Task Management Software

SYSTEM SPECIFICATION

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CONTENT

1. Initial situation and goal

1.1 Initial situation

A team has to work on a project together. So, they have to split the project into single tasks. Each team-member is assigned to a task. But how should they know when somebody has finished his/her task? And the person which solves the task how should he/she know until when it has to be done?

Without software support things like this are nearly impossible to do efficient and professionally at the same time.

The application will make large pin boards in companies useless because it will make everything digital and meetings won't be necessary too. Just imagine if one member finishes his/her task at home, how should he/she inform the colleagues? As it is digital, sheets won't be needed anymore, and every project member is notified immediately.

Even though there are a lot of established companies which also offer such similar software we are confident that our one is much better. Because of the useful tools which only we offer, like a history-function or the option for getting all tasks as a list (in pdf). Through assigning priorities to tasks everything will get faster done and pointed out what to do next.

1.1.1 Application Domain

Every company, society, family or classrooms must do tasks for example bring out garbage, program the front end, add the new members to the members list and so on. The organization is mostly the same, the data are kept in lists (for example on a blackboard). So, every let's say company has to-do lists in different topics and at separate places. For sure every worker can create his own to-do lists.

All these to-do lists must be synchronized by hand every time a simple task has changed or got added. For example, two company to-do lists, which can be maintained by every employee. The first employee adds a very important task to the list and forgets to add it to the second list too. So, it is clear to see that there is a lot of background work to do.

1.1.2 Glossary

Project

Projects are the heart of the task management software. These projects contain all the appropriated tasks.

Task

Task specify the work the assigned members have to do.

Push Notification

A little message that comes from the side to inform a user that a task or project is finished, or due date is reached.

Synchronization

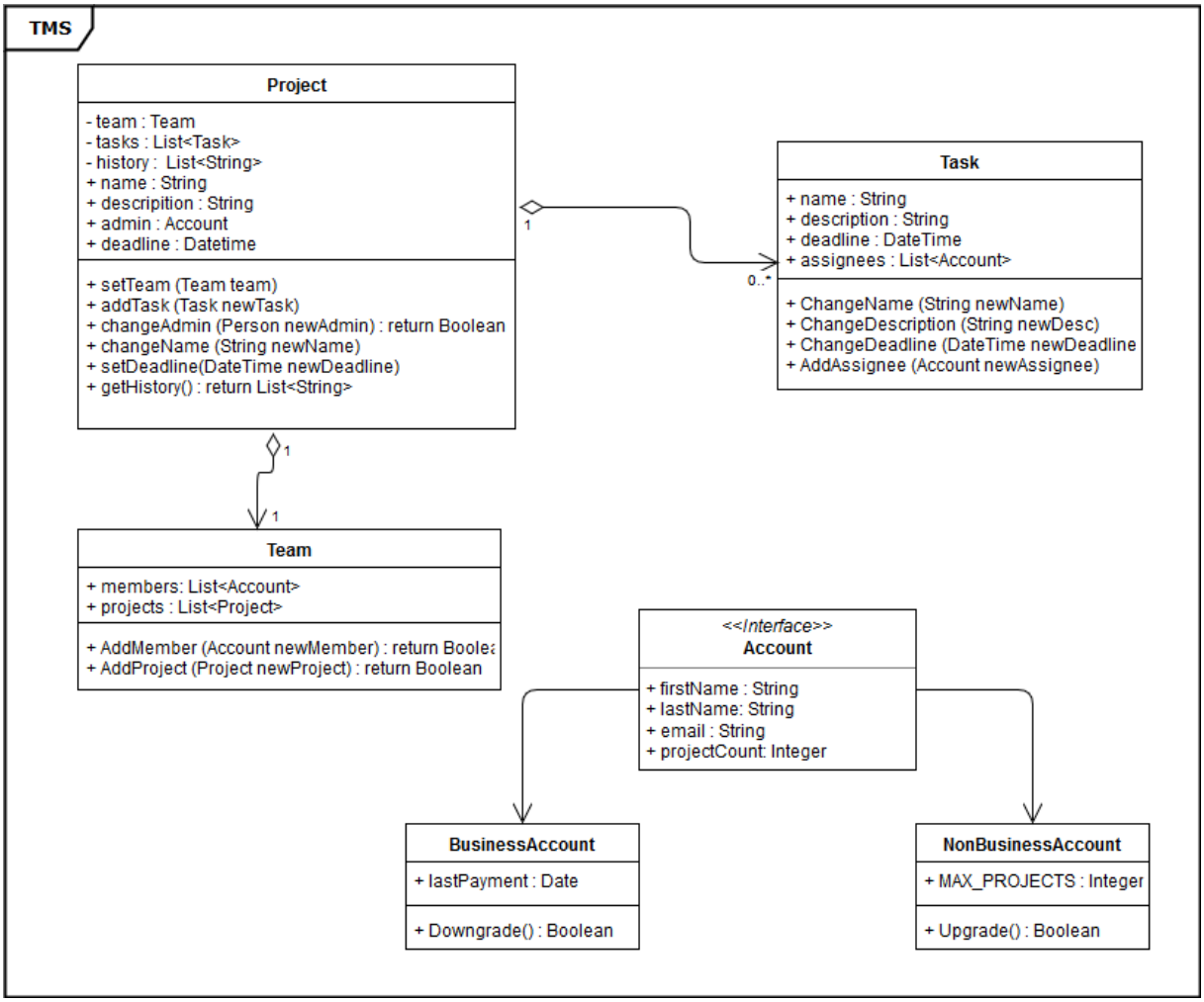
Synchronization in a process to make all the users seeing the same information at any time. Therefore, after every change of entries it has to be saved on a common database server from where all applications are listening.

Background work

Background work is running, as the name already says, in the background. This means that the use will not notice that the application is doing something different than just displaying the requested information.

