

# Requirements Document for Co-opMeeting

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# Glossary

**3G** is the third generation of mobile telecommunications technology. 3G telecommunication networks support services that provide an information transfer rate of at least 200 kbit/s up to several Mbit/s to smartphones and mobile modems in laptop computers. 18

**Account** describes the privileges for registered users. 11–13, 19

**Admin User** administrates and maintains the system. 13

**Alias** is the displayed user name in a session. 11, 21

**Anonymous User** is someone who is not registered to the system and therefore has no user account. 11

**API** (application programming interface) specifies how some software components should interact with each other. 20

**Blacklist** is a list or register of entities who, for one reason or another, are being denied a particular privilege, service, or access. 13

**Cache** is a mechanism for temporary storage of web documents to increase performance. 18

**Caching** is a mechanism for temporary storage of web documents to increase performance. 19

**Codec** is a way to en-/decode datastreams for better performance, wider support or higher security. 18

**CSS** (Cascading Style Sheets) is a style sheet language used for describing the presentation semantics (the look and formatting) of a document written in a markup language. Its most common application is to style web pages written in HTML. 20

**GPL** The GNU General Public License (GNU GPL or GPL) is the most widely used free software license, which guarantees end users (individuals, organizations, companies) the freedoms to use, study, share (copy), and modify

the software. Software that ensures that these rights are retained is called free software. 21

**HTML** (HyperText Markup Language) is the main markup language for creating web pages and other information that can be displayed in a web browser. 20

**Installed Plugins** are plugins which are approved by an admin user and installed on the server, so that every regular user can use them. 11–13, 19

**Invitations** are used to ask regular users to join a session. 12

**JavaScript** (JS) is an interpreted computer programming language. As part of web browsers, implementations allow client-side scripts to interact with the user, control the browser, communicate asynchronously, and alter the document content that is displayed. 20

**Keys** are used to invite anonymous users to a session. 12

**Man-in-the-middle attacks** in computer security are a form of active eavesdropping in which the attacker makes independent connections with the victims and relays messages between them, making them believe that they are talking directly to each other over a private connection, when in fact the entire conversation is controlled by the attacker. 19

**Michael's smartphone** is an old outdated smartphone that is only capable of running Android 2.2. 18

**Moderator** is a regular user. Moderators can restrict the privileges of regular users. 12, 13

**Plugins** are software components that add a specific feature to an existing software. 12, 13, 18, 20

**Ports** are application-specific or process-specific software constructs serving as communications endpoints in a computer's host operating system. 17

**Registration** is the process of creating a new user account. 11

**Regular User** is someone who is registered and has an account. 11–13

**Security hole** is a weakness which allows an attacker to reduce a system's information assurance. 20

**Session** can be a text based chat, telephone or video conference. 11, 12, 18, 19

**Tunneling** is the process of encapsulating one network protocol within another network protocol to circumvent the problems of incompatible delivery-networks and creating secure Connection. 17

**UTF-8** allows the representation of every existent character. 18

**Window** is a simple, guilike windows, containing at least one plugin. 23



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**Part I**

**User Requirements**



**UR001**

**Statement** *An Anonymous User may be invited to any Session by a key from Regular Users.*

**Priority** *A*

**UR002**

**Statement** *An Anonymous User shall be able to use Installed Plugins for the Session he is invited to.*

**Priority** *A*

**UR003**

**Statement** *An Anonymous User shall be able to register at the server, if Registration is possible.*

**Priority** *A*

**UR004**

**Statement** *A Regular User must register with a valid email address.*

**Priority** *A*

**UR005**

**Statement** *A Regular User shall be able to login with his email address and password.*

**Priority** *A*

**UR006**

**Statement** *A Regular User shall be able to change his password and/or Alias.*

**Priority** *A*

**UR007**

**Statement** *A Regular User shall be able to delete his own Account.*

**Priority** *A*

**UR008**

**Statement** *A Regular User shall be able to open Sessions.*

**Priority** *A*

**UR009**

**Statement** *A Regular User shall be able to join any Session he is invited to.*

**Priority** *A*

**UR010**

**Statement** *A Regular User shall be able to close Sessions he has the rights to.*

**Priority** *A*

**UR011**

**Statement** *A Regular User shall be able to create and distribute Keys and send  
Invitations to every Session he has the rights to.*

