

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examcommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Benjamin Laagewaard
Student number	4498496

Studio		
Name / Theme	Gamechangers in Transitions	
Main mentor	Monique Arkesteijn	Real Estate Management
Second mentor	Ruud Binnekamp	Preference-Based Design
Argumentation of choice of the studio	<p>During the master there was a course that focused heavily on real estate management. This field caught my attention due to concept that it can have influence on the performance of a real estate portfolio. The idea that real estate could support business operations caught my interest and motivated me to learn more about the processes of portfolio management.</p> <p>I found out that there are still persistent problems in portfolio management that hinder the transition towards future proof real estate portfolios. This seemed problematic to me due to clear societal demands of, for example, sustainable and flexible real estate. Therefore, I aim to provide new insights that can support managers to improve the performance of the portfolio by writing my master thesis.</p>	

Graduation project	
Title of the graduation project	Enhancing decision support in real estate portfolio management <i>A dashboard redesign for the Preference-Based Accommodation strategy based on principles of effective dashboard design</i>
Goal	
Location:	A sizable Dutch public organization: the Dutch Police
The posed problem,	<p><i>Problem</i></p> <p>Public organisations may have a mismatch between the demand and supply sides of their real estate portfolio due to conflicting ambitions. In result, the strategic decision-making is complicated by the possible tensions between added-values within the real estate (Den Heijer, 2021; Valks, 2021). This is problematic, since public organisations are known to struggle with meeting national and global policy demands due to challenges in, for example, financing and sustainability implementations (Den Heijer, 2021).</p>

	<p>The Preference-Based Accommodation Strategy (PAS) approach could support real estate value maximalisation by aligning the business strategy to the operational side of a portfolio (Heywood et al., 2017). However, pilots with the PAS approach have shown that stakeholders experienced difficulties in using the PAS dashboard effectively (Arkesteijn, 2019). Some stakeholders found the dashboard difficult to understand and unintuitive to use. Therefore, the dashboard could benefit from optimisation for stakeholder engagement. However, no studies have been done yet to systematically evaluate the PAS dashboard. As a result, the effective implementation and broad user acceptance for the PAS approach could be improved (Arkesteijn, 2019). When the dashboard design of PAS is not effective enough to communicate information clearly to its users, it could limit its adaptation or effectiveness as a decision support tool for decision-making in CREM.</p> <p><i>Gap</i></p> <p>To gain a better understanding of the problem, a screening of the literature was conducted. This review revealed that general design principles for dashboard have existed for several decades in academic research and many are based on the foundations described by Few (2006). Similarly, research was done by Valks et al. (2021) on the selection of information requirements for dashboards in campus RE portfolio management. Dashboard design principles have been mentioned by several sources (Few, 2006; Sarikaya et al., 2019; Yigitbasioglu & Velcu, 2012). However, in the current literature there is no existing link regarding the application of dashboard design principles to dashboards used in Decision Support Systems (DSS) for enhanced decision-making and more specifically about the PAS dashboard developed by Arkesteijn (2019). Therefore, it is necessary to evaluate the current dashboard design and subsequently develop and evaluate a redesigned PAS dashboard based on the design principles for effective dashboard design. Furthermore, it should be considered that not all dashboard design principles are transferable to dashboards of different types and uses when considering the resulting functionality (Sarikaya et al., 2019).</p>
<p>research questions and</p>	<p>Main question: <i>How can a redesigned PAS dashboard be developed and evaluated based on the identified design principles of effective dashboards?</i></p> <p>Sub-questions:</p> <ol style="list-style-type: none"> 1) <i>What are the principles to design a dashboard?</i> 2) <i>What are the criteria of effectiveness for dashboards?</i>

	<p>3) <i>What limitations and challenges do stakeholders currently experience when using the existing PAS dashboard?</i></p> <p>4) <i>What are the design principles to be considered for the design of a new effective PAS dashboard?</i></p> <p>5) <i>What are users' perceptions of the redesigned PAS dashboard in relation to the criteria of effectiveness?</i></p>
design assignment in which these result.	<ul style="list-style-type: none"> - Gathering dashboard design principles and criteria for effective dashboard design from the literature and use the findings to evaluate the current PAS dashboard. - Creating and evaluating a redesigned PAS dashboard based on the design principles and asses the users perceptions based on criteria for effective dashboards. <p>In result, valuable insights could be provided for the dashboard design of the PAS approach or other DDS systems.</p>

