



Project Management Plan

S. Abdian¹, N. Chakrabarty¹, E. Honarvar², J. Mwende¹, R. Sadeghimehr¹, G. Walravens², and M. Zelina²

¹Jheronimus Academy of Data Science

²Eindhoven University of Technology



July 17, 2023

Contents

1 About the document	5
1.1 List of definitions and abbreviations	5
1.1.1 Definitions	5
1.1.2 Abbreviations	5
1.2 Document purpose	5
1.3 Document ownership	5
2 Project overview	6
2.1 Introduction	6
2.2 Purpose and scope	6
2.2.1 Purpose	6
2.2.2 Scope	6
2.3 Assumptions and Constraints	7
2.3.1 Assumptions	7
2.3.2 Constraints	7
3 Project organization	7
3.1 External interfaces	7
3.2 Internal interfaces	7
3.3 Team description	8
3.4 Roles and responsibilities	8
3.4.1 Project Manager	9
3.4.2 Team Leader	9
3.4.3 SCRUM Master	10
3.4.4 Configuration Manager	10
3.4.5 Quality Manager	11
3.4.6 System Architect	11
3.4.7 Engineer/Designer	12
3.5 Stakeholders and Concerns	12
3.6 Project delivery	13
3.7 Project schedule	13
4 Project context	13
4.1 Process model	13
4.2 Process Improvement Plan	14
4.3 Infrastructure Plan	14
4.4 Methods, tools and techniques	15
4.5 Project acceptance plan	15

5	Project Assessment and Control	15
5.1	Requirements Management Plan	15
5.2	Quality Assurance Plan	15
6	Supporting Process Plans	15
6.1	Risk Management Plan	15
6.1.1	Risk register	16

Change history

Version	Date	Author	Description
1.0	15-05-2023	G. Walravens	Created Initial draft
1.1	17-05-2023	G. Walravens	Added all necessary section headers, filled initial bits in
1.2	24-05-2023	G. Walravens	Added external interfaces, stakeholders and concerns
1.3	03-07-2023	G. Walravens	Added risk register
1.4	16-07-2023	G. Walravens	Finish several plans, changes to introduction

1 About the document

1.1 List of definitions and abbreviations

1.1.1 Definitions

- *IKEA*: Swedish multinational conglomerate based in the Netherlands that specializes in ready-to-assemble furniture, kitchen appliances, and decorative items.
- *INGKA Group*: represents Inter IKEA Systems, which operates on behalf of the primary franchisee. It manages approximately 450 IKEA stores worldwide, with around 360 of those stores falling under the responsibility of INGKA.
- *Celonis*: a data processing software that aids in process mining that contains a wrapper for Jupyter Notebooks.

1.1.2 Abbreviations

- *TU/e*: Eindhoven University of Technology
- *JADS*: Jheronimus Academy of Data Science
- *EngD*: Engineering Doctorate
- *ST*: Software Technology
- *MSD*: Mechatronic Systems Design
- *DS*: Data Science

1.2 Document purpose

The goal of this *Project Management Plan* (PMP) is to serve as a guide for the project's goals, objectives, scope, risks, and resources. Furthermore the manner in which the project will be executed from an organizational point of view will be defined.

1.3 Document ownership

This document is owned by team and maintained by the project manager. It is furthermore used in communication with the client (IKEA), the EngD ST program management, EngD MSD program management, and the EngD DS program management.

2 Project overview

2.1 Introduction

INGKA Group (from hereon referred to as just Ingka) is a holding company that is part of IKEA. Ingka represents Inter IKEA Systems, which operates on behalf of the primary franchisee. They consist out of three business areas:

- IKEA Retail: consists out of 379 IKEA stores across the globe.
- Ingka Centres: creates meeting places anchored by an IKEA store.
- Ingka Investments: makes investments in core IKEA business and customer value.

For ease, we will refer to our client as IKEA. IKEA serves many orders across the world daily. With all these orders, there is bound to be a few that do not go according to plan. If this happens, this leads to a decrease in customer satisfaction, and loss of sales for IKEA. Therefore, it is desirable to know not only what causes orders to become imperfect, but also when they might become imperfect. This problem is what our project aims to help mitigate.