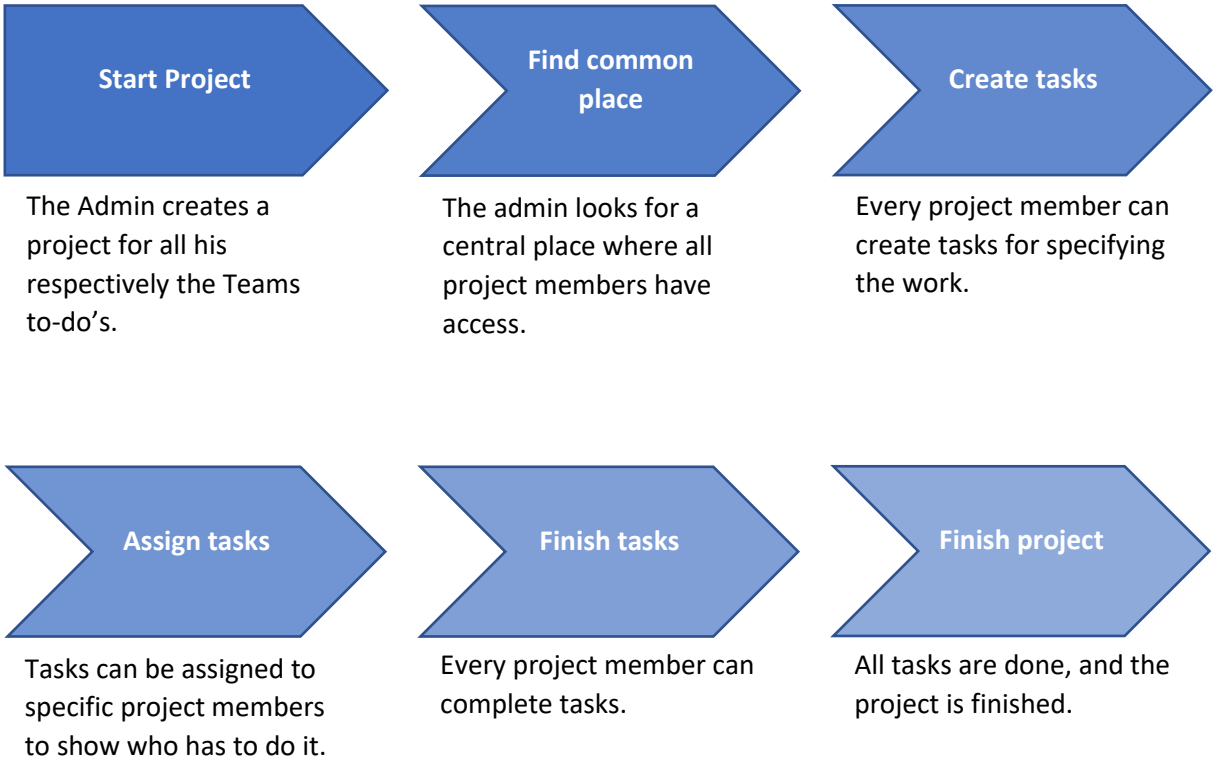
1.1.3 Model of the application domain

This is the model of our application. It is a class diagram which shows the relations between the components. For example, one project has zero or more tasks. The availability of business accounts is also shown in the class diagram below.



1.1.4 Business processes

This software has one core business process which describes the process from starting a new project to finishing the project.



1.2 Goal Definition

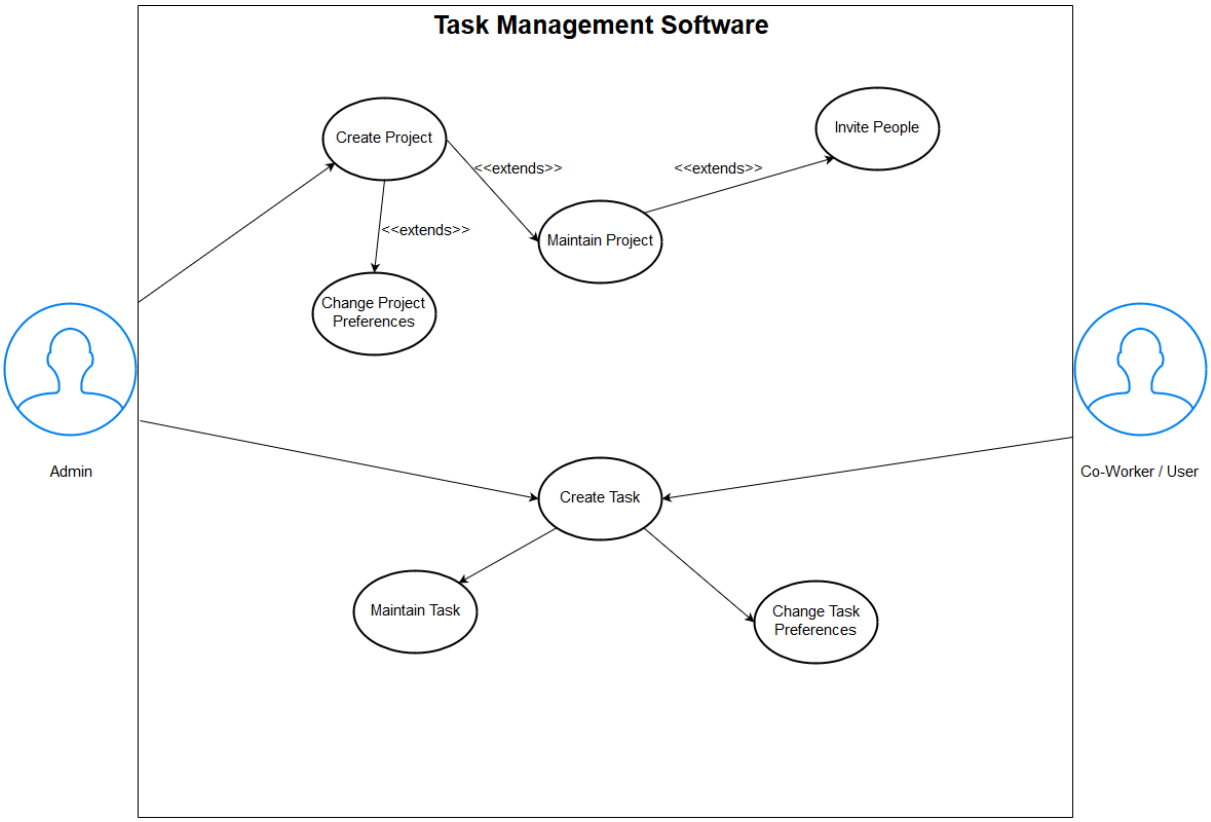
Our project idea is to combine all tasks which a company, a family or a private person needs, to have a good overview about what has to be done. We want to finish the project as successful as possible, because we think it can be very useful to have an application which combines all functions a company or any other teams needs for organization every day.

The final application and project will be published in form of a WPF program, because it is based on a very widespread Operating System.

