**Requirements and Analyses: Project Proposal**

Digital Door Sign

**Version:** 0.5

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| **Project name** | Digital Door Sign |
| **Project leader** | Gloria Sara Panturu |
| **Responsible** | Mr Peter Bauer |
| **Created on** | 20/09/2019 |
| **Last changed** | 07/10/2019 |
| **Processing status** | |  |  | | --- | --- | | X | in process | |  | submitted | |  | completed | |
| **Document file** |  |
| **Digital Door Sign Version** | 0.5 |

Change Listing

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | **Change** | | | | **No** | **Date** | **Version** | | | | **Changed Chapters** | **Description of changes** | **Author** |
| 1 | 04.03.2019 | 0.1 | all | Initial Draft | All |
| 2 | 06.05.2019 | 0.2 | Functional Requirements | Add Text and GUIs | Dalpiaz |
| 3 | 14.05.2019 | 0.3 | 1,2,5 | Removed unnecessary text, added Clemens deployment diagram, added Use Case 2.2.5, updated 2.2.1 | Dalpiaz |
| 4 | 17.06.2019 | 0.4 | 1,2,3,5 | Updated deployment diagram, added admin page 2.3.4, updated 2.2.4, updated views in 2.3, added non-functional requirement, updated goal definition | Dalpiaz |
| 5 | 18.06.2019 | 0.5 | 4 | Update | Dalpiaz |

Content

1 Introduction 4

2 Initial Situation 5

3 General Conditions and Constraints 6

4 Project Objectives and System Concepts 7

5 Opportunities and Risks 8

6 Planning 9

# Introduction

Einordnung des Dokuments

The higher technical college in Leonding (Upper Austria) is a very good high school with four departments: informatics, media technology, medicine technology and electronics. Our school has over 1000 pupils and over 100 teachers.

For a higher technical college is very important to have a modern design. In the last few years our school has been renovated outside and some rooms on the inside.

It is also very important to be up to date with new technologies that can be used in buildings, that can let our school look more modern and can let people find rooms easier, especially during open-door days for new pupils and people interested in our school.

That’s why we want to start using a digital signage system which lets people see which rooms are being used and which not, when and where events like tests or seminars are taking place and many more.

There are two preliminary projects developed by two teams from the 5th grade, one using tablets as digital door signs and one using E-Papers, which should help us continue developing better signs for our school.

# Initial Situation

The initial situation presents the **assessment of the actual situation** of an organizational unit or the entire organization of an agency or company. Thus a need for action, which may lead to a product or system vision, is recognizable. The vision may be developed into a project idea. The need for action may be initiated by several project or system ideas.

The demonstration of capability gaps (i.e. the difference between the necessary planned capabilities and the actually existing capabilities) in a company or agency may clearly show an urgent need for action in order to increase the efficiency or reduce costs. This need for action is presented as product or system idea, leading frequently to a concrete project proposal. Corresponsingly, the determination of the requirement to renew or improve a "technically obsolete" system (so-called "system regeneration") or the recognition of market chances for a new product or system may lead to a project idea. The applicable data must be developed for the project proposal.

Research programs or studies may also be the basis for project ideas; they will be concretized in a project proposal.

In der Ausgangslage werden beispielsweise folgende Informationen und Daten der zu untersuchenden Organisationseinheit im Hinblick auf die Projektidee beschrieben:

GERMAN

EXPLANATION

● Die Ist-Fähigkeiten der Organisation (was können wir?)

● Die Soll-Fähigkeiten der Organisation (was wollen wir können?)

● Ein Soll-Ist-Fähigkeitenvergleich (wo liegen die Defizite?)

● Ein Fähigkeitsvergleich nach vorgegebenen Bewertungskriterien

● Eine Skizze der Projektidee

**There are different types of rooms in our school. Each room is tagged by a sheet of paper telling different information, depending on the room type.

The most common room types are:

* *Classrooms*

These rooms’ signage contains the room number, the main class that is usually in there and the form teacher.

* *Computer rooms*

The computer rooms’ signage currently contains only the room number, the computer room’s name and the room’s department (e.g. informatics).

* *Teachers’ rooms*

These rooms have multiple teachers with their name and their consultation hours.

Furthermore, there are also special rooms like the physics/chemistry room, which are sometimes needed for other tests and rooms like our celebration hall, which is also used for events like seminars, workshops or thesis presentations.

Last but not least, our school organizes different bigger events like the open-doors’ day or the FIT (Firmeninformationstag). These events require a special signing for more than one room. Visitors like companies and pupils interested in our school can’t easily find the rooms they’re looking for.

All these rooms and events don’t have a concrete signage showing which events are currently taking place. Moreover, it often happens that teachers spontaneously need a computer room for their lessons. Searching for one on the WebUntis website is very time-consuming and knocking at all the computer rooms’ door to see if the room is occupied is pretty annoying. This also leads to disturbing pupils during important tests.

