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# **1 Vision**

## **1.1 Introduction**

Our goal is to make an interactive document sharing system, Slice of Pie, which allows multiple users to share and edit documents both online and offline.

## **1.2 Problem statement**

Sharing and editing documents can be cumbersome.

Sending a document back and forth between multiple users can lead to a lot of errors. Users can overwrite what another user has done, and if they aren't all using the same text editing system this can lead to formatting issues in the document.

## **1.3 Summary of system features**

1. Multiple users must be able to share and edit documents online.
2. Synchronization for offline usage.
3. Merging of documents.
4. History. Which allows the user to see all recent changes made to the document.
5. Documents can be categorized into folders or projects in order to get a better overview when working on a larger project with multiple files.

# **2 Use cases**

1. UC1: Create new document
2. UC2: Edit document
3. UC3: Delete document
4. UC4: Merging documents (resolve conflict)
5. UC5: Offline sync
6. UC6: New folder
7. UC7: New project
8. UC8: Find old version of document
9. UC9: Share Document

10. UC10: Accept invite

11. UC11: Log in

**Use case UC1: Create new document**

**Scope:** Slice-of-pie application

**Level:** User goal

**Primary actor:** Regular user

**Stakeholders and Interests:**

- Regular user: Wants to create a new document without any complications.

**Preconditions:** none.

**Postconditions:** The document will be created

**Basic flow:**

1. The user needs a document that can be shared with others.
2. The user chooses a client program (web or desktop client).
3. The user presses the "New Document" button.
4. The client presents a dialogue box.
5. The user types information about the document and press OK.
6. The client sends a request to the server and the document gets stored by the server.
7. The client displays the document for the user.

**Extensions:**

6. The server is not responding
  - (a) The document is saved locally.
  - (b) The client requests the server in regular intervals to see if it has recovered.

**Special requirements:**

- The document should be displayed properly on any devices such as smart phones and tablets.

**Use case UC2: Edit document**

**Scope:** Slice-of-pie application

**Level:** User goal

**Primary actor:** Regular user

**Preconditions:** A document must have been created

**Postconditions:** The document must be edited the way the user desires and the change must be recorded by the server too

**Basic flow:**

1. The user opens a document.
2. The user edits the content of the document.
3. The client sends a request to the server.
4. The document is changed on the server.

**Extensions:**

3. The server is not responding
  - (a) The document is saved locally.
  - (b) The client requests the server in regular intervals to see if it has recovered.

**Special requirements:**

- The document should be displayed properly on any devices such as smart phones and tablets.

**Use case UC3: Delete document**

**Scope:** Slice-of-pie application

**Level:** User goal

**Primary actor:** Regular user

**Preconditions:** A document must have been created. The user trying to delete a document must have sufficient rights to delete selected document

**Postconditions:** The document is now deleted from the users local repository, and will be deleted when user commits

**Basic flow:**

1. The user selects a document
2. The user tries to delete the document 3. The client sends a request to the server
3. Server checks for authentication
4. Document is deleted

**Extensions:**

3. The server is not responding
  - The document is saved locally
  - The client requests the server in regular intervals to see if it has recovered
4. The user lacks the right to delete the selected document
  - User is told that he has not got the rights to delete selected document

**Special requirements:****Use case UC4: Merging documents (Resolve conflict)**

**Scope:**

**Level:**

**Primary actor:**

**Preconditions:**

**Postconditions:**

**Basic flow:**

**Extensions:**

**Special requirements:**

**Use case UC5: Offline synchronization**

**Scope:** Slice-of-pie application

**Level:** User goal

**Primary actor:** Regular user

**Preconditions:** User must be logged in. Client must be connected to the server.

**Postconditions:** The users offline repository will be synchronized with his online repository

**Basic flow:**

1. The user selects offline synchronization
2. The client sends a request to the server.
3. The server copies the user's online repository and sends it to the client
4. The client sends verification upon receiving the documents

**Extensions:**

2. The server is not responding
  - The user gets an error message (no connection)
4. The server is not responding
  - The client tries to re-establish a connection to the server at regular intervals, and then sends the verification.

**Special requirements:**

**Use case UC6: Create new folder**

**Scope:** Slice-of-pie application

**Level:** User goal

**Primary actor:** Regular user

**Preconditions:** none.

**Postconditions:** The folder will have been created

**Basic flow:**

1. User clicks on "create new folder" button
2. User fills in valid folder information and clicks "OK"
3. Client sends a request to server and server stores the folder
4. Client displays the new folder

**Extensions:**

2. Information is not valid
  - (a) User gets an error message describing what information is invalid
3. Server does not respond
  - (a) folder is stored locally
  - (b) The client requests the server in regular intervals to see if it has recovered, then resends the request to create a folder.

