and promote overall well-being among knowledge workers in the post-pandemic era.

Among academic personnel, it is found that 76% will experience a burnout at least once in their lives, while 70% have felt stressed and fatigued, 35% have felt angry, and more than 50% have considered changing their career, retiring early or leaving academic altogether (Vvedenskaya et al., 2022).

Summary of the challenges within the psychosocial dimension of hybrid working

As a result of the above literature review, the following challenges have been identified:

Challenge O: Different employee groups are impacted differently:	Demographic factors like gender, education, job type, and commute length impact employees' hybrid work preferences and needs. This variation can make it difficult to devise a universal policy, as different groups may be adversely affected by hybrid work in distinct ways.
Challenge P: Determining the optimum balance of autonomy and control:	Determining the optimal balance of autonomy and control (allowing employees to choose their office days/times) is challenging, as it can both enhance and diminish various psychosocial outcomes (e.g., wellbeing, socialization, collaboration) and lead to unpredictable office space utilization, causing overcrowding or underuse.
Challenge Q: Equality issues and unintended outcomes:	Employees who are the least present on-site are also less likely to receive opportunities for development, learning, promotion and career advancement leading to unequal outcomes.
Challenge R: Preventing isolation and burnout:	How to ensure that employees want to and are allowed/able to come to the office (campus) enough, and/or are able to manage their workload regardless of work location, to prevent feelings of isolation and burnout.

B5.5.3 Organisational outcomes and management dimension

Several organisational challenges related to hybrid work can be distinguished, including team cohesion, communication, and organisational culture (Thompson et al., 2020), but also misalignment between remote and on-site work, and a lack of innovation (Felstead, 2022) and reduced employee and organisational productivity (Golden & Veiga, 2008).

B5.5.3.1 Collaboration and socialisation

Challenge S: Retaining team cohesion and connectivity:

Hybrid work models offer opportunities for collaboration through digital tools and platforms, allowing employees to connect and work together regardless of physical location (Gratton, 2021). However, research by Wang et al. (2020) suggests that hybrid work may also lead to challenges in socialisation retaining team cohesion, as remote employees may feel isolated from their colleagues and miss out on informal interactions that occur in traditional office settings. Moreover, the blurring of boundaries between work and personal life in hybrid setups can further complicate socialisation efforts, making it difficult for employees to foster meaningful connections with their peers (Gallup, 2023).

Employees who retained strong and diversified networks were more likely to report a stronger sense of belonging within the organisation and were more likely to be positive agents of change within the business. Here, collaboration was highest among people who worked consistently onsite with their teams, face-to-face (Cushman & Wakefield, 2022). These findings were supported by Yang (2022), who indicated that employees who worked from home caused the collaboration network of workers to become more static and siloed, with fewer bridges between disparate parts, potentially resulting in negative organisational and employee-based outcomes.

While synchronous collaboration facilitates immediate communication and decision-making, research suggests that asynchronous work may be better suited for certain tasks and activities (Yang et al., 2022). Fully remote work has been found to be particularly conducive to asynchronous work, allowing employees to focus on tasks without interruptions and tailor their schedules to optimise productivity (Gallup, 2023; Colenberg, 2023). However, hybrid work environments, which incorporate elements of both synchronous and asynchronous work, require careful balancing to ensure effective collaboration and socialisation across remote and on-site teams (Yang et al., 2022). Organisations must consider the nature of tasks and activities when determining the appropriate blend of synchronous and asynchronous work modes to maximise productivity and employee engagement in hybrid work settings.

B5.5.3.2 Creativity and Innovation

Challenge T: Potential decrease in creativity and innovation due to less time spent together on campus.

Research demonstrates that face-to-face interactions play a significant role in stimulating creativity and knowledge sharing among researchers (Allen et al., 2004), which might challenge maintaining the same level of collaboration, spontaneous interactions, and interdisciplinary collaborations as in traditional in-person settings (Pentland, 2012). Another outcome of hybrid working models in universities is the potential decrease of student engagement and well-being, due to reduced opportunities for in-person interaction with the faculty. This may also impact their overall learning experience (Singh, 2021).

