IDE Master Graduation Project

Project team, procedural checks and Personal Project Brief

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

- Student defines the team, what the student is going to do/deliver and how that will come about
- Chair of the supervisory team signs, to formally approve the project's setup / Project brief
- SSC E&SA (Shared Service Centre, Education & Student Affairs) report on the student's registration and study progress
- IDE's Board of Examiners confirms the proposed supervisory team on their eligibility, and whether the student is allowed to start the Graduation Project

STUDENT DATA & MASTER PROGRAMME

Complete all fields and indicate which master(s) you are in

Family name	van der Horst
Initials	N.
Given name	Niek
Student number	4875796

IDE master(s) IPD ✔ DfI ☐ SPD ☐

2nd non-IDE master	
Individual programme *(date of approval)*	
Medisign	☐
HPM	☐

SUPERVISORY TEAM

Fill in he required information of supervisory team members. If applicable, company mentor is added as 2nd mentor

Chair	Arjen Jansen	dept./section	SDE/MM
mentor	Bart van Trigt	dept./section	3ME/BMechE
2nd mentor			
client:			
city:		country:	
optional comments			

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

! Chair should request the IDE Board of Examiners for approval when a non-IDE mentor is proposed. Include CV and motivation letter.

! 2nd mentor only applies when a client is involved.

APPROVAL OF CHAIR on PROJECT PROPOSAL / PROJECT BRIEF -> to be filled in **by the Chair** of the supervisory team

Sign for approval (Chair)

Digitally signed by tudelft.protect Jamf Protect CSR Identity
Date: 2023.12.19 16:32:29 +01'00'

Name A.J.Jansen Date 19 Dec 2023 Signature

CHECK ON STUDY PROGRESS

To be filled in **by SSC E&SA** (Shared Service Centre, 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 _____ EC

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

☐	**YES**	all 1st year master courses passed
☐	**NO**	missing 1st year courses

Comments:

Sign for approval (SSC E&SA)

Name _____ Date _____ Signature _____

APPROVAL OF BOARD OF EXAMINERS IDE on SUPERVISORY TEAM -> to be checked and filled in by IDE's Board of Examiners

Does the composition of the Supervisory Team comply with regulations?

YES	☐	Supervisory Team approved
NO	☐	Supervisory Team not approved

Comments:

Based on study progress, students is …

☐	**ALLOWED** to start the graduation project
☐	**NOT** allowed to start the graduation project

Comments:

Sign for approval (BoEx)

Name _____ Date _____ Signature _____

Personal Project Brief – IDE Master Graduation Project

Name student Niek van der Horst **Student number** 4,875,796

PROJECT TITLE, INTRODUCTION, PROBLEM DEFINITION and ASSIGNMENT

Complete all fields, keep information clear, specific and concise

Project title Faster learning of smashtechnique in amature Padelplayers

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

Introduction

Describe the context of your project here; What is the domain in which your project takes place? Who are the main stakeholders and what interests are at stake? Describe the opportunities (and limitations) in this domain to better serve the stakeholder interests. (max 250 words)

Padel is a relative new sport and can be seen as a combination of tennis and squash. The court features a glass arena where the ball can rebound similar to squash, yet it must first touch the ground after crossing the net, resembling tennis. The strategic use of lobs for defensive manoeuvres is very popular in this sport since it allows players time to adjust their positions and even seize attacking opportunities. The technique to counter this lob is called a smash. The smash is an aggressive overhead shot that often finishes the point or puts the opponent back into a defensive position. Because you have to use it frequently in this sport and it can often result in winning a point, the smash has taken on greater significance in this game.

The sport attracts a considerable number of newcomers, including those new to a racket sports in general. With an emerging community of amateurs and the novelty of sport, there exists a gap in the market for the demands of products designed to enhance skill development in padel.

