

Software Requirements Specification For Cloud-SOMS

Prepared by

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1. Introduction

This document is designed to serve readers to understand the concepts of Cloud-SOMS and to use this tool easily and effectively. The Cloud-SOMS is designed so that individuals and companies can reduce the time and effort to collaborate.

1.1. Problem Definition

Organizations including student clubs, non-governmental organizations, and small and medium size enterprises (SME) have the need for distributed collaboration tool to work together. Up to now, several tools and platforms, such as online collaboration tools, forums, social network groups/events, have been used to overcome this problem. However, there are major missing features in these tools/platforms, some of which can be listed as follows:

1. Role and available time assignment for individuals so that the optimal team can be formed in an event.
2. To Do list item assignment from Owner/Leader/Chair
3. Keeping track of the state of the assigned items
4. Mobile access
5. Event notification
6. Organization recommendation to users having possible interest to it.

Currently, there is no such a platform, which satisfies all the needs of users mentioned above. Thus, in this project these issues will be addressed.

1.2. Purpose

The purpose of this document is to describe requirements for the Cloud-based Scalable Organization Management System with Semantic Web, Mobile Interface and Social Integration (Cloud-SOMS) software that will serve as a foundation for the final product. It's planned to satisfy everyone's expectations. Written descriptions and types of modeling diagrams were used in order to demonstrate the high level structure of the application. Some similar diagrams are used in this document to provide an alternative point of view so that all stakeholders may have a suitable view to their area of responsibility.

Cloud-SOMS is intended to provide a quick, easy and user-friendly cloud-based organization management system. For instance, one can easily manage organizational tasks, which will be operated automatically by the system. The system should be designed so that management-time is minimized. These and many other features of the system will be described in a greater detail.

1.3. Scope

The Cloud-SOMS is a complex, scalable and safe system, which is on web. The purpose of this user-friendly, safe and secure system is to provide organizations including student

clubs, non-governmental organizations, and small and medium size enterprises a distributed collaboration tool. It is designed so that organization creation, participation to an organization via search or recommendation of a member, role sharing in an organization according to member's interests and skills, accepting or rejecting an event, integrated personal and organizational calendar, organization/event recommendation according to users' interest, social network connection (Facebook, MySpace, Twitter etc.), notification of upcoming events via e-mail, showing upcoming events and hot topics for every member and mobile access can be done via Cloud-SOMS. It is assured that none of the information clashes or get harmed. Since all the data are kept in cloud, it is accessible from everywhere in the world. In case it is lost or damaged, it can be easily recovered. The cloud keeps the necessary information of both organizations and individuals. In order to keep the data secure, organized and up to date, Cloud-SOMS provides several functionalities. Those are analyzed detailed in the following pages.

1.4. User and Literature Survey

The most popular organizational management system tools in the market can be listed as follows:

A. Zoho

Zoho is a powerful collaboration tool whose features include calendar, tasks, to-do list, recruitment system, contacts, reporting, and wiki. However, it is not possible to specify roles of team members. Besides, it does not have social network integration, organization search/recommendation, and specific task/event assignment for individuals. Currently, Zoho has more than one million users worldwide.

B. Business IT Online

Features of Business IT Online include team calendar, cash flow, contacts and documents. However, it is not possible to specify roles of team members. Besides, it does not have social network integration, mobile access, organization search/recommendation, and specific task/event assignment for individuals. Business IT Online has more than 50000 users.

C. Qtask

Qtask mainly focuses on project management. Features of Qtask include tasks, calendar, reporting, mobile services, and file sharing. However it is not possible to specify roles of team members. Besides, it does not have social network integration, organization search/recommendation, and specific task/event assignment for individuals. Qtask has more than 20000 users currently.

The target market of Cloud-SOMS is international charities, non-governmental organizations, student clubs, commercial organizations especially SMEs which cannot afford internal management tools.

Total web collaboration industry was estimated to be \$1.5 billion in 2008 according to the analysis of Frost&Sullivan and it is forecasted to reach \$4.5 billion by 2014.

1.5. Definitions and Abbreviations

Cloud-SOMS: Cloud-based Scalable Organization Management System with Semantic Web, Mobile Interface and Social Integration

SaaS: Software as a service

SME: Small and Medium Enterprise

API: Application Programming Interface

SDK: Software Development Kit

No-SQL: Not only Structured Query Language

ACL: Access Control List

GQL: Google Query Language

XMPP: Extensible Messaging and Presence Protocol

Python: An interpreted scripting programming language.

Google App Engine Framework: it is a cloud-based development environment.

Google BigTable: It is a Not Only SQL (noSQL) database.

Query Builder and GQL: There are two alternative ways to create queries for BigTable, which are query builder and GQL. They provide easy to express queries similar to natural language and SQL respectively.

HTML/CSS/JavaScript: The basic ingredients for web applications.

JQuery: It is a fast and concise JavaScript Library that simplifies HTML document traversing, event handling, animating, and Ajax interactions for rapid web development.

Google Analytics: This will be used to provide the organizations statistical information about their users.

Facebook Python SDK: This client library is designed to support the Facebook Graph API and the official Facebook JavaScript SDK, which is the canonical way to implement Facebook authentication

Facebook JavaScript SDK: The JavaScript SDK enables you to access all of the features of the Graph API and Dialogs via JavaScript

Twitter API: Twitter exposes its data via an Application Programming Interface (API).

1.6. References

Business IT Online: <http://www.businessitonline.com>

Zoho: <http://www.zoho.com>

Qtask: <http://www.qtask.com>

tinyPM: <http://www.tinypm.com/>

Google App Engine: <http://code.google.com/App Engine/>

Gliffy: <http://www.gliffy.com>

Creately: <http://www.creately.com>

Software Requirements Specification Template. (n.d.). Retrieved from Process Impact: http://www.processimpact.com/process_assests/srs_template.do

1.7. Overview

General information about Cloud-SOMS is included. Additionally, main classes and use cases, functions, features and special technologies are described. Safety factor is investigated in detailed.

The rest of the document is organized into sections.

In chapter 2 an overall description of Cloud-SOMS is provided. First product perspective is presented with product features and main functions. Then follow user classes and characteristics, operating environments that Cloud-SOMS supports as well as design and implementation constraints. After all, that user documentation is presented and will provide you with more details about each feature's technology.

In chapter 3 most important features are presented with detailed description, use cases and requirements.

In chapter 4 user and communication interfaces are described.

In chapter 5 requirements about safety and performance are presented.

The document is intended for:

Developers: In order to be sure whether they develop the right project, which satisfies the requirements given in this document.

Testers: In order to provide list of the features and functions which work according to the requirements and diagrams in the document to be tested.

Users: In order to get used to the idea of the system and give feedback about the features so as to make it more functional.

Documentation writers: In order to know what features and in what way they should explain. These are the system's response in each user's action, security technologies etc.

Advanced end users, end users/desktop and system administrators: In order to know exactly what they have to expect from the system, right inputs and outputs and response in error situations.

2. Overall Description

2.1. Product Perspective

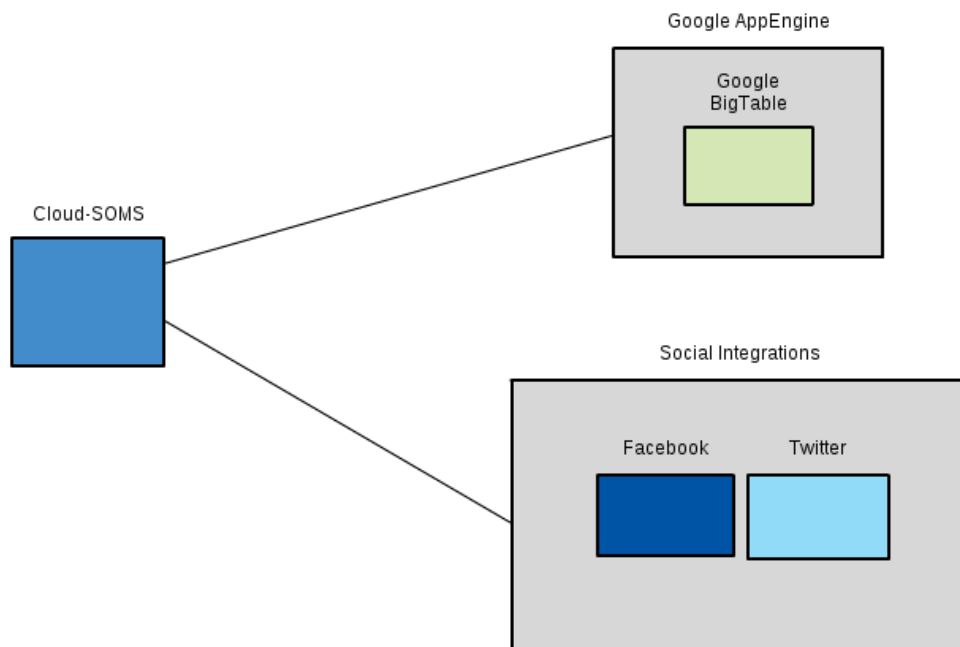


Figure 1 - Basic Product Structure Diagram

Cloud-SOMS is a self-contained product, is not a component of a larger system.

It will be built on Google App Engine and use Google BigTable as data storage. Google App Engine will provide a cloud-based framework and Google BigTable will provide a cloud based NoSQL data storage. It will also be integrated to social networks such as Facebook and Twitter using their public API's and SDK's.

2.1.1. External Interface Requirements

2.1.1.1. User Interfaces

Interfacing of the system with users can be categorized into two subtopics.

2.1.1.1.1. System Administrator Interface

The system administrator is a privileged user who has permissions to access the whole system .The system administrator can manage both organizations and users.

The system will provide an easy to use interface for the system administrator to create, view and modify the organization data and user data.

2.1.1.1.2. Organization Administrator Interface

Organization administrators have permission to access and modify the whole information belongs to organizations they administrate. They also have right to invite a user to the organization or to ban a user from that organization.

2.1.1.1.3. Member Interfaces

Members can see and edit their personal information and profiles, and public pages of organizations they do not belong to. Members can also search and apply to an organization. Members in an organization have permission to see all the organization information, events, tasks, calendars, messages and forum. Members can apply or be invited to an organization.

2.1.1.2. *Software Interfaces*

The purpose of the link between the system and the Google Big Table is to store and fetch data. The purpose of the link between the system and mobile devices is to provide a mobile access to the system. Besides, this system is integrated into social networks such as Facebook and Twitter to help organizations to reach huge amount of users. By means of Facebook API, Cloud-SOMS will obtain the user information so that users can start using the application without the hassle of signup flow. Organizations can also use Facebook integration to promote themselves. By means of Twitter API, members and organizations can reach to people in the same way as Facebook does.

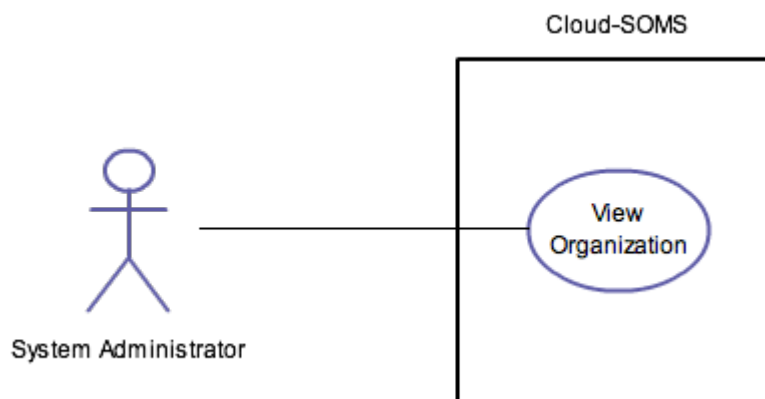
2.1.1.3. *Hardware Interfaces*

Since the application will be working on Google App Engine no specific hardware interfaces exist.