**Special requirements:**

**Use case UC7: Create new project****Scope:** Slice-of-pie application**Level:** User goal**Primary actor:** Regular user**Preconditions:** none.**Postconditions:** a Project will have been created**Basic flow:**

1. User clicks on "Create New Project" button
2. User fills in valid Project information and clicks "OK"
3. Client sends a request to server and server stores the Project
4. Client displays the new folder

**Extensions:**

2. Information is not valid
  - (a) User gets an error message describing what information is invalid
3. Server does not respond
  - (a) Project is stored locally
  - (b) The client requests the server in regular intervals to see if it has recovered, then resends the request to create a Project.

**Special requirements:****Use case UC8: View old version of document****Scope:****Level:****Primary actor:****Preconditions:****Postconditions:****Basic flow:****Extensions:****Special requirements:**



### 3 Glossary

- **Response Time:** The time it takes for the system to respond to a request from the user.

### 4 Supplementary Specification (FURPS+)

- Functionality
  - The system must be able to store documents.
  - The system must support multiple users.
- Usability
  - The system must have a clean and simple user interface.
  - Users must be able to use the application without training.
  - System features must be simple and straight forward. No complicated work flows.
  - The overall system must be easy to use. 8 out of 10 users must be able to use the system without any training.
- Reliability
  - The system must be able to restore it's state in case of a server failure.
- Performance
  - The system must be fast and responsive. A request to the system can't take longer than 3 seconds. (not counting the external internet connection)
- Supportability

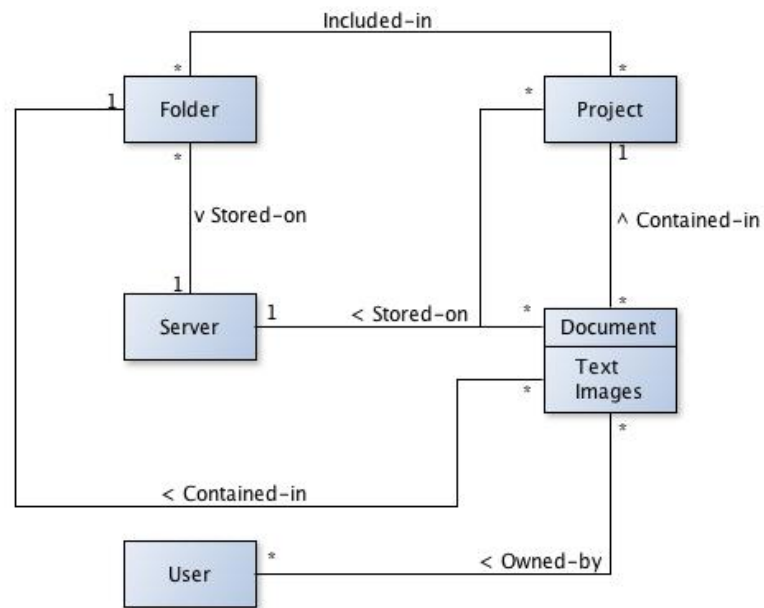
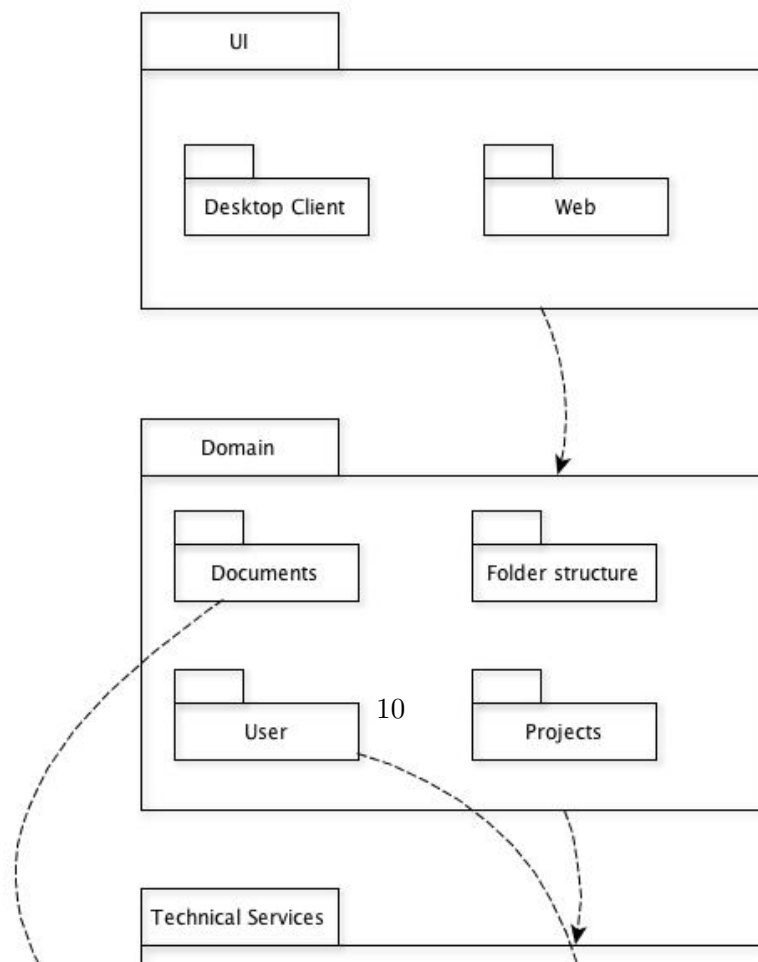


