

PROCESS REPORT

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IT-SEP4C-S18 ICT ENGINEERING

4TH SEMESTER

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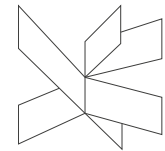
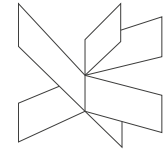


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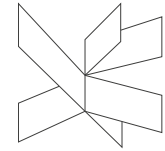


1 Introduction

Video games have been in the spotlight of multinational technology companies and ever since the massive growth in popularity of Operating Systems distribution for personal or family usage. The innovative use of gameplay mechanics to drive effective learning, such as memorization training, is a hot topic despite the scarcity of practical examples.

The purpose of this Process Report is to give some insight into our group's thinking process throughout the period of our project weeks. This will include various details of our activities and procedures that may or may not have been mandatory, but were definitely essential for a successful outcome, such as choice of methods and models or time schedule

Games are entertainment and they should thrive to create fun and engagement. Our game, called “Crazy Maze”, twists that fact, by bringing in an educational aspect that will benefit the player in real life situations while maintaining the entertainment factor as high as possible. Skills acquired by playing this game will be beneficial in training the user's brain to activate his short-term memory faster and with much greater efficiency.



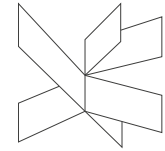
2 Group Description

Our group consists of hard working students that dedicated their entire time during the three weeks project period to ensure that our game and our documentation is well designed and organized.

Both Andrei and Oleg know each other since their first semester at VIA University in Horsens. In the past, we have previously worked together in projects for the CSE course, as well as other course assignments throughout the second and third semesters.

Regarding prior experience and experience gained during this project, there are a lot of aspects which can be expanded. Previous semester projects, such as SEP1 and SEP2, have been more than crucial in developing analytical skills, design skills and implementation skills which were used in the making of this project.

There is always a lot to learn from group projects, and this semester project has been no exception. In the following pages we will cover what experience we have gained and what can be improved in the future for an even better outcome.



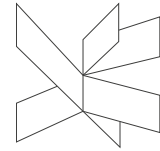
3 **Development Methodology (UP)**

Choosing the right development methodology for your project is not always the easiest of tasks in an assignment, as it involves a lot of understanding in your group's capabilities and limits. We have decided to go for the **Unified Process** model, which in our view, fits well with our goals set in the Project Description.

Overview of the Unified Process methodology:

Unified process (UP) is an architecture-centric, use-case driven, iterative and incremental development process that leverages unified modelling language and is compliant with the system process engineering metamodel. Unified process can be applied to different software systems with different levels of technical and managerial complexity across various domains and organizational cultures.

It is often used to describes a simple and easy to understand approach to develop business application software using agile techniques and concepts. Unified process is a refinement of rational unified process. It is an extensible framework that can be customized for specific projects, such as our SEP4.

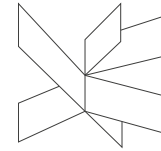


Phases of the Development Process:

1. **Inception:** The goal is to identify the initial scope of the project, a potential architecture for your system, and to obtain initial project go-to and stakeholder acceptance.
2. **Elaboration:** The goal is to prove the architecture of the system so that the implementation can be proceeded.
3. **Construction:** The goal is to build working software on a regular, incremental basis which meets the highest-priority needs of your project stakeholders.
4. **Transition:** The goal is to validate and deploy your system into your production environment / user review.

<u>Phase name</u>	<u>Starting date</u>	<u>Finishing Date</u>
Inception	10/05/2018	16/05/2018
Elaboration	18/05/2018	22/05/2018
Construction	24/05/2018	02/06/2018
Transition	04/06/2018	05/06/2018

Above we have designed a table with our project period schedule for each phase.



Iterative Disciplines of the Unified Process:

Disciplines are performed in an iterative manner, defining the activities which the team members perform to build, validate, and deliver working software, in our case an interactive game based on memorization training, which meets the needs of the stakeholders. The disciplines are the following:

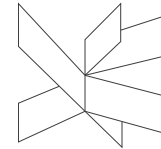
Model: The goal of this discipline is to understand the main areas of the project requirements, the problem domain being addressed by the project, and to identify a viable solution to address the problem domain.