2.2. Product Functions

Use Case: View organizations

Diagram:



Brief Description:

A system administrator can view information of organizations.

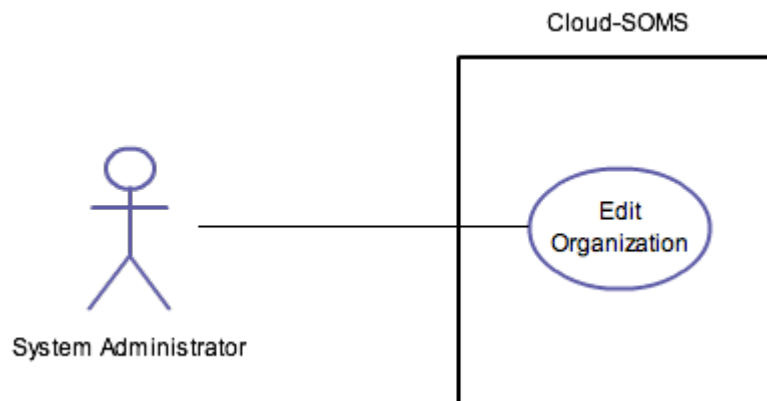
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a system administrator.

1. A system administrator can view information of organizations.

Use Case: Edit organizational information.

Diagram:



Brief Description:

A system administrator can edit information of organizations.

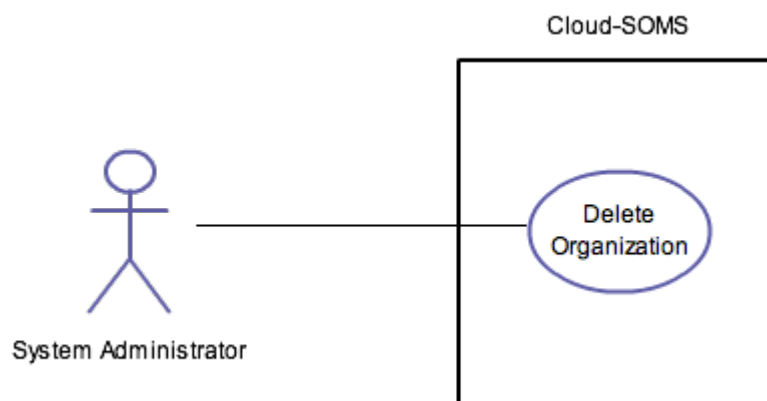
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a system administrator.

1. A system administrator can edit information of organizations in need.

Use Case: Delete an organization

Diagram:



Brief Description:

A system administrator can delete an organization when an organization abuses the terms of use.

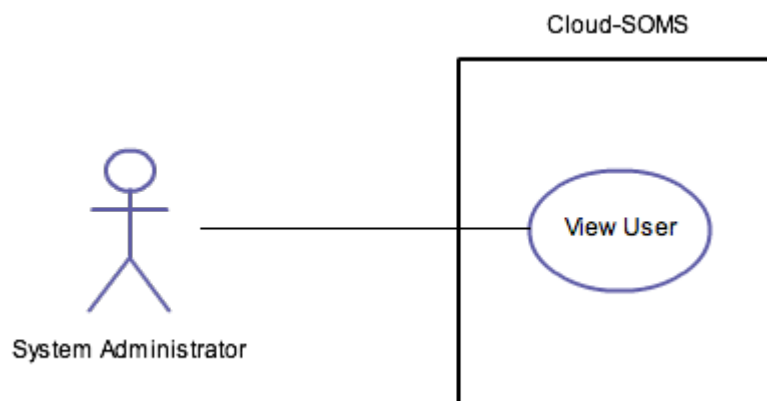
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a system administrator.

1. A system administrator warns an organization when the terms of use are abused.
2. When an organization continues to abuse the terms of use, a system administrator can delete this organization.

Use Case: View users

Diagram:



Brief Description:

A system administrator can view information of users.

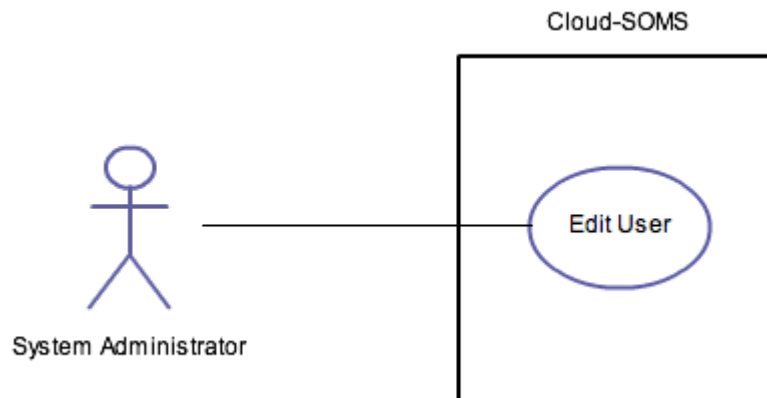
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a system administrator.

1. A system administrator can view information of users.

Use Case: Edit user information.

Diagram:



Brief Description:

A system administrator can edit information of users.

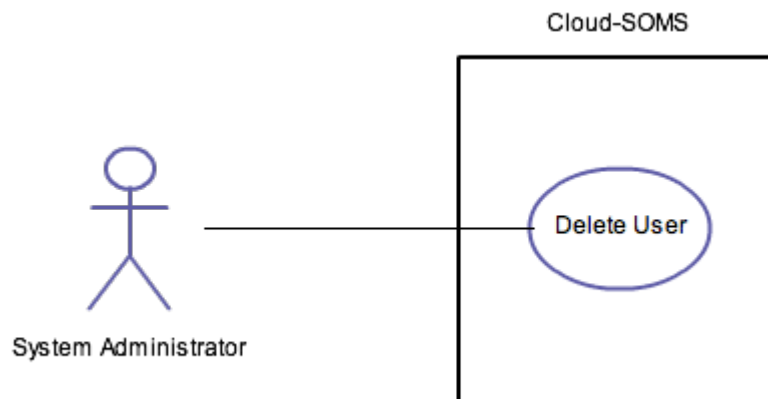
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a system administrator.

1. A system administrator can edit information of users in need.

Use Case: Delete a user

Diagram:



Brief Description:

A system administrator can delete a user when a user abuses the terms of use.

Initial Step-By-Step Description:

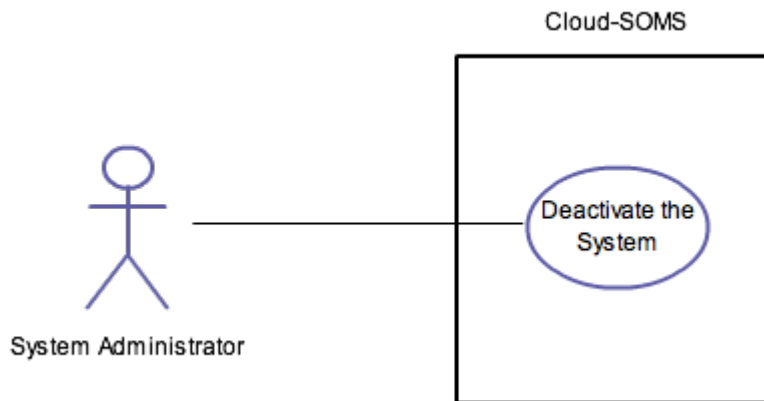
Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a system administrator.

1. A system administrator warns a user when the terms of use are abused.

2. When a user continues to abuse the term of use, a system administrator can delete this user.

Use Case: Deactivate the system

Diagram:



Brief Description:

System administrator can deactivate the Cloud-SOMS in case of an attack to the system in order to prevent data lost.

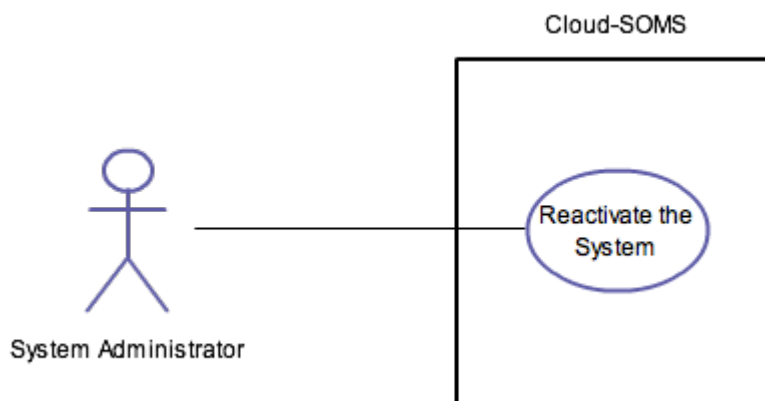
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a system administrator.

1. System administrator checks the Cloud-SOMS so as to make sure that no attack had been done to the system.
2. In case of any destructive attack system administrator can deactivate the system.

Use Case: Activate the system, which is deactivated before

Diagram:



Brief Description:

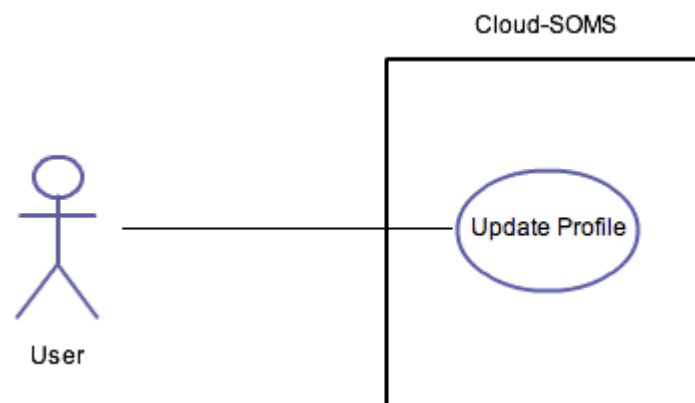
After the system administrator is assured about dismissal of attack, he can reactivate the system from a safe cloud.

Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a system administrator.

1. System administrator checks the Cloud-SOMS so as to make sure that the attack to the system is dismissed.
2. Then he can reactivate the system.

Use Case: Update profile

Diagram:**Brief Description:**

A user can update his/her profile.

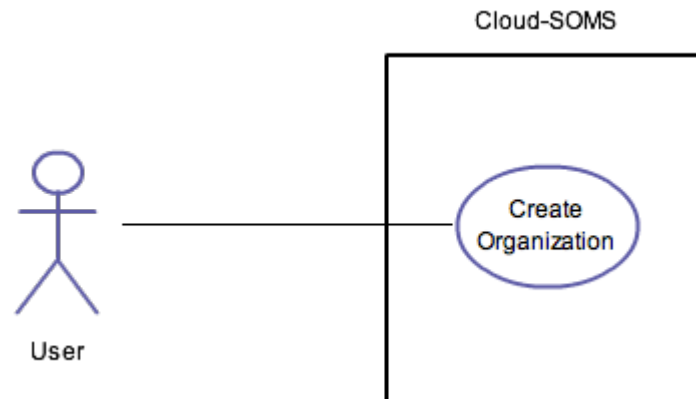
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can update his/her profile.

Use Case: Create an organization

Diagram:



Brief Description:

A user can create an organization.