**Priority** *A*

**UR012**

**Statement** *A Regular User may activate or deactivate Installed Plugins.*

**Priority** *A*

**UR013**

**Statement** *A Regular User shall be able to request installation of new Plugins.*

**Priority** *A*

**UR014**

**Statement** *A Moderator shall be able to restrict privileges of Regular Users, if  
a Regular User misbehaves like insulting others, uploading inappropriate  
content or harming the system.*

**Priority** *A*

**UR015**

**Statement** *A Moderator shall be able to restore privileges of Regular Users.*

**Priority** *A*

**UR016**

**Statement** *A Moderator shall be able to suspend Accounts of Regular Users  
for a certain amount of time.*

**Priority** *A*

**UR017**

**Statement** *An Admin User shall be able to reset passwords for every Account, if a Regular User, a Moderator or an Admin User forgot the password.*

**Priority** *A*

**UR018**

**Statement** *An Admin User shall be able to test Plugins requested by a Regular User.*

**Priority** *A*

**UR019**

**Statement** *An Admin User shall be able to install tested Plugins.*

**Priority** *A*

**UR020**

**Statement** *An Admin User shall be able to remove previously Installed Plugins.*

**Priority** *A*

**UR021**

**Statement** *An Admin User shall be able to add Plugins to a Blacklist, if they may harm the system.*

**Priority** *A*

**UR022**

**Statement** *An Admin User shall be able to remove Plugins from a Blacklist, if they were accidentally added.*

**Priority** *A*



# Part II

## System Requirements





# Chapter 1

## Non-Functional Requirements

### 1.1 Product Requirements

#### 1.1.1 Usability Requirements

##### 1.1.1.0.1 NFR001

**Statement** *The website should be usable with touchscreen devices.*

**Priority** *A*

##### 1.1.1.0.2 NFR002

**Statement** *The website should support the most popular browsers such as Mozilla Firefox, Safari, Opera, Google Chrome and Internet Explorer.*

**Priority** *A*

##### 1.1.1.0.3 NFR003

**Statement** *The service should prevent epileptic fits.*

**Priority** *A*

##### 1.1.1.0.4 NFR004

**Statement** *The service should use Tunneling to provide its service when certain Ports are unavailable.*

**Priority** *A*

**1.1.1.0.5 NFR005**

**Statement** *The characters should be encoded using UTF-8*

**Priority** *A*

**1.1.2 Efficiency Requirements****1.1.2.1 Performance Requirements****1.1.2.1.1 NFR006**

**Statement** *The website should work on Michael's smartphone.*

**Priority** *A*

**1.1.2.1.2 NFR007**

**Statement** *Sessions should work with limited internet bandwidth (minimum of 3G) on mobile devices.*

**Priority** *A*

**1.1.2.1.3 NFR008**

**Statement** *The service should provide automatic scaling of the video size/quality based on internet bandwidth.*

**Priority** *A*

**1.1.2.2 Space Requirements****1.1.2.2.1 NFR009**

**Statement** *The Service should use lossless Codecs to reduce filesize.*

**Priority** *A*

**1.1.2.2.2 NFR010**

**Statement** *The Service must not exceed 20Mb of Cache on mobile devices.*

**Priority** *A*

**1.1.3 Dependability Requirements****1.1.3.0.3 NFR011**

**Statement** *The Login data and available Plugins should be redundant on multiple servers.*

**Priority** *A*

**1.1.3.0.4 NFR012**

**Statement** *The client should use Caching to minimize bandwidth consumption.*

**Priority** A

**1.1.4 Security Requirements**

**1.1.4.0.5 NFR013**

**Statement** *The service must always use encryption to transmit credentials to the server.*

**Priority** A

**1.1.4.0.6 NFR014**

**Statement** *The service must save the password as a salted hash on the server.*

**Priority** A

**1.1.4.0.7 NFR015**

**Statement** *The service must provide encryption for transmission of Session data to ensure privacy and to prevent Man-in-the-middle attacks.*

**Priority** A

**1.2 Organizational Requirements**

**1.2.1 Environmental Requirements**

**1.2.1.0.8 NFR016**

**Statement** *User Accounts are verified through the user's email address and password.*

**Priority** A

**1.2.2 Operational Requirements**

**1.2.2.0.9 NFR017**

**Statement** *Account data and Installed Plugins should be backed up frequently to prevent data loss during a server failure.*

**Priority** A

**1.2.2.0.10 NFR018**

**Statement** *The service itself, it's dependencies (like web server software) and the operating system of the server should be kept up to date. Security holes will be closed by updates.*

**Priority** A

**1.2.2.0.11 NFR019**

**Statement** *The services should have a logfile that lists status messages and errors (server side only). This helps to find/solve problems.*

