

Project Plan



Faes
StackAssist[®]

Lectorate Interaction Design
Eindhoven

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Version

Version	Date	Author(s)	Changes	Status
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		Gabriela	Approach and LOs	
		Dimitar	Communication and Risks	
		Kindi	Context, Assignment, Goal	
		Majid	Scope and Deliverables	
1	06.04	Gabriela	Research Questions & Methods	Complete
1.1	08.04	Gabriela	Changes based on Veerle's feedback (Project Assignment, Research Questions, Scope, Planning)	Complete
1.2	09.04	Tsveta	Changes based on a review	Complete
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Communication

Version	Date	To
1	08.04	Anke Eyck
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1. Project Assignment

1.1 Context

StackAssist is a tool designed to optimize warehouse operations by efficiently guiding order pickers on how to best stack products, considering factors like package rotation and weight limits. This assignment arises from the need to improve the user experience for order pickers who require hands-free, intuitive support to access stacking instructions without unnecessary movement or error. The project is motivated by technological advancements and market demands for enhanced productivity in warehouse management, aiming to integrate StackAssist with existing systems and explore innovative solutions like digital work instructions and AR technology to meet these challenges.

There is research conducted to compare the stacking process efficiency between paper instructions and DWI (Digital Working Instructions). The results were in favor of the DWI. This is another incentive of FAES to look for more innovative solutions for their product StackAssist.

1.2 Goal of the project

The goal of this project is to develop a prototype for StackAssist that significantly improves the efficiency and accuracy of order pickers in warehouses by providing them with an intuitive, hands-free method to receive stacking instructions. Currently, the order pickers have to deal with a multi-page PDF document that presents them with stacking guidelines. This document is either printed on paper or statically attached to a stand. The problem at hand is the current inefficiency and high potential for errors in manual stacking processes, compounded by the physical limitations of order pickers who need to use both hands and may have to make unnecessary movements to access instructions.

By focusing on user experience improvements, the project seeks to ensure that the StackAssist system becomes a more integral and accepted part of the order pickers' workflow. The improved interface will enable order pickers to receive stacking instructions in a manner that is both time-efficient and easy to understand, without the need for additional movements or distractions from their primary tasks.

This project provides an opportunity to further develop the work environment for the order picker, making the work more feasible and attractive. Further research would be conducted, as may be deemed necessary, in order to be able to refine the statement of the problem and determine the actual needs of the client that will be addressed by the proposed solution.

1.3 The Assignment

The assignment involves enhancing the usability and effectiveness of the existing StackAssist system by developing a user-friendly interface that delivers stacking instructions to order pickers in a more intuitive and efficient manner. Despite StackAssist's already-established functionality in calculating optimal packing configurations, improving the interaction between the system and the order pickers is the challenge. The solution must facilitate easy access to stacking instructions, aiming to increase compliance and efficiency and reduce errors without adding unnecessary steps to the order pickers' workflow. Key considerations include:

- **System Acceptance:** Develop strategies to ensure order pickers' acceptance of the system, addressing concerns that it may be too time-consuming or complex, and reinforcing the benefits of adherence to the provided instructions.
- **Optimization Focus:** Clarify that the project's aim is not to overhaul StackAssist but to optimize the delivery and comprehension of its stacking instructions, thereby reducing damages, costs, and CO2 emissions through more efficient packing.