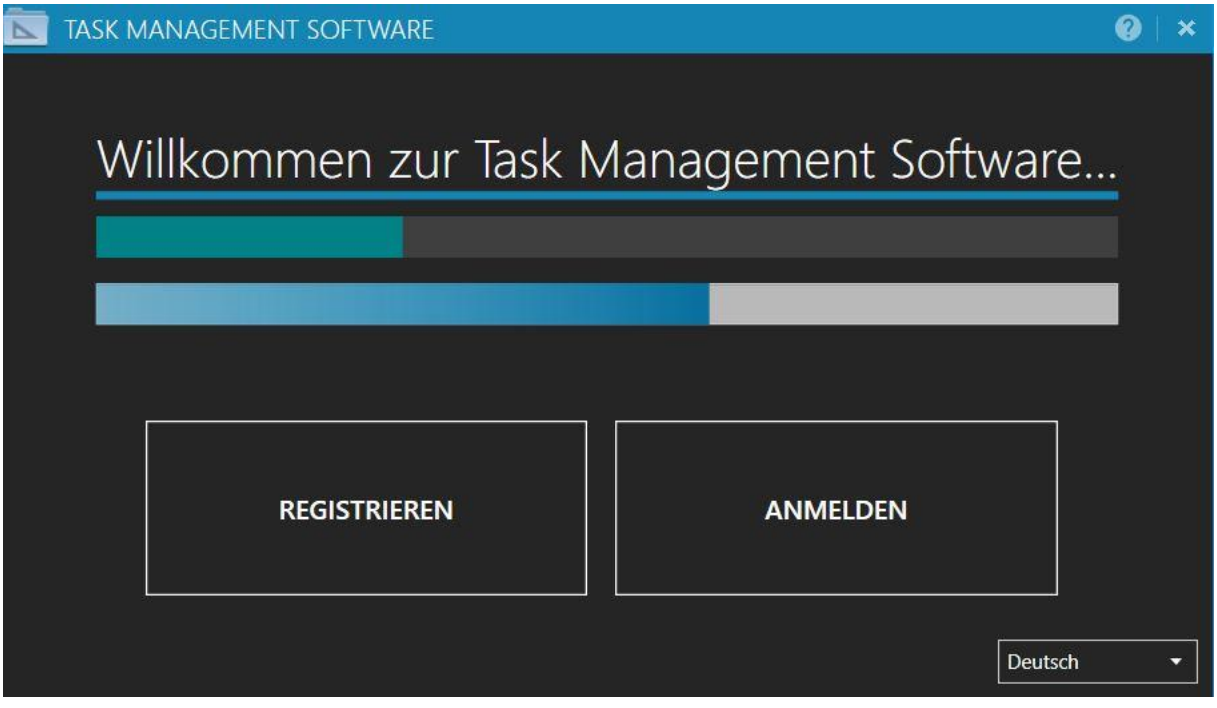
For this program people need no previous knowledge because it will have simple operations which explains itself.

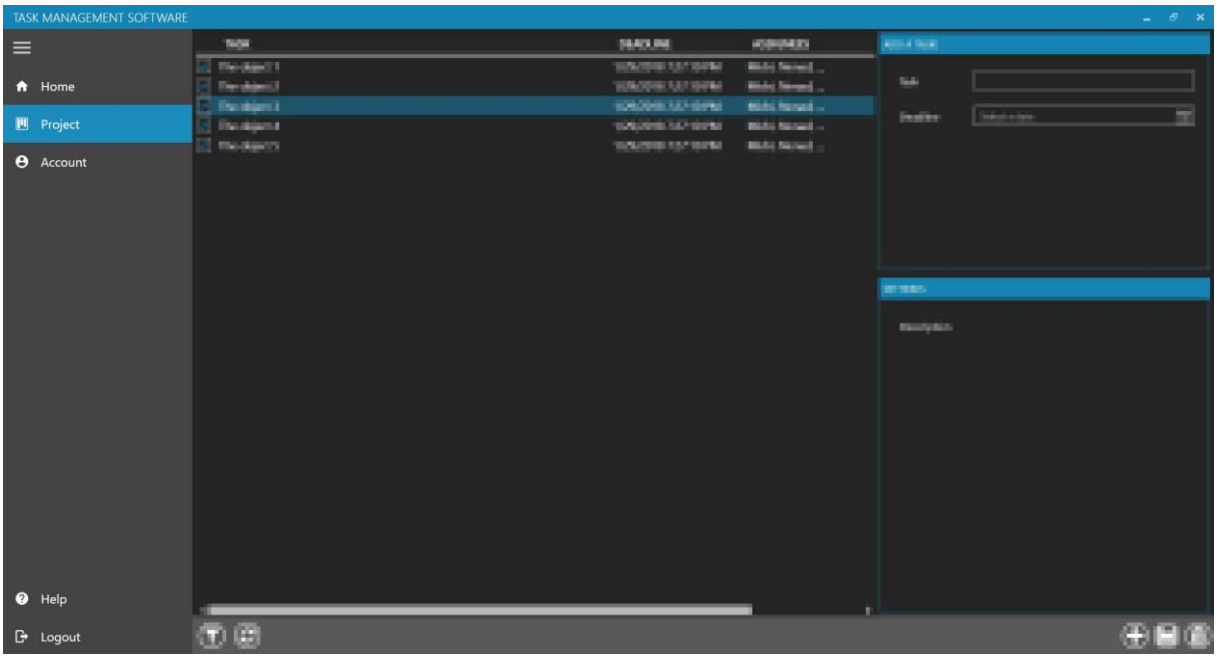
2 Functional requirements

2.1 Use case diagram

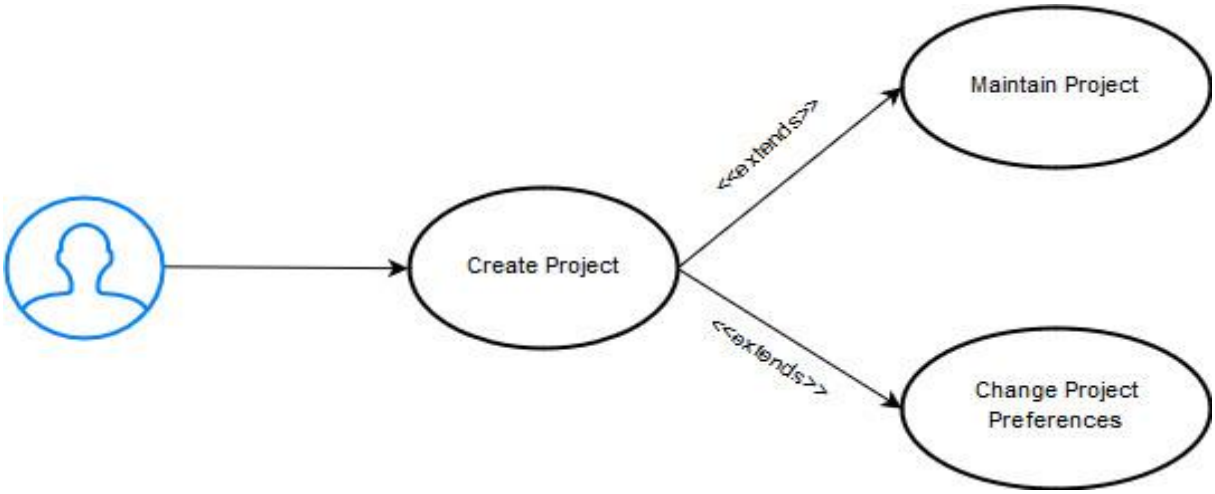


2.2 General GUI to call the use cases





2.3 Use case details 1 – Create project



The main function of this use case is that a user can create a project which includes a name, the admin and optionally a due date.