Implementation: The goal of this discipline is to transform the model(s) into executable code that shapes the system and to perform a basic level of testing, in particular unit testing.

Test: The main goal of this discipline is to perform an objective evaluation to ensure quality. This includes finding defects (the so-called “beta testing”), validating that the system works as designed, and verifying that the requirements are met.

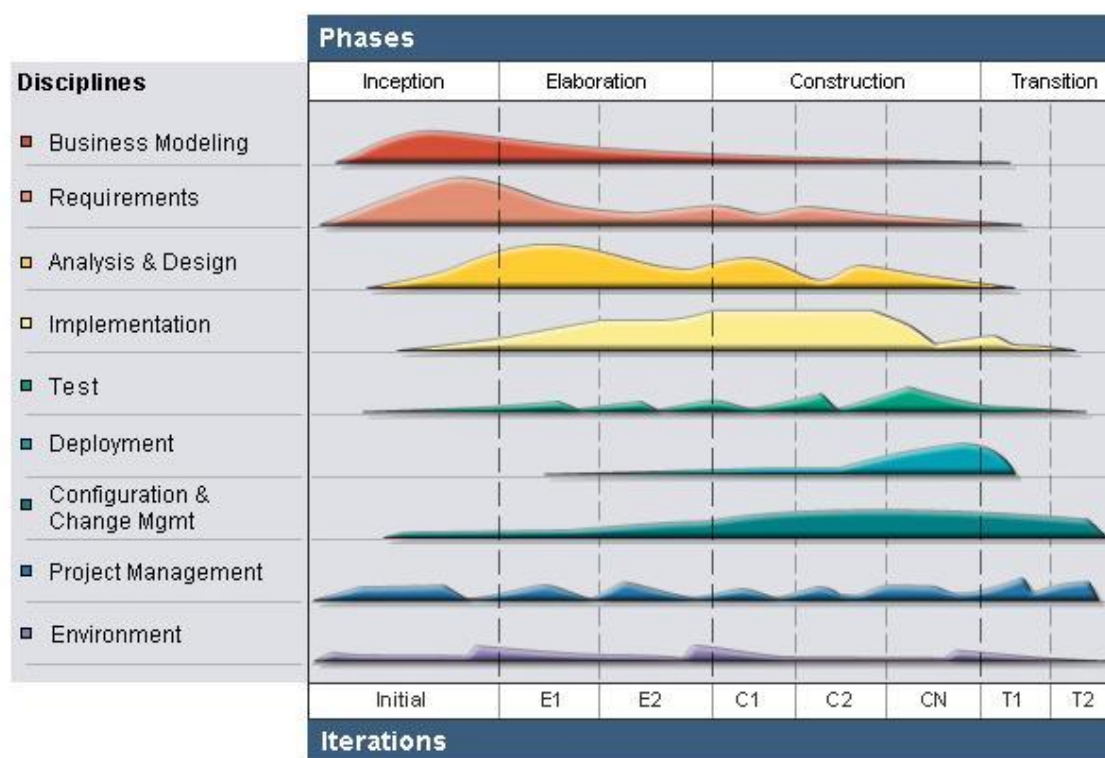
Deployment: The goal of this discipline is to plan for the delivery of the system and to execute the plan to make the system available to the target audience users.

Configuration Management: Primarily an engineering process for establishing and maintaining consistency of a product's performance, functional, and the physical attributes with its requirements, design, and operational information throughout its life time.

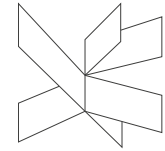


Project Management: The goal of this discipline is to direct the activities that takes place in the project. This includes managing risks, directing people (assigning tasks, tracking progress, etc.), and coordinating with people and systems outside the scope of the project to be sure that it is delivered on time.

Environment: The goal of this discipline is to support the rest of the effort by ensuring that the proper process, guidance (standards and guidelines), and tools (hardware, software, etc.) are available for the team as needed and with immediate effects.



In the graph above we can notice the priority and the amount of iterative activities that were put in each discipline across the four phases of our Semester Project. We will explain what challenges our group faced in each phase in the following pages.

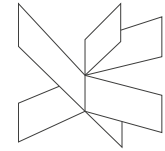


4 Project Inception

The inception phase was the starting point of our project. As previously mentioned, the goal was to identify the initial scope and a potential architecture to follow for the remainder of the SEP period. To do that, we also had to take the requirements posted by our supervisors and stakeholders Ensight Games into consideration.