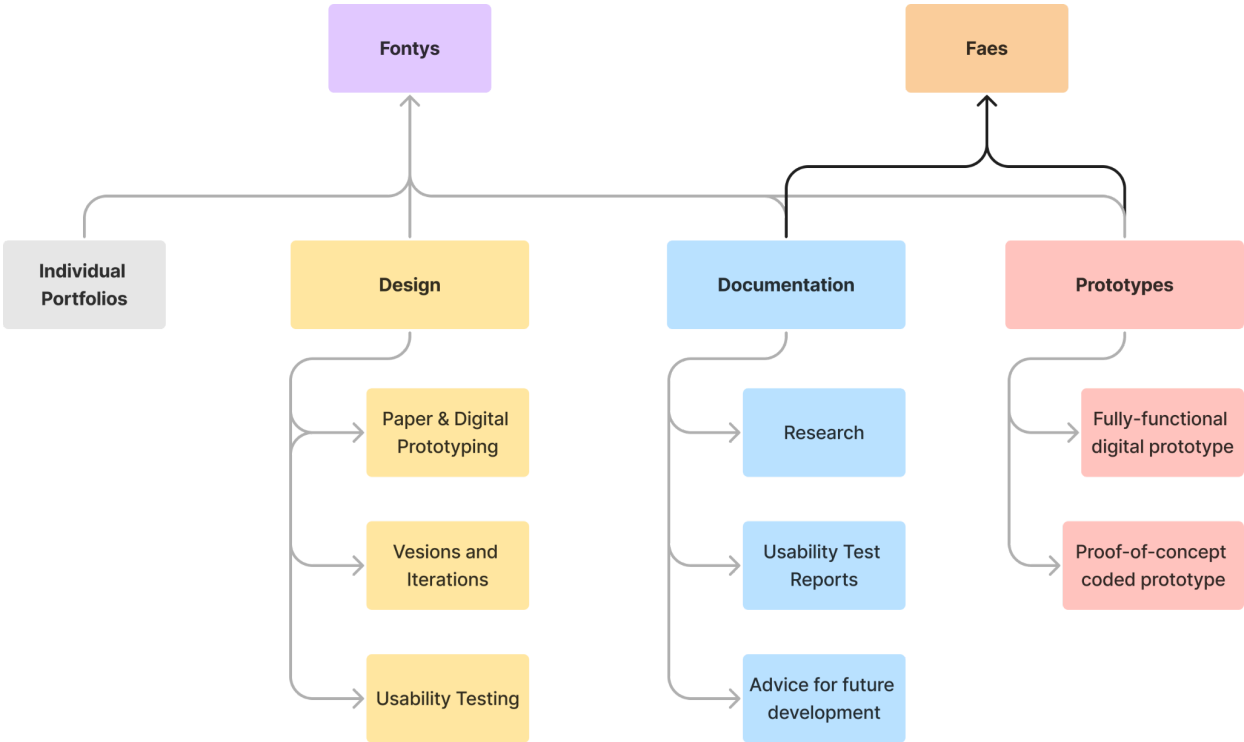
More specific functional requirements will be configured after further research.

1.4 Scope

The focus of this project is to improve the efficiency and accuracy of order pickers in the work environment by developing a prototype that leverages technology for better package stacking.

Includes:	Does NOT include:
User research	Hardware development
Technology Selection (Assessing and selecting the most appropriate DWI)	Long-term maintenance and support
Finished Prototype	User training program
User testing of the prototype (not necessarily with warehouse workers from FAES' client companies)	Full-scale deployment of prototype
Documentation of prototype	Changes to the stacking calculations
Advice on further development of the project	Changes to StackAssist (outside of the stacking instructions)

1.5 Deliverables



1.6 Research questions

Main research question:

How can the interaction between order pickers and the StackAssist system be enhanced to improve the efficiency, accuracy, and user acceptance of technology delivery in the stacking process?

Sub Questions:

- Which existing software components or libraries can be effectively utilized or adapted in enhancing StackAssist?
- What innovative technologies could be implemented to facilitate a more intuitive interaction between StackAssist and the order pickers?
- Which UX/UI design strategies are proven to be most effective in delivering DWI (Digital Working Instructions) in a manner that maximizes comprehension and ease of use for warehouse employees?
- What are the needs, preferences, and constraints of the target audience (order pickers) that must be carefully considered and integrated into the design and functionality of StackAssist?
- What specific strategies and approaches can be employed to encourage the adoption of StackAssist among order pickers, especially in overcoming resistance to new technologies and ensuring a smooth transition?
- How to ensure our solution meets the stakeholders' needs and expectations and reaches the goals of the project?