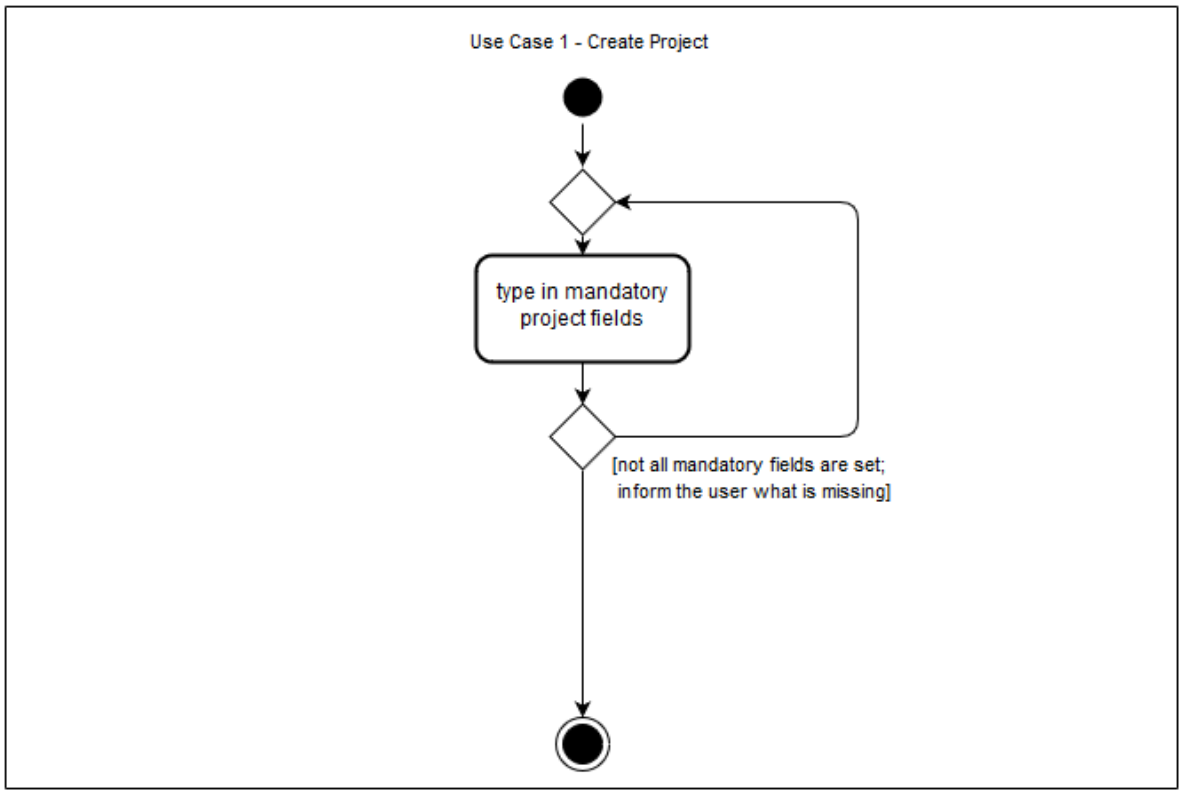
2.3.1 Characteristic information

Goal:	Creating a project that has at least the basic information's like name, due-date, ….
Precondition:	The creator must be logged in.
Postcondition:	The creator of the project is automatically the admin. The project is only visible for the admin and the invited persons. The admin is also the only the person which can maintain the project.
Involved user:	The creator of the project is automatically the admin.
Triggering event:	The user wants to do a project in real life, so he creates a digital project to help him out with organizational stuff.

2.3.2 Scenario for the standard use

Step	User	Activity
1	User	Click on "create Project"
2	Application	Check if input is valid
3	Application	Save the project to the database

2.3.3 Activity diagram



2.4 Use case details 2 – Change project preferences

The main function of this use case is that the admin can set various type of things like due date, description of project, change admin, dismiss members and the projects name.

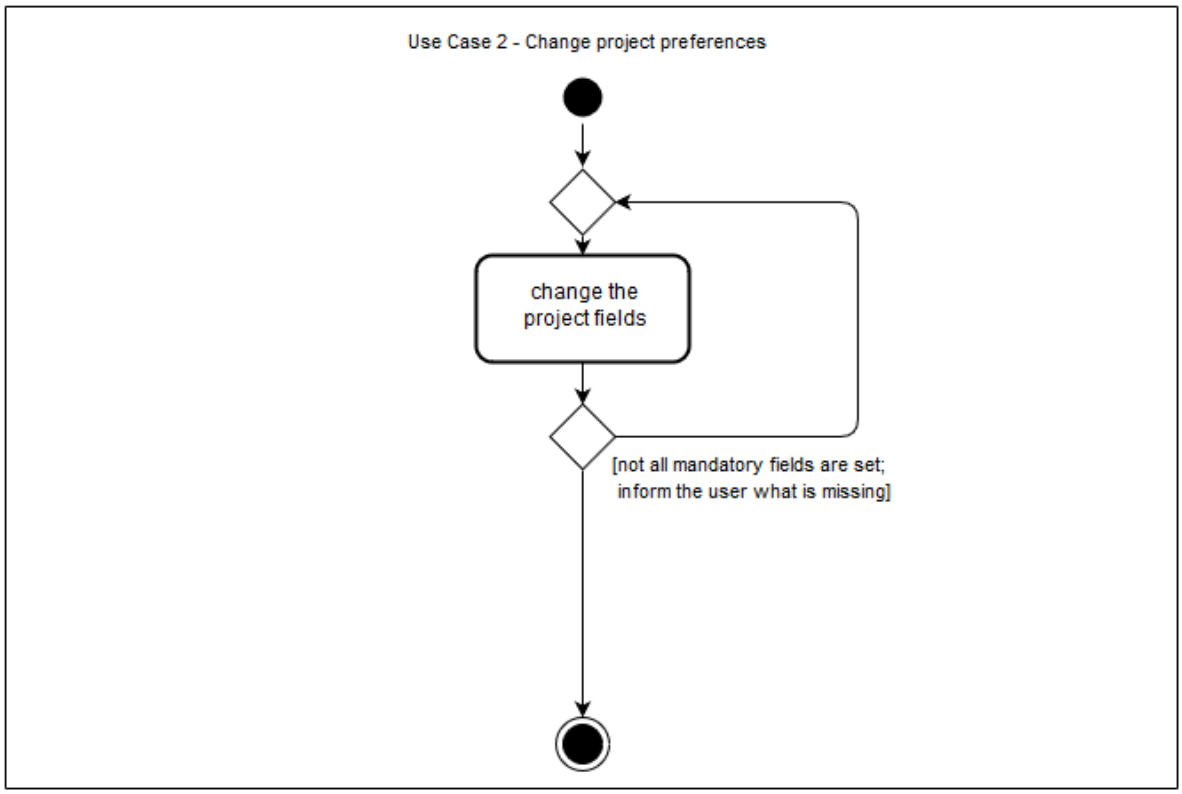
2.4.1 Characteristic information

Goal:	Maintain the project. Set several things.
Precondition:	Must be admin and logged in.
Postcondition:	The project preferences are changed.
Involved user:	All project members.
Triggering event:	The owner wants to change something about the project.