B5.5.3.3 Employee Engagement

Challenge U: Hybrid can both increase and decrease employee engagement:

Weideman and colleagues (2020) found that flexible work, including hybrid work arrangements, can enhance employee engagement due to increased autonomy and flexibility. Employees in hybrid setups reported higher engagement levels than those in fully remote or traditional office settings. Nevertheless, hybrid work may also lead to feelings of isolation and reduced team cohesion, potentially reducing employee engagement (Knight et al., 2022). As Yang et al. (2022) indicate, organisational support and communication strategies are important in mitigating these challenges and maintain engagement levels among hybrid workers. Efficient leadership (e.g., clear communication, goal setting, and support) practices play an important role too, as it is crucial for fostering engagement and well-being among hybrid workers (Franzen-Waschke, 2021).

Among higher education workers, several challenges were found to diminish engagement, including a lack of technology training, insufficient support in developing self-management skills, and inadequate workspace or equipment when working from home (Gutman, 2023). However, a limitation of that paper is its broader focus on the general experience of hybrid work rather than specifically addressing the unique influences faced by higher education or academic workers. Consequently, the results do not offer insights into the specific issues encountered within these populations.

B5.5.3.4 Changing needs of campus management teams in response to hybrid and new ways of working

Challenge V: New issues require multidisciplined skills to solve:

Hybrid work has accelerated the reshaping of the relationship between campus management real estate and facilities teams, human resources, and IT departments. Previously more independent and distinct, these groups must now collaborate closely to effectively support the flexible working arrangements that have become standard (Chan & Foster, 2022). Decisions made by one department can significantly impact the operations and service delivery of the others, often revealing skill gaps and the need for realignment within the organization. To address these challenges and enhance collaboration, organizations may need to reorganize and develop new competencies across these departments. This ensures that the evolving demands of workplace management are met effectively, aligning physical and digital infrastructures to support productivity and employee satisfaction.

B5.5.3.5 Hybrid as an ecological response to climate change

Challenge W: Limited insights on the climate impact of hybrid work:

The definition of hybrid work extends to encompass hybrid work as an ecological response to climate change, recognising the potential environmental benefits associated with reduced carbon emissions due to less commutes, and reduced ecological footprint of the traditional office-based work (Felstead et al., 2020). This shift towards hybrid work aligns with broader sustainability initiatives aimed at minimising the environmental impact of organisational operations. For instance, Tao and colleagues, (2023) show that increased telecommuting can lead to reductions in greenhouse gas emissions, particularly in urban areas with high commuting rated. Hybrid working could also contribute to the conservations of natural resources by reducing energy consumption and waste generation associated with office buildings (Golden & Gajendran, 2019).

Moreover, energy-saving behaviours, such as turning the lights off when a space is not used, are more likely at home than at the office (Gensler, 2023).

However, the increased prevalence of remote work, hybrid arrangements, and distributed teams has the potential to promote increased asset utilisation and reduced urban agglomeration, which may reduce resource efficiency. Full-time home working leads to 16-17% higher domestic energy demand, particularly due to the extended use of computers, monitors, and other electronic devices for work purposes (Shi et al., 2023). Additionally, the need for heating, cooling, and lighting in home offices can contribute to increased energy usage compared to centralised office spaces, where these resources may be shared among multiple workers in a more efficient manner. Together, these findings suggest that energy-related savings as a result of hybrid working should be considered across both locations. More research is needed to understand how the adoption of hybrid work may support or hinder efforts to address climate change.

B5.5.3.6 Hybrid working policies

Challenge X: Inconsistent or unclear hybrid policies:

In a study of ten global universities, Haubrich and Hafermalz (2022) highlight that there is little consensus on the implementation and working of hybrid working policies, highlighting that policies tend to ‘vary in tone from ‘provisional’ to ‘definitive’. In their study, the authors highlight that several universities, such as Durham University, University College London, and University College Dublin, adopted a trial-and-feedback methodology, treating hybrid working as an experimental phase during the academic year 21/22. Conversely, some institutions like the University of Alberta and the University of Illinois opt for a more definitive approach, outlining strict procedures for hybrid work (n.d).

Only one university hybrid policy predates the COVID-19 pandemic (Victoria) and indicates ongoing policy development. The authors found that adaptations to working arrangements are largely driven by dialogues between employees and line managers, with final decisions resting on managerial approval. While some universities provide decision-making frameworks or guidelines, there is a notable emphasis on interpersonal communication and individualised agreements between managers and employees.

The emphasis on dialogue-based arrangements in implementing hybrid working may result in diverse and idiosyncratic experiences among employees, potentially leading to unequal adoption or varying experiences. This underscores the necessity for future empirical research to delve deeper into the experiences of campus workers as a consequence of hybrid working arrangements. Such research could shed light on the nuances and implications of hybrid work in different organisational contexts, informing future policy decisions and organisational practices.