2.2 Purpose and scope

2.2.1 Purpose

This project aims to make a tool/methodology for IKEA to improve their order lifecycles. Specifically, our solution should provide them with the ability to recognize possible order failures from the available order lifecycle logs.

By detecting the crucial attributes or patterns typical of failed orders, they hope to analyze the process and take preventative action. Specifically, our solution should provide them with the ability to recognize and predict possible order failures based on the available order lifecycle logs.

2.2.2 Scope

To achieve the aforementioned purpose, the team shall develop a predictive process mining solution that will extract the crucial attributes or patterns that indicate a potential order failure. These findings will be output such that IKEA can use the output to improve their overall business.

The team will be responsible for conducting a literature review to figure out the best approach, explore the available data, implement the solution, and then lastly visualize the findings using graphs and diagrams as well.

In order to make the solution realistically implementable with the given timeframe and resources, the team will focus on a dataset solely covering stores in Finland. This is one of their main target markets, and would provide a representable case study that can later be scaled to more countries.

Lastly, the solution should be implemented in Celonis. Celonis is a popular tool used in process mining and process visualization. It contains a machine learning workbench which allows users to write code in Python. By implementing our solution in Celonis, it will be integrated within IKEA's system right away, lessening the onboarding process for them, and the software transfer process for us.

2.3 Assumptions and Constraints

2.3.1 Assumptions

- The client shall provide us either direct or indirect access to the data (i.e. by proving the raw log files or through Celonis, respectively).
- The delivered solution shall work on a size-increasing dataset.

2.3.2 Constraints

- The solution shall employ process mining techniques.
- The solution shall be implemented in the Celonis environment.
- The project shall be completed by July 7, 2023.
- No budget will be provided.

3 Project organization

3.1 External interfaces

IKEA Externally, our primary stakeholder is IKEA. They are interested in the solution as it helps improve their business.

3.2 Internal interfaces

Management Internally we have the management of EngD ST (Yanja Dajsuren), EngD DS (Tiberiu Muntean) and EngD MSD (Riske Meijer) as stakeholders. Their responsibilities are the arranging of the project, getting necessary contracts and NDAs

signed, and supervising trainees.

Experts There are several industry experts available to us to provide guidance, advice, frameworks and review through the project and all associated work (e.g. documentation).

- Eltjo Poort: Software/System Architecture.
- Han Schaminée: Agile Project Management.
- Julien Schmaltz: Requirement Analysis.
- Harold Weffers: Project Management.
- Daniel Kapitan: Machine Learning.
- Ger Cloudt: Software Quality.
- Felix Mannhardt: Process Analytics.
- Ankit Majhi: Year 2 EngD DS doing Process mining for ASML.

3.3 Team description

The team is composed out of seven team members. Out of these seven, four are from the EngD DS program, a joint program between TU/e and JADS. Two team members are from the EngD ST program, and the final member is from the EngD MSD program, both of which are from TU/e. The roles covered by the team members are Project Manager (1), Scrum Master (1)

3.4 Roles and responsibilities

For our team, we have the following roles assigned as can be seen in [Figure 1](#).

	Program	Project Manager	SCRUM Master	Team Leader	Test Manager	Configuration Manager	Quality Manager	System Architect	Software Architect	Engineer/Designer
Elham Honarvar	MSD		X				X			X
Roya Sadeghimehr	DS			X**						X
Navoneel Chakrabarty	DS				X			X		X
Saba Abdian	DS			X						X
Jesca Mwende	DS						X**			X
Gijs Walravens	ST	X			X					X
Mihai Zelina	ST					X**		X		X

NOTE:

* The SCRUM Master role is required, if the PM decides to follow an Agile or Agile related hybrid approach.

** Supporting role (max. 10% or just when asked for).

Figure 1: Role distribution for the project

Below follows a description of each of the roles and their responsibilities.