2.4.2 Scenario for the standard use

Step	User	Activity
1	Project admin	Open the menu and select the project
2	Project admin	Change the preferences (like name, due date, …)
3	Application	Check if input is valid
4	Application	Apply changes on the database

2.4.3 Activity diagram



2.4.4 Open points

- Record the action to the History of the project could be difficult
- Manage the permissions

2.5 Use case details 3 – Maintain project

The main function of this use case is that the admin can maintain his project.

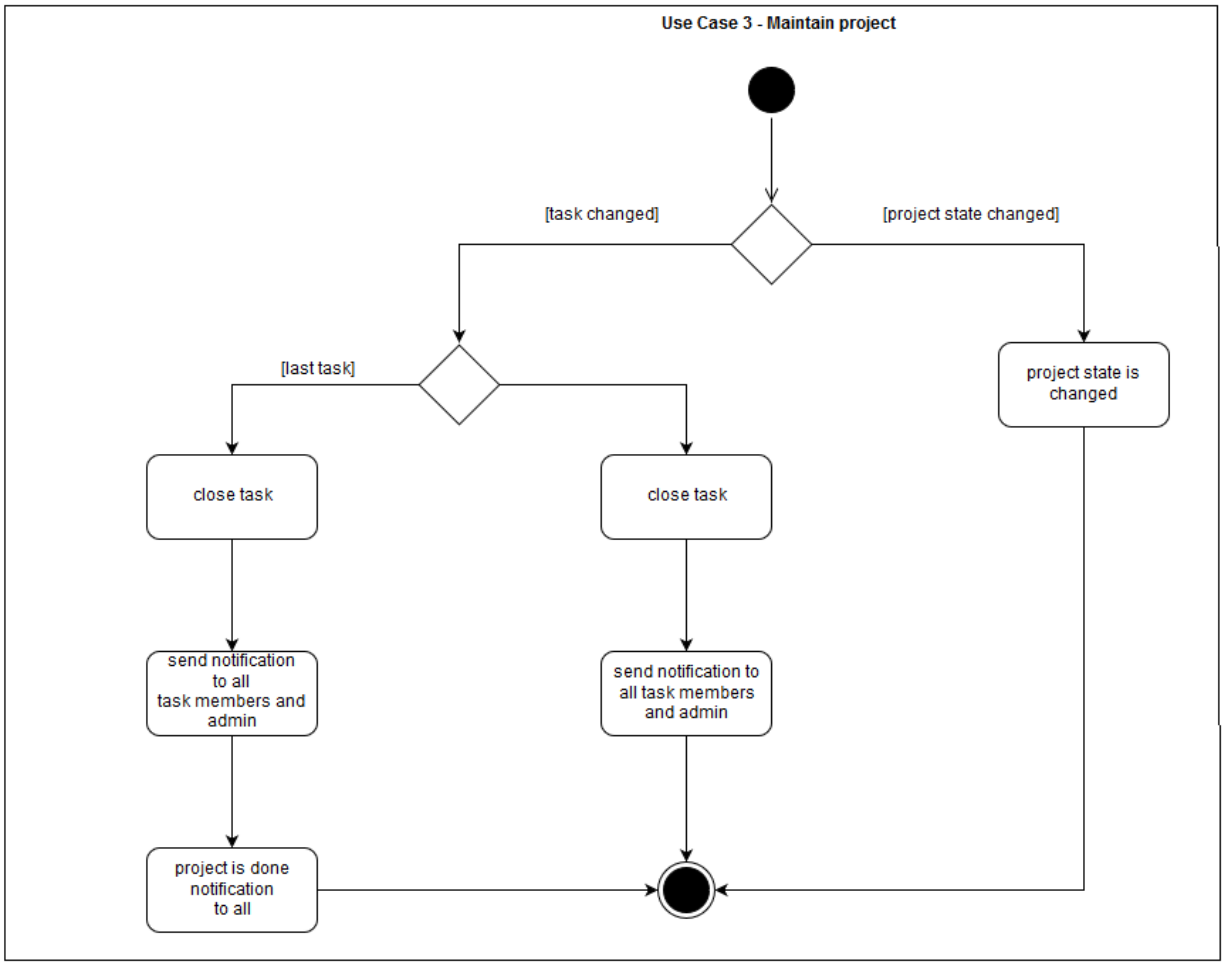
2.5.1 Characteristic information

Goal:	The project represents the actual state of the project progress.
Precondition:	The project must exist.
Postcondition:	The owner maintained his project and a push notification has been sent to all involved users.
Involved user:	The project admin.
Triggering event:	The actual state of the project has been changed.

2.5.2 Scenario for the standard use

Step	User	Activity
1	Project admin	Open the menu and select the project
2	Project admin	Finish the project or change the project progress
3	Application	Save the project state to the database
4	Application	Send a push notification to all involved users

2.5.3 Activity diagram



2.5.4 Open points

- Manage the permissions
- Access to the windows push notification service

2.6 Use case details 4 – Invite people

The main function of this use case is that the admin invites people to the project.