2. Approach and Planning

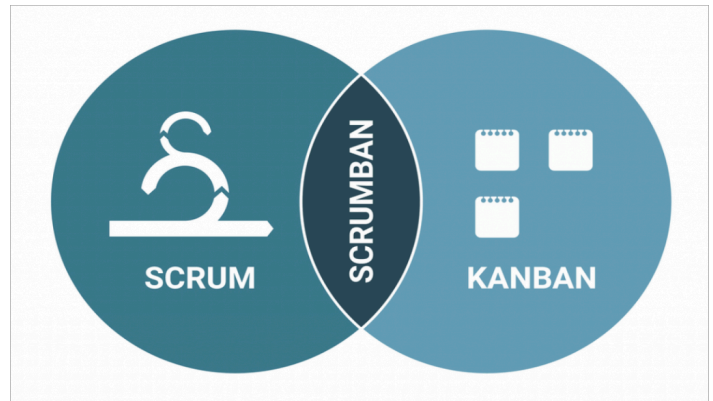
2.1 Approach

In undertaking the development of StackAssist, our approach is structured around the adoption of three pivotal methodologies: Scrumban, the DOT Framework, and the Double Diamond design process. This multifaceted strategy is designed to ensure agility, foster innovation, and maintain a strong focus on delivering a user-centric product that meets professional standards.

Scrumban for Agility and Flexibility:

Scrum is an agile framework that organizes work into short, fixed periods called sprints, focusing on delivering value in iterative cycles.

Kanban is a visual project management system that emphasizes continuous delivery without overburdening the team, using a board and cards to represent work items and their progress through stages.

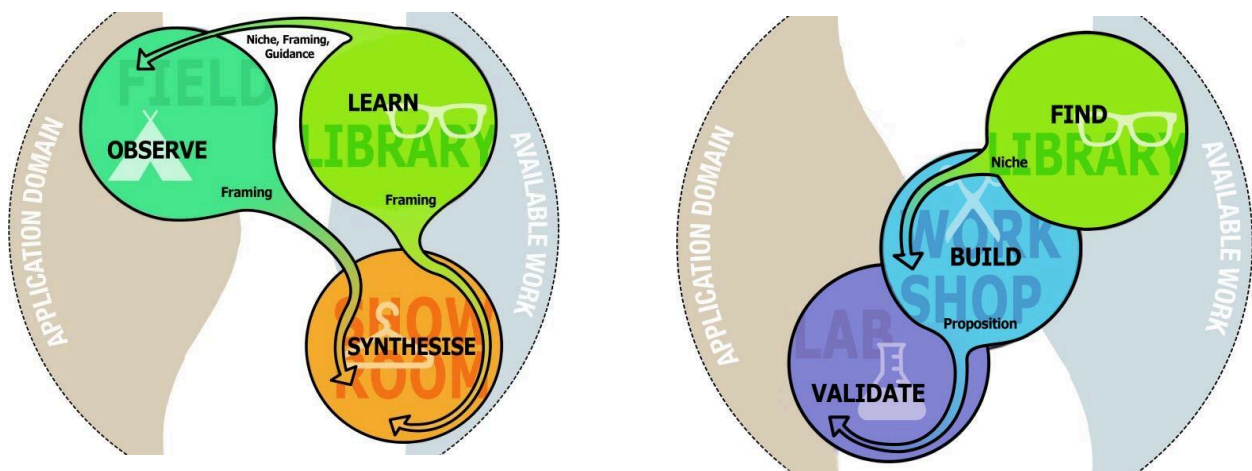


We will employ **Scrumban**, a hybrid agile project management methodology that combines elements of Scrum and Kanban, to manage our workflow.

Scrumban will provide us with the flexibility of Kanban and the structure of Scrum, enabling us to adapt to changing requirements while maintaining focus on our sprint goals. This approach facilitates continuous improvement, allows for a more adaptive planning process, and ensures timely delivery of high-priority features.