More specific, we had to design and build a serious game for phones or tablets in the Unity game engine, using the Assets provided by our stakeholders or our own. Moreover, the game had to be a “Memorization Training” activity for the users, thus making the inception phase more important than ever in this case.

Andrei came up with the interesting idea of an “interactive maze” concept that would test the player in remembering the paths he went through to get to the end of the labyrinth by using spatial learning and memory. In addition, Oleg thought that improving and evolving gameplay mechanics, as well as an “item choice mini-game” to test short-term memory would fit perfectly in one fully built video game.

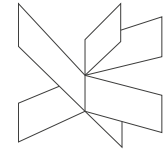


5 Project Elaboration

In the elaboration phase, we started organizing and debating on how we can use the available resources in the most efficient and effective way possible, in order to create the game we had in mind. This task's difficulty was further improved by the amount of work that had to be done in the Construction and Transition phases, so we had to up our pace in order to finish everything in time.

The group members split their tasks accordingly in this context. One member had to design diagrams and search for other necessary references that would later be used in the implementation of the game. The other member was in charge of finding necessary Assets that would later be imported to the Unity game engine, as well as making sure that progress is made regarding the process and project reports.

Another important aspect was the architecture: the structure of the game, as well as the mobile OS specifics, would have to be taken into account from the start in order to keep the progress of the game implementation as fluid as possible. Both members were responsible for this elaboration detail.

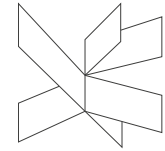


6 Project Implementation

As the name already implies, this phase was fully devoted to building our game in Unity. We started to construct our game scenes (levels and main menu) and write C# code. We also managed to make a lot of progress regarding appendices materials and the reports during the start of the phase. Later on, the game also started taking shape, but there was still a lot of work to be done before the Transition phase.

One of the biggest challenges which we had to overcome during this period was the amount of work we had to put in implementing the gameplay mechanics that we previously decided to put in our game. Overall, our group had to not only make sure that these core aspects of the game were working properly, but also edit them or even remove some of them completely if the implementation would not be satisfactory enough to make it in the final version of the game.

Testing our progress was also a very beneficial activity that made us aware of some “bugs” in our code that were later on fixed. We believe that our research and design in the Inception and Elaboration phases was an advantageous detail for us.

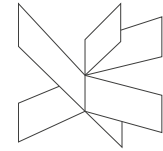


7 Project Transition

The transition phase was the final part of our project. We gave a lot more attention to testing, configuration and management in favor of analysis, design or implementation. Most of the time was spent on testing the functionalities of the system.

The biggest challenge we faced during this phase was the short amount of time we had left to finish everything for the hand-in. Thankfully, we split the tasks wisely and managed to finish the “bug testing and fixing” of our application after one day of intensive play-testing and coding. The following day, which was the day we handed in our project, was mainly focused on finishing the Project and Process reports.

We allocated some time to prepare every file or piece of information unused in the reports for the Appendices folder. A readme.txt notepad file and a YouTube video presentation of our game were also required for the hand-in to be approved. For references of quotes or materials used in the Process or Project Reports, please see the References.docx file inside the Appendices folder.



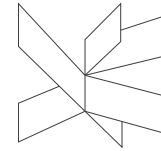
8 Personal Reflections

Andrei Enoiu

Out of all the projects and group assignments that I've been in, the SEP4 project was by far the most challenging and interesting one. Both of us did their work in the best of their abilities, and we are confident that the end-result is a very appealing, yet efficient one in the purpose of memorization.

Compared to the first serious game I made in Unity for the SGM course assignment, I think that I've improved a lot in terms of how I can give each asset and piece of code an important meaning for the outcome of the game. In my opinion, I have improved my game development skills greatly compared to that project, and I am fully confident that I can do an even better job next time, given the opportunity. At the same time, I would like to thank Oleg for his hard work, understanding and patience throughout the project.

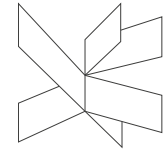
Overall, I'm extremely proud of what we've accomplished this semester project. Most importantly, I can safely say that I've accumulated a lot of experience and practical knowledge during these 3 weeks. After all, it is about learning and understanding the process behind it, and not just doing it mechanically, without any role or purpose in our thinking and development. I am very pleased that both of us worked really hard to achieve the common task we had.