Figure 1: Domain Model

## 5 Domain Model

## 6 Logical Architecture



## 7 System Sequence Diagram

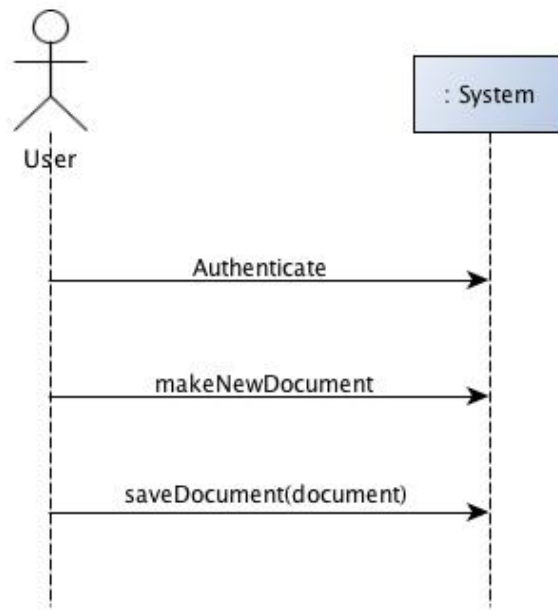


Figure 3: SSD - New document

## 8 Operation Contracts

**Contract CO1:** Synchronize

**Operation:** Synchronize

**Cross References:** UC1, UC2, UC5

**Preconditions:** Some documents and/or must have been created on the system.

**Postconditions:**

- All documents and folders on the client must be uploaded to the server.
- All documents and folders on the server must be downloaded to the client.
- Document version must be the same on the client and server.