DOT Framework for Focused Problem-Solving:

Applying the DOT Framework, we commit to a disciplined approach where each development cycle concentrates on a singular, well-defined problem. This ensures clarity of purpose, efficiency in design and development, and, most importantly, a straightforward user experience. Firstly, we are going to use mixed-methods research to discover the necessary information from the two domains: Available work and Application context. Once we have the needed knowledge, our team is going to enter the Innovation space domain and combine various methods to develop the best solution for StackAssist. Last but not least, we plan to validate if the product we build in the Innovation Space is relevant to our Application domain and if it is up to the industry standards.



Double Diamond for User-Centered Design:

Central to our approach is the Double Diamond design process, which emphasizes the importance of divergent and convergent thinking in designing solutions that are deeply rooted in user needs and experiences. The process is divided into four key stages: Discover, Define, Develop, and Deliver.

- In the Discover phase, we will conduct extensive research to understand the challenges and opportunities within the context of StackAssist.
- The Define stage will see us synthesizing our findings, and identifying the key problems to solve.
- During the Develop phase, we will generate, prototype, and test a wide range of creative solutions, employing the DOT Framework to refine our focus.
- Finally, in the Deliver stage, we will finalize our solution, ensuring it is polished, user-friendly, and ready for implementation, leveraging Scrumban to manage this process efficiently.

By integrating Scrumban, the DOT Framework, and the Double Diamond process, we aim to deliver a product that not only meets the current needs of our users but is also flexible enough to evolve with those needs. This approach will enable us to navigate the complexities of software design and realization while maintaining a strong focus on user interaction, ethical considerations, and sustainability, thereby upholding our commitment to achieving professional standards and personal leadership within the ICT domain.

2.2 Research methods

For each research question, we mention a goal and further explanation of what we aim to uncover with the selected CMD methods.

Main research question:

How can the interaction between order pickers and the StackAssist system be enhanced to improve the efficiency, accuracy, and user acceptance of technology delivery in the stacking process?

Sub Questions:

1. What innovative technologies could be implemented to facilitate a more intuitive interaction between StackAssist and the order pickers?
 - Competitive analysis - to ensure that StackAssist is up to the industry standards
 - Library Study(s) - to investigate what is already being accompanied in the Available work domain
 - Expert Interview(s) - to understand the underlying needs and goals of the StackAssist' creators
 - Task Analysis - to fully understand the stacking process and identify pain points which our solution will address
2. Which existing software components or libraries can be effectively utilized or adapted in enhancing StackAssist?
 - Available product analysis - to investigate the current technologies adopted by FAES (StackAssist) and ensure our solution will be compatible
 - Prototyping - experimenting with different software technologies to for proof-of-concept ensure our solution is feasible
3. Which UX/UI design strategies are proven to be most effective in delivering DWI in a manner that maximizes comprehension and ease of use for warehouse employees?
 - Best, Good & Bad Practices- to discover the pros and cons of the numerous technologies and strategies to deliver DWI

- Prototyping - to visualize, iterate, and present the most suitable form of DWI for StackAssist
4. What are the needs, preferences, and constraints of the target audience (order pickers) that must be carefully considered and integrated into the design and functionality of StackAssist?
 - Interview(s) - to gather insights into the target users and take into account their needs and preferences in the design process
 - Persona(s)- to create a realistic representation of key segments of a target audience and to guide the design and development process.
 5. What strategies can be employed to facilitate the adoption of StackAssist among employees, particularly in addressing resistance to technological change and ensuring smooth transition processes?
 - Design Pattern Search - to look for available analogies that will help us bridge the gap between the warehouse worker and technology adoption
 - Usability Testing - to ensure our proposed solution solves the problem and is intuitively used by the users
 6. How to ensure our solution meets the stakeholders' needs and expectations and reaches the goals of the project
 - Co-reflection - regular catch-up meetings with the stakeholders in order to keep them updated on our process and make room for timely improvements and error prevention
 - Usability Testing - to ensure our solution is up to the needs of both stakeholders and target users
 - Peer Review - to gather constructive feedback and fresh perspectives from peers who are not involved in the project
 - Co-creation - to invite experts/stakeholders/users to brainstorm ideas and create solutions with the team

2.3 Learning outcomes

Learning outcome 1: User interaction (analysis & advice)

You analyze the user, the interaction, and the user experience, also taking state-of-the-art interactive technologies into account. You select a suitable design process to be able to advise on UX interventions based on a validated UX design.