➔ *space available for images / figures on next page*

introduction (continued): space for images

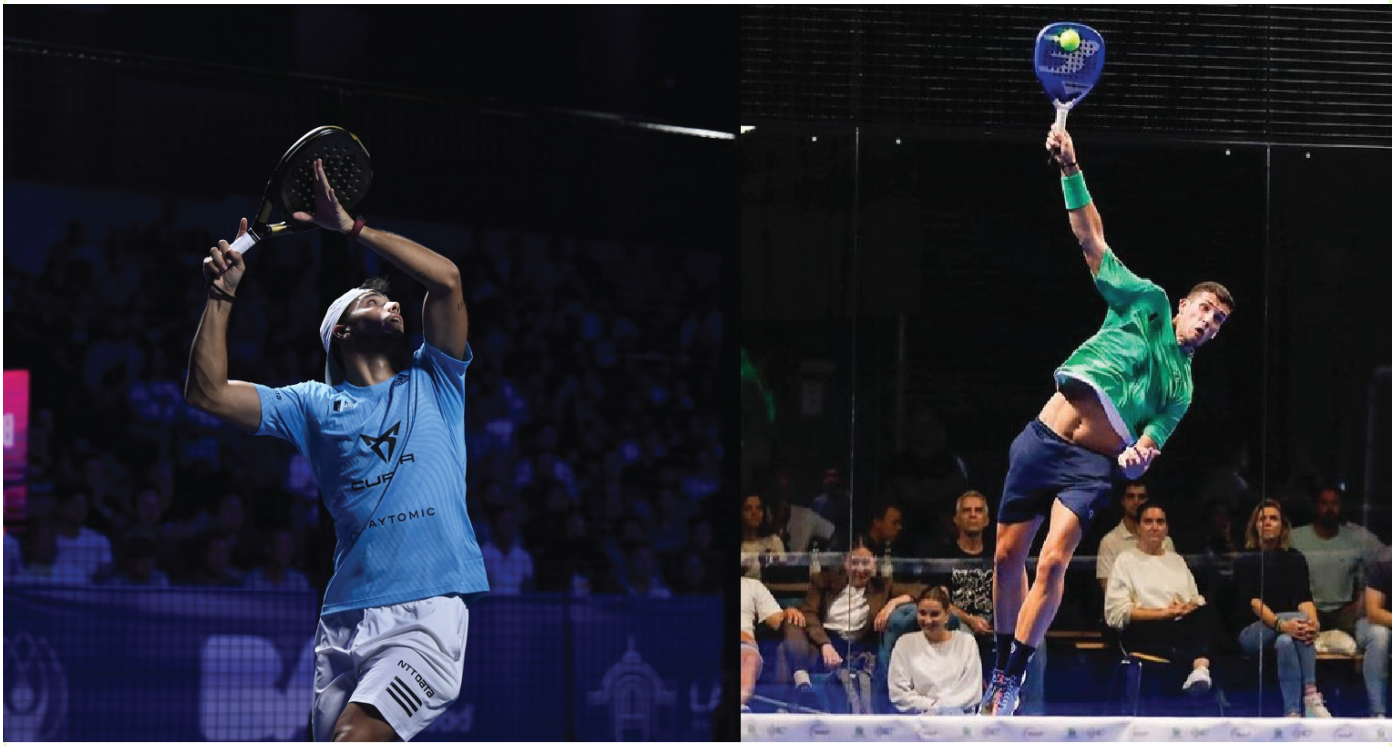


image / figure 1 Professional Padel players lining-up and performing a smash

image / figure 2

Personal Project Brief – IDE Master Graduation Project

Problem Definition

What problem do you want to solve in the context described in the introduction, and within the available time frame of 100 working days? (= Master Graduation Project of 30 EC). What opportunities do you see to create added value for the described stakeholders? Substantiate your choice.
(max 200 words)

A large part of a successful padel game lies quite often in mastering smash technique. However, many amateurs, with no experience in racket sports, often lose points by hitting the ball incorrectly - whether it is hitting the net, hitting the back wall or even missing the ball entirely. I therefore want to find a solution for the player to faster learn the right technique.

Performing a smash requires a complex movement for the player. To faster learn such a difficult motion might require high-end equipment. However since the target audience are padel amateurs who are new to the sport, the proposed solution must remain affordable. Simplicity and cost-effectiveness are of primary importance.

Assignment

This is the most important part of the project brief because it will give a clear direction of what you are heading for. Formulate an assignment to yourself regarding what you expect to deliver as result at the end of your project. (1 sentence) As you graduate as an industrial design engineer, your assignment will start with a verb (Design/Investigate/Validate/Create), and you may use the green text format:

Design a solution to faster learning of the smash technique in Padel for amateur athletes

Then explain your project approach to carrying out your graduation project and what research and design methods you plan to use to generate your design solution (max 150 words)

My approach to the project consists of four main phases: Analysing, exploring, concepting & developing. In the Analysing phase I will conduct 1) research about the physics and biomechanics behind smashing in Padel, 2) research about learning and teaching the correct smash technique and 3) research into direct feedback methods. During the first phase I will also already start with ideating ideas. This leads me to the exploring phase. In this phase I will go from idea to concept and eventually choosing a concept to actually build (parts of it). In the last phase I will develop a prototype to perform user testing. These phases will also overlap in an iterative way.

Given the limitations of a 100-day graduation project, it is clear that a fully functional solution is not feasible within this time frame. Therefore, the aim of the project is to deliver a functional prototype to assess critical design components, complemented by a comprehensive concept describing all intended functionalities.