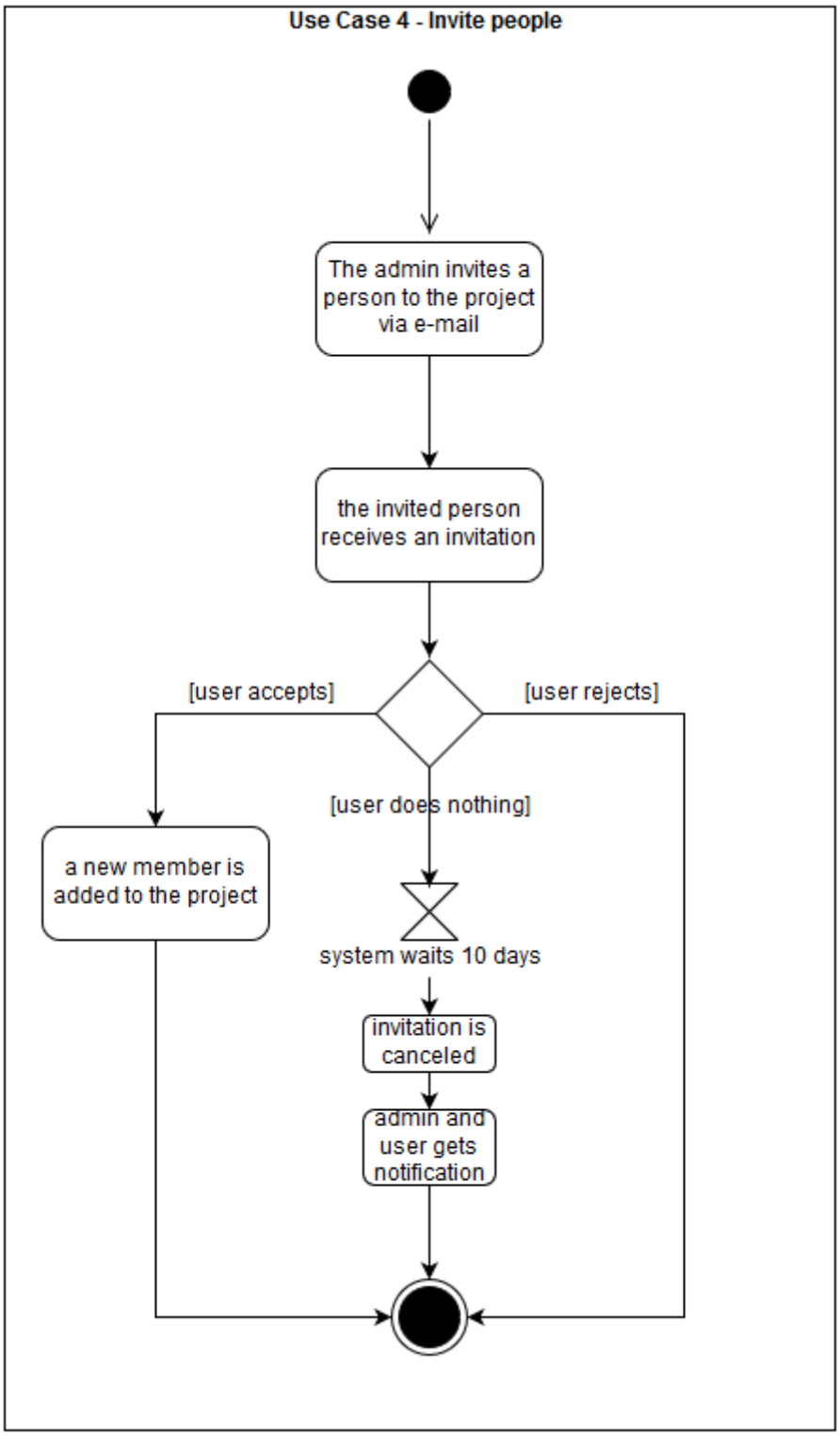
2.6.1 Characteristic information

Goal:	A person is invited to the project.
Precondition:	The person who invites must be the owner of the project.
Postcondition:	A new member is a part of the project.
Involved user:	All project members.
Triggering event:	The admin wants another person to be involved.

2.6.2 Scenario for the standard use

Step	User	Activity
1	Project admin	Open the menu and select the project
2	Project admin	Click on “invite People”
3	Project admin	Type in the user’s email
4	Application	Check if input is valid
5	Application	Send invitation to the user

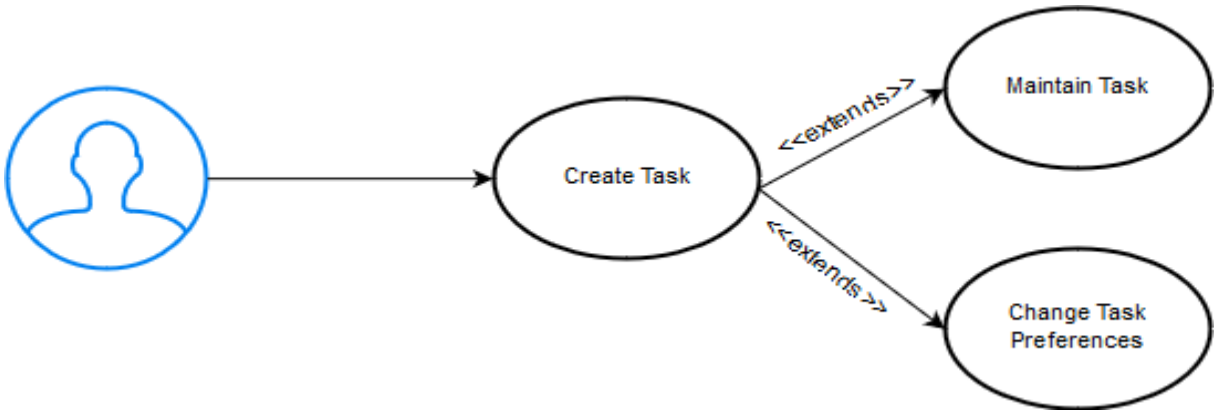
2.6.3 Activity diagram



2.6.4 Open points

- Record the action to the History of the project could be difficult
- Manage the permissions

2.7 Use case details 5 – Create task



The main function of this use case that everybody can create tasks and set their name, due date and assign people to it.

