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Mobile Communication App

***MoCap***



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# Management Summary

## What is MoCap

MoCap is a windows form based application serving the purpose of managing small projects and simplifying communication. Besides typical chat functions, like self-destructing messages etc., the goal is to create an app that allows you to chat with people, setup simple projects, where you invite people to contribute to, distribute tasks among people who joined your project and track expenses of your endeavor.

Tasks created can be assigned manually, automatically or ever through a poll, where project members vote for the owner of the task.

To track costs, you can attach bills and invoices to a task. To avoid overspending, a certain budget can be set for each task to be accomplished.

Another focus of the app is security, thus any communication is encrypted before it leaves the device, ensuring that secured content only is being transmitted and persisted eventually.

Finally, the integration to the operating system allows alerts and notifications popping up in time anytime.

MoCap is the next generation of communication, helping people to stay connected and get projects going without a massive planning overhead. Try it now and see how MoCap will help you ease your day.

## System Context



## License addendum

GNU LESSER GENERAL PUBLIC LICENSE

Version 3, 29 June 2007  
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As used herein, “this License” refers to version 3 of the GNU Lesser General Public License, and the “GNU GPL” refers to version 3 of the GNU General Public License.

“The Library” refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An “Application” is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A “Combined Work” is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the “Linked Version”.

The “Minimal Corresponding Source” for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The “Corresponding Application Code” for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

### Exception to Section 3 of the GNU GPL

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

### Conveying Modified Versions

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

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1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

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If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

# Requirements Engineering

## Technology

1. The application must run on Windows 8 or higher
2. The technology used must offer GUI design through its IDE
3. Technology must offer OS integration to generate alarm and / or notifications
4. Allow MVC programming pattern
5. Technology must be user friendly, easy to handle and good documentation
6. Programming language must be versatile with regards to platform
7. Technology must offer great efficiency when it comes to GUI design

### Descision Matrix

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Descision Matrix** | | | | | | | |  |
|  | **Runs on Win8+** | **GUI Design** | **OS Integration** | **MVC Capability** | **User Friendly** | **Portability** | **Efficiency** |  |
| WinForm C# | 10 | 10 | 10 | 10 | 9 | 9 | 10 |  |
| ASP.net c# | 10 | 9 | 8 | 10 | 7 | 10 | 7 |  |
| Java JSF | 10 | 8 | 7 | 10 | 6 | 10 | 6 |  |
| Java Swing | 8 | 10 | 9 | 10 | 9 | 10 | 8 |  |
|  |  |  |  |  |  |  |  |  |
| **Criterion Weight** | 10 | 10 | 8 | 10 | 10 | 8 | 10 |  |
|  |  |  |  |  |  |  |  |  |
| **Weighted Scores** | | | | | | | |  |
|  | **Runs on Win8+** | **GUI Design** | **OS Integration** | **MVC Capability** | **User Friendly** | **Portability** | **Efficiency** | **Total Score** |
| WinForm C# | 100 | 100 | 80 | 100 | 90 | 72 | 100 | 642 |
| ASP.net c# | 100 | 90 | 64 | 100 | 70 | 80 | 70 | 574 |
| Java JSF | 100 | 80 | 56 | 100 | 60 | 80 | 60 | 536 |
| Java Swing | 80 | 100 | 72 | 100 | 90 | 80 | 80 | 602 |

## Interaction Components

The components listed here offer some kind of interaction between Users themselves or user(-s) to systems or vice versa. Interaction in this context means “non static”, either a user or the system has to do something and interact with someone.

You will find the textual requirements for each type of interaction, which will be further refined and brought into a technical specification in the “Technical Specification” section. Refer to the table of contents to navigate through this document

### Chat

### Project

### Task

A task represents a piece of work one has to accomplish, typically until a date specified. It can consist out of many other subtasks which, as a whole, represent specific work.

As an Example:

The task “Go Shopping” consists, of subtasks  
1. “Get milk, honey and wheat”   
2. “Fill-up Gas”

The task then is assigned to a project. In case a task contains subtasks, they automatically belong to the same project. You can enrich the task with a description and estimate its duration and cost. Additionally, you can specify alarms to be created if the due date is in danger. Once the alarm is raised, the owner can reassign the tasks to someone else or react on it by initiating a chat.

#### Manually assigning a task

Once a task is created and assigned to a project you can delegate it to any member of the project group. Manually assigned tasks do not consider the hours a person has dedicated to the project. Hence you need to make sure the task is assigned to a person dedicating enough time to this project or have the person to dedicate more time.