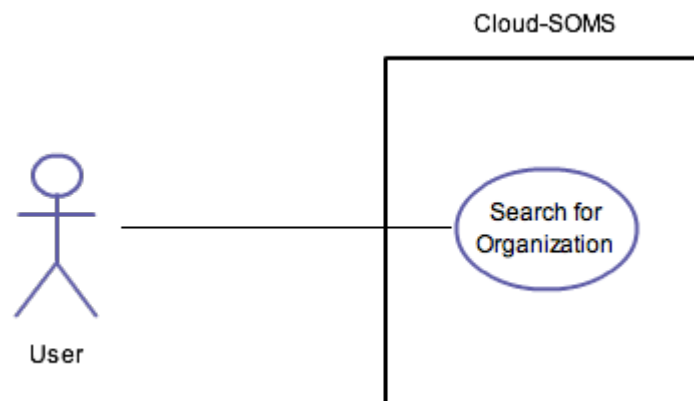
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can create an organization.

Use Case: Search for an organization

Diagram:



Brief Description:

A user can search for an organization.

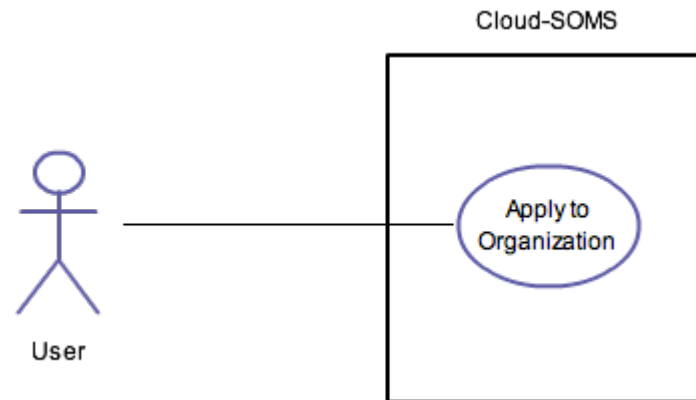
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can search for an organization.

Use Case: Apply to an organization

Diagram:



Brief Description:

A user can apply to an organization through search.

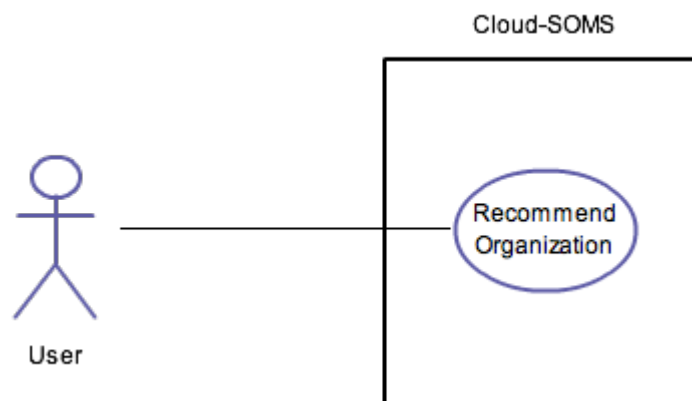
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can apply to an organization.

Use Case: Recommend an organization

Diagram:



Brief Description:

A user can recommend an organization to other users.

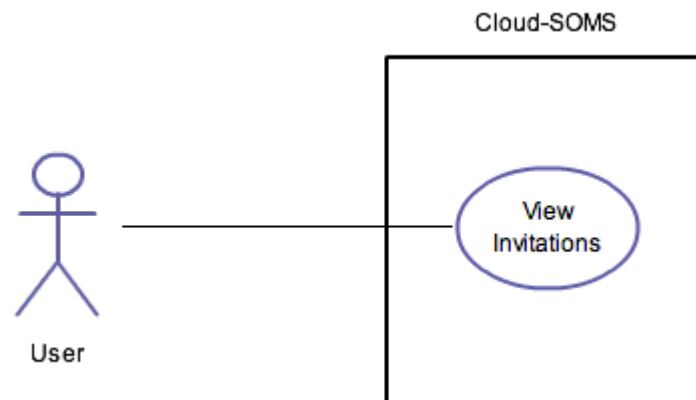
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can recommend an organization to other users.

Use Case: Viewing invitations

Diagram:



Brief Description:

A user can view organizational invitations.

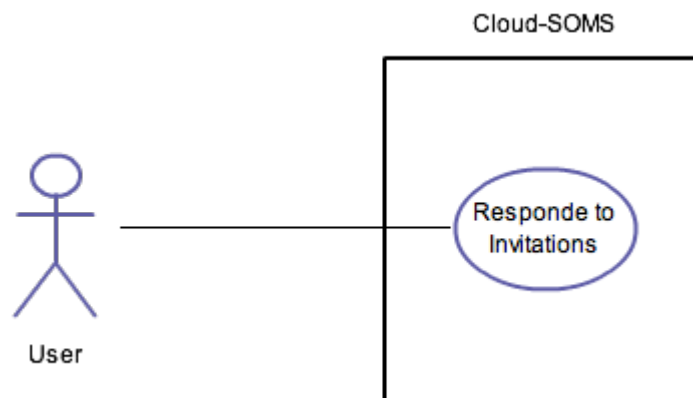
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can view organizational invitations.

Use Case: Respond to invitations

Diagram:



Brief Description:

A user can respond to invitations.

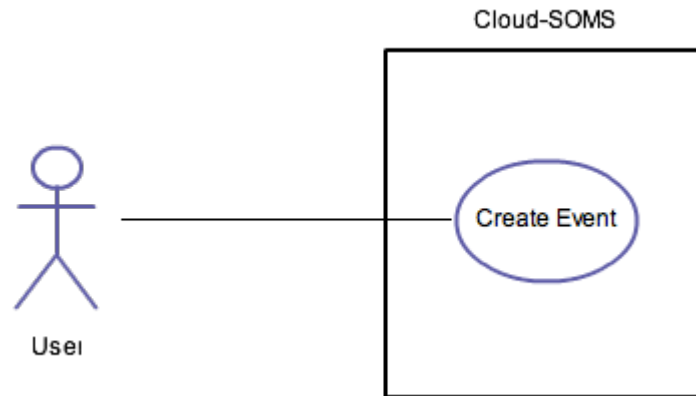
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can respond to invitations either by accepting or rejecting them.

Use Case: Create an event

Diagram:



Brief Description:

A user can create an event.

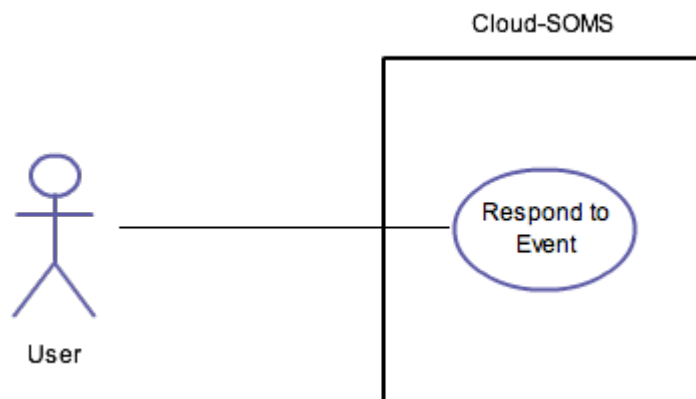
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can create an event.

Use Case: Respond to an event

Diagram:



Brief Description:

A user can respond to an event.

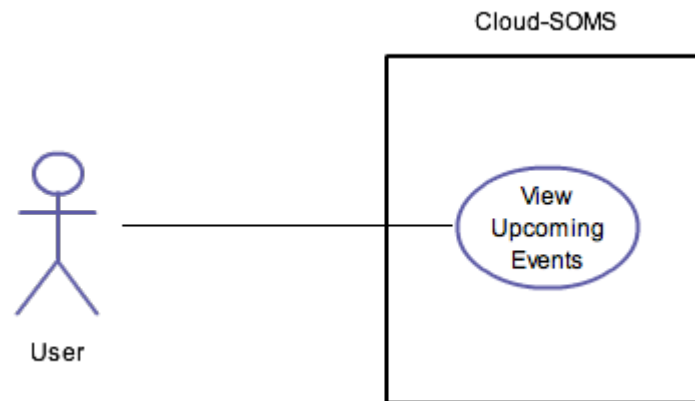
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can respond to events either by accepting or rejecting them.

Use Case: View upcoming events and hot-topics.

Diagram:



Brief Description:

A user can see the upcoming events and hot topics on his/her page.

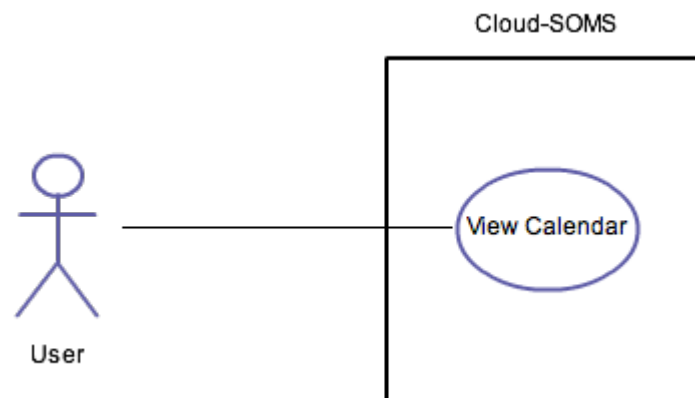
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can see the upcoming events and hot topics by accessing his/her page.
2. Then s/he can act according to these upcoming events and hot topics.

Use Case: View Calendar

Diagram:



Brief Description:

A user has a calendar on his/her personal page on which s/he can adjust the events.

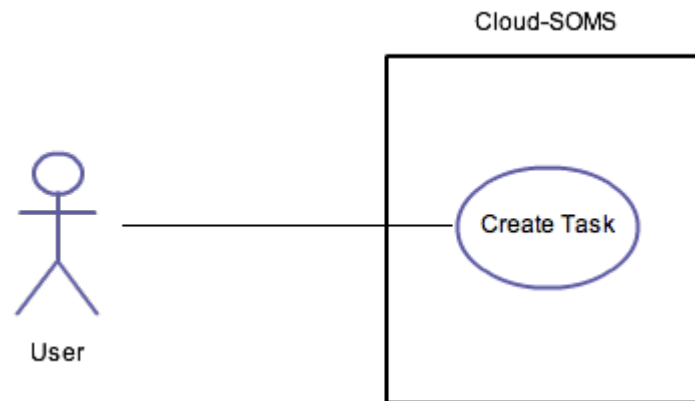
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can reach the personal calendar by accessing his/her page.
2. Then s/he arranges the events on his/her desires.

Use Case: Create a task

Diagram:



Brief Description:

A user can create a task to him/herself.

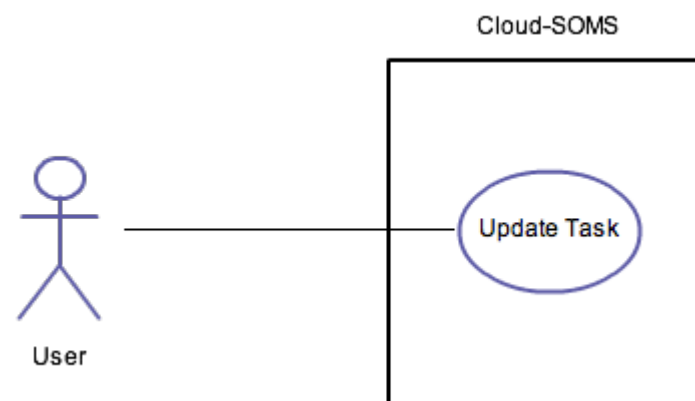
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can create a task to him/herself.

Use Case: Update a task

Diagram:



Brief Description:

A user can update a task.