3.4.1 Project Manager

The Project Manager (PM) is responsible that the teams' deliverables meet the stakeholder's expectations. He therefore:

- Translates the stakeholders' expectations into a project plan including a Project Management Plan (PMP), with a roadmap of incremental objectives.
- Reports progress to the stakeholders.
- Works with the Team Leaders to clarify the stakeholders' expectations.
- Aligns the project goals and sub-goals with the TL's.
- Works with the Scrum Master to build a good view on the status of the project.

Stakeholders include EngD program management and the client. The PM communicates to program management on team issues and progress.

3.4.2 Team Leader

A Team Leader (TL) is a role responsible for managing and leading a group of individuals toward achieving a common goal. The key responsibilities include:

- Leads the team, providing direction, support, and motivation to achieve common goals.
- Assigns tasks based on individual expertise and learning goals.
- Collaborates with the project manager as well as Scrum Master to allocate resources effectively.
- Monitors the quantitative and qualitative result that is to be achieved by the team.
- Takes care of the well-being of team members.
- Participates actively in the proper handling of team meetings.
- Responsible for handing over final results/documentation to the project manager.

3.4.3 SCRUM Master

The Scrum Master is responsible for facilitating the Scrum process and ensuring its effective implementation. The key responsibilities include:

- Guides and facilitates the team through the Scrum framework, ensuring proper execution of Scrum events.
- Provides guidance and support to the team, helping them understand and adopt agile principles and practices.
- Makes a resource planning (who does what and when) in consultation with the project manager, or work with SCRUM.
- Helps the team define and achieve their goals and objectives, promoting self-organization and continuous improvement.
- Ensures the appropriate and efficient use of Scrum artifacts, such as the product backlog and sprint backlog.

3.4.4 Configuration Manager

A configuration manager is a professional who is responsible for managing and controlling the configuration items within a project or organization. The main responsibilities include:

- Applies tools, techniques and processes to track, log and correct information related to configuration items.
- May deal with getting the frameworks that support the group process (Git, Jenkins, Assembla, Enterprise Architect etc.), make it available, make it work, and accessible.
- Responsible for version control of documents, codes/scripts, and test results.

3.4.5 Quality Manager

The Quality Manager (QM) is responsible for ensuring the adherence to defined standards and requirements throughout the development process. Their main responsibilities include:

- Responsible for defining tests.
- Responsible for verification according to requirements (and standards).
- Approves/disapproves the developed functions.

3.4.6 System Architect

A system architect is a professional who takes the lead in developing the design and architecture of systems or software. Their primary responsibilities include:

- Initiates meetings on system/software design/architecture with team.
- Ensures that appropriate (software) tools and methods are available.
- Decides on the selection of system/software design/architecture
- Ensures consistency with specified requirements.
- Balance between functional, quality, (service), and systems management requirements.
- Discuss shortcomings and necessary deviations with the project manager.

3.4.7 Engineer/Designer

A design engineer is a professional responsible for performing various content-related tasks related to the development and implementation of design solutions. Their main responsibilities include:

- Performs content-related tasks such as Requirements, risks, brainstorming, design, Literature search, Model and implementing Tests, and Writing/present.
- Communicates with other team members about the progress.
- Reports to the software/system architect and team leader.

3.5 Stakeholders and Concerns

The main stakeholders for this project are IKEA and the managements of the respective programs.

C1: Receive a solution capable of predicting which orders might become imperfect.

C2: Receive the final documentation, such as:

- C2.1** Project Management Plan
- C2.2** Literature Review
- C2.3** Architecture Design Document
- C2.4** User Requirements Document
- C2.5** User Manual
- C2.6** Technical report
- C2.7** Quality Plan

	IKEA	Yanja Dajsuren	Tiberiu Muntean	Riske Meijer
C1	X	X	X	X
C2	X	X		X
C2.1	X	X		X
C2.2	X	X		X
C2.3	X	X		X
C2.4	X	X		X
C2.5	X	X		X
C2.6	X	X	X	X
C2.7	X	X		X

3.6 Project delivery

The following deliverables will be provided to the stakeholders upon the completion of the project:

- Source code of solution that predicts potential imperfect orders.
- User Requirements Document specifying the functional and nonfunctional requirements of the project.
- Literature review document outlining background review and option consideration.
- User manual describing usage of our solution.
- Architecture Design Document
- Recommendations Document cover future suggestions

3.7 Project schedule

The project starts on May 8 and ends on July 7, 2023. It shall be organized in sprint of approximately one week length. Some sprints will be two weeks long due to public holidays and difficulties in our collectives calendars.