#### Poll assigning a task

You can assign a task through the result of a poll you created. To do that you create a project poll, through which members vote for the person to complete the task. Remember, that this method of assigning a task does not consider the hours, the person that got assigned to the task, has dedicated to this project.

#### Auto assigning a task

When selecting to auto assign the task, the due date and a priority define which person gets assigned to the task. The priority is used to determine the importance compared to other tasks this person may has been assigned to. The system then tries to find a project member that contributes enough time towards this project and has enough capacity to complete the task on time. In other words, if a task will take 5 hours to complete and has to be completed within 2 days, a project member contributing 1 hour a day will not be assigned to this task.

When completing the task, the person is requested to enter the time and money (if at any) spent on the task. The project owner is then notified of the completion and the project balance is updated accordingly.

#### Sequence Diagram



#### Use Cases

Below all task use cases are documented and visually lined out.

##### Diagram



##### - Create

|  |  |
| --- | --- |
| **Use Case Id:** | 1 |
| **Use Case Name:** | Create |
| **Actors:** | User |
| **Description:** | The user creates a new tasl |
| **Preconditions:** | 1. User is logged in 2. User opened the task panel |
| **Normal Flow:** | 1. User clicks "New Task" button 2. User enters a title 3. User enters a description of the task 4. User estimates the duration 5. User specifies the start date 6. User specified the due date (if any) 7. User associates task with project 8. User specifies a budget (if any) 9. User selects either "auto-assign", "manual-assign" or "poll-assign" 10. User clicks "Save" button |
| **Alternative Flow:** | 9a. If the user selects "poll-assign"  10. => Goto Use Case **"Create" (poll)** 7a. User specifies task to be a "To-Do" item  7. => Skipped 7b. Project does not exist yet  7. => Goto Use Case **"Create" (project)** |
| **Exceptions:** | None |

##### - Update

|  |  |
| --- | --- |
| **Use Case Id:** | 2 |
| **Use Case Name:** | Update |
| **Actors:** | User |
| **Description:** | The user updates task information |
| **Preconditions:** | 1. User is logged in 2. User opened the task panel |
| **Normal Flow:** | 1. User selects the task to be updated from within the task list 2. User updates corresponding fields 3. User saves changes |
| **Alternative Flow:** | 2a. If the user adds subtasks to the task  Goto Use Case **"Create" (task)** 2b. If the user re-assigns the task  Goto Use Case **"Assign" (task)** |
| **Exceptions:** | None |

##### - Delete

|  |  |
| --- | --- |
| **Use Case Id:** | 3 |
| **Use Case Name:** | Delete |
| **Actors:** | User |
| **Description:** | The user deletes a task |
| **Preconditions:** | 1. User is logged in 2. User opened the task panel |
| **Normal Flow:** | 1. User selects the task (-s) to be deleted 2. User clicks the "delete task" button 3. User confirms the deletion |
| **Alternative Flow:** | 3a. If the user cancels the deletion  3. => abort process |
| **Exceptions:** | None |

##### - Forward

|  |  |
| --- | --- |
| **Use Case Id:** | 4 |
| **Use Case Name:** | Forward |
| **Actors:** | User |
| **Description:** | The user forwards the task to another user |
| **Preconditions:** | 1. User is logged in 2. User opened the task panel |
| **Normal Flow:** | 1. User selects the task (-s) to be forwarded 2. User clicks the dispatch button 3. User selects either "auto-dispatch", "manual-dispatch" or "poll-dispatch" 4. User clicks "save" button |
| **Alternative Flow:** |  |
| **Exceptions:** | 2a. The user is not permitted to forward the task  3. => abort process |

##### - UpdateProgress

|  |  |
| --- | --- |
| **Use Case Id:** | 5 |
| **Use Case Name:** | UpdateProgress |
| **Actors:** | User |
| **Description:** | The user updates the progress of the task |
| **Preconditions:** | 1. User is logged in 2. User opened the task panel |
| **Normal Flow:** | 1. User selects the task (-s) to be updated 2. User changes the progress value 3. User clicks the "save" button 4. System updates task progress and subtask(-s) progress accordingly 5. Dialog closes |
| **Alternative Flow:** | 2a. The user updates a subtask  3. => Goto "UpdateProgress" use case for subtask  4. System updates the progress based on subtask status  5. User clicks the "save" button  6. Dialog closes 2b. User adds a subtask to the task  3. => Goto use case "Create" (task)   4. => Continue as per 2a.4 2c. User deletes a subtask  3. => Goto use case "Delete" (task)  4. => Continue as per 2a.4 2d. User completes the task  3. => Goto use case "Complete" (task) 2e. User cancels the dialog  3. Dialog closes |
| **Exceptions:** | 2a. The user specifies a negative or lower value than before  3. Message is shown  4. => Goto 2. |