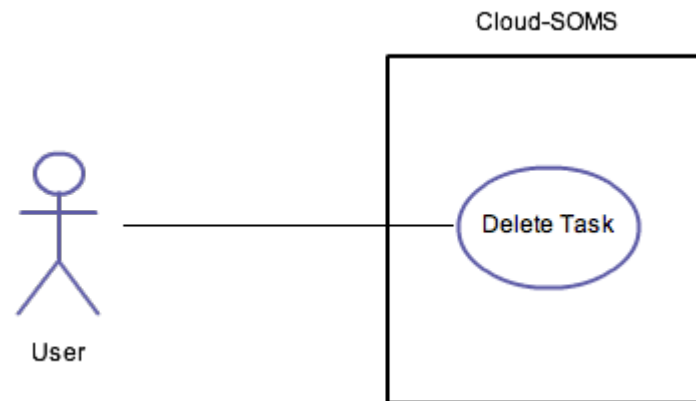
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can update a task.

Use Case: Delete a task

Diagram:

**Brief Description:**

A user can delete a task.

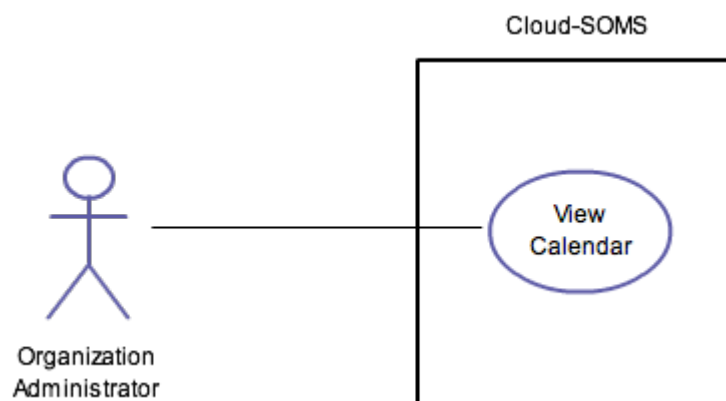
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is a user.

1. A user can delete a task.

Use Case: View organizational calendar

Diagram:



Brief Description:

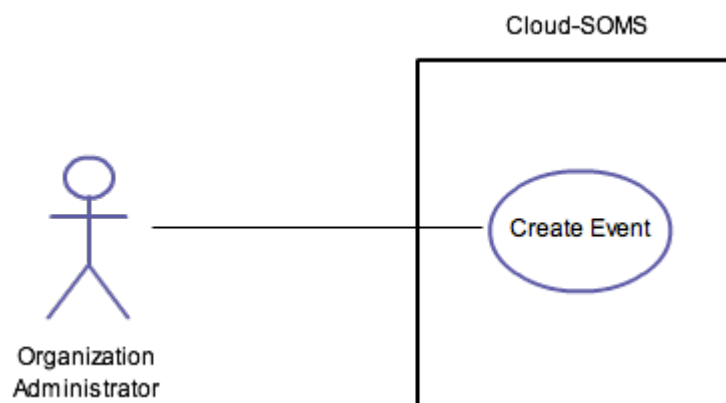
An organization has a calendar on its page on which every member can see the events.

Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. A member can reach the organizational calendar by accessing the organization's page.
2. An organization administrator can see and update the organizational calendar.

Use Case: Creating organizational events

Diagram:**Brief Description:**

An organization administrator can create organizational events.

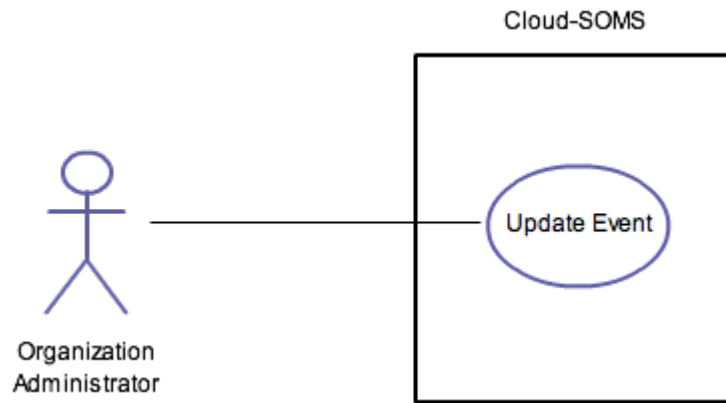
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can create organizational events.

Use Case: Updating organizational events

Diagram:



Brief Description:

An organization administrator can update organizational events.

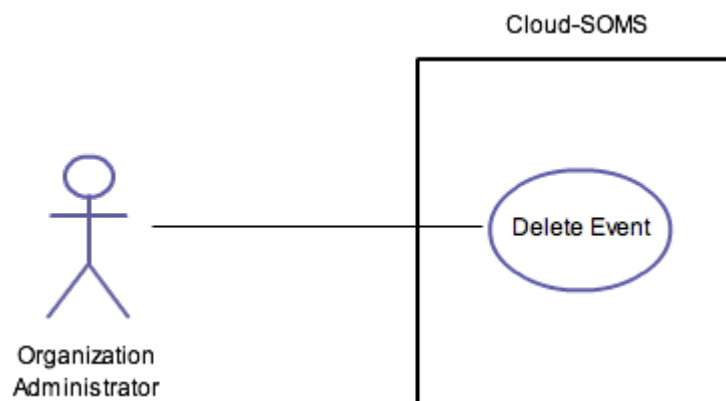
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can update organizational events.

Use Case: Deleting organizational events

Diagram:



Brief Description:

An organization administrator can delete organizational events.

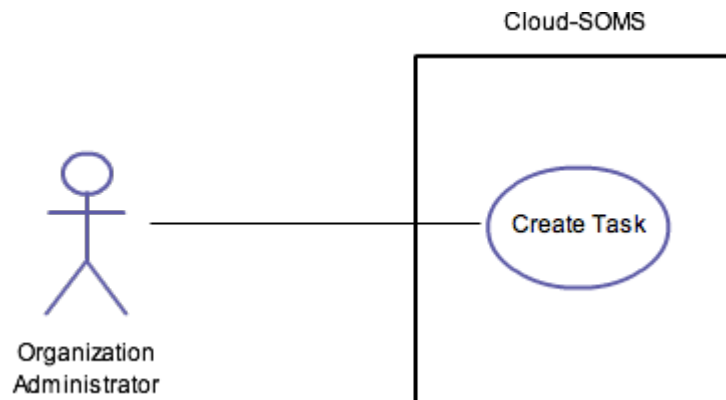
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can delete organizational events.

Use Case: Creating organizational tasks

Diagram:



Brief Description:

An organization administrator can create organizational tasks.

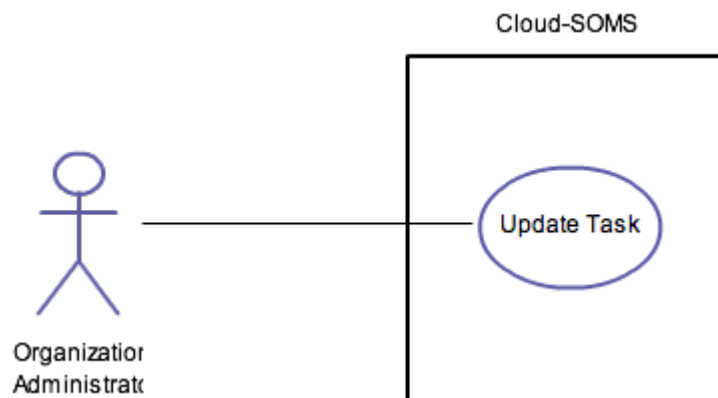
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can create organizational tasks.

Use Case: Updating organizational tasks

Diagram:



Brief Description:

An organization administrator can update organizational tasks.

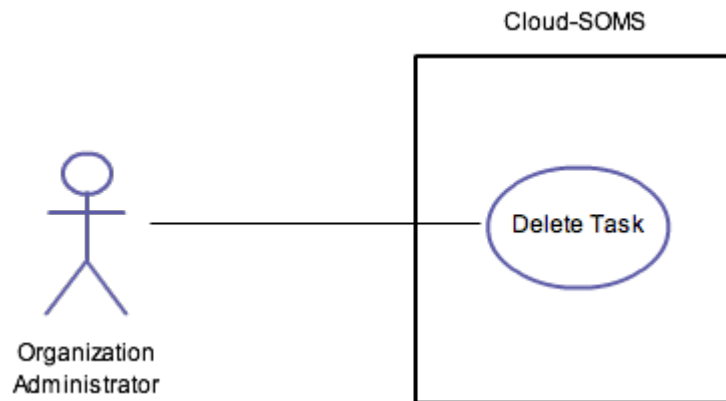
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can update organizational tasks.

Use Case: Deleting organizational tasks

Diagram:



Brief Description:

An organization administrator can delete organizational tasks.

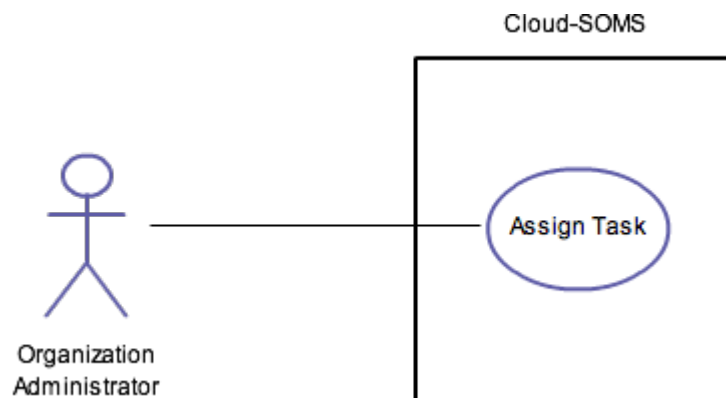
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can delete organizational tasks.

Use Case: Assigning a task to a member

Diagram:



Brief Description:

An organization administrator can assign an organizational task to a member.

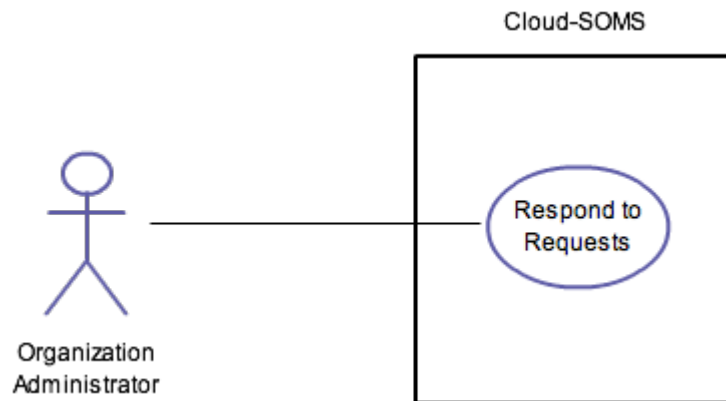
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can assign an organizational task to a member.
2. A member can accept or reject this task.

Use Case: Respond to incoming requests

Diagram:



Brief Description:

An organization administrator can respond to incoming requests either by accepting or rejecting them.

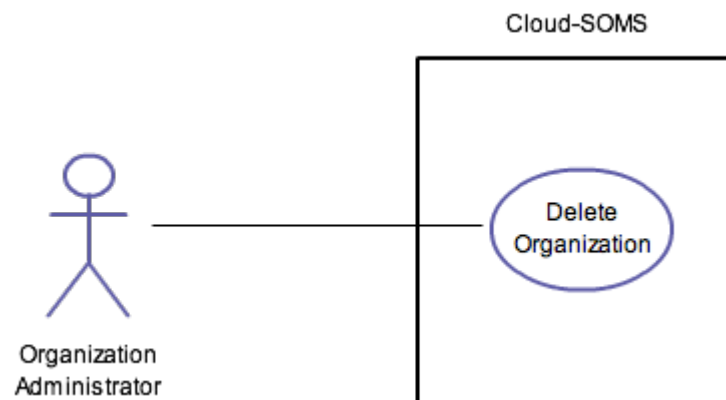
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can respond to incoming requests either by accepting or rejecting them.