Below is a table that gives insight on the improvements / regresses made by the student during the project period:

<u>Skill Review</u>	<u>Before project</u>	<u>After project</u>
Assets / Materials	8	9
C# coding	7	8
Process Report	8	8
Project Report	7	7
Team work	4	6
Researching	9	10
Diagram design	6	6
Unified process	3	7
Presentation	6	8
Written English	9	9
System scalability	7	9
Testing	8	10

Note: scale 1-10 (1 lowest,10 highest); Every member is equally responsible for completing their respective table / personal reflection before hand-in.

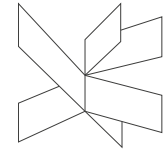


Oleg Eni

When we first started our SEP project, I knew that it's going to be even harder to get everything ready in time compared to previous SEP projects, as there were a lot more things to do and take care of to begin with. I was not sure if we will be able to fulfil all the requirements until the deadline, because we've never worked in a Semester Project together before.

What I could learn from this project is that nothing is for granted. You always have to work hard for it, and even when you think you've done everything, there is never something that is 100% perfect. To understand that, and to use this to push the group forward, made it essential in checking everything before the Hand-in, in order to tick every requirement on our list. The only downside that I could find is that we took a long time to find some of our mistakes early on, which led to some time lost, but everything was sorted out after that. So, in the end, we managed to pull together through it.

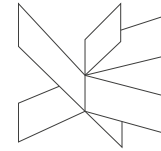
All in all, I think that we've done the best we could in the time we had. There is always room for improvement, and I hope that next semesters I can do an even better job in group projects. I understood that only with hard work and dedication you can succeed and achieve your goals, or your team's goals. This was an important and valuable experience that has taught me a lot of things related to group work, and I will find it useful in the future.



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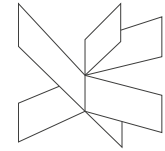
Note: scale 1-10 (1 lowest,10 highest); Every member is equally responsible for completing their respective table / personal reflection before hand-in.



9 Daily Log (agendas and summaries)

The table below is a brief list of daily activities (all include group members' meetings) during the project period:

<u>Date</u>	<u>Summary</u>
12/05/2018	Analysis on memory training
14/05/2018	Analysis on mobile games
15/05/2018	Project Description
18/05/2018	Fixing Unity compatibilities
19/05/2018	Diagrams design & Assets
20/05/2018	Diagrams design & Assets
22/05/2018	Started working on reports
24/05/2018	Additional work on reports
26/05/2018	Scenes creation and docs
27/05/2018	C# coding and scenes
29/05/2018	C# coding and scenes
30/05/2018	Finished the first three levels
01/06/2018	Finished tutorial & custom lvl
02/06/2018	C# coding and bug fixing
04/06/2018	Bug testing & fixing
05/06/2018	Finished reports & docs
06/06/2018	Live Presentation

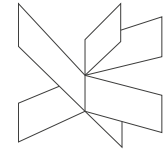


10 Considerations

Academic writing is, and has always been, an essential social practice. This means that we, as students, always write with a readership in mind and we always write with a clear and defined purpose, for example to explain or even to persuade. It also means that what is right or wrong, appropriate or inappropriate is defined by the users in the social community that review our project. In this case, these are other students, lecturers, and examiners.

Our group considered that writing and implementing the project with all the details and explanations necessary is the most appropriate way to make the reader fully understand the logical complexity of our work. Dividing the work between the group members, regarding both project report and process report, was needed to get everything done in the limited time that we had.

We also believe that the supervision of our project was done in a professional and very helpful way, and we are glad that we were supported by our teachers for the entire duration of the project period.



11 Unimplemented ideas

- **Leaderboard system:** We thought that it would be very cool to have a leaderboard in our game, but we did not have the time necessary to fully implement it
- **4th Level:** Originally, we had a 4th pre-made level for our game, but there were too many bugs to fix in the limited time, so we decided to focus on the first three levels instead
- **Better Mobile Optimization:** Our game is able to be run on pretty much any Portrait resolution of Android phones, although we would've liked to make it run even smoother and on Landscape mode as well

Appendices

Note: all appendices related content will be found in the Appendices folder in our project zip folder (hand-in file)