

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

! USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

Save this form according to the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy". Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !

family name Merchant

initials Z.M.M given name Zahra

student number 5263603

street & no. _____

zipcode & city _____

country _____

phone _____

email _____

Your master programme (only select the options that apply to you):

IDE master(s): IPD Dfl SPD

2nd non-IDE master: _____

individual programme: _____ (give date of approval)

honours programme: Honours Programme Master

specialisation / annotation: Medisign

Tech. in Sustainable Design

Entrepreneurship

SUPERVISORY TEAM **

Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair Sicco Santema dept. / section: _____

** mentor Fernando Secomandi dept. / section: _____

2nd mentor Larissa Plink

organisation: Royal Schiphol Group - Innovation Hub

city: Amsterdam country: Netherlands

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v.



Second mentor only applies in case the assignment is hosted by an external organisation.



Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

comments
(optional)

⋮

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair Sicco Santema date - - signature

CHECK STUDY PROGRESS

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: 22 EC

Of which, taking the conditional requirements into account, can be part of the exam programme 22 EC

List of electives obtained before the third semester without approval of the BoE

YES all 1st year master courses passed

NO missing 1st year master courses are:

name C. van der Bunt date 21 - 02 - 2022 signature CB

FORMAL APPROVAL GRADUATION PROJECT

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **. Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

comments

name Monique von Morgen date 1/3/2022 signature MvM

Envisioning Schiphol's first collaborative Multi-Modal Hub

project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 07 - 02 - 2022

01 - 07 - 2022

end date

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

Royal Schiphol group's future vision of 2050 focuses on being one of the most sustainable and competitive hubs in the world. It stresses on providing quality of life, quality of network and quality of service. While it is currently working on these goals through automation of processes, becoming more human independent & investing in sustainable technologies, there is a huge technology driven radical innovation opportunity for faster and more sustainable mobility options such as urban mobility, hyperloop, hydrogen planes, etc currently being developed in the world.

The opportunity for a multi modal hub arises due to transport options within and to our towns and cities are fragmented and do not align with our complex lives. Multiple modes, each with their own operator, payment platforms, service arrangements and locations can make it difficult to complete our journeys, making the private vehicle the mode of choice (at the point of use) on the basis of simplicity, cost and convenience. The negative consequences of private vehicles are well known - congestion, poor air quality, severance and safety implications. Linear public transport systems can present a significant time penalty over the private vehicle due to multiple stops and longer distances, limiting their reach to their fixed routes. Future Mobility Hubs could offer a new, low compromise solution to meet all our mobility needs in a sustainable, efficient and convenient way.

A mobility hub is a place where people can switch from one mode of transport to another with convenient facilities designed for a low-carbon society. RSG's partnership work is constantly evolving as it currently initiates passive collaboration with these various organisations to explore new forms of mobility, innovative transportation networks and other developments within the mobility landscape to achieve its future vision.

While the need for a multi-mobility hub is evident and there are various upcoming examples of small scale multi-modal nodes within cities, there is very little research conducted on what a full scale & functional multi modal hub should look like. Part of the reason exists because most of the sustainable transportation that will be part of a multi-modal hub is still being developed. With Schiphol's ambition of remaining as one of the worlds most competitive & sustainable hubs, it currently struggles with identifying the wants & needs of users as well as the different modalities that will be integrated and beneficial to Schiphol in the far future. With current developments in technology, we can scope modalities from local - to - international. Where local modalities include cycles, buses, walking, E-scooters, etc. Regional modalities include urban mobility, trains & trams. National mobilities include Hyperloop, E-planes, trains, hydrogen planes and international modalities include planes & cruises, but there are a lot more stakeholders to consider that could be considered as a mobility in the future. These will be revealed from the research with users and trend analysis.

Just knowing different modalities exist is not beneficial to Schiphol's planning towards creating a fully functional multimodal hub. We need to understand what are the passengers needs and wants as well as new disruptive trends that will contribute to a selective process of choosing the right modality. by taking it a step forward and understanding the context of each modalities, we will be able to strategically connect modalities and create a dynamic & seamless mobility experience for passengers from a local perspective to an international perspective.

This may seem as a straightforward solution but there are many limitations that exist that could deter the outcome of this opportunity. There is no fixed timeline for when some of these technologies will come into existence and furthermore in use with passengers. In order to create a multi-modal hub, there will be new infrastructure required and Schiphol has a long leading time when it comes to implementing projects.

space available for images / figures on next page

introduction (continued): space for images



image / figure 1: HARDT hyperloop's alluring perspective on Schiphol as a interconnected & sustainable MM