B5.5.3.7 Organisational costs

Challenge Y: Unclear impacts of hybrid on financial performance and organisational outcomes:

Organisations may feel that reduced physical presence in the office could hinder financial results (Fox Business, 2023). For instance, additional costs may be expected to maintain hybrid work environments, and as a result of lacking productivity, innovation, and collaboration. Nevertheless, research also shows that the enterprise value or financial performance of organisations were not influenced as a result of hybrid work implementation (Ding & Ma, 2024). Whilst universities are also commercial enterprises,

hybrid work may have the potential to influence various outcomes, such as research productivity, grant acquisition, and collaborative innovation. Nevertheless, no studies so far exist on the influence of hybrid working on such university outcomes parameters.

B5.5.3.8 Talent attraction and retention strategies

Challenge Z: Limited insights on attraction and retention of talent:

Hybrid work arrangements offer universities a valuable human resources tool for attracting and retaining talent within their campuses. Top talent and highly productive faculty members contribute to teaching quality, research output, and the overall intellectual environment of universities, attracting students, funding, and partnerships that are essential for long-term success and competitiveness (Kwiek & Roszka, 2024). By allowing flexibility in where and how work is conducted, universities can tap into a broader talent pool beyond their immediate geographical vicinity. This can be particularly beneficial for universities located in centralised and fixed geographic locations.

In general, research underscores the significance of flexible work arrangements in enhancing employee satisfaction and retention for non-academic knowledge workers (Choi, 2019). For academic knowledge workers, the ability to work outside the campus setting part-time or full-time can be appealing. In addition, as Universities become more multidisciplinary, creating opportunities for part-time work, such as that between private practice and academia, can prove successful in increasing the rate of valorisation, access to external grant funding, and innovation. Hybrid work can, therefore, support access to a wider and less fixed talent pool from which to shape the future of education and research.

Nevertheless, spatial interventions such as the adoption of open-plan, ABW or ABO may pose a risk to the retention of top university talent, such as professors. The working culture of professors is often characterised by professional autonomy and decentralised managerial structures (Wilhoit et al., 2016). Wilhoit et al. (2016) emphasise that spatial interventions that can threaten the culture of work, often facilitated by top talent, such as professors, can create adverse and unintended social consequences such as resistance, lack of ownership, and the potential for staff members to threaten to leave the university.

B5.5.3.9 IT – digital work

Challenge ZZ: Limited management of employee experience of the digital environment:

Successful implementation of hybrid work relies on the integration of advanced technologies such as video conferencing, collaborative platforms, and project management tools. These technologies facilitate seamless communication and collaboration among geographically dispersed teams (Felstead et al., 2020; Golden & Gajendran, 2019), and play a pivotal role in enabling virtual meetings, document sharing, and real-time collaboration. Research suggests that organisations that embrace technology as an enabler of hybrid work are better positioned to leverage the benefits of flexibility while maintaining operational efficiency and employee engagement (Thompson et al., 2020). As Sailer (2023) argues, the social function of both physical and digital spaces should be emphasised, as the interplay between physical and digital realms could help shape the social relations within hybrid work environments.

The digital work environment, such as the use of Microsoft Team’, Google Workspace and Slack, is essential for enhancing productivity and connectivity among colleagues and students (Tahsiri, 2023). Especially after the pandemic, digital meetings via Teams or other platforms have become more normalized. A report by Forrester (n.d) emphasises

the importance of actively managing the digital environment to the same extent as the physical office and home environment in order for hybrid arrangements to be successful. According to that report, the digital experience is critical for hybrid work, as a lack of a digital experience strategy could hinder organisational outcomes.