## 9 Use Case Diagram

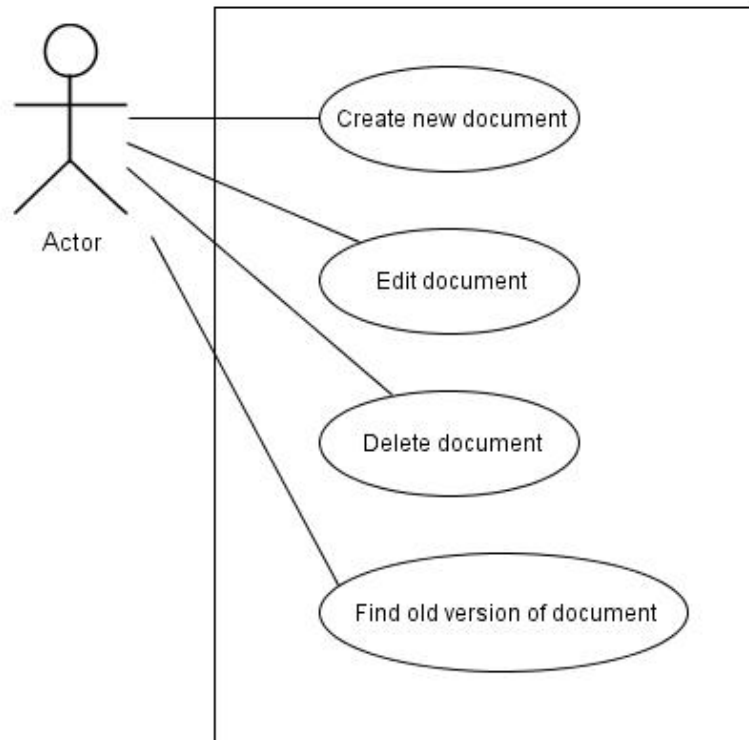


Figure 4: Use case diagram

## 10 UML Package Diagram

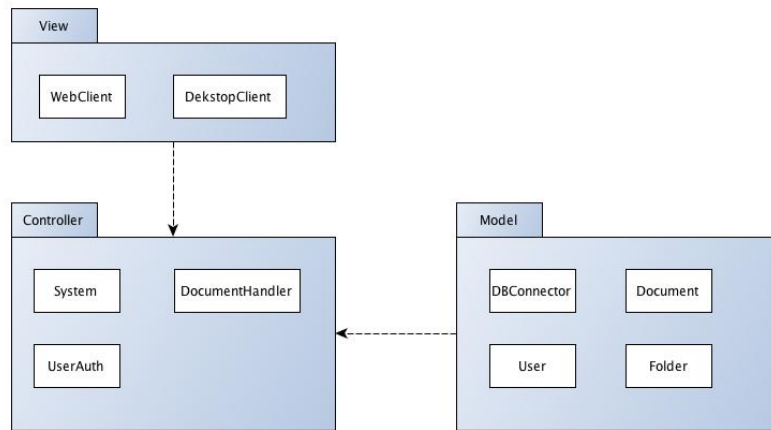


Figure 5: Package Diagram Overview

## 11 UML Class Diagram

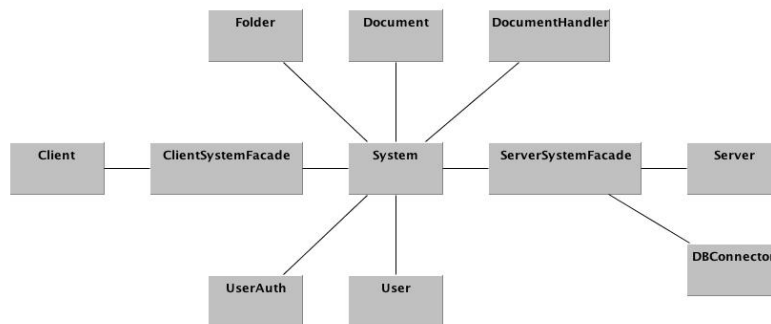


Figure 6: Class Diagram Overview

## 12 Communication Diagram

Diagrams/Delete Communication Diagram.jpg

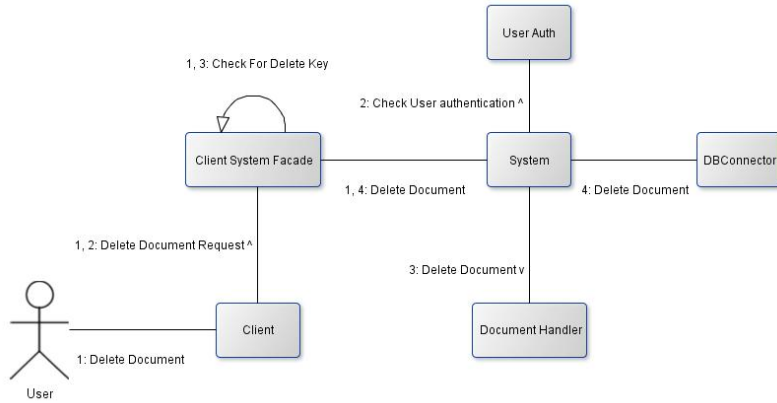


Figure 7: Communication Diagram

## 13 Revision Table

Table 1: Revision Table

Revision	Changes	Section	Author
21-11-12	Created Vision	1	Bergar
21-11-12	Created Use cases	2	Bergar
21-11-12	Use case 1 and 2	2	Filip
21-11-12	Created Glossary	3	
21-11-12	Created Supplementary Specifications	4	Bergar
21-11-12	Created Domain Model diagram	5	Bergar and Filip
21-11-12	Created Logical Architecture diagram	6	Bergar and Filip
22-11-12	System Sequence Diagram	7	Bergar
22-11-12	Operation Contracts	8	Bergar
22-11-12	Use cases 3, 4, 6 and 7	2	Morten
22-11-12	Use case diagram	9	Filip
23-11-12	UML Package Diagram	10	Bergar
23-11-12	UML Class Diagram	11	Bergar
27-11-12	UML Communication Diagram	12	Morten