Use Case: Delete an organization

Diagram:



Brief Description:

An organization administrator can delete an organization.

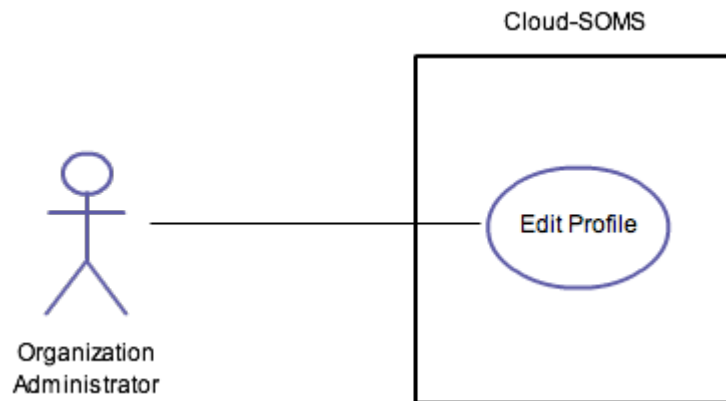
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can delete an organization.

Use Case: Edit organization profile

Diagram:



Brief Description:

An organization administrator can edit the organization profile.

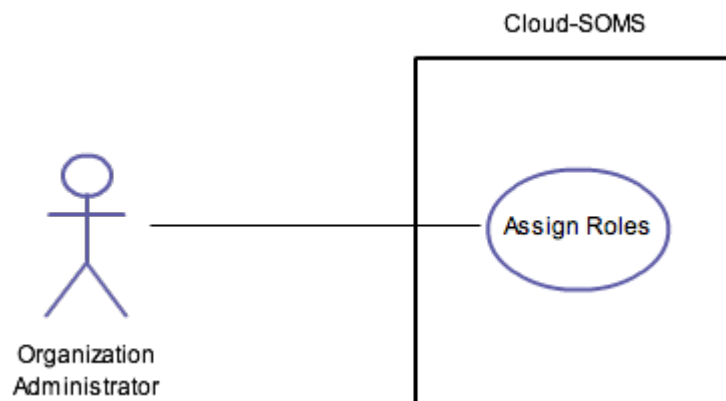
Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can edit the organization profile.

Use Case: Assign roles to members

Diagram:



Brief Description:

An organization administrator can assign roles to members.

Initial Step-By-Step Description:

Before use case can be initiated, the Cloud-SOMS should assure that the logged-in user is an organization administrator.

1. An organization administrator can assign roles to members.

2.3. Design and Implementation Constraints

Data, which includes information regarding of users and organizations, should be secured against malicious deformations. Data should not be corrupted in case of system crash or power failure. Google Big Table is used for data storage. Google App Engine's limitations and quotas can be seen from tables below. The software requires a modern web browser such as Mozilla Firefox, Google Chrome for connection between users and Cloud-SOMS. Since Cloud-SOMS will work integrated to Google App Engine, Facebook and Twitter, it is dependent to them.

Requests

CPU Time	6.50 CPU hours
Requests	43,200,000
Outgoing Bandwidth	1.00 GBytes
Incoming Bandwidth	1.00 GBytes
Secure Requests	43,200,000
Secure Outgoing Bandwidth	1.00 GBytes
Secure Incoming Bandwidth	1.00 GBytes

Table 1 – Google App Engine Request Quotas

Storage

Datastore API Calls	141,241,791
Datastore Queries	417,311,168
Blobstore API Calls	141,177,600
Total Stored Data	1.00 GBytes
Blobstore Stored Data	1.00 GBytes
Data Sent to Datastore API	72.00 GBytes
Data Received from Datastore API	696.00 GBytes
Datastore CPU Time	2,487.70 CPU hours
Number of Indexes	200

Table 2 – Google App Engine Storage Quotas

Mail

Mail API Calls	7,000
Recipients Emailed	2,000
Admins Emailed	5,000
Message Body Data Sent	0.06 GBytes
Attachments Sent	2,000
Attachment Data Sent	0.10 GBytes

Table 3 – Google App Engine Mail Quotas

UrlFetch

UrlFetch API Calls	657,084
UrlFetch Data Sent	4.00 GBytes
UrlFetch Data Received	4.00 GBytes

Table 4 – Google App Engine UrlFetch Quotas

Image Manipulation

Image Manipulation API Calls	45,273,600
Data Sent to API	562.00 GBytes
Data Received from API	427.00 GBytes
Transformations executed	47,001,600

Table 5 – Google App Engine Image Manipulation Quotas

Memcache

Memcache API Calls	0 of 192,672,000
Data Sent to API	0.00 of 558.00 GBytes
Data Received from API	0.00 of 640.00 GBytes

Table 6 – Google App Engine Memcache Quotas

XMPP

XMPP API Calls	46,310,400
XMPP Data Sent	1,046.00 GBytes
Recipients Messaged	46,310,400

Invitations Sent	100,000
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Table 7 – Google App Engine XMPP Quotas

Channel

Channel API Calls	46,310,400
Channels Created	8,640
Channel Data Sent	1,046.00 GBytes

Table 8 – Google App Engine Channel Quotas

Task Queue

Task Queue API Calls	100,000
Task Queue Stored Task Count	1,000,000
Task Queue Stored Task Bytes	104,857,600

Table 8 – Google App Engine Task Queue Quotas

Deployments

Deployments	1,000
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Table 9 – Google App Engine Deployment Quotas

3. Specific Requirements

3.1. Interface Requirements

3.1.1. System Administrator User Interface

- In the main page there are three links, which are namely User, Organization and Deactivate/Reactivate.
- When User link is clicked user list with edit and delete buttons, and search functions are displayed.
- When Organization link is clicked organization list with edit and delete buttons, and search functions are displayed.

3.1.2. Organization Administrator User Interface

- In the main page Profile, Members, Activities and Calendar links and organization information, requests are shown. When Profile link is clicked organization profile edit page is displayed.
- When Members link is clicked organization member list with View, Edit, Delete and Roles buttons are displayed.

- c. When Activities link is clicked organization events and tasks are displayed with User List, Create, Edit and Delete buttons.
- d. When Calendar link is clicked organization calendar is shown.

3.1.3. User User Interface

- a. In the main page, user information, invitations and Profile, Organizations, Activities and Calendar links are shown.
- b. When Profile link is clicked organization profile edit page is displayed.
- c. When Organizations link is clicked organization list with apply button, and search functions are displayed.
- d. When Activities link is clicked events and tasks are displayed with View, Create, Edit and Delete buttons.
- e. When Calendar link is clicked personal calendar is shown.

3.2. Functional Requirements

3.2.1. View organizations

3.2.1.1. *Description and Priority*

It is one of the most important features of the system. This enables system administrator to maintain the Cloud-SOMS.

3.2.1.2. *Stimulus/Response Sequences*

Data Flow

3.2.1.2.1. Basic Data Flow

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks Organization link to view a list of organizations.
3. He clicks view button to see the information of the desired organization.
4. Then he views the organization, which he wants to view.

3.2.1.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have System Administrator privileges.

3.2.2. Edit organizational information.

3.2.2.1. *Description and Priority*

It is one of the most important features of the system. This enables system administrator to maintain the Cloud-SOMS.

3.2.2.2. *Stimulus/Response Sequences*

Data Flow

3.2.2.2.1. Basic Data Flow

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks Organization link to view a list of organizations.
3. He clicks edit button to edit the information of the desired organization.
4. Then he edits the organization, which he wants to edit.
5. Administrator clicks the save button.
6. Cloud-SOMS saves the organizational information.

3.2.2.2.2. Alternative Data Flows

3.2.2.2.2.1. *Alternate Data Flow 1*

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks Organization link to view a list of organizations.
3. He clicks edit button to edit the information of the desired organization.
4. Then he edits the organization, which he wants to edit in an incorrect way.
5. Administrator clicks the save button.
6. Cloud-SOMS shows an error message.

3.2.2.2.2.2. *Alternate Data Flow 2*

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks Organization link to view a list of organizations.
3. He clicks edit button to edit the information of the desired organization.
4. Then he edits the organization, which he wants to edit in an incorrect way.
5. Administrator clicks the cancel button.
6. Cloud-SOMS returns to the list of organizations.

3.2.2.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have System Administrator privileges.

3.2.3. Delete an organization

3.2.3.1. *Description and Priority*

It is one of the most important features of the system. This enables system administrator to maintain the Cloud-SOMS.

3.2.3.2. *Stimulus/Response Sequences*

Data Flow

3.2.3.2.1. Basic Data Flow

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks Organization link to view a list of organizations.
3. He clicks delete button to delete the desired organization.
4. Cloud-SOMS deletes the organization.

3.2.3.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have System Administrator privileges.

3.2.4. View users

3.2.4.1. *Description and Priority*

It is one of the most important features of the system. This enables system administrator to maintain the Cloud-SOMS.

3.2.4.2. *Stimulus/Response Sequences*

Data Flow

3.2.4.2.1. Basic Data Flow

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks "User" link to view a list of users.
3. S/he clicks view button to see the information of the desired user.

4. Then s/he views the user, which he wants to view.

3.2.4.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have System Administrator privileges.

3.2.5. Edit user information.

3.2.5.1. *Description and Priority*

It is one of the most important features of the system. This enables system administrator to maintain the Cloud-SOMS.

3.2.5.2. *Stimulus/Response Sequences*

Data Flow

3.2.5.2.1. Basic Data Flow

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks User link to view a list of users.
3. He clicks edit button to edit the information of the desired user.
4. Then he edits the user, which he wants to edit.
5. Administrator clicks the save button.
6. Cloud-SOMS saves the user information.

3.2.5.2.2. Alternative Data Flows

3.2.5.2.2.1. *Alternate Data Flow 1*

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks User link to view a list of users.
3. He clicks edit button to edit the information of the desired user.
4. Then he edits the user, which he wants to edit in an incorrect way.
5. Administrator clicks the save button.
6. Cloud-SOMS shows an error message.

3.2.5.2.2.2. *Alternate Data Flow 2*

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks User link to view a list of users.

3. He clicks edit button to edit the information of the desired user.
4. Then he edits the user, which he wants to edit in an incorrect way.
5. Administrator clicks the cancel button.
6. Cloud-SOMS returns to the list of users.

3.2.5.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have System Administrator privileges.

3.2.6. Delete a user

3.2.6.1. Description and Priority

It is one of the most important features of the system. This enables system administrator to maintain the Cloud-SOMS.

3.2.6.2. Stimulus/Response Sequences

Data Flow

3.2.6.2.1. Basic Data Flow

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks User link to view a list of users.
3. He clicks delete button to delete the desired user.
4. Cloud-SOMS deletes the user.

3.2.6.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have System Administrator privileges.

3.2.7. Deactivate the system

3.2.7.1. Description and Priority

It is one of the most important features of the system. This enables system administrator to maintain the Cloud-SOMS.

3.2.7.2. *Stimulus/Response Sequences*

Data Flow

3.2.7.2.1. Basic Data Flow

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks Deactivate button to deactivate the system.
3. Cloud-SOMS becomes passive until system administrator reactivates the system.

3.2.7.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have System Administrator privileges.

3.2.8. Activate the system which is deactivated before

3.2.8.1. *Description and Priority*

It is one of the most important features of the system. This enables system administrator to maintain the Cloud-SOMS.