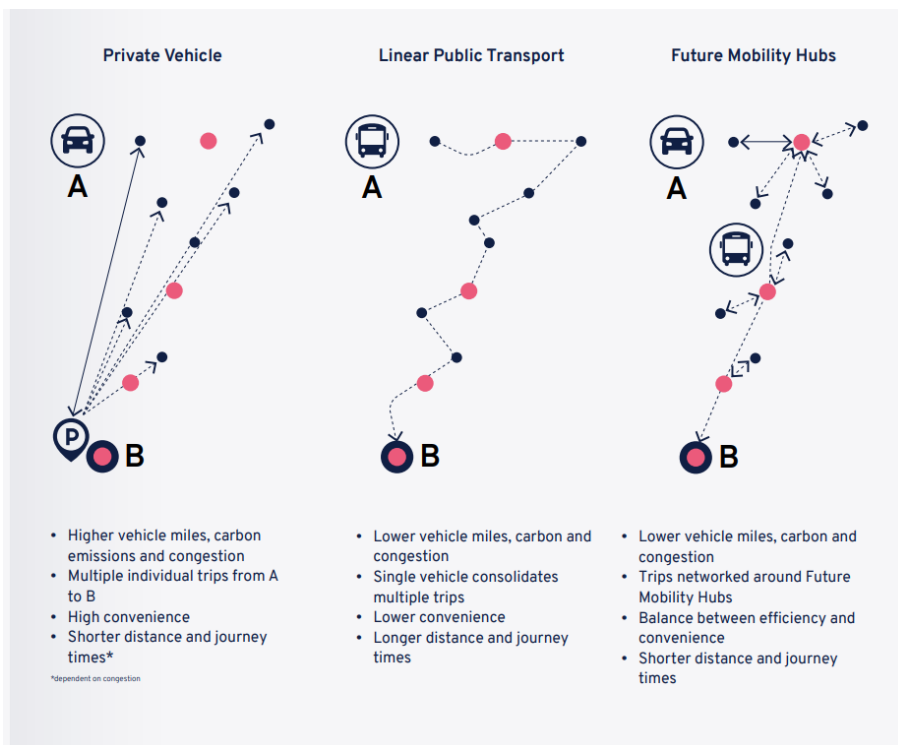


image / figure 2: Need for a multi-modal hub

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

The innovation hub at Schiphol has identified the need to transition towards a sustainable multi-modality hub in order to integrate these future mobilities and align with their future vision. Currently RSG lacks a clear understanding and perspective on the scaling of new modalities and envisioning how they all connect in Schiphol's Multi-modality Hub. There is also a knowledge gap on identifying the needs & wants of passengers that would pave the research on scaling various mobilities and understand how they can be beneficial to Schiphol as well as how these modalities will actually connect and interact with one and another to create a fully functional multi modality hub.

The opportunity: How does various future mobility stakeholders connect at Schiphol's multi modality ecosystem in order to create a seamless mobility experience for its users?

Depending on various factors/ trends such as demographics, tourism, work culture, etc, What does Schiphol look like in the future with so many new modalities added to it? Currently its main source of revenue comes from being an airport, real estate as well as its carpark, but in the future will Schiphol be one location for all the modalities? or a dispersion of services across the Netherlands? How does it earn from being a MMH?

- What are the relevant mobility stakeholder for RSG and How do various mobility stakeholders influence the future of mobility 2050? (e.g. Hardt Hyperloop, Hydrogen planes, Urban mobility)
- What value do these stakeholders bring to Schiphol's MMH?
- How should Schiphol position itself in this ecosystem and what business opportunities arise from being a Multi-modality Hub?

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

I would like to design a future strategic vision for Schiphol which consists of a proposition on how Schiphol should position itself as a multi modal ecosystem in the Netherlands by connecting various relevant mobility stakeholders in order to provide its users with a seamless mobility experience.

The graduation project will result in a critical and reflective report on the analysis of value that various mobility stakeholders bring to Schiphol and its users on its transition towards becoming an interconnected Multi modal ecosystem. Future thinking (combination of methodologies will be used i.e Vip, unexpected consequences, STEP card trend analysis, etc) will be conducted to identify future context relevant to design for the MME. Co-creation workshops with users will take place to identify needs and wants of the users. Value mapping will be used to design relevant values for the mobility stakeholders in relation to Schiphol. A combination of these insights and values will be transformed into a strategic future vision for Schiphol which will consist of a proposition on how Schiphol should position itself in this new ecosystem in order to provide its users with a seamless mobility experience. A holistic view of this future vision will be created and showcase any new strategic opportunities that might arise for Schiphol.

Regular Deliverables: Presentation, critical & reflective report on the value of Schiphol transitioning towards an interconnected MME, Poster.

Framework of relevant stakeholders (Value map)

Co-creation workshops with users that clearly identify new insights & their needs and wants for an interconnected MME.

Future strategic vision which clearly consists of a proposition on how Schiphol should position itself as a MME in the Netherlands by connecting relevant stakeholders to provide its users with a seamless mobility experience.