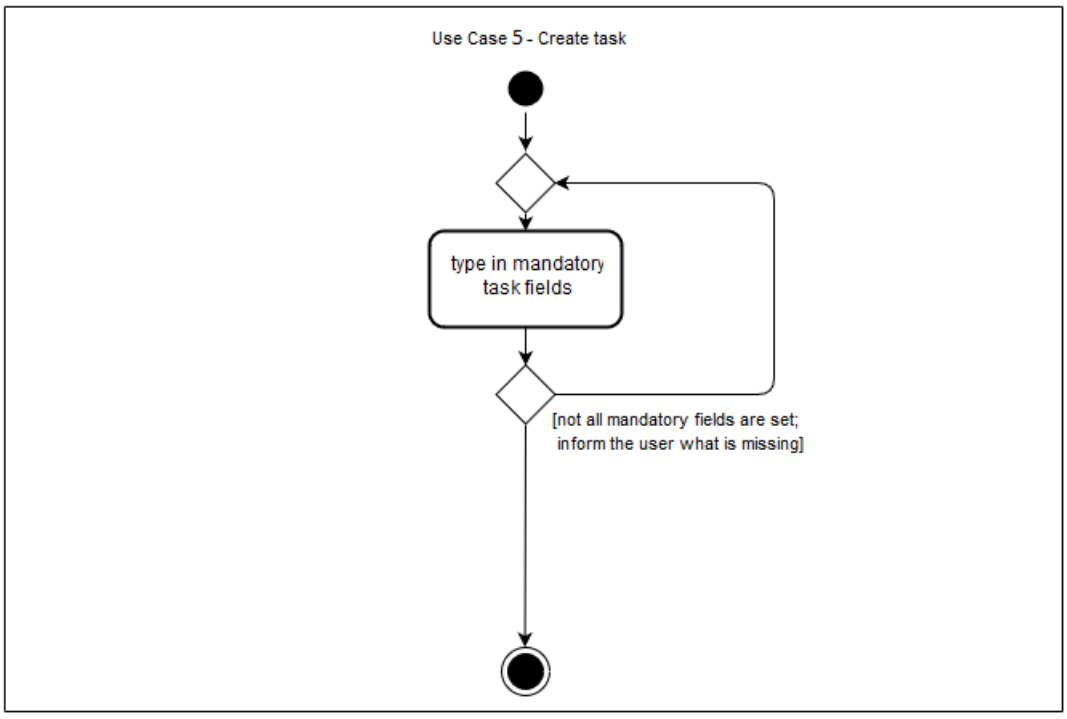
2.7.1 Characteristic information

Goal:	Creating a task that has at least basic information like name and people who are assigned to it.
Precondition:	Must be member of the project.
Postcondition:	The task is visible for everyone but only involved users can see detailed information.
Involved user:	Project owner and the ascribed members.
Triggering event:	User wants to split the work and then give it to groups of people.

2.7.2 Scenario for the standard use

Step	User	Activity
1	Project member	Open the menu and select the project
2	Project member	Click on “add Task”
3	Project member	Type in the information’s for the task (like name, due date, assignees, …)
4	Application	Check if input is valid
5	Application	Save the task to the database and link it to the project

2.7.3 Activity diagram



2.7.4 Open points

- Record the action to the History of the project could be difficult

2.8 Use case details 6 – Change task preferences

The main function of this use case is that the admin can set various type of things like due date, description of the task, dismiss members or change the projects name.

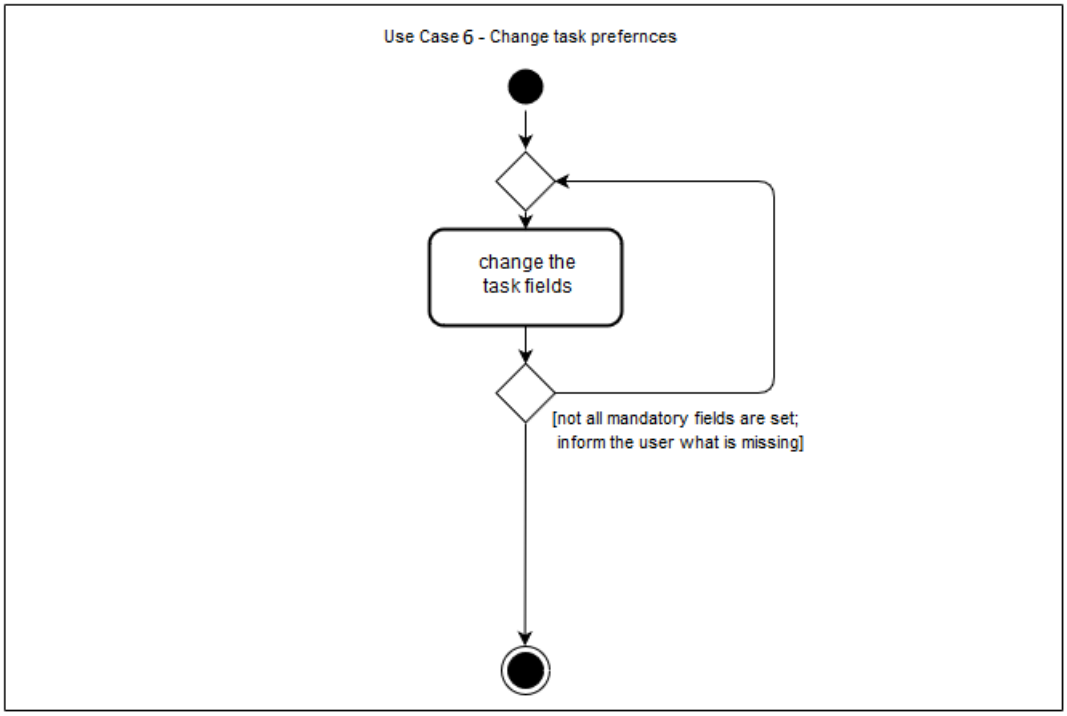
2.8.1 Characteristic information

Goal:	Change the settings of a task.
Precondition:	Only the creator can change the settings.
Postcondition:	The task is visible for everyone but only involved users can see the updated detailed information.
Involved user:	Project owner and the ascribed members.
Triggering event:	The admin wants to change something about the task.

2.8.2 Scenario for the standard use

Step	User	Activity
1	Project admin	Open the menu and select the project
2	Project admin	Click on the task
3	Project admin	Type in new information's (like due-date, …)
4	Application	Check if input is valid
5	Application	Apply changes on the database

2.8.3 Activity diagram



2.8.4 Open points

- Record the action to the History of the project could be difficult

2.9 Use case details 7 – Maintain task

The main function of this use case is that the administrator can maintain the task.

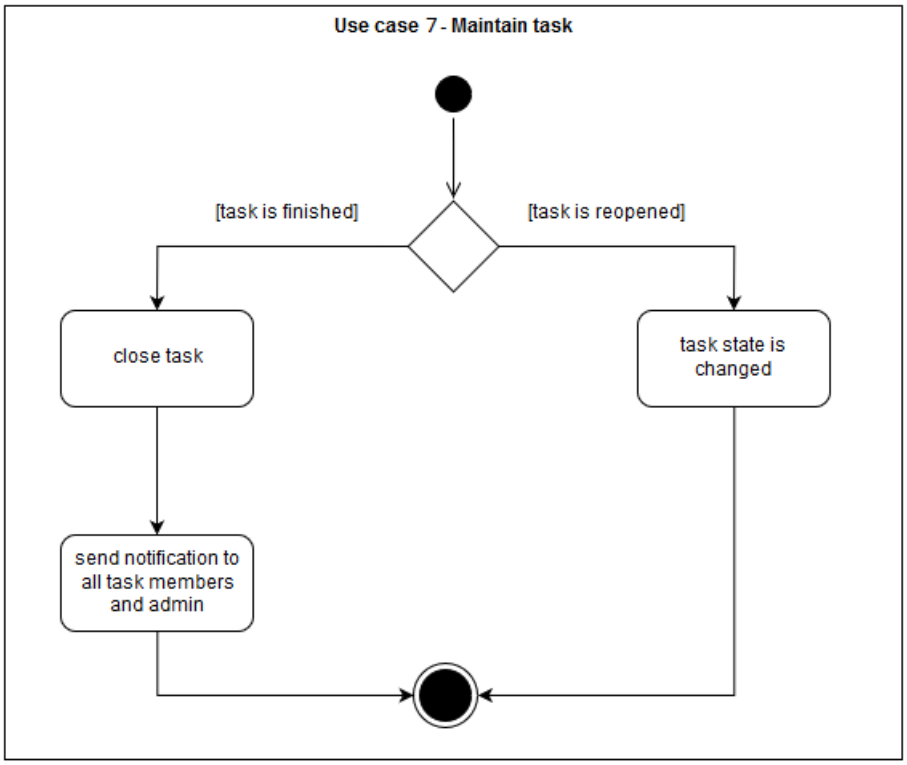
2.9.1 Characteristic information

Goal:	The task entry represents the actual state of the task.
Precondition:	Project and task itself exists.
Postcondition:	The project member has changed the state of the task and a push notification has been sent.
Involved user:	All users, single users
Triggering event:	The actual state of the task has been changed.