3.2.8.2. *Stimulus/Response Sequences*

Data Flow

3.2.8.2.1. Basic Data Flow

1. System administrator logs in to Cloud-SOMS.
2. A system administrator then clicks Reactivate button to reactivates the system.
3. Cloud-SOMS becomes active until system administrator deactivates the system.

3.2.8.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have System Administrator privileges.

3.2.9. Update profile

3.2.9.1. *Description and Priority*

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.9.2. *Stimulus/Response Sequences*

Data Flow

3.2.9.2.1. Basic Data Flow

1. User logs in to Cloud-SOMS.
2. The user chooses the Profile link.
3. The user edits his/her profile information.
4. The user clicks the save button.
5. Cloud-SOMS saves the profile information of the user.

3.2.9.2.2. Alternative Data Flows

3.2.9.2.2.1. Alternate Data Flow 1

1. User logs in to Cloud-SOMS.
2. The user chooses the Profile link.
3. The user edits his/her profile information in an incorrect way.
4. The user clicks the save button.
5. Cloud-SOMS shows an error message.

3.2.9.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.10. *Create an organization*

3.2.10.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.10.2. Stimulus/Response Sequences

Data Flow

3.2.10.2.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user clicks to Organization link.
3. The user clicks to Create Organization link.
4. The user enters organization information.

5. The user clicks the save button.
6. Cloud-SOMS creates the organization and updates the status of user as Organization Administrator for the organization

3.2.10.2.2. Alternative Data Flows

3.2.10.2.2.1. Alternate Data Flow 1

1. The user logs in to Cloud-SOMS.
2. The user clicks to Organization link.
3. The user clicks to Create Organization link.
4. The user enters invalid organization information (duplicate name, incorrect information etc.).
5. The user clicks the save button.
6. Cloud-SOMS shows an error message.

3.2.10.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.11. Search for an organization

3.2.11.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.11.1.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user clicks to Organization link.
3. The user clicks to Search Organization link.
4. The user enters an organization name.
5. The user clicks the search button.
6. Cloud-SOMS shows organizations matching the search criteria

3.2.11.2. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.12. Apply to an organization

3.2.12.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.12.1.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user views the organization page.
3. The user clicks to Apply button.
4. Cloud-SOMS sends a request to organizations administrator.

3.2.12.2. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.13. Recommend an organization

3.2.13.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.13.1.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user views the organization page.
3. The user clicks to Recommend button.
4. The user enters email address of another user

5. Cloud-SOMS sends a recommendation to the other user.

3.2.13.2. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.14. Viewing invitations

3.2.14.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.14.1.1. Basic Data Flow

1. The user clicks the link sent to him/her.
2. The user will be redirected to the organization page.

3.2.14.1.2. Alternative Data Flows

3.2.14.1.2.1. Alternate Data Flow 1

1. The user clicks a broken or expired link.
2. Cloud-SOMS shows an error message.

3.2.14.2. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.15. Respond to invitations

3.2.15.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.15.2. Stimulus/Response Sequences

Data Flow

3.2.15.2.1. Basic Data Flow

1. The user is on the organization page to which s/he is invited.
2. The user clicks Accept or Reject buttons.
3. Cloud-SOMS adds user to the organization if the user is clicked Accept.
4. Cloud-SOMS removes the invitation and redirects the user to homepage if the user clicked Reject.

3.2.15.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.16. **Create an event**

3.2.16.1. *Description and Priority*

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.16.1.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user clicks to Activities link.
3. The user clicks to Create Event link.
4. The user enters event information.
5. The user clicks the save button.
6. Cloud-SOMS creates the event.

3.2.16.1.2. Alternative Data Flows

3.2.16.1.2.1. *Alternate Data Flow 1*

1. The user logs in to Cloud-SOMS.
2. The user clicks to Activities link.
3. The user clicks to Create Event link.
4. The user enters invalid event information
5. The user clicks the save button.

6. Cloud-SOMS shows an error message.

3.2.16.2. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.17. Respond to an event

3.2.17.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.17.1.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user clicks Accept or Reject buttons for the event invitation.
3. Cloud-SOMS adds user to the event if the user is clicked Accept.
4. Cloud-SOMS removed the invitation and redirects the user to homepage if the user clicked Reject.

3.2.17.2. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.18. View upcoming events and hot-topics.

3.2.18.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.18.2. Stimulus/Response Sequences

Data Flow

3.2.18.2.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.

2. The user clicks to Activities link.
3. The user clicks to Upcoming Events or Hot Topics link.
4. Cloud-SOMS shows upcoming events if the user clicked to Upcoming Events.
5. Cloud-SOMS shows hot topics if the user clicked to Hot Topics.

3.2.18.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.19. View Calendar

3.2.19.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.19.1.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user clicks to Calendar link.
3. Cloud-SOMS shows the personal calendar of the user.

3.2.19.2. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.20. Create a task

3.2.20.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.20.2. Stimulus/Response Sequences

Data Flow

3.2.20.2.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user clicks to Activities link.
3. The user clicks to Create Task link.
4. The user enters task information.
5. The user clicks the save button.
6. Cloud-SOMS creates the task.

3.2.20.2.2. Alternative Data Flows

3.2.20.2.2.1. *Alternate Data Flow 1*

1. The user logs in to Cloud-SOMS.
2. The user clicks to Activities link.
3. The user clicks to Create Task link.
4. The user enters invalid task information
5. The user clicks the save button.
6. Cloud-SOMS shows an error message.

3.2.20.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.21. **Update a task**

3.2.21.1. *Description and Priority*

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.21.1.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user clicks to Activities link.
3. The user clicks to desired task.
4. The user edits task information.

5. The user clicks the save button.
6. Cloud-SOMS saves the changes.

3.2.21.1.2. Alternative Data Flows

3.2.21.1.2.1. *Alternate Data Flow 1*

1. The user logs in to Cloud-SOMS.
2. The user clicks to Activities link.
3. The user clicks to desired task.
4. The user enters invalid task information
5. The user clicks the save button.
6. Cloud-SOMS shows an error message.

3.2.21.2. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.22. **Delete a task**

3.2.22.1. *Description and Priority*

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.22.1.1. Basic Data Flow

1. The user logs in to Cloud-SOMS.
2. The user clicks to Activities link.
3. The user clicks to desired task.
4. The user clicks Delete button.
5. Cloud-SOMS deletes the task.

3.2.22.2. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

3.2.23. View organizational calendar

3.2.23.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.23.2. Stimulus/Response Sequences

Data Flow

3.2.23.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. The organization administrator clicks to Calendar link.
3. Cloud-SOMS shows the calendar of the organization.

3.2.23.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.24. Creating organizational events

3.2.24.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

Stimulus/Response Sequences

Data Flow

3.2.24.1.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks activities button.
3. Then s/he clicks the event button.
4. S/he can create an event by clicking create button.
5. The Cloud-SOMS saves the changes.

3.2.24.2. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.25. Updating organizational events

3.2.25.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.25.2. Stimulus/Response Sequences

Data Flow

3.2.25.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks activities button.
3. Then s/he clicks the event button.
4. S/he can update an event by clicking update button.
5. The Cloud-SOMS saves the changes.

3.2.25.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.26. Deleting organizational events

3.2.26.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.26.2. Stimulus/Response Sequences

Data Flow

3.2.26.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks activities button.
3. Then s/he clicks the event button.
4. S/he can delete an event by clicking delete button.

5. The Cloud-SOMS saves the changes.

3.2.26.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.27. Creating organizational tasks

3.2.27.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.27.2. Stimulus/Response Sequences

Data Flow

3.2.27.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks activities button.
3. Then s/he clicks the task button.
4. S/he can create a task by clicking create button.
5. The Cloud-SOMS saves the changes.

3.2.27.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.28. Updating organizational tasks

3.2.28.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.28.2. Stimulus/Response Sequences

Data Flow

3.2.28.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks activities button.
3. Then s/he clicks the task button.
4. S/he can update a task by clicking update button.
5. The Cloud-SOMS saves the changes.

3.2.28.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.29. **Deleting organizational tasks**

3.2.29.1. *Description and Priority*

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.29.2. *Stimulus/Response Sequences*

Data Flow

3.2.29.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks activities button.
3. Then s/he clicks the task button.
4. S/he can delete a task by clicking delete button.
5. The Cloud-SOMS saves the changes.

3.2.29.3. *Functional Requirements*

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.30. Assigning a task to a member

3.2.30.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.30.2. Stimulus/Response Sequences

Data Flow

3.2.30.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks activities button.
3. Then s/he clicks the task button.
4. S/he can assign a task by choosing a member from the member list.
5. The Cloud-SOMS saves the changes.

3.2.30.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.31. Respond to incoming requests

3.2.31.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.31.2. Stimulus/Response Sequences

Data Flow

3.2.31.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks Members button.
3. Now s/he can see the request.
4. By clicking this request s/he can either clicks apply or reject button.
5. The Cloud-SOMS saves the changes.

3.2.31.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.32. Delete an organization

3.2.32.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.32.2. Stimulus/Response Sequences

Data Flow

3.2.32.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks profile button.
3. Clicks the delete organization button.
4. The Cloud-SOMS saves the changes.

3.2.32.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.33. Edit organization profile

3.2.33.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.33.2. Stimulus/Response Sequences

Data Flow

3.2.33.2.1. Basic Data Flow

1. The organization administrator goes to organization's main page.
2. Then he clicks profile button.

3. S/he can edit something.
4. The Cloud-SOMS saves the changes.

3.2.33.3. Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.2.34. Assign roles to members

3.2.34.1. Description and Priority

The priority of this function is medium. In this way, users will be provided with an easy to use interface.

3.2.34.2. Stimulus/Response Sequences

Data Flow

3.2.34.2.1. Basic Data Flow

1. The organization administrator clicks Members button.
2. Then he clicks role and assign a role to a member by selecting a member from the member list.
3. The Cloud-SOMS saves the changes.

3.2.34.3. 3.2.1.3 Functional Requirements

REQ 1: The user needs an Internet connection.

REQ 2: The user needs a web browser

REQ 3: The user needs to have a Cloud-SOMS account.

REQ 4: The user needs to have Organization Administrator privileges.

3.3. Non-functional Requirements

3.3.1. Performance requirements

Since our system is available to its users as web pages high performance system is not needed. Any operating system and modern web browser is compatible.

3.3.2. Security Requirements

Since Cloud-SOMS aims to reach billions and millions of people, security is the most important issue that must be considered. To achieve this goal, no one can see another users

information without his or her permission. ACL (Access Control List) is used to construct a secure structure.

3.3.3. Software Quality Attributes

Widely accepted quality standards and the best practices will be applied.

3.3.4. Design constraints

Programming languages and frameworks that are needed to create Cloud-SOMS can be listed as follows:

Python: An interpreted scripting programming language. It is appropriate for web application development and there are lots of web frameworks dedicated to it. Its ease of use and not having steep learning curve makes it suitable for this kind of project.

Google App Engine Framework: It is based on two choices: Python and Java. Being a part of Google infrastructure, it is a cloud-based development environment. Considering its performance/price ratio is highly competitive to its rivals such as Amazon E2C.

Google BigTable: It is a Not Only SQL (noSQL) database. It is easy to learn and use; it also provides consistent interfaces to developers. In addition to these, management of queries is quite efficient and this makes the applications highly scalable.

Query Builder and GQL: There are two alternative ways to create queries for BigTable, which are query builder and GQL. They provide easy to express queries similar to natural language and SQL respectively.

HTML/CSS/JavaScript: The basic ingredients for web applications. Latest improvements on HTML5 and CSS3 will be used.

