Tunisian Republic
Ministry of Higher Education and Scientific Research

Private Higher School of Engineering and Technology

Project FullStackJS Report

Collaborative Social Network

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Academic Year: 2020-2021

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General introduction

The role of Internet in personal and professional lives of people has increased dramatically during the last decade and today people use Internet for many different purposes including education, shopping, communication, working, entertainment etc.

Social Networking Sites have emerged as a platform for displaying individual profiles, sharing information, photos, videos, experiences among Internet users as well as forming friendships and sending messages to each-other.

Having started as a display for personal achievements for members only several years ago Social Networking Sites have quickly developed and have mushroomed during the last few years and today there are many global Social Networking Sites as well as sites targeting specific countries,members of specific groups and people of specific professions.

Given the enormous advancement of computer technologies and the intense use of social networks, having a tool allowing the use of these to collaborate is essential.

For the modeling of our project, we followed the SCRUM iterative and incremental methodology.
Our report is organized as follows:

- Chapter 1 titled « Project Framework »
  This chapter is dedicated to the presentation of the work context.
  The needs and specifications of the project will be analyzed in the second chapter.
- Chapter 2 titled « Requirements specification»

We close our report with a general conclusion and perspective.

Chapter 1

Project Context

1.1 Introduction

The project is a complex effort to achieve a very specific objective, having to respect a schedule and a budget ...
The preliminary study is a strategic approach aimed at organizing the smooth running of a project and ensuring the conduct of all the phases that constitute it. A complete and effective study generally leads to the success of a project.
This study will therefore the subject of our first chapter which will be devoted to the general framework, the field study and the study of technologies and products as well as the working method.

1.2 State of the art

Since life is going further and further and technology is growing everyday, We have more and more questions to ask. But unfortunately we are obligated to search several sites to find an answer to our problems. Even google which is the number one search engine in the world do not give us the actual answer to our questions but his role is to refeer other sites which probably could contain solutions, and that makes the search operation considerably longer.
As we mentioned previously that technology is growing, hiring employees for companies is becoming harder.

1.3 Analysis of the existing

1.3.1 Existing solutions

1.3.1.1 StackOverflow

StackOverflow is a question and answer site for professional and enthusiast programmers.
It features questions and answers on a wide range of topics in computer programming.

Figure 1.1: StackOverflow

1.3.1.2 Linkedin

Linkedin is a platform mainly used for professional networking, and allows job seekers to post their CVs and employers to post jobs.

Figure 1.2: Linkedin

1.3.2 Criticism of existing

1.3.2.1 StackOverflow

- You can't create a free account, cheapest offer is 7 Dollars, absence of social networking functionalities (private chat , user status, etc).

1.3.2.2 Linkedin

- Absence of collaborative space.

1.4 Proposed solution

We are considering in this work to make a plateform giving the user the ability to ask any question and to search for answers using advanced filtering making the task easier and much more user friendly.
Also via our plateform we are giving freelancers in our country the chance to work without the need of foreign payment methods. Opting to add international payment methods soon. Last but not least we are giving companies some statics visualisations about their domains and giving them the chance to hire new employees using quizzes for a preselection.

1.5 Technical Requirements

1.5.1 Technical architecture

1.5.1.1 Physical architecture

This application will be based on 3-tiers which is:

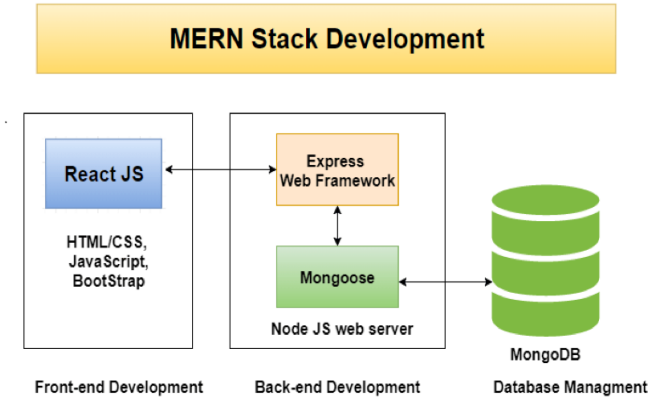

Figure 1.3: MERN Stack Architecture

1.5.1.2 Logical architecture

Model–view–controller is a software design pattern commonly used for developing user interfaces that divides the related program logic into three interconnected elements.