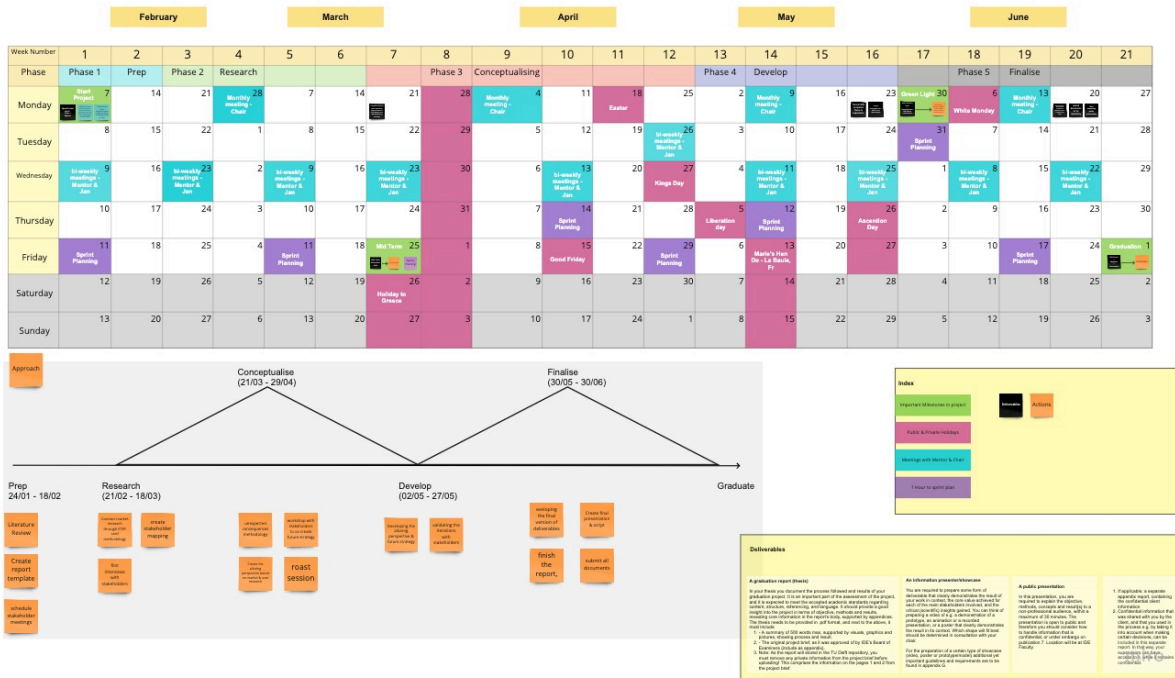
A holistic illustrated view of the proposed strategic future vision.

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date 7 - 2 - 2022

1 - 7 - 2022 end date



Approach:

Phase 1: Prep - (24/01 - 18/02) Conclude with presentation on lit review & signed brief. Official kick off Literature Review, Create report template, schedule stakeholder meetings for phase 2.

Phase 2: Research - (21/02 - 18/03) Conclude with new insights from research. Conduct market research through STEP card methodology, create stakeholder mapping of all possible mobilities, first interviews with stakeholders to gain knowledge on their vision and future.

Phase 3: Conceptualizing - (21/03 - 29/04) Conclude with 1st iteration of strategy & alluring perspective. Conceptualize through unexpected consequences methodology, workshop with stakeholders to co-create future strategy, Create the alluring perspective based on market & user research, Host a roast session with stakeholders to gain feedback on the first iterations of the deliverables.

Phase 4: Develop & validate - (02/05 - 27/05) Conclude with final version of deliverables and 80% of report. Developing the alluring perspective & future strategy, validating the iterations with stakeholders, developing the final version of deliverables

Phase 5: Deliver - (30/05 - 30/06) Conclude with grad report & presentation. Create final presentation & script, finish the report, submit all documents.

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, Stick to no more than five ambitions.

Growing up I have always be passionate about the mobility sector especially airports and airplanes because my mother has worked for Emirates as a revenue optimization manager. That meant I always spent my childhood around airports and would dream of working there. I ended my bachelors by redefining the future of air travel and loved every minute of it. I knew coming into the master program at TU Delft that I wanted to strategically design for the future of mobility. During the course manage your master, I put down Schiphol as one of my dream companies to work at in 5 - 10 years time. Little did I know, that I would get the opportunity much sooner and be able to graduate in my dream company. This is where my passion lies and i hope to use my learnings from the master course to balance my passion on this subject and knowledge in industry.

I have four major learning goals:

Hard skills:

- 1) Broadening my knowledge of co-creating with stakeholders by creating, testing & learning new ways of workshoping with them. Gaining confidence to accept that sometimes stakeholder meeting outcomes dont go as planned...trust the process.
- 2) Learning to design within the sweet spot of innovation. (Feasability, viability & desirability)

Soft Skills:

- 1) Reduce unnecessary stress by not procrastinating & believing in yourself
- 2) Take time out to enjoy your passion project & make an active decision to integrate more into the Dutch culture of working and socialising. (small steps like going for borrels, learning dutch phrases & words, etc)

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

I have used the tools trello & Miro for creating a schedule and keeping up with daily tasks through Agile & Scrum methodology. I will be weekly sprint planning through out the project to be extremely agile in my work and set realistic deadlines as I go. I am more comfortable using these tools and methodologies over a gant chart. These are the links to the given planning, feel free to access them at anytime. Miro: https://miro.com/app/board/uXjVOdEtWD0= / Trello: <https://trello.com/b/FptkWALT/project-management>