Summary of the challenges within the organisational dimension of hybrid working	
As a result of the above literature review, the following challenges have been identified:	
Challenge S: Retaining team cohesion and connectivity:	How to ensure continued team cohesion and connectivity through the on-campus experience.
Challenge T: Potential decrease in creativity and innovation due to less time spent together on campus.	Face-to-face interactions foster creativity and knowledge sharing, crucial for collaboration, but hybrid models may reduce employee connectivity, thus reducing creativity and innovation and its byproducts, such as research and new ideas.
Challenge U: Hybrid can both increase and decrease employee engagement:	Hybrid work may both increase employee engagement through increased autonomy and choice, however it may also reduce engagement through increase detachment from colleagues and the organisations and isolation.
Challenge V: New issues require multidisciplinary skills to solve:	Hybrid work has transformed the relationship between campus management, HR, real estate, and IT departments, requiring closer collaboration to support flexible arrangements (Chan & Foster, 2022). Interdepartmental decisions impact operations, revealing skill gaps and prompting organizational realignment to meet evolving workplace demands.
Challenge W: Limited insights on the climate impact of hybrid work:	There is currently no consensus on the climate change impacts of hybrid work, preventing an assessment of whether hybrid work positively or negatively affects university climate change goals
Challenge X: Inconsistent or unclear hybrid policies:	Few Dutch Universities have a hybrid working policy, with many relying on departmental instruction as to what is possible/permissible
Challenge Y: Unclear impacts of hybrid on financial performance and organisational outcomes:	There is a lack of consensus in the literature regarding the true impact of hybrid work on various organizational outcomes, such as revenue, profitability, innovation. No known research available on influence of hybrid work on university outcomes, such as student enrolments, publications and grant funding.
Challenge Z: Limited insights on attraction and retention of talent:	There is no known research on how hybrid work affects the attraction and retention of Dutch academic workers, making it hard to predict how changes in hybrid policies might affect employment at Dutch universities.
Challenge ZZ: Limited management of employee experience of the digital environment:	Despite evidence that a successful digital experience greatly impacts employee satisfaction, very few organizations take the employee experience of the digital workplace into account when planning for hybrid work. IT strategies relating to hybrid work tend to focus on functionality rather than considering the digital workplace as a piece of the workplace experience, to be managed. The challenge is to integrate the various locations with the digital experience.

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Campus NL academic team

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Photo with Campus NL team members from academia and practice (taken 24 May 2024), from left to right: Daan Braakman, Chiara Pelosi, Jasmine Bacani, Boudewijn Peters, Monique Arkesteijn, Mansur Karadavut, Alexandra den Heijer, Franc van Nunen

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Campus NL core team

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Managementsamenvatting (Dutch)



Aerial photo Mekelpark TU Delft
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Managementsamenvatting

Campus NL is een vierjarig project, van 2023 tot 2027, en heeft als doel de kennis en ervaring van veertien Nederlandse universiteiten te bundelen om hedendaagse uitdagingen op de campus samen te kunnen tackelen. Dit rapport omvat de resultaten van het eerste jaar, 2023-2024. Deze samenwerking heeft al een decennialange historie en verbindt theorie en praktijk van vastgoedmanagement. Afgelopen jaar stond het thema "hybride werken" centraal.

Dilemma's rond hybride werken en on-/off-campus studeren zijn maar twee van de grote uitdagingen waarvoor universiteiten staan. Andere collectieve opgaven zijn de grote aantallen instromende studenten - maar mogelijk ook krimp - de krappe (studenten)woningmarkt, verduurzaming en een gezond werkklimaat. Crises waaronder de coronapandemie, energieprijzen, materiaalschaarste en personeelstekort hebben de urgentie om campuskennis te delen alleen nog maar versterkt. Onderzoeksproject Campus NL brengt inzichten uit theorie en praktijk bij elkaar om het campusmanagement binnen elk van de 14 Nederlandse universiteiten (nog) effectiever en efficiënter te kunnen organiseren.

“Campus NL is voor universiteiten door universiteiten”

Niet alleen de complexe campusopgave is onderwerp van studie, maar ook de manier van kennisuitwisselen. Naast een wetenschappelijk team van TU Delft is per universiteit ook een campuscontact aangewezen, waarmee "team Campus NL" een netwerkorganisatie is. Via stuurgroep, kernteam en diverse workshops worden naast bestuurders en directeuren campus/FM (facility management) ook andere stakeholders betrokken.

Hybride werken als thema voor 2023/2024

Denkend aan hybride werken was een van de eerste onderzoeksvragen: hoeveel kantooroppervlak gebruiken we eigenlijk en hoe goed? Dit was dan ook het hoofdonderwerp van deel A van het onderzoek: campusdata. Voor de trendanalyse in deel B stond centraal welke beleidskeuzes universiteiten hadden gemaakt of nog wilden maken: hoeveel dagen moet een medewerker op de campus zijn of hoeveel dagen mag er thuisgewerkt worden? Hanteert een universiteit een minimale of maximale verhouding voor on-/off-campus werken? Wordt het bijvoorbeeld toegestaan als een medewerker minder dan 20% van de werktijd op de campus is? Voor deel C van het onderzoek bestudeerden we ook hoe andere (publieke) organisaties hiermee omgaan: wat kunnen we daarvan leren?