Project planning and key moments

*To make visible how you plan to spend your time, you must make a planning for the full project. You are advised to use a Gantt chart format to show the different phases of your project, deliverables you have in mind, meetings and in-between deadlines. Keep in mind that all activities should fit within the given run time of 100 working days. Your planning should include a **kick-off meeting**, **mid-term evaluation meeting**, **green light meeting** and **graduation ceremony**. 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 course activities).*

Make sure to attach the full plan to this project brief.
The four key moment dates must be filled in below

Kick off meeting	19 dec 2023
Mid-term evaluation	29 feb 2024
Green light meeting	24 mei 2024
Graduation ceremony	26 juni 2024

In exceptional cases (part of) the Graduation Project may need to be scheduled part-time. Indicate here if such applies to your project

Part of project scheduled part-time	✔
For how many project weeks	13
Number of project days per week	4,0

Comments:

The first 8 weeks I want to work full-time because I am very motivated and eager to begin. After these 8 weeks working part-time helps me stay motivated.

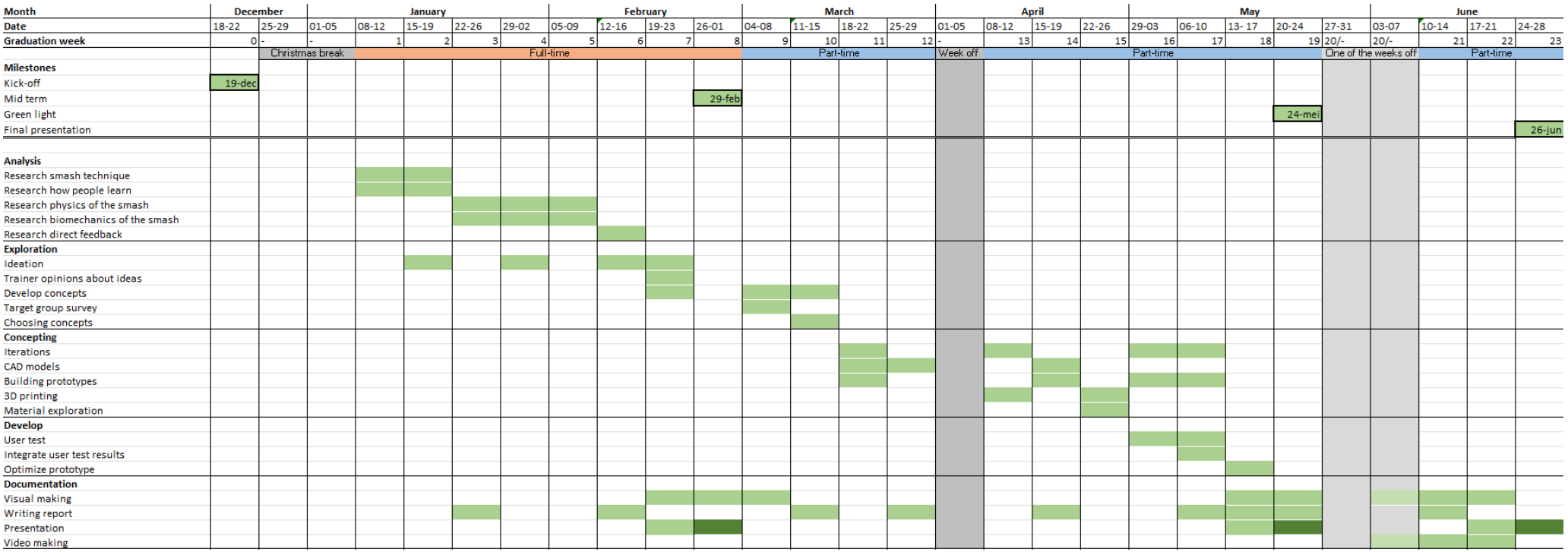
Motivation and personal ambitions

Explain why you wish to start this project, what competencies you want to prove or develop (e.g. competencies acquired in your MSc programme, electives, extra-curricular activities or other).

Optionally, describe whether you have some personal learning ambitions which you explicitly want to address in this project, on top of the learning objectives of the Graduation Project itself. You might think of e.g. acquiring in depth knowledge on a specific subject, broadening your competencies or experimenting with a specific tool or methodology. Personal learning ambitions are limited to a maximum number of five.
(200 words max)

My passion has always revolved around sports. Since my first year at IDE, I have wanted to design for sports. However, I felt there were too few projects in this area, especially in the bachelor's programme. Hence, the moment I gained the freedom to choose my topic, I immediately gravitated towards a sports-oriented theme.

When I practise a new sport with beginners, I often see that they feel discouraged to keep playing because they struggle with fundamental techniques. I want to break this barrier by designing a solution that facilitates and accelerates the learning process. While researching different sports that sparked my interest, I eventually chose padel. Although I do not play it on a weekly basis, the mix of elements intrigues me and provides room for continuous learning.

Choosing the IPD master's programme was a conscious choice because my interest lies with the product aspect of design. Making something physical gives me flow in my work and also leads to a better understanding of it.

Appendix: Graduation planning Niek van der Horst 4875796, 23/24