4 Project context

4.1 Process model

This project is managed according to a hybrid Agile approach. The methodology used to implement Agile is Scrum. The Scrum events adopted by the team are:

- **Daily standup:** every morning working day the standup is done. When everyone is available in the office it is done in person. If less than 3/4th of the group is available, we will conduct it online instead. During this standup everyone will get a minute or two to cover what they did previously, what they will do today, and anything they might need help with.
- **Planning poker:** done at the start of every new sprint. The team will come together to come up with tasks for the next sprint. These tasks will especially be based of the requirements that have the highest priority. This session is led by the Scrum Master.

- **Sprint retrospective:** done at the end of every sprint. The team will come together and discuss what went well during the sprint, and what did not go so well. For the latter action points will be established to improve it for the next sprint. This session is led by the Team Leader.

Furthermore, we will use the following tools and artifacts in to help in this endeavor.

- **Kanban board:** the Kanban board contains all the tasks for that sprint. Team members can move their tasks between the columns 'TODO', 'In progress', 'Review', and 'Done', to indicate the task status.
- **Product backlog:** during the sprint planning, new tasks will be created and placed into backlog as needed, and tasks from the backlog will then be selected to be done during that sprint.
- **Definition of Done:** a task will be considered done only after it has been reviewed by at least one independent group member (independent being, someone who has not worked on that task themselves) and they deem it to done as well. In case there are still changes to be made after the review, the task moves back to 'IN PROGRESS', and the above process repeats itself until the task is completed to satisfaction.
- **Happiness index:** during the sprint team members are able to score their satisfaction on scale from 1-10. During the sprint retrospective reasons for everyone's grades are brought up to discover how it can be improved.

4.2 Process Improvement Plan

At the end of every sprint, the team shall organize a sprint retrospective. This is done in order to identify what went well, and what did not go so well. From the negative things that people bring up, action points are created. These action points will then be followed in the next sprint in order to improve upon the previous sprint's negative experiences. In the sprint that follows after this, the action points will first be repeated again to gauge if the previous sprint's problems have been resolved.

4.3 Infrastructure Plan

Since the client's request is to have the implementation be done in the Celonis environment, this is also where we will be doing most of our work as well. The benefit of this is that we do not have to setup our own environment, and security is guaranteed by the fact that only IKEA can allow people into this environment. Only for most of the documentation we shall use outside sources, such as Overleaf.

4.4 Methods, tools and techniques

We have used the following technical methods and tools in this project:

- Overleaf
- Celonis
- GitLab

4.5 Project acceptance plan

5 Project Assessment and Control

5.1 Requirements Management Plan

For specific requirements, see the User Requirements Document.

5.2 Quality Assurance Plan

For the quality assurance of this project, see the separate Quality Assurance Plan.

6 Supporting Process Plans

6.1 Risk Management Plan

We construct the following risk management plan according to ISO 31000:2018. The purpose of the risk management is to identify the risks, evaluate the probability of the risk manifesting itself, and the severity of a risk when it actually happens. This is a continuous process that happens throughout the life of the system.

6.1.1 Risk register

ID	Risk	Probability	Effects	Importance	Strategy	Status
1	Calendars not of team members not aligning	9	8	72	Check weekly for changes, contact program managers	Done
2	Lack of domain knowledge from team members	5	7	35	Members self-teach and set up meetings with coaches	Partly complete
3	Lack of client system knowledge from team members	6	7	42	Setup instruction meeting and follow guides	Done
4	Not getting proper access to the data	6	10	60	Request access in time, use dummy data in meantime	Done
5	Lack of infrastructure from the client	5	9	45	Ask for upgrades to infrastructure	Done
6	Availability of the client	6	7	42	Setup weekly meetings in advance	Done