Streven naar een campusdashboard om beter te kunnen besturen

Al sinds 2000 publiceert TU Delft's Campus Research Team periodiek data over het veranderende campusoppervlak: van onderwijsruimte per student tot kantoorruimte per medewerker (fte). Parallel daaraan werden via de facilitair directeuren tweejaarlijkse benchmarks gedaan van kosten en oppervlaktedata (Colliers, 2018, 2022, 2024). Komende jaren wordt gezamenlijk een campusdashboard opgebouwd met deze data, om beter te kunnen besturen. Naast het totale campusoppervlak, dat afgelopen decennia opvallend achterbleef bij het stijgend aantal studenten en medewerkers (TU Delft 2016), focusten we afgelopen jaar op het kantoorgebruik.

Focus op het universiteitskantoor: steeds efficiënter gehuisvest

Het Campus NL onderzoek uit 2016 liet zien dat maar liefst eenderde van het nuttig gebouwoppervlak op Campus NL de functie "kantoor" had. Per medewerker is het oppervlak sindsdien sterk gedaald: van rond de 20 m2 (Campus NL 2016) via 12,5 m2 (Colliers 2022) naar 11 m2 gemiddeld (Colliers 2024). Deze efficiencyslag binnen acht jaar komt deels door het herbestemmen (naar bijvoorbeeld onderwijs) of reduceren van m2, maar grotendeels door de forse groei van het aantal te huisvesten medewerkers.

In 2023-2024 werd de grote behoefte aan vergelijkbare bezettings- en benuttingscijfers bekrachtigd. Hoe vaak is werkplek bezet en hoe goed worden bijvoorbeeld meerpersoonskamers benut? Afgelopen jaar zetten we onze schouders gezamenlijk onder het verzamelen van zoveel mogelijk studies over kantoorgebruik. Met de afspraak dat de gebouwddata anoniem zou worden verwerkt, stroomden de bezettings- en benuttingscijfers binnen. Met trots (van zowel wetenschap als praktijk) leverde deze Campus NL inventarisatie studies van meer dan 100 gebouwen op.

Uit de cijfers was onder andere te concluderen dat de gemiddelde bezettingsgraad van kantoorruimten na corona duidelijk lager is dan voor de coronapandemie: de post-corona bezetting is 2/3 van de pre-corona bezetting. Het omgekeerde geldt overigens voor vergaderzalen: die worden na de "campus lockdowns" van 2020-2021 beter gebruikt.

Uitdagingen en beleidskeuzes rond hybride werken

Aan onderzoekers van de TU Eindhoven werd gevraagd een literatuurstudie te doen naar hybride werken in internationale media. Een definitie: "Hybrid work blends remote work and in-person work, offering flexibility in work location. It has evolved over time and encompasses activity based working and flexible work." Een belangrijke uitdaging is de weerstand tegen verandering van werkomgeving, maar er blijkt ook een bereidheid om het delen van territorium te bespreken in ruil voor meer autonomie. Hier moeten collectieve en individuele doelen worden afgewogen. Toch is men ook voorzichtig met het snel reduceren van oppervlak, omdat het ook te druk kan worden en de mogelijkheden voor werken in stilte of (video)bellen vaak beperkt zijn.

Hybride beleid op Campus NL: hiërarchie, regie of autonomie

Parallel aan de literatuurstudie verzamelde het onderzoeksteam de meest actuele richtlijnen of beleidsstukken voor hybride werken bij de 14 universiteiten. Ook hier was ambivalentie te vinden: van het stimuleren van grotendeels on-campus aanwezigheid naar het overlaten van de locatiekeuze aan teamleiders of individuele medewerkers. Van hiërarchie via regie naar autonomie, of weer terug. Minimaal 60% op de campus of maximaal 40% thuis: het lijkt hetzelfde, maar wetenschappers zijn ook vaak "elders" (niet on-campus en niet thuis). Daarnaast betekent on-campus niet automatisch aan een bureau of in een vergaderruimte, maar vaak ook in een onderwijsruimte of in een laboratorium.