**Priority** A

**1.2.2.0.12 NFR020**

**Statement** *The services should offer a test mode to test requested Plugins, without harming the system.*

**Priority** A

**1.2.3 Development Requirements****1.2.3.0.13 NFR021**

**Statement** *To maintain compatibility with web browsers, the service must use standards like HTML, CSS and JavaScript.*

**Priority** A

**1.3 External Requirements****1.3.1 Regulatory Requirements****1.3.1.0.14 NFR022**

**Statement** *The source code should be open to a developer community.*

**Priority** A

**1.3.1.0.15 NFR023**

**Statement** *The API for Plugins must be documented to help developers to create new Plugins.*

**Priority** A

## 1.3.2 Ethical Requirements

### 1.3.2.0.16 NFR024

**Statement** *The service must not gather user data. Data like the Alias are voluntary.*

**Priority** A

## 1.3.3 Legislative Requirements

### 1.3.3.1 Software License Requirements

#### 1.3.3.1.1 NFR025

**Statement** *The service should only use libraries that have been published under the terms of GPL.*

**Priority** A

#### 1.3.3.1.2 NFR026

**Statement** *The service must be published under the terms of GPL.*

**Priority** A

### 1.3.3.2 Safety / Security Requirements



## Chapter 2

# Functional Requirements

### 2.0.3.2.1 FR001

**Statement** *The user shall be able to compose and configure Window setups to save them and load them at later points in time*

**Priority** *B*

### 2.0.3.2.2 FR002

**Statement** *The service should provide the functionality to split a conference into multiple conferences. The service should provide the functionality to merge multiple conferences into a single one.*

**Priority** *A*

### 2.0.3.2.3 FR003

**Statement** *The service should provide the functionality to set a reminder for appointments and has the option of notifying every user/email that he associates with that appointment*

**Priority** *A*

### 2.0.3.2.4 FR004

**Statement** *The service should provide the functionality to insert preinstalled and customized emoticons in the chatting plugins*

**Priority** *G*

**2.0.3.2.5 FR005**

**Statement** *The service should provide the functionality to use a Doodle like plugin to find times for appointments and have the option to set a reminder(see FR003)*

**Priority** *A*

**2.0.3.2.6 FR006**

**Statement** *The service should provide the functionality to use a whiteboard like plugin to freely draw in a session*

**Priority** *A*

**2.0.3.2.7 FR007**

**Statement** *The service should provide the functionality to create and edit contact lists.*

**Priority** *A*

**2.0.3.2.8 FR008**

**Statement** *The service should provide the functionality to create Business Cards/Profiles other users can see.*

**Priority** *B*

**2.0.3.2.9 FR009**

**Statement** *The service should provide the functionality to edit Files online and see edits from other users instantly*

**Priority** *A*

**2.0.3.2.10 FR010**

**Statement** *The Whiteboard Plugin(FR006) should have the capability to import pictures to edit and, if the user allows it, give every listener the option of downloading/saving the picture*

**Priority** *A*

**2.0.3.2.11 FR011**

**Statement** *The service should provide the functionality to mute/disable streams at the will of the user.*

**Priority** *B*



**2.0.3.2.12 FR012**

**Statement** *The service should provide the functionality to call for a quick vote or simple choice.*

**Priority** *A*

**2.0.3.2.13 FR013**

**Statement** *The service should provide the functionality to search the web and display the search results to every one who watches the session*

**Priority** *A*

**2.0.3.2.14 FR014**

**Statement** *The service should provide the functionality to recognize and execute voice commands*

**Priority** *C*

**2.0.3.2.15 FR015**

**Statement** *The service should provide the functionality for remote desktop recording/viewing.*

**Priority** *B*

**2.0.3.2.16 FR016**

**Statement** *The service should provide the functionality for client side desktop recording.*

**Priority** *B*

**2.0.3.2.17 FR017**

**Statement** *The service should provide the functionality to open a chat with at least one other user.*

**Priority** *A*

**2.0.3.2.18 FR018**

**Statement** *The service should provide the functionality to start audio/video calls with at least one other user.*

**Priority** *A*



## Chapter 3

# Scenarios

### 3.1 Scenario for a general video conference

**INITIAL ASSUMPTION:** *Max, a member of an international research group, is responsible for the organization and conduct of internal group meetings. All research group members are already regular users and registered in Max's contact list. He created a contact group that contains all group members. All participants know about the appointed date for the meeting. Unless otherwise stated, this assumptions hold for all following scenarios as well as the consequences that are discussed below.*