Process

Method description

Research question	1 + 2	3	4	5
Phase explanation	1. Understanding the criteria and principles	2. Understanding the current PAS dashboard	3. Dashboard redesign & evaluation	4. Validation of findings
Research methods	Narrative literature review	Cross-pilot comparison and review of the publications about PAS (theses)	Making the updated version of PAS dashboard	Interviews and/or workshop and/or survey
Guidelines / activities	Literature search and filtering Literature analysis	Researcher observation of current PAS dashboard (pilots at the police) Reviewing the publications about PAS and finding out the dashboard limitations	Selection of design principles to be implemented Creation of the updated version of PAS dashboard	Preparing the protocol for the interview/survey Conducting the interview/survey
Output	Criteria of effectiveness & design principles	Limitations and challenges with the current PAS dashboard	The updated version of PAS dashboard	Validation of findings

Phase 1 of the research focused on the understanding of the criteria and principles of dashboard design. This responds to the first and second research questions (RQ1 and RQ2). The research methods is narrative literature review. The output is expected to be a comprehensive list of criteria of effectiveness and design principles, which will be later used in Phase 3 of the research (“dashboard redesign and evaluation”). In phase 2 of the research, the current PAS dashboard will be studied. A cross-pilot comparison and review of the publications will be conducted. This responds to RQ3. The output is expected to be a list of limitations and challenges of the current PAS dashboard. This phase in conducted in parallel with Phase 1 (as shown in Figure 1). In Phase 3, RQ4 will be responded and dashboard redesign and evaluation will be conducted. The output is expected to be the updated version of the PAS dashboard. In Phase 4, RQ5 will be dealt with. The research methods are interviews and/or workshops and/or surveys to ask feedback about the updated PAS dashboard and validate it.

Literature and general practical references

The literature that I intend to consult:

- Public real estate management: (Den Heijer, 2011; Valks, 2021).
- Decision Support Systems: PAS approach (Arkesteijn, 2019), Preference-Based Design (Binnekamp, 2010).
- Real estate management alignment: (Heywood et al., 2017)
- Dashboard design: Literature reviews (Arkesteijn et al., 2017; Bach et al., 2022; Pauwels et al., 2009; Sarikaya et al., 2019; Vazquez-Ingelmo et al., 2019).

Reflection

1. *What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?*

Real estate management is one of the core activities of the built environment. It occurs at a large scale since many organisations use real estate. Therefore, real estate portfolio can add value to an organisations on a large scale. However, the requirement is that the portfolio supports the business activities of the organisation. To achieve this, stakeholders of all backgrounds from the built environment can use Decision Support Systems, such as PAS, to find design and compare portfolio alternatives. However, the dashboard effectiveness should be considered since it is important for the translation of data to the stakeholders. Decision-making could be improved when using design principles for the PAS dashboard.

2. *What is the relevance of your graduation work in the larger social, professional and scientific framework.*

Public organisations may have a mismatch between the demand and supply sides of their real estate portfolio due to conflicting ambitions. In result, the strategic decision-making is complicated by the possible tensions between added-values within the real estate (Den Heijer, 2021; Valks, 2021). This is problematic, since public organisations are known to struggle with meeting national and global policy demands due to challenges in, for example, financing and sustainability implementations. In addition, public organisations use public funds and are obligated to meet societal demands (Den Heijer, 2021).

Alignment models have been used to match the demand and the supply side of the real estate and they have existed for over 30 years. However, after an analysis of theories and models on alignment, it was concluded by Heywood and Arkesteijn (2018) that they had limitations and lack of focus of RE portfolio design and selection. According to these authors, alignment was not clearly defined in most of the models and users of the models often failed to grasp how complex and pluralistic the theories and models of alignment are. Generally, there was marginal attention to decision-making and concrete procedures for the selection of the best alternatives were not present, as mentioned by Heywood and Arkesteijn (2018).

References

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