JQuery: It is a JavaScript library. In its web page it is defined as “a fast and concise JavaScript Library that simplifies HTML document traversing, event handling, animating, and Ajax interactions for rapid web development”. Besides its power, having lots of plugins makes it a desirable choice.

Facebook Python/JavaScript API: The application will be integrated into Facebook. In order to achieve this, these two APIs of Facebook will be utilized.

4. Data Model and Description

4.1. Data Description

Users, organization, event, task objects will be managed and manipulated by Cloud-SOMS.

4.1.1. Data object

Cloud-SOMS system has:

status: state of the system (active or passive) is kept in this field.

system administrator: the list of users who manage the Cloud-SOMS system are kept in this field.

User has:

id: a unique identifier of the user.

username: each user has a unique username.

name: each user has a real name of the user.

invitations: the list of invitation that comes to a user is kept in this field.

organizations: organizations that a user belongs to is kept in this field.

organization roles: the role of a user in an organization is kept in this field.

Organization has:

id: unique identifier of an organization.

name: each organization has a unique organization name.

members: each organization has a member list and this list is kept in this field.

admins: each organization has at least one admin.

requests: requests that come to an organization is kept in this field.

Event has:

id: unique identifier of an event

name: each event has a name

dateTime: each event has a time interval.

place: each event has a place.

guests: the list of users who attend an event is kept in this field.

Task has:

id: unique identifier of a task.

name: each event has a name.

percent: each task has a percent that shows how proportion of work has done so far.

owner: each task is created by an owner.

due date: each task has a due-date.

4.1.2. Complete data model and Relationships

Complete data model and relationship of Cloud-SOMS is shown in the figure below.

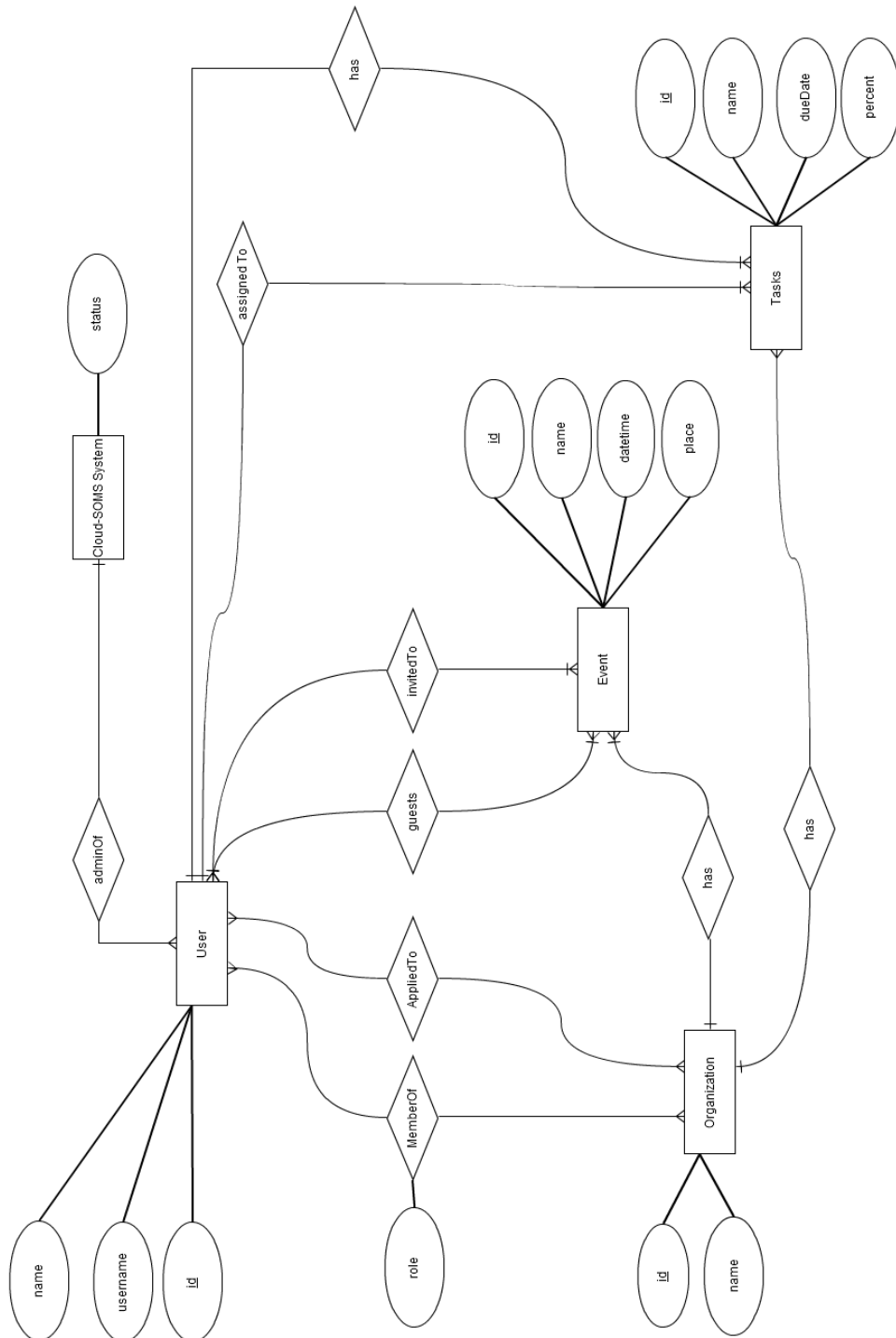


Figure 2 – Complete data model and relationships

5. Behavioral Model and Description

5.1. Description for software behavior

Description of behavior of Cloud-SOMS system is described in a detailed way in the figure below.

Login Page	Login Page	Login failed
Login Page	System Administrator Page	System Administrator logs in the system
Login Page	User Page	User logs in the system
Login Page	Organization Page	Organization Administrator log in the system
System Administrator Page	User List Page	System Administrator views user list
System Administrator Page	Organization List Page	System Administrator views organization list
System Administrator Page	System Administrator Page	System Administrator Deactivates the system
System Administrator Page	System Administrator Page	System Administrator Reactivates the system
User Page	Edit Profile Page	User edits his/her profile
User Page	Organization List Page	User views organization list
User Page	Calendar Page	User views calendar page
User Page	Activities Page	User views activities page
Organization Page	Edit Profile Page	Organization Administrator edits his/her profile
Organization Page	Member List Page	Organization Administrator views member list
Organization Page	Activities Page	Organization Administrator views activities page
Organization Page	Calendar Page	Organization Administrator views calendar page
User List Page	User Edit Page	System Administrator edits a user
User List Page	User List Page	System Administrator deletes a user
Organization List Page	Organization Edit Page	System Administrator edits an organization
Organization List Page	Organization List Page	System Administrator deletes an organization
Edit Profile Page	User Page	User saves his/her profile
Edit Profile Page	User Page	User cancels editing his/her profile
Organization List Page	Organization List Page	User applies to an organization
Activities Page	Tasks Page	User views tasks
Activities Page	Events Page	User views events
Edit Profile Page	Organization Page	Organization Administrator saves organization profile
Edit Profile Page	Organization Page	Organization Administrator cancels editing organization profile
Edit Profile Page	User Page	Organization Administrator deletes the organization
Member List Page	Role Assignment Page	Organization Administrator assigns a role to a member
Activities Page	Tasks Page	Organization Administrator views tasks
Activities Page	Events Page	Organization Administrator views events

User Edit Page	User List Page	System Administrator saves user
User Edit Page	User List Page	System Administrator cancels editing user
Organization Edit Page	Organization List Page	System Administrator saves organization
Organization Edit Page	Organization List Page	System Administrator cancels editing organization
Tasks Page	Create Task Page	User creates task
Tasks Page	Edit Task Page	User edits task
Tasks Page	Tasks Page	User deletes task
Events Page	Create Event Page	User creates event
Events Page	Edit Event Page	User edits event
Events Page	Events Page	User deletes event
Tasks Page	Create Task Page	Organization Administrator creates task
Tasks Page	Edit Task Page	Organization Administrator edits task
Tasks Page	Tasks Page	Organization Administrator deletes task
Events Page	Create Event Page	Organization Administrator creates event
Events Page	Edit Event Page	Organization Administrator edits event
Events Page	Events Page	Organization Administrator deletes event
Create Task Page	Tasks Page	User saves task
Create Task Page	Tasks Page	User cancels creating task
Edit Task Page	Tasks Page	User saves task
Edit Task Page	Tasks Page	User cancels editing task
Create Event Page	Events Page	User saves event
Create Event Page	Events Page	User cancels creating event
Edit Event Page	Events Page	User saves event
Edit Event Page	Events Page	User cancels editing event
Create Task Page	Tasks Page	Organization Administrator saves task
Create Task Page	Tasks Page	Organization Administrator cancels creating task
Create Task Page	Tasks Page	Organization Administrator assigns task to a member
Edit Task Page	Tasks Page	Organization Administrator saves task
Edit Task Page	Tasks Page	Organization Administrator cancels editing task
Create Event Page	Events Page	Organization Administrator saves event
Create Event Page	Events Page	Organization Administrator cancels creating event
Create Event Page	Events Page	Organization Administrator invites users to event
Edit Event Page	Events Page	Organization Administrator saves event
Edit Event Page	Events Page	Organization Administrator cancels editing event