##### - ManualDispatch

|  |  |
| --- | --- |
| **Use Case Id:** | 6 |
| **Use Case Name:** | ManualDispatch |
| **Actors:** | User |
| **Description:** | The user dispatches the task manually |
| **Preconditions:** | 1. User is logged in 2. User opened the task panel |
| **Normal Flow:** | 1. User selects the task (-s) to be dispatched 2. User selects "Manual Dispatch" 3. User selects project member to assign the task 4. System evaluates availability of user => Use Case "GetIdealMembers" (task) 5. System displays availability stats 6. User clicks the "Dispatch" button 7. System dispatches the task to selected member 8. Dialog closes |
| **Alternative Flow:** | 5a. The selected user does not have anough availability  6. => Goto use case "NotifyInsufficientAvailability" (task)  7. Dialog closes 2a. User selects "Auto-Dispatch"  3. System evaluates availability of user => Use Case "GetIdealMemebers" (task)  4. User clicks "Dispatch" button  5. Dialog closes   6. System selects project member  7. System assigns task to member 2b. User selects "Poll-Dispatch"  3. => Goto use case "Create" (Poll)  4. Dialog closes  5. System assigns task based on poll result |
| **Exceptions:** | none |

##### - AutoDispatch

|  |  |
| --- | --- |
| **Use Case Id:** | 7 |
| **Use Case Name:** | AutoDispatch |
| **Actors:** | System |
| **Description:** | The system dispatches a task based on availability, and preferences defined |
| **Preconditions:** | 1. A task exists or was created 2. Auto-Dispatch function was called |
| **Normal Flow:** | 1. System retrieves project members 2. System calculates scor card by executing "Get Ideal Members" use case 3. System identifies member with highest score card 4. System assigns task to user 5. System raises "Task Assigned" event 6. System adds users to task |
| **Alternative Flow:** | 2a. No due date specified  3. Randomly select user  4. => Goto use case step 4 2b. System does not find user with sufficient availability  3. => Raise "Insufficient Resources" Exception  4. End process |
| **Exceptions:** | 2b. Insufficient availability |

##### - Complete

|  |  |
| --- | --- |
| **Use Case Id:** | 8 |
| **Use Case Name:** | Complete |
| **Actors:** | System |
| **Description:** | The system detects that the task is completed after the user has updated the task progress |
| **Preconditions:** | 1. User has updated the task progress 2. Task is completed after update progress ends |
| **Normal Flow:** | 1. System marks the task as "Completed" 2. System notifies the users (Creator and current task owner) 3. System checks if the task is a subtask and updates the parent task if required 4. System raises "Task Completed" event |
| **Alternative Flow:** | None |
| **Exceptions:** | None |

##### - GetMatchingMembers

|  |  |
| --- | --- |
| **Use Case Id:** | 9 |
| **Use Case Name:** | GetMatchingMembers |
| **Actors:** | System |
| **Description:** | The system identifies members able to complete the task until due date whithout over calculating hours dedicated to this project |
| **Preconditions:** | 1. A task exists or was created 2. Task was selected in Task panel 3. Task opened 4. Due Date was specified 5. Task duration was specified |
| **Normal Flow:** | 1.System calcutates score cards for each member 2. System identifies member offering sufficient time to this project 3. Process ends |
| **Alternative Flow:** | 1a. No due date specified  2. Display all users  4. Process ends 2b. System does not find user with sufficient availability  3. => Raise "Insufficient Resources" Exception  4. End process |
| **Exceptions:** | 2b. Insufficient availability |

#### GUI Mockup



### Poll

A poll allows users in your project to vote for one or multiple pre-defined option(-s), based on your configuration. In some scenarios it might be useful to allow user specifying an individual option, besides the ones pre-defined. The vote can be limited to a specific time / date range and the users eligible can be specified individually.

Once the poll has ended, which happens either after the date / time range specified elapsed or when every eligible user has voted, the results are being sent to either all, a specific group or the creator only.

If the poll was to vote for a task owner, both the current task owner as well as the future owner are notified together with the users specified and the owner of the poll. The task is then taken off the current user and assigned to the new user.