Uit verschillen in beleid werd het dilemma haarscherp: kiezen we voor een campusuniversiteit en hoort daar een minimaal aantal dagen campus-aanwezigheid bij of omarmen we de hybride werkelijkheid en faciliteren we de resultante van individuele keuzes?

Leren van niet-universitaire praktijk

De Nederlandse universiteiten zijn in dit afwegingsproces in goed (en zeer groot) gezelschap van elke organisatie met kantoren in gebruik of bezit. Het Delftse Center for People & Buildings (CfPB) meldt op basis van hun "Werk in Transitie" onderzoek "dat 80% van de Nederlandse kenniswerkers in 2023 zelfs minder dan twee dagen op de eigen standplaats werkte (kantoor). De rest van de tijd werd thuis of elders gewerkt." De kantoorgebruikerervaart soms wel meer of minder "drukke" dan objectief gemeten, wat ervoor pleit om beide te meten. Te druk en te rustig kunnen beide redenen zijn naar huis te gaan om thuis te werken.

Mediaberichten bevestigen de tegenstrijdige strategieën voor de toekomst van kantoren. Zo zijn er diverse werkgevers die van alles proberen om de werknemer weer terug naar kantoor te krijgen. Andere berichten laten het omgekeerde zien: organisaties willen (toekomstige) werknemers juist meer autonomie geven en aantrekken of vasthouden met gunstige arbeidsvoorwaarden om werk en privé te combineren en de mogelijkheid om zelfs verder van de traditionele werklocatie te gaan wonen. Ook de Rijksoverheid gaf medio 2023 aan (op termijn) mogelijk minder gebouwen nodig te hebben vanwege hybride werken. Ook wordt ingezet op regiohubs, dichterbij de woonplaats van ambtenaren.

Maar wat de kantoorwerkplek te rustig wordt en collega's elkaar niet meer ontmoeten? Zijn de lasten daarvan niet hoger dan de baten van minder kantoorruimte? Naast 'actieve strategieën' werd aangegeven dat er ook een 'passieve, afwachtende strategie' bestaat die ervoor zorgt dat het op sommige dagen (zoals dinsdag en donderdag) steeds drukker is, maar het geleidelijk steeds rustiger op kantoor wordt, werknemers zelf hun thuiswerkdagen bepalen of verder van hun werk verhuizen.

Twee tegengestelde strategieën voor hybride werken

Op basis van bezettingcijfers, literatuurstudie en analyse van beleidsstukken en vergelijkbare organisaties kunnen twee 180-graden-verschillende strategieën voor Campus NL worden geschetst met bijbehorende keuzes voor de werkomgeving: (1) "wij zijn een campus-universiteit" en (2) "omarm de hybride werkelijkheid". Beide strategieën en de dilemma's die daarbij horen, worden toegelicht.

1. Kiezen voor strategie 1: "wij zijn een campusuniversiteit"

Strategie (1) "wij zijn een campus-universiteit" die inzet op commitment van medewerkers om weer vaker fysiek aanwezig te zijn op de campus en on-campus community en teamwork. Achterliggende visie is dat onderwijs en onderzoek fysieke aanwezigheid vragen, innovatie niet kan zonder toevallige ontmoetingen/ kruisbestuiving, aanwezigheid essentieel is voor teamvorming en loyaliteit van medewerkers belangrijk is voor continuïteit. Community is belangrijker dan individuele autonomie.

Kantooroppervlak kan vergelijkbaar blijven met de huidige situatie: territorium voor wie er ook daadwerkelijk (vaak) zijn. Huisvestingskosten zijn relatief hoog (als % totaal), maar er is wel veronderstelde 'besparing' op HR kosten: minder personeelsverloop en belangrijker voor onderlinge communicatie en van elkaar leren? Energiekosten en infrakosten zijn hoog, maar bezetting/benutting campus wel weer hoger (meer nut uit m2) en dient primaire proces, dus wellicht ook een hogere productiviteit per m2. Duurzaamheid is wel gebaat bij minder territorium en een kleinere werkplek in m2 per fte.