This is done to separate internal representations of information from the ways information is presented to and accepted from the user.
The logical architecture of this application will be based on the MVC model .
These are some examples of MVC models used in the app:

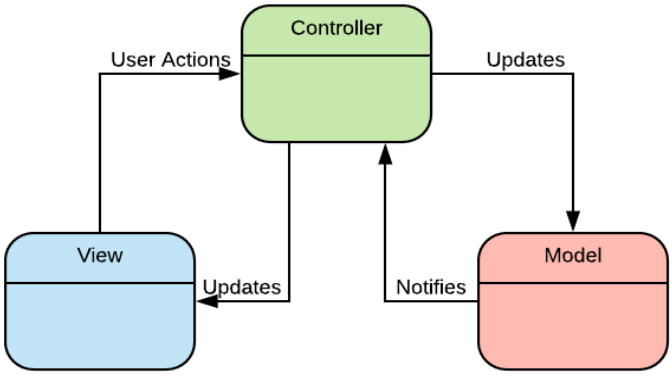

Figure 1.4: MVC Architecture

1.5.2 Languages and frameworks

To conduct our project well and ensure the smooth running of the different phases, we opted for NodeJS as development technology and more specifically React as Framework.

- **NodeJS** :
  NodeJS is a JavaScript runtime built on Chrome's V8 JavaScript engine. NodeJS uses an event-driven, non-blocking I/O model that makes it lightweight and efficient

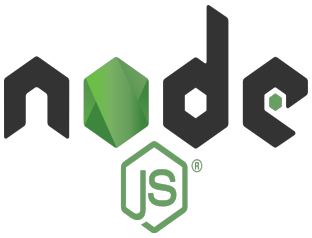

Figure 1.5: NodeJS Logo

- **React** :
  React (also known as React. js or ReactJS) is an open-source, front end, JavaScript library for building user interfaces or UI components.
- **MongoDB** :
  MongoDB is a document-oriented database which stores data in JSON-like documents with dynamic schema.

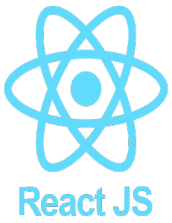

Figure 1.6: React Logo

Figure 1.7: MongoDB Logo

- **ExpressJS** :
  ExpressJS, or simply Express, is a back end web application framework for Node.js, released as free and open-source software under the MIT License.

Figure 1.8: ExpressJS Logo

- **StarUML** :
  StarUML is an open source software modeling tool that supports the UML (Unified Modeling Language) framework for system and software modeling. It is based on UML version 1.4, provides eleven different types of diagram and it accepts UML 2.0 notation.

Figure 1.9: StarUml Logo

1.6 Conclusion

In this chapter we have presented the general framework as well as the domain study of our project, we have unveiled the study of technologies, products and working method that will be used in the next chapters of this report.

Chapter 2

Requirement Analysis

2.1 Introduction

Before developing our application, we suggest starting with the specification phase to properly organize and clarify the tasks of our project and follow a good methodology.
This chapter therefore consists in determining the functional needs while respecting certain constraints corresponding to the non-functional needs of our project.

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2.2 Requirements specification

The analysis of the subject and the various issues raised by existing tools as well as the understanding of user needs made it possible to identify the functionalities offered by our final application.
The constraints to which the system is subjected for its implementation and its proper functioning will be described below as non-functional requirements.

2.2.1 Identification of Functional Requirements

The functional needs and expectations of our application change from one actor to another. To do this, we have described for each actor the functional needs associated with it, in order to solve the problems mentioned in the previous chapter.
The functional needs that our application must meet are summarized in the following points :

- The system allows :
  - Authentication.
  - User Management.
  - Publication Management.
  - Group Management.
  - Messaging.
  - Courses Management.
  - Business Management.

- Comments Management.
- Tokens Management.

2.2.2 Identification of Non-Functional Requirements

These are the technical needs describing all the constraints to which the system is subjected for its realization and its good functioning. The nature of our project requires certain rules to be observed.
For this, all the extensions to be carried out must meet the following needs:

- **Ergonomics and user-friendliness** : The interface of our application must be ergonomic and user-friendly.
  Also, it must be accessible to all users, regardless of their characteristics and their means of accessing information.
- **Reliability** : The results provided by the application must be reliable and effectively reflect the state of the database when it is queried, that is to say when the data is updated.
- **Availability** : The application must be available at all times for use by any user, and must be easily accessible via any computer and mobile device.
- **Security** : The application contains personal and sensitive information, so it must comply with the rules relating to the security of computer systems.
  The access system must be secure based on authentication and password encryption.

2.3 Identification of actors

The actor is the one who interacts with the system.