2.9.2 Scenario for the standard use

Step	User	Activity
1	Project admin	Open the menu and select the project
2	Project admin	Click on the task
3	Project admin	Change task state (open or done)
4	Application	Check if input is valid
5	Application	Change the project progress (call use case Maintain project)
6	Application	Send a push notification to all involved users

2.9.3 Activity diagram



2.9.4 Open points

- Record the action to the History of the project could be difficult
- Access to the windows push notification service

3 Non-functional Requirements

3.1 Type USE: Usability requirement

To use the task management software, some important criteria must be satisfying:

- The tasks of the application should not have a long loading time because nobody will wait more than about 5 seconds.
- The application should not require more than 50MB memory.
- The application should not need more than 250MB internet per month
- The appearance of the application is one of the most important criteria, because nobody will look on a simply designed application with fixed elements.

3.2 Type EFFIC: Efficiency requirement

As described in “Type USE”, the loading time of the application should not be longer than 5 seconds. We cannot affect the internet speed, but we can optimize the speed of loading the data and the synchronization. At the moment, we cannot calculate exact loading times.

3.3 Type SEC: Security requirement

Data security is one of the most important points which must be considered carefully. It is extremely important that the user data cannot be changed or seen by unauthorized persons. Only the user should be able to change his information and only the admins of the projects should be able to change settings.

When we are talking about availability, the application will run all the time.

3.4 Type LEGAL: Legal requirement

The privacy of the user data must be respected by all people. Other laws or standards, which could be important, are not known yet.

4 Quantity Structure

Considering the project data, we need a server for the profile information so that people can edit their data and assign new tasks at any time.

Project

The disk space for each project is about 128B. Totally we need about 123Mb for 1 000 000 projects.

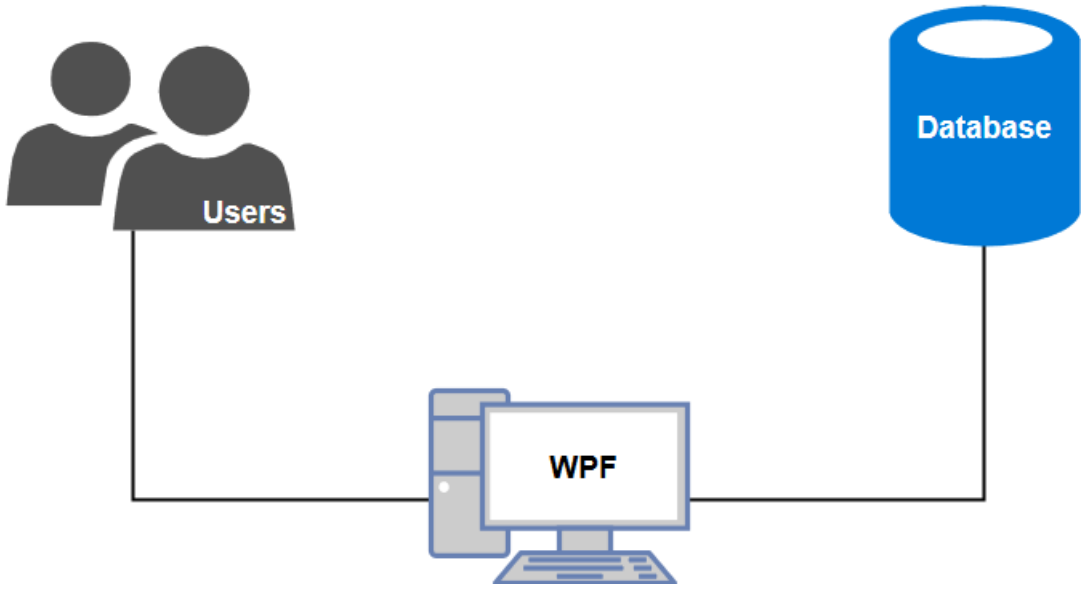
Profile

Each user will also have a profile, so we need even 128B for each profile and 2MB for the profile picture. In addition, each user is going to have his own project and his own tasks. If we assume that every profile has a profile picture with a size of 2MB we then need at least 1.9 TB of disk space for 1 000 000 profiles.

Conclusion

Totally we need about 2TB disk space for 1Mio. users.

5 System Architecture and Interfaces



The WPF application is the interface to the users where they get all the information and entries of their projects. The database is used to save all personal data for example email, password, projects including the tasks and History.

6 Acceptance Criteria

6.1 Use case 1 – Create Project

Test Step	Expected Behavior
Click “create new project”	The “create a project” interface appears. It asks the users to type in mandatory things like name, due date and invite members.
Click “finish project”	The interfaces close and shows the new project entry in the overview.

6.2 Use case 2 – Change project preferences

Test Step	Expected Behavior
Click on the project	It shows all the project entries and the settings button.
Click on the settings button	A pop-up window appears and lets the user change the mandatory fields.
Click “save changes”	The interface closes, and all the new settings are applied.

6.3 Use case 3 – Maintain project

Test Step	Expected Behavior
Maintain projects	The current task of the project has been changed and a push notification has been sent to all involved users.

6.4 Use case 4 – Invite people

Test Step	Expected Behavior
Click on the project	The project overview shows up and a button which says, “invite people”, this is only visible for the admin.
Click “invite people”	A new interface appears and asks the admin to type in an e-mail address of the person to be invited.
A person is invited	A new person is able to see the project details if this person accepts the invitation. All other members of the project can now see the new member.

6.5 Use case 5 – Create task

Test Step	Expected Behavior
Click on the project	The project overview appears and a button which says, “create task”. This is only possible for the admin.
Click “create task”	An interface pops up and asks mandatory things like name, due date and members which have to do them.
Click “save task”	The interface closes, and project overviews appears with the new task as an entry.

6.6 Use case 6 – Change task preferences

Test Step	Expected Behavior
Click on the task in the project overview	A task overview is shown. A settings button is visible for the owner of the project.
Click the settings button	An interface pops up and lets the admin change the mandatory fields.
Click “save changes”	The interface closes, and the new settings are applied.

6.7 Use case 7 – Maintain task

Test Step	Expected Behavior
Maintain tasks	The current state of the task and the project has been changed. A push notification has been sent to all involved users.