



## User Requirements Document

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# Change history

Version	Date	Author	Description
1.0	30-05-2023	G. Walravens	Added initial draft
1.1	02-06-2023	G. Walravens	Added initial requirements

## **0.1 List of definitions and abbreviations**

### **0.1.1 Definitions**

- *IKEA*: The client, one of the global leading home furnishing retailers.
- *Imperfect order*: a order that had at least one deviation from the perfect order lifecycle.

### **0.1.2 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 Introduction**

## **1.1 Purpose**

This document contains the user requirements for the EngD IKEA project. These requirements are a result of the negotiations with the client, IKEA, and the EngD team. The listed requirements will be implemented according to their indicated priorities. Any changes made to these requirements need to be agreed upon by both of the above mentioned parties.

## **1.2 Scope**

Process mining team is a team of EngD trainees from TU/e and JADS. Trainees are from the ST, ASD and DS programs. The project will be done for IKEA, one of the global leading furniture stores.

The goal of the project is to take the process mining done on the order lifecycle logs of IKEA's orders so far to the next level. Instead of just figuring out what things are undesirable in an order, we should know when these undesirable things might happen. The solution should be able to predict whether, given a sequence of actions in order, it is likely for the order to become imperfect. Imperfect orders are orders that deviate from the standard order lifecycle pattern. Such deviations can for example be modifications made to the order content, problems in logistics, or cancellations midway through the order.

By being able to predict which orders are likely to become imperfect, IKEA can adjust their business practices such that more order can be completed correctly, leading to higher revenue and greater customer satisfaction.

# **2 Requirements**

Below are the requirements for this project. The requirements are prioritized according to the MoSCoW method [1].

## 2.1 Capability requirements

### 2.1.1 Functionality

URF-1	<i>Must have</i>
The solution shall detect crucial activity patterns for imperfect orders.	
URF-2	<i>Must have</i>
The solution report the probability of a given order being imperfect.	
URF-3	<i>Must have</i>
The solution shall involve a regression analysis to explore the relationships between activities and imperfect orders.	
URF-4	<i>Must have</i>
The solution shall provide an explainable AI visualization.	
URF-5	<i>Won't have</i>
The solution shall be integrated to provide real-time alerts for orders that are likely to become imperfect.	

## 2.2 Constraints requirements

### 2.2.1 Environment

URC-1	<i>Must have</i>
The solution shall be implemented in Celonis.	

### 2.2.2 Languages

URC-2	<i>Should have</i>
The solution shall be created using Python.	
URC-3	<i>Must have</i>
The documentation of the solution shall be done in English.	

### **2.2.3 Security**

**URC-4**

*Must have*

The solution shall only be accessible via Celonis.

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### **2.2.4 Privacy**

**URC-5**

*Must have*

The training data shall contain no personal information.

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**URC-6**

*Must have*

The team shall adhere to the privacy standards as specified in the GDPR.

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**URC-7**

*Must have*

The team shall not leak company-sensitive information to a third party.

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### **2.2.5 Scalability**

**URC-8**

*Must have*

The solution shall be able to handle one country worth of data.

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**URC-9**

*Should have*

The solution shall be able to handle three countries worth of data.

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**URC-10**

*Could have*

The solution shall be able to handle all countries worth of data.

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### **2.2.6 Performance**

**URC-11**

*Must have*

The model training shall complete in 30 minutes.

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**URC-12**

*Should have*

The model training shall complete in 20 minutes.

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**URC-13**

*Could have*

The model training shall complete in 10 minutes.

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**URC-14** *Must have*  
The model shall be able to an imperfection prediction for a given order within 500ms.

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**URC-15** *Should have*  
The model shall be able to an imperfection prediction for a given order within 250ms.

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**URC-16** *Could have*  
The model shall be able to an imperfection prediction for a given order within 100ms.

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### **2.2.7 Documentation**

**URC-17** *Must have*  
The team shall provide adhere to the coding standard set by the quality assurance plan.

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**URC-18** *Must have*  
The team shall create a user manual instruction how to use the delivered solution.

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**URC-19** *Could have*  
The team shall provide a literature study document.

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### **2.2.8 Compatibility**

**URC-20** *Should have*  
The solution shall be able to integrate with the other relevant Celonis tools.

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## **References**

- [1] Dai Clegg and Richard Barker. *Case method fast-track: a RAD approach.* Addison-Wesley Longman Publishing Co., Inc., 1994.