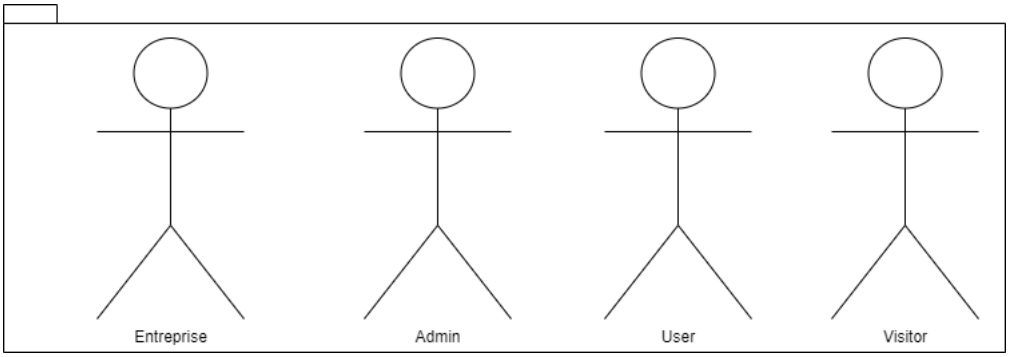
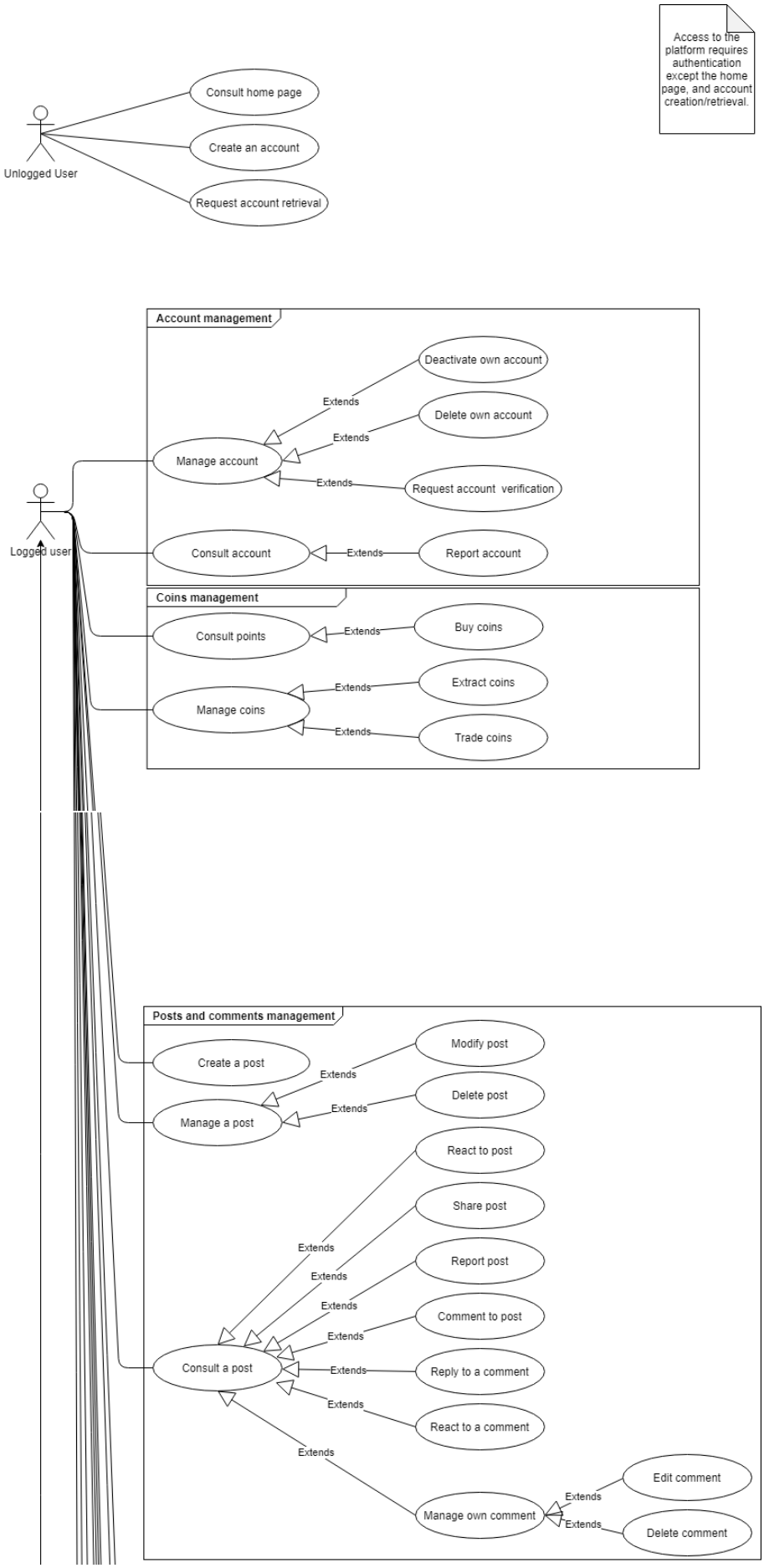