2. Kiezen voor strategie 2:"omarm de hybride werkelijkheid"

Strategie (2) "omarm de hybride werkelijkheid" gaat uit van meer off-campus werken, thuis of elders, en gebruikt dit als strategie om de individuele medewerker meer te faciliteren in een tijd waarin personeel schaars is en verder van de traditionele werklocatie woont of is gaan wonen. Uitgangspunt is dat onderwijs en onderzoek na coronapandemie (en daarvoor ook al) veranderd zijn in hybride, plaatsonafhankelijke processen. Volgens deze visie vindt innovatie grotendeels plaats met partijen buiten de eigen campus. Daarnaast zet deze strategie in op het faciliteren van de werk-privé-balans medewerkers (on/off-campus), wat meer doelgroepen in staat stelt om flexibel voor de universiteit te werken. Individuele support weegt zwaarder dan het belang van de groep.

Kantoorruimte kan bij deze strategie gereduceerd worden (in m2 per fte). Daarmee zijn energiekosten en infrakosten eveneens lager, ook door minder woonwerkverkeer. Is dit het onvermijdelijke einde van de eigen werkplek? Huisvestingskosten zouden omlaag kunnen (% totaal), maar wellicht leidt dit wel tot extra HR- en andere kosten: mogelijk meer personeelsverloop door minder loyaliteit aan organisatie, meer moeite om leiding te geven aan hybride onderzoek/onderwijsteams en zorg over hoe innovatie plaatsvindt zonder toevallige ontmoetingen.

Concretisering van de mogelijke reductie van het kantooroppervlak:

- de bezettingscijfers laten zien dat in theorie een "herbestemming" van minstens 30% van het kantooroppervlak mogelijk is
- deze "herbestemming" kan betekenen: niet bijbouwen bij groei, meer onderwijs faciliteren op kantooroppervlak, maar ook verkopen, zelfs (circulair) slopen of transformeren tot woningen

Combineer beide strategieën of geen keuze maken

Bij beide strategieën geldt dat allereerst de dialoog met de universitaire gemeenschap moet worden aangegaan: wat voor universiteit willen we zijn en wat zijn daarvan de functionele, financiële en (milieu)technische consequenties? Ruimte is duur, maar gebrek aan ruimte is misschien wel duurder. Maar gezamenlijke beslissen dat bijvoorbeeld eigen werkplekken moeten blijven bestaan betekent ook samen bedenken waarop dan wel bezuinigd zou moeten worden om dit te kunnen (blijven) bekostigen.

Universiteiten geven zelf aan dat zonder expliciete keuze tussen de twee strategieën toch "een passieve strategie wordt gekozen: nietsdoen" en dat betekent doorgaans dat er geen regie is op aan/afwezigheid, veel leegstand is en er te weinig discussie is over de middelen die dat kost.

Vanzelfsprekend is er ook een gulden middenweg tussen de strategieën, als er duidelijk gebruikersgroepen of tijdvakken te identificeren zijn, waarvoor meer campusaanwezigheid doelmatiger is of juist de mogelijkheid tot meer thuiswerken.

Welke strategie ook wordt gekozen, het besef dat leegstaande ruimte wel verwarmd of gekoeld, schoongemaakt en betaald moet worden, zou moeten leiden tot bewuster ruimtegebruik en (ruimtereserverings)gedrag. Dit in het kader van de duurzame campus en de ambitie om doelmatig met schaarse middelen om te gaan, zeker in tijden van bezuinigingen en ambitieuze milieudoelen.

Beter vastleggen van collectieve campusgeheugen

Hoewel het nog te vroeg om conclusies te trekken over het proces van kennisuitwisseling via project Campus NL, is er wel een “nulmeting kennisdeling” gedaan, oftewel een survey, onder bijna 200 campusmanagement-medewerkers in november en december 2023. Daaruit blijkt enerzijds dat er al vele interuniversitaire netwerken zijn die kennis uitwisselen op diverse thema's, wat illustreert dat er bereidheid is tot kennisdelen bij velen. En anderzijds wordt aangegeven dat verbetering mogelijk is bij de effectiviteit van kennisdeling en het daadwerkelijk opslaan en terugvindbaar-maken van kennis. Het “collectieve campus-geheugen” kan beter vastgelegd worden en daarvoor is zeker een vruchtbare voedingsbodem (en motivatie) aanwezig. Tegelijkertijd is er zeker ook urgentie, omdat de nieuwe generatie “campusmanagers” sneller wisselt van baan en ook afhankelijk is van de kennisdeling van de oudere generatie met tientallen jaren aan campusexpertise (die vroeg of laat met pensioen gaat of wellicht anderszins vertrekt). Campus NL zal komende jaren in nauwe samenwerking met campusmanagers verbeteringen suggereren voor doelmatiger kennisdeling.