**Requirements and Analyses: Project Proposal**

Digital Door Sign

**Version:** 0.5

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# Introduction

Einordnung des Dokuments

The technical college in Leonding (Upper Austria) is a high school with four departments:

* Informatics
* Media technology
* Medicine technology
* Electronics

Our school has over 1000 students and over 100 teachers.

For a 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.

This project is based on two preliminary projects, one using tablets as digital door signs and one using E-Papers.

# 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*

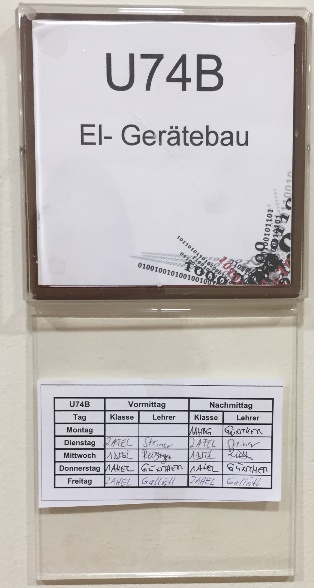
The computer rooms’ signage currently contains only the room number, the computer room’s name and the room’s department (e.g. informatics). The schedule is pinned on the door.

* *Teachers’ rooms*

These rooms have multiple teachers with their name and picture.

* *Special purpose rooms*

The physics and chemistry rooms are used for lessons in these subjects. Furthermore, they are sometimes used as special rooms for holding tests.

* *Assembly hall*

This room is used for the final exams and special events.

* *Workshops*

These rooms have a different signage compared to the classrooms. They only contain the room number and the room name. Some of them have symbols for the rules that have to be followed (e.g. wearing work clothing or safety glasses). Other rooms have a special schedule that is divided in morning and afternoon lessons.

* *Meeting room (E26, ILB, …)*

Rooms with no regular schedule, booked for single events.

Currently all our rooms and events do not have a concrete signage showing which events are currently taking place. Even worse, one may not rely on the regular schedule shown at the doors.

Moreover, it happens that teachers spontaneously need a computer room, a special purpose room, a workshop, etc. for their lessons. Searching for one in WebUntis is time-consuming and knocking at all the room door to see if the room is occupied is pretty disturbing during regular lessons, not to mention situations where tests or exams take place.

example

# General Conditions and Constraints

example

**Our know-how:**

* Java
* Angular
* mySQL
* C++

There are two different prototypes available from preceding projects: one using tablets and another using E-Paper devices. We can cooperate with two other teams that worked on the previous versions of this project. Both projects aren’t finished yet. Furthermore, the final outcome of this project is not defined yet. E-Paper devices and tablets have a different backend, which has to be merged in order to combine both projects.

Furthermore, these services have to be used:

* WebUntis – currently the regular schedule plus some of the extra events are planned/maintained in WebUntis. Unfortunately, the extra events are not completely planned in WebUntis (e.g. the final exams are rarely scheduled since they always take place in the same rooms). First investigations have shown that the clumsy user interface for entering events is the reason why teachers hardly ever schedule their extra events, nevertheless this tool plays a central role in scheduling of courses and events at the HTL and has to be part of a future solution for a digital signage.
* WebUntis API: WebUntis offers a sort of user interface to the internal data model. In order to integrate WebUntis into our new system this API has to be used.

# Project Objectives and System Concepts

The content of the door signs depends on the situation whether the room is part of a special event or not. Most of the rooms have a regular schedule and serve the lectures and courses. In case of special events (FIT, Open Doors Day, …) the purpose may change and, therefore, the content of the digital door signs also has to change.

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 currently happening.

The physics/chemistry rooms can also be considered as an IT room since we want to display the weekly schedule.

**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.

Ein Bild, das Screenshot enthält.

Automatisch generierte Beschreibung

**Workshop rooms**

**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.

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)
* Parent conference day: every year the students’ parents are invited to conferences with the teachers in order to talk about their children. Every teacher is in a room an has a schedule with all the parents that want to talk to him/her. This schedule can be digitalized and be put on the tablets.

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 rooms where they take place.

**Admin Page**

Admin interface beschreiben !!!

# 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
* Students 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(flexible auff events reagieren )
* More modern look of our school

The following **risks** must be considered:

* Vandalism – students 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)
* WebUntis has a clumsy user interface. This is the main reason why most teacher don’t like scheduling their events into WebUntis. Our solution will currently just supports him/her in finding 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:**

* Create an admin page for the E-Paper devices
* Improve the views for the classrooms and computer rooms
* Create views for all the special events/rooms
* Create views for the workshop rooms