**NORMAL:** *Before the given meeting date, Max creates a new video conference session and adjusts all necessary and optionally some advanced general session settings. He manipulates the list of participants by selecting the participating group members one by one out of his contact list or by selecting the whole contact group and deselecting some afterwards, where required. As the moderator of the new session, he may decide to elevate the privileges of members of the list of participants up to the moderator level. Now he may save the session for later use or start it immediately. When the session starts, all participants that are already online within the tool get a popup window that asks whether they want to join. Those that are not online receive an email that tells them about the invitation. If a user accepts an invitation, he is immediately part of the video conference and will be able to communicate with the others.*

**WHAT CAN GO WRONG:** *Some members of the research group are not already regular users and therefore Max cannot invite them regularly. After making notice of that, Max invites the missing users by sending them an one-way session key via email. This can be used once to join the session without regular invitation. As an alternative, he asks them to register to the server and then he invites them regularly. Some members of the research group are regular users but not members*

*of Max's group of contacts, so they will not get invited if only the contact group is selected for invitation. Max can invite them via his contact list while the session is running.*

*Some participants lose their internet connection temporarily. When they are connected again, they should rejoin the session automatically.*

**OTHER ACTIVITIES:**

*Some invited users may be part of another session at the time of invitation. As long as no element of their current session prohibits multiple sessions, they can join the new session regularly. Otherwise, they will be asked to drop the old session in favor of the new one.*

**SYSTEM STATE ON COMPLETION:** *The video conference session is running and all participants can communicate with each other.*

## 3.2 Scenario for a meeting planned via doodle plugin

**INITIAL ASSUMPTION:** *All group members know about a doodle poll for the next meeting date and have the doodle plugin installed.*

**NORMAL:** *To reach an agreement on a group meeting date, Max wants to use the doodle plugin. In the plugin window he uses an option to create a new poll. He enters the information needed for a new doodle poll and selects his research contact group to be informed about the poll.*

*After creation, Max can edit the poll or vote for his favorite dates. Max activates the reminder function with a set time distance to the date that he will choose after all have voted.*

*At the set notification time, Max gets a notification email and, if he has the application open at that time, also a notification popup window within the tool.*

**WHAT CAN GO WRONG:** *Some group members did not install the doodle plugin and be part of the poll within the tool. They can install the plugin and join the poll with the tool or join the poll without the tool via the doodle website. In the latter case they will not receive any notification from our tool.*

**OTHER ACTIVITIES:** *Other plugin users may also decide to be reminded before the date that Max chooses.*

**SYSTEM STATE ON COMPLETION:** *All relevant users got notified by a popup window and/or email before the planned meeting date.*

### 3.3 Scenario for file sharing and whiteboard usage

**INITIAL ASSUMPTION:** *Max wants to present his recent research results and discuss it with the whole group. This should be supported by the usage of document sharing and placement and modification of graphics on the whiteboard.*

**NORMAL:** *Max creates the desired session and selects some of his local files containing data to be shared within the session. All session participants can download these files after the upload is completed. Max opens a new whiteboard, which is now visible to all participants. He selects some supported graphics files to be displayed on the whiteboard. Then he starts to draw on top of the graphics to help the others to understand his explanations. As the moderator of the session, he may also allow others to use the whiteboard.*

**WHAT CAN GO WRONG:** *Placing the uploaded files on the whiteboard is not possible, because the file format is not supported for that purpose. Max gets an error message, which explains the problem and states which files are supported. If possible, he converts them and is able to present them on the whiteboard.*

**OTHER ACTIVITIES:** *Because modifications of the whiteboard by different users may happen concurrently, it is advisable to agree on who is modifying the whiteboard at a time. This can be enforced by the moderator.*

**SYSTEM STATE ON COMPLETION:** *Session participants are able to download shared files and the content of a graphics file is visible on the whiteboard together with modifications by hand.*

### 3.4 Scenario for recording a session

**INITIAL ASSUMPTION:** *Max has created a new plugin for the tool and wants to record an example session to show how it can be used.*

**NORMAL:** *Max creates a new session and afterwards selects to start a new record. In a window he configures where to save the record file and audio/video settings. After some time he stops the record.*

**WHAT CAN GO WRONG:** *While recording, the space at the record file location may come to an end. The recording of the session will stop and Max will get an appropriate error message.*

**OTHER ACTIVITIES:**

**SYSTEM STATE ON COMPLETION:** *Max has saved a video record of the session window to a location of his choice.*