

Introduction

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1.1 Motivation

As this is a student report written as part of a learning project, we are required to comply with the study regulation. The main areas of focus, according to the study regulation, are: multi-project management and quality assurance in the form of requirements analysis, requirements management, and testing. The goal is to create a comprehensive software system, across multiple project groups, in order to enhance our competences in analysis, design, implementation, and evaluation of software applications in regards to the system requirements. [12]

To create a comprehensive system that will be usable in real life scenarios, this project will build on top of a previous project and will also be built with the aim of having other students continue its development later. The project we are building on top of is aimed at creating a touch based tablet system to support children with autism and their guardians in every day scenarios.

1.2 Target Group

Autism is a spectrum disorder meaning that, the degree of disorder can be different [10]. Autism can affect people in different ways, i.e. it can make them more chatty or silent, more methodical or disorganized. Lisa Jo Rudy, researcher, consultant, and mother to a child with autism, states [9] that: "if you've met one person with autism, you've met one person with autism".

The Autism Society of America defines autism [1] as follows: "Autism is a complex developmental disability that typically appears during the first three years of life and is the result of a neurological disorder that affects the normal functioning of the brain, impacting development in the areas of social interaction and communication skills. Both children and adults with autism typically show difficulties in verbal and non-verbal communication, social interactions, and leisure or play activities."

Autism is one of five disorders that falls under the umbrella of Pervasive Developmental Disorders (PDD), a category of neurological disorders characterized by severe and

pervasive impairment in several areas of development.”

Children with autism are usually very fixated in a single area, meaning that they can become very interested in one area and thereby completely forget or ignore the world around them, which can lead to unintended behavior. This fixation can be used by educators or teachers to motivate the children to learn, by including this area of interest into the learning process.

Children with autism may also have difficulties socializing with people, feeling empathy, and understanding other peoples feelings. Lastly children with autism often wants to structure everything because they have a need for a structured environment, which is also an important aspect during the planning of their everyday

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~~everyday~~ daily life.

1.2.1 Working with Children with Autism

This section is based upon the statements of a woman with autism [7], explaining what it is like to live with autism, and an interview with an educator at Birken, a special kindergarten for children with autism (see appendix .1 for interview notes).

People with autism are often more visual in their way of thinking. Rather than visualizing thoughts in language and text, they do it in pictures or visual demonstrations. Pictures and symbols are therefore an essential part of the daily tools used by children with autism and the people interacting with them. Also, children with autism can have difficulties expressing themselves by writing or talking, and can often more easily use electronic devices to either type a sentence or show pictures, to communicate with people around them.

Different communication tools for children with autism already exist, but many of them rely on a static database of pictures, and often these has to be printed on paper in order to use them as intended. Other tools, such as hour glasses of different sizes and colors, are also essential when working with children with autism, and these tools are either brought around with the child, or a set is kept every place the child might go, being at an institution or at home. Because this need of many different tools exist, it is relevant to explore the possibilities in using android tablets with customizable software as a tool for children with autism and the people working with them.

We will describe some of the other systems in section ...?

1.3 Target Platform

In this learning project we are developing applications, for children with autism, using the android platform. The android platform was chosen because this project is part of a multi project which began the development of the Giraf system [8].

Android is an open-source platform developed for mobile devices. The Android Open Source Project (AOSP) is maintained and further developed by the Open Handset Alliance (OHA), which is led by Google [6]. The companies from the OHA contributes to the project, these contributions are often made in form of engineering resources.

Ref til tidligere rapporten.

Android has a large community, spread over various websites, with different areas of expertise. This provides developers of android applications a community where they can find help ~~with~~ their niche [4]. Google, which is head of the android development, also has a website for teaching app developers how to program for android [5]. On Google's website they also provide various tutorials, so one can easily get started developing for android.

In this project we have been provided with several Samsung Galaxy Tab 10.1 [11]. The firmware on the tablets are version 3.2 [3]. This version has been chosen because it is the first version developed mainly for tablets, and it is going to be supported for the duration of the project. Version 3.2 provides some new features, which are:

- Statusbar notifications.
- Hardware acceleration.

1.4 Development Method

As mentioned earlier this is a learning project and therefore we have been required to use the same development method in our multi project groups. Therefore we have looked into two different methods XP(eXtreme Programming) [13], and Scrum [2], both are agile development methods. As a part of our courses we have been further introduced to how each method work and how ~~each one they~~ can be implemented in the development process.

With the knowledge of both XP and Scrum we in the multi project decided to use Scrum (Seen in Figure 1.1 on the following page) along with Scrum of Scrums.

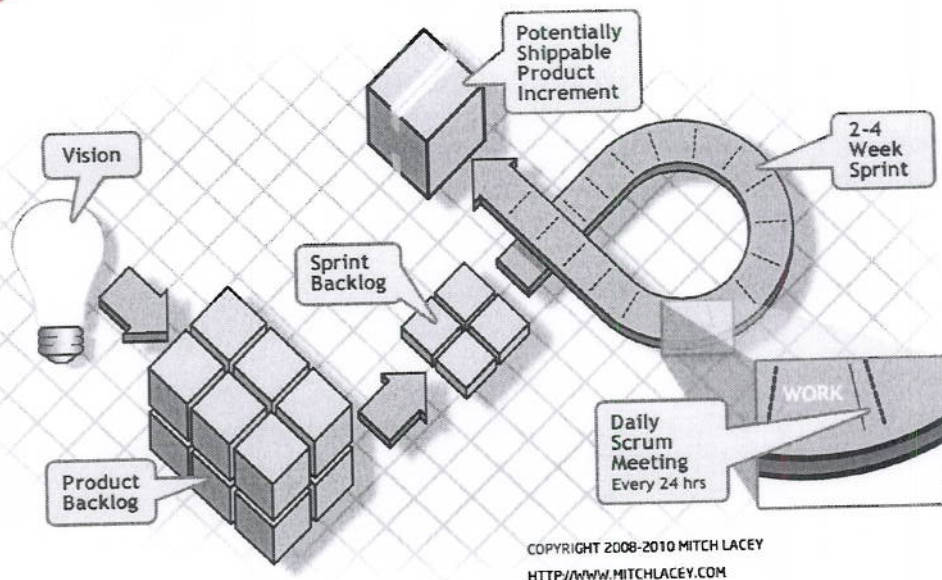


Figure 1.1. An Overview of the Scrum Framework

To enhance our use of Scrum we customized elements of Scrum to fit our project. The changes in the customized version of Scrum, and Scrum of Scrums are:

- The sprint length have been shortened to approximately 7 - 14 half days.
- Some degree of pair programming have been introduced.
- There is no project owner because this is a learning project.
- Everyone is attending the Scrum of Scrums meetings.
- The Scrum of Scrums meetings are only held once at sprint planning.

The benefits from choosing Scrum, and Scrum of Scrums with the customizations are that everyone, at all times, will be able to know what the vision of the project is, and how close every group is to achieving their individual goals of the vision.

As a part of ~~Scrum~~ we maintain a close contact with the customers. This helps keep the product backlog up to date and correctly prioritized. The customer are presented with the vision of the project as well as sprint demonstrations of the different incrementation of the product.

Scrum?

Har I ikke bare den seneste version med ud til kunder?

• Target group

• System diagram.

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- Oversight over det der ikke er svært ændre!!
- Som at kode noget 8 uden at være enige om metodik og typer!