

# **1 Introduction**

This document will go over the description, requirements, and infrastructure of the shared document application (name in progress, from now on denoted as SD).

## **1.1 Purpose**

The purpose of SD is to provide a fast and easy-to-use extendable online text editor environment, where multiple users can edit a document at the same time.

## 2 Description

### 2.1 Features

The main feature is high performance, allowing large numbers of users to work together on a single document without a significant performance loss. SD also supports easy document and folder sharing using hyperlinks.

### 2.2 Operation Environment

SD is platform-independent. Clients will run in an internet browser and the server requires Node.js as it is written in JavaScript.

### 2.3 Documentation

SD is installed using an installer. Specific steps of installation will be added later, as the software is not finished yet.

After SD had been successfully installed and started, clients can connect to the server in their browser. They will be prompted to authenticate themselves using external authentication. After authenticating, the main menu will be displayed, allowing users to create new documents, visit existing ones and create folders to structure their documents. Documents can be shared with other users using hyperlinks or the document's known user list (KUL), which is described in the functional requirements ([3.1.1 Document Creation](#)). Folders can be shared in the same manner.

SD supports user roles, allowing only some users with a certain role to edit documents or folder content. This is described in detail in the functional requirements ([3.1.2 User Roles](#)).

SD also supports a server-wide role of an admin, who can delete user accounts along with their documents.

## 3 Requirements

### 3.1 Functional Requirements

#### 3.1.1 Document Creation

SD supports the creation of new documents. After the document is created, the user will be able to obtain the document's hyperlink, which can be shared with other users to allow them access to the document. If the hyperlink is not shared, no other user should be able to access the document (unless a user guesses the hyperlink), with the exception of users explicitly added to the document's known users list (KUL). A document's KUL is a list of users that have access rights to the document even without a hyperlink. Certain users can add other users to the KUL. The document will have an option to disable the hyperlink, disabling access to users who are not on the document's KUL.

#### 3.1.2 User Roles

SD supports user roles, which define the set of actions a user may take. These are specific to a document or a folder (folder-specific roles are specified in point [3.1.4 Folders](#)). Document-specific roles include read-only access (viewer), read-write access (editor), read-write access with the option to change roles of other users as well as adding users to the document's KUL (admin), and the option of renaming or deleting the document, as well as having all admin privileges (owner).

#### 3.1.3 Main Menu

SD will have a main menu that will be available after user authentication. The menu allows a user to create a new document, new folder and the menu will list all documents and folders to which the user has access. There will be two separate lists, one for the documents/folders the user created, and the other for documents/folders accessible through hyperlinks as well as those that have the user on their KUL.

#### **3.1.4 Folders**

Folders support user roles similarly to documents and have their own KUL and a hyperlink. A viewer can only view the folder's contents, an editor can add new folders and files as well as rename or delete them (the owner of these new folders and files will be the owner of the root folder), an admin can also change user roles as well as adding users to the folder's KUL (as well as to a contained document's KUL) and the owner can delete the root folder. If a user is granted editor or higher rights, he can rename or delete a file/folder even if he is not the owner of that file/folder. Giving access to a folder, therefore, allows users with a high enough rank to take actions they could not if they had access to a sole document with the same rank.

If a user receives a hyperlink to a folder and the folder has hyperlinks enabled then that folder will be added to the user's list of accessible folders. The user can then access all content contained in the folder. If a file contained in such a folder has its hyperlink disabled, it can still be accessed as long as the folder's hyperlink is enabled. However, the file is not accessible through the file's hyperlink. The same applies to folders. Similarly, a user in the folder's KUL can access all its content.

#### **3.1.5 Document Editing**

A document can be edited by multiple users at once.

#### **3.1.6 User Authentication**

SD allows external user authentication.

#### **3.1.7 Server-Wide Roles**

SD supports two server-wide roles. The first is a user and the second one is a server admin. A server admin can delete accounts of other admins or users as well as any documents they created.

## **3.2 Non-Functional Requirements**

### **3.2.1 Performance**

SD should be able to support 100 users typing at the same time and 1000 total users per document.

If a document is being edited, it should not affect the performance of other documents.

It should take less than one second for changes made by a user to be visible by other users (assuming reasonable latency).