Learning outcome 2: User interaction (execution & validation)

You execute and evaluate the user experience of an interactive product. You document the development process for the stakeholders.

Learning outcome 3: Software design and realization

You create & design software with existing components or libraries using predetermined quality criteria and version control.

Learning outcome 4: Professional standard

You take responsibility when solving an ICT issue. You define and carry out your research using relevant selected methodologies and provide advice to your stakeholders even in complex and uncertain contexts. You substantiate and validate future-oriented choices by use of ethical, intercultural, and sustainable arguments.

Learning outcome 5: Personal leadership

You independently formulate goals and actions that demonstrate leadership in your own long-term development as an ICT professional. You show that you can carry out these actions and achieve your goals, adjusting them as necessary.

2.4 Breakdown of the project

Each sprint consists of:

- Sprint planning
- Sprint retrospective & review
- Daily stand-ups

Discovery Phase

Sprint 0 (21.03-28.03)

Goal: Orientation

Tasks: Executing preliminary research

Output: Research Documents

Sprint 1 (28.03 - 11.04)

Goal: Research

Tasks: Defining and finding answers to as many research questions and sub-questions as possible concerning the project.

Output: Research documentation.

Define Phase

Sprint 2 (11.04 - 25.04):

Goal: Concept Definition

Tasks: Developing personas, identifying design challenges, and crafting the problem statement.

Output: Concept documentation, user stories, user flows, and features.

Develop Phase

Sprint 3 (25.04 - 09.05):

Goal: Wireframes (Initial Design)

Tasks: Research into UX/UX Suitable Methodologies Creating wireframes and potentially branding.

Output: First version high-fidelity prototype, and design reviews.

Sprint 4 (09.05 - 23.05):

Goal: High-Fidelity Design and Testing

Tasks: Developing high-fidelity prototypes and conducting usability tests.

Output: Second version high-fidelity prototype, first Usability Testing Report and third version high-fidelity prototype.

Sprint 5 (23.05 - 06.06):

Goal: Design Iteration and Coding

Tasks: Refining designs based on feedback, researching suitable software solutions and coding the product.

Output: Second Usability Testing Report and First Version of Coded Prototype.

Delivery Phase

Sprint 6 (07.06 - 20.06):

Goal: Coding and Documentation

Tasks: Finalizing coding and creating project documentation.

Output: Final code prototype and comprehensive documentation.

2.5 Time plan

** Our whole process is research-based and all phases will include research for the particular needs of the project state. The research phase is purely research. However, the design and the coding phase will also involve research for suitable solutions.*

*** Sprint dates are subject to modification contingent upon the project group's workload and the emergence of unforeseen challenges.*

Phasing	Phase	Start	Ready
Sprint 0: Orientation	Discovery	21.03	28.03
Sprint 1: Analyze	Discovery	28.03	11.04
Sprint 2: Research & Concepting	Define	11.04	25.04
Sprint 3: Wireframes (Initial Design)	Develop	25.04	09.05
Sprint 4: High-Fidelity Design & Testing	Develop	09.05	23.05
Sprint 5: Design Iteration & Coding	Develop	23.05	06.06
Sprint 6: Coding & Documentation	Delivery	06.06	20.06