Table 10 – Behavioral Model

5.2. State Transition Diagrams

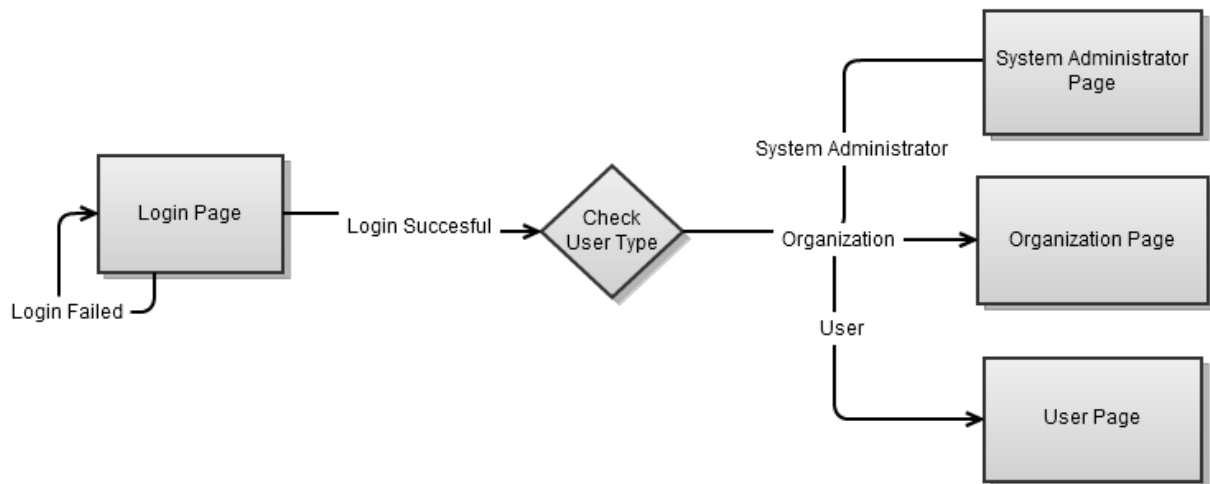


Figure 3 – State Transition Diagram for Login Process

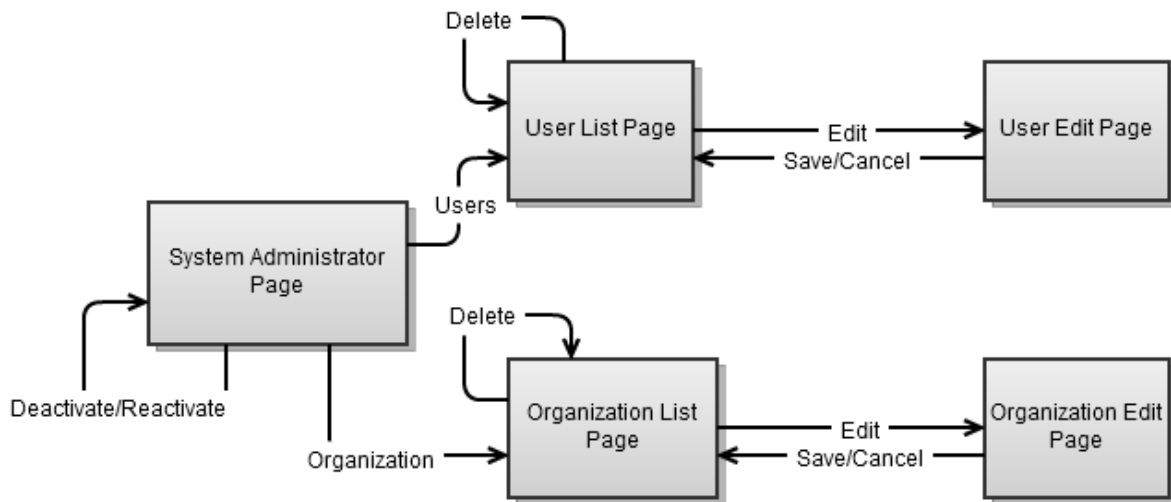


Figure 4 – State Transition Diagram for System Administrators

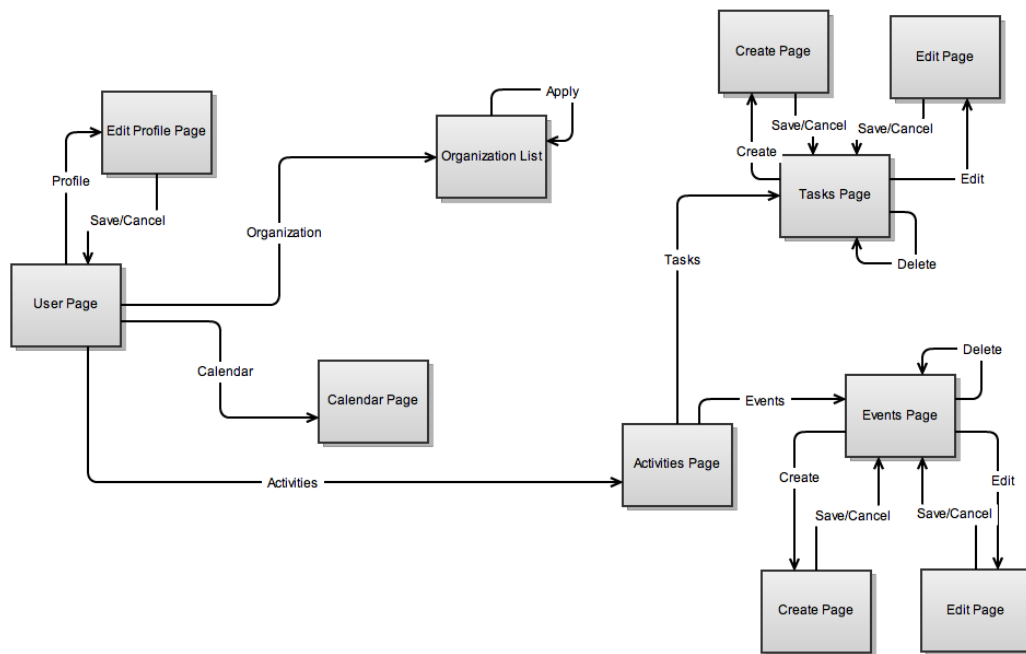


Figure 5 – State Transition Diagram for Users

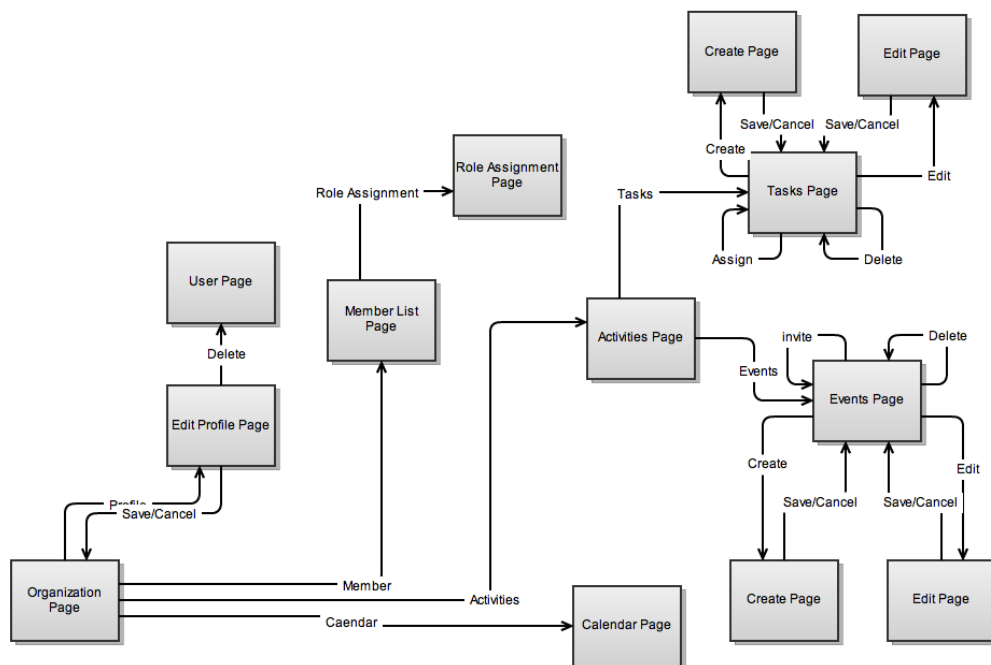


Figure 6 – State Transition Diagram for Organizations

6. Planning

6.1. Team Structure

Team structure of the developer team is a very significant aspect of creating a well-formed, well-designed, organized project. It is also beneficial for maintainability of the project. The Cloud-SOMS team structure is decided in a Democratic Decentralized way after

searching and examining the different structure from various books and using checklists. There is no hierarchy among team members, no decision-making mechanism so that communication among team members can be improved. Each member has equal responsibility and own role in the team. Roles of members can be changed in need. If a member has an exam or homework, other members share this member's work to accomplish the task estimated before. However, this member has to compensate the work s/he has to do.

6.2. Estimation (Basic Schedule)

Basic schedule is shown in Figure 7.

6.3. Process Model

It is a common belief that software engineering origins from project management; hence the process model belonging to project management gains importance. At the very beginning of design stage, it is decided to use sequential structure, which compels us to use waterfall method. However, considering the minor but continuous changes that will be made throughout the process, it is also convenient to use an evolutionary structure, which represents the spiral model. Since customers' requirements and desires may change in time, the implementation and testing may be rearranged with minor modifications. Besides, spiral model is used since requirements are not so well bounded by user. Thus creating new version of both documents and coding is inevitable. Choosing a deteriorated spiral model, some releases and documents will be handed in time like working in incremental model, nevertheless spiral model is chosen to make sure the requirements totally overlap with the product.

7. Conclusion

This analysis report shows software team's approach to on-line team collaboration platform problem. Scenario including some of the details is stated clearly. In addition to project constraints user interaction with the system is defined. Market research has been done so as to obtain the similarities and differences between Cloud-SOMS and other projects done so far. Also, possible users of Cloud-SOMS and their needs are investigated. After doing market research, scheduling and time lining have been done in order to arrange time and effort effectively. Also, expectations of each member from the project and capabilities of each team member have been understood with the help of this analysis.

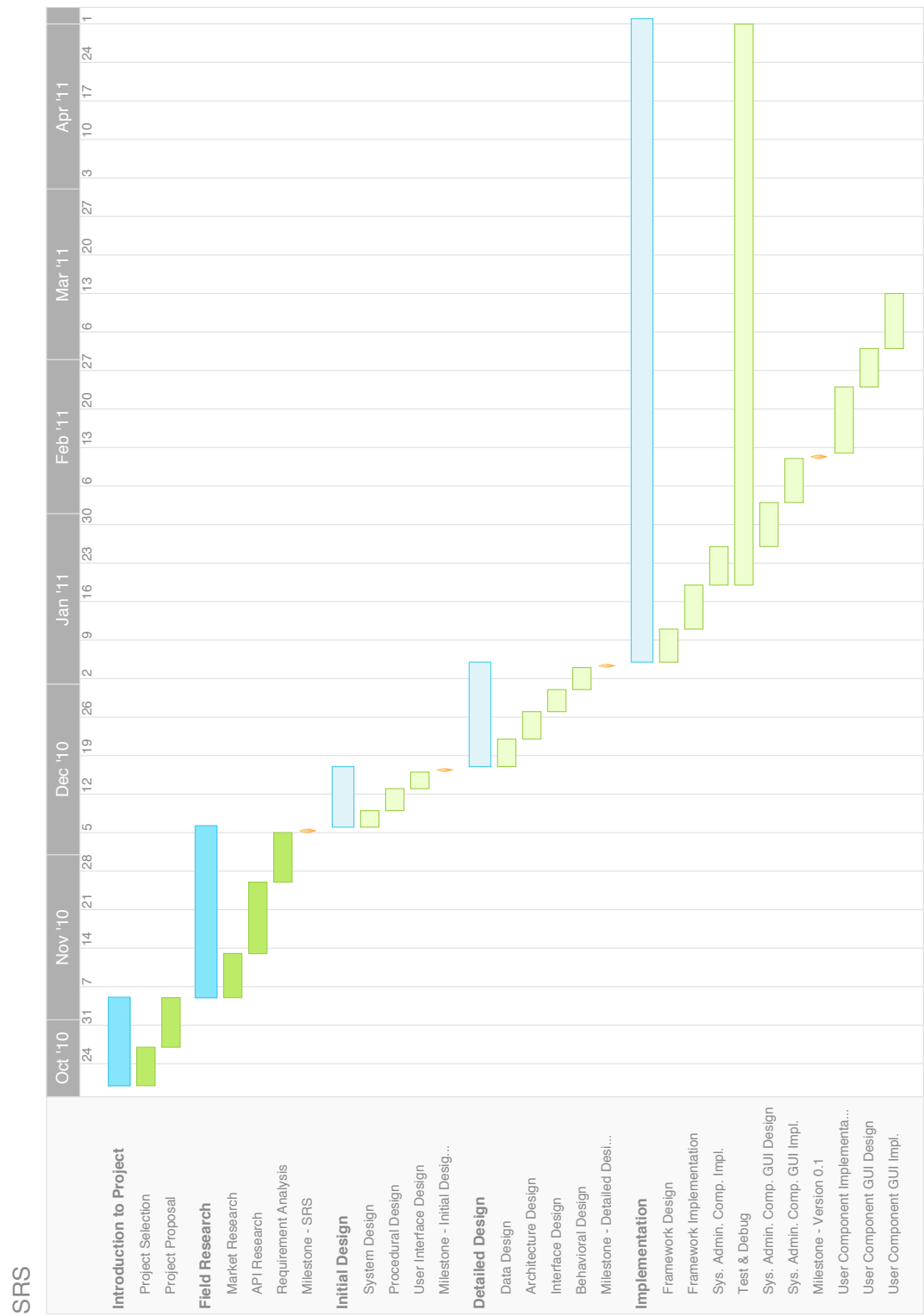


Figure 7 – Gantt chart

SRS