Therefore, this time-consuming search for rooms can be simplified by so called digital door signs.

example

# General Conditions and Constraints

example

**Our know-how:**

* Java
* Angular
* Databases (mySQL)
* C#
* C

**Technical conditions:**

* IntelliJ/Netbeans for Java
* Visual Studio Code for Angular
* Tablets and E-Paper devices
* WebUntis API

**Cooperations:**

We can cooperate with two other teams that worked on the previous versions of this project.

We can also contact our teachers for advice.

# Project Objectives and System Concepts

In the Subject Project Objectives and System Concepts, the acquirer describes his vision of a new project or system on a high abstraction level. Project objectives and system concepts may concern several aspects, e.g., the introduction of innovations, the definition of objectives (quality, deadline and cost objectives), the operation of the system in its operating environment and the use of new, improved functionalities.

example

**Computer rooms**

The door sign at the IT-Rooms will display in addition to the room number and the weekly schedule events happening currently.

Workshop rooms (Werkstatt) and Physics/Chemistry rooms can also be considered as an EDV room, since we want to display the weekly schedule. The only difference between workshop rooms and other rooms is that the lesson hours are different compared to other departments.

**Teacher rooms**

The teacher’s sign will display every teacher located in the room, their name, their current location (or if they’re not having any lessons at the time) and the consultation hours of each teacher.

**Classrooms**

The classroom signs will display

* + - * the room number,
      * the main class and its form teacher,
      * the current location of the main class (if anywhere else),
      * the current class in that room,
      * the current subject,
      * the current teacher,
      * special sign during an exam and
      * when the class is split it shows the room where the rest of the class currently is.

**Special rooms and events**

Depending on the room, there will be information displayed about the current lesson/event/test taking place, accompanied by the room’s name (e.g. “Physiksaal”).

There are currently 2 types of special rooms:

* The multipurpose hall (room number E26)
* Rooms used for events like open-doors days

There are mostly events like presentations, project awards or even the oral final exam taking place. All these events can have the same interface.

Also, there is a variety of other events that are yearly taking place in our school. The most important events that need a special interface are:

* Open doors’ day
* FIT (Firmeninformationstag)

Other events like Girls’ Day, IoT (lessons taking place on Saturdays) or the so-called “Schnupperprogrammieren” can also have the same interface as FIT.

**Central view**

By the entrance of our school we want a bigger display that will show

* current events (e.g. workshops) in our school and the room where they take place.

# Opportunities and Risks

The Subject Opportunities and Risks comprises data which are normally prepared in industrial business plans. Frequently, an anonymous market with potential acquirers, which could be interested in the new product or system idea, will be analyzed at first. Therefore, the contents of this subject is characterized by a certain uncertainty or fuzziness. The subjects examines the chances of achieving profit on the market with a specific product or system. In addition to the chances, the risks of failing on the market or sustaining losses with a product or system should be analyzed.

The project has the following **opportunities**:

* Teachers save time when searching for free rooms
* Classrooms that are taking tests are not disturbed during them
* Pupils searching for teachers know immediately where the teachers are by looking at their current location on the tablet
* When wanting to use a computer room, the weekly schedule will show on the table in order to see at which time the room is free
* People that are not familiar with our rooms can easily find what they search for
* More modern look of our school

The following **risks** must be considered:

* Vandalism – pupils can damage the tablets/E-Paper devices
* Hacking
* Power supply (Tablets consume a lot of energy. Also, in the case of power failure, the tablets/E-Paper won’t work)
* If a teacher wants to switch rooms spontaneously, WebUntis will not cover these changes (except the teacher logs the change into WebUntis). Our solution will just support him/her to find available rooms faster.
* Since we have over 100 rooms in our school, providing every classroom with a

tablet can become pretty expensive

Potential **customers**:

Our school and other schools that like our solution and also use WebUntis.

# Planning

The planning specifies the organizational and commercial project execution and system development aspects. The project organization, e.g., matrix organization and steering committees, and the responsibilities for the decision-making processes within project will be specified.

The »Project Leader will be appointed, his tasks will be defined. Available resources, funds and specialist personnel will be determined. Start and end date for the project will be specified. The planning can be based on the statements developed in the subject Project Objectives and System Concepts, which makes additional statements on feasibility, funding and schedules.

**Milestones:**

|  |  |
| --- | --- |
| Project Proposal | 30.9.2019 |
| First Prototype | 15.10.2019 |

**Needed resources:**

* A WebUntis account
* Tablets
* E-Paper devices
* Licenses: JetBrains Toolbox
* ESP32 Micro Controllers

**Team structure:**

|  |  |
| --- | --- |
| Developer & team leader | Gloria Sara Panturu |
| Developer | Felix Bogengruber |
| Developer | Belmin Coralic |
| Developer | Janine Höllhuber |

**What needs to be done:**

* Be able to retrieve the MAC addresses from the tablets
* The connection between the server and the page that the admin needs in order to assign the right content to the tablets needs to be established
* Create an admin page for the E-Paper devices
* Eventually add the HTL Leonding logo to the E-Paper devices
* A database has to be set up in order to cache content from WebUntis and save time
* Improve the views for the classrooms and computer rooms
* Create views for all the special events/rooms
* Docker the project