3. Project Organization

3.1 Team members

Name + E-mail	Abbr.	Role/tasks	Availability
<i>Tsveta Pandurska</i> t.pandurska@student.fontys.nl	<i>Group member</i>	<i>Designer/Researcher</i>	<i>Tue-Thu on site. Mon & Fri online</i>
<i>Dimitar Gunchev</i> g.gunchev@student.fontys.nl	<i>Group member</i>	<i>Designer, Programmer</i>	<i>Tue-Thu on site. Mon & Fri online</i>
<i>Majid Al-Jahwari</i> m.aljahwari@student.fontys.nl	<i>Group member</i>	<i>Designer, Programmer</i>	<i>Tue-Thu on site. Mon & Fri online</i>
<i>Gabriela Simeonova</i> g.simeonova@student.fontys.nl	<i>Group member</i>	<i>Project Leader, Designer/Researcher</i>	<i>Tue-Thu on site. Mon & Fri online</i>
<i>Abdullah Al-Kindi</i> a.aalkindi@student.fontys.nl	<i>Group member</i>	<i>Designer, Programmer</i>	<i>Tue-Thu on site. Mon & Fri online</i>

3.2 Communication

1. Team Communication

- **In-Person Meetings:** The core of our team communication occurs in person, primarily on:
 - Tuesday (Morning and Afternoon)
 - Wednesday (Morning and Afternoon)
 - Thursday (Morning)
- **Daily Stand-ups:** To maintain momentum and ensure alignment, we hold daily stand-ups from Tuesday to Thursday at 09:30. These meetings are crucial for sharing updates, discussing challenges, and planning day-to-day activities.
- **Bi-Weekly Reflections:** Every second Thursday at 11:00, we conduct a reflection session. This meeting is dedicated to reviewing the current sprint, planning the next one, and discussing improvements in our workflow and processes.
- **Digital Platforms:** For communications outside the scheduled in-person meetings or to share additional information and updates:
- **Microsoft Teams:** Our primary digital channel for formal communications, meeting scheduling, and document sharing within the team.
- **WhatsApp Group Chat:** Used for informal interactions, quick updates, and team alerts.

2. Communication with Teachers

Our interaction with teachers is scheduled every Tuesday and Wednesday. These sessions are essential for receiving guidance, feedback, and support on our projects. The format and content of these communications are tailored to ensure that both academic and project objectives are met.

3. Communication with Clients

- **Email Correspondence:** Our primary method of communication with clients is through email. This channel is used for formal communications, including project updates, queries, and feedback.
- **Progress Showcases:** Although we do not have a fixed schedule for presenting progress to clients, we ensure that presentations are prepared and delivered as per project milestones or whenever significant progress needs to be showcased.

3.3 Stakeholders

Name + E-mail	Abbr.	Role
Veerle Schepers v.schepers@fontys.nl	Stakeholder	Main company contact & stakeholder, feedback
Bard van Gennip b.vangennip@fontys.nl	Stakeholder	Secondary stakeholder, feedback
Joris Ariëns j.ariens@fontys.nl	Teacher	Mentoring, providing feedback
Anke Eyck a.eyck@fontys.nl	Teacher	Mentoring, providing feedback
FAES CEO & Employees	Users	Main target group for the project

4. Finance and Risks

4.1 Risks and fall-back activities

Risk	Prevention activities included in the plan	Fall-back Activities
Illness, absence from university	Online meetings and discussions via MS Teams/WhatsApp	Anyone will be able to join the online meetings and message via Teams if in need of help or feedback
Issues during work, coding, or anything else	Daily stand discussions and help-seeking from group members	Understanding the cause of the issue and correctly providing that to the group while seeking help or additionally inquiring with experts outside of the group
Data loss	Save work on cloud-based providers (Google Docs, Figma, GIT)	If any data loss occurs, any group member can quickly recover their latest progress as soon as valuable products have been made.
Inability to complete project scope in time	Splitting scope points into smaller tasks to quickly progress and not get lost	Coming to a conclusion with project stakeholders on scope changes if there need to be any
Changes in project requirements	Implement a change control process, ensuring all stakeholders agree on a process for managing changes	Maintain a flexible project plan that allows for some degree of change and have additional resources on standby if necessary
Inability to directly interact with order pickers	Utilize indirect research methods	Leverage insights from subject matter experts within the field and academic literature
Findings indicate that printouts are still the preferred method for receiving stacking instructions	Conduct user research to identify the specific aspects of printouts that order pickers find most appealing and useful	Explore ways to enhance this method with digital support, integrating smart features into printouts that improve their utility without fully digitizing the process.