#### Use Cases

Below all task use cases are documented and visually lined out.

##### Diagram



##### - Create

|  |  |
| --- | --- |
| **Use Case Id:** | 10 |
| **Use Case Name:** | Create |
| **Actors:** | User |
| **Description:** | The user is creating a new Poll |
| **Preconditions:** | 1. User is logged in 2. User opened the poll panel |
| **Normal Flow:** | 1. User clicks the create poll button 2. User specifies a poll title 3. User enters a description of the poll (optional) 4. User defines the date this poll ends 5. User defines whether or not custom options are allowed to vote for 6. User enters a list of options to vote 7. User selects the people eligible to vote 8. User specifies the number of votes per users 9. User saves the vote 2. System identifies member offering sufficient time to this project 3. Process ends |
| **Alternative Flow:** | 4a. No end date specified  4. Poll ends once each user has voted  5. Goto use case step 5 5a. User selects a task to distribute  6. Options are set automatically (including all project members)  7. Eligible users are project members only  8. Goto use case step 8 |
| **Exceptions:** | None |

##### - CreateOptions

|  |  |
| --- | --- |
| **Use Case Id:** | 11 |
| **Use Case Name:** | CreateOptions |
| **Actors:** | User |
| **Description:** | The user is creating a new option selectable in a poll |
| **Preconditions:** | 1. User is logged in 2. User opened the poll panel |
| **Normal Flow:** | 1. User clicks the create option button 2. User specifies an option title 3. User enters a description for the option (optional) 9. User saves the option |
| **Alternative Flow:** | None |
| **Exceptions:** | None |

##### - Delete

|  |  |
| --- | --- |
| **Use Case Id:** | 12 |
| **Use Case Name:** | Delete |
| **Actors:** | User |
| **Description:** | The user deletes a poll |
| **Preconditions:** | 1. User is logged in 2. User opened the poll panel |
| **Normal Flow:** | 1. User selects the poll to be deleted 2. User clicks the delete button 3. Process ends |
| **Alternative Flow:** | 2a. The user cancels the delete request  3. Dialog closes |
| **Exceptions:** | None |

##### - Complete

|  |  |
| --- | --- |
| **Use Case Id:** | 13 |
| **Use Case Name:** | Complete |
| **Actors:** | User / System |
| **Description:** | Ocurrs once the poll is completed. Thei happens either when the due date expires or all users have left their vote |
| **Preconditions:** | 1. User is logged in 2. User opened the poll panel |
| **Normal Flow:** | 1. User votes 2. System checks if all users have voted or due date expired 3. System closes the poll 4. System notifies users 5. System marks poll as completed |
| **Alternative Flow:** | 2a. Some votes are still open  3. The process ends 5a. The poll was a assign poll  6. The system assigns the task to user  7. System notifies the task owner  8. The process ends |
| **Exceptions:** | None |

##### - Vote

|  |  |
| --- | --- |
| **Use Case Id:** | 14 |
| **Use Case Name:** | Vote |
| **Actors:** | User |
| **Description:** | The user votes for an option |
| **Preconditions:** | 1. User is logged in 2. User opened the poll |
| **Normal Flow:** | 1. User selects an option 2. User clicks save button to submit his vote 3. Dialog closes |
| **Alternative Flow:** | 1a. User files a custom option  2. The user defines a new option  3. User saves the new option  4. User selects the new option  5. User saves the vote  6. The dialog closes |
| **Exceptions:** | None |

##### - Invite

|  |  |
| --- | --- |
| **Use Case Id:** | 15 |
| **Use Case Name:** | Vote |
| **Actors:** | User |
| **Description:** | The user invites participants for a poll |
| **Preconditions:** | 1. User is logged in 2. User opened the poll |
| **Normal Flow:** | 1. User opens the poll 2. User clicks the participants button 3. User adds participants from either a project or individually from his / her addressbook 4. User saves the poll 5. The dialog closes 6. The system notifies the user 7. Process ends |
| **Alternative Flow:** | None |
| **Exceptions:** | None |

##### - AssignTask

### Reporting

### Accounting

#### Balance

#### Bills

## Backend Components

### Database Module

#### Programmability

##### Stored Procedures

##### Views

##### Triggers

## WebService

### Functions

### Bindings

## Security Components

## Logging Components

# Technical Specification

## Interaction Components

### Interfaces

#### IComponent (Interface)

#### Task (Class)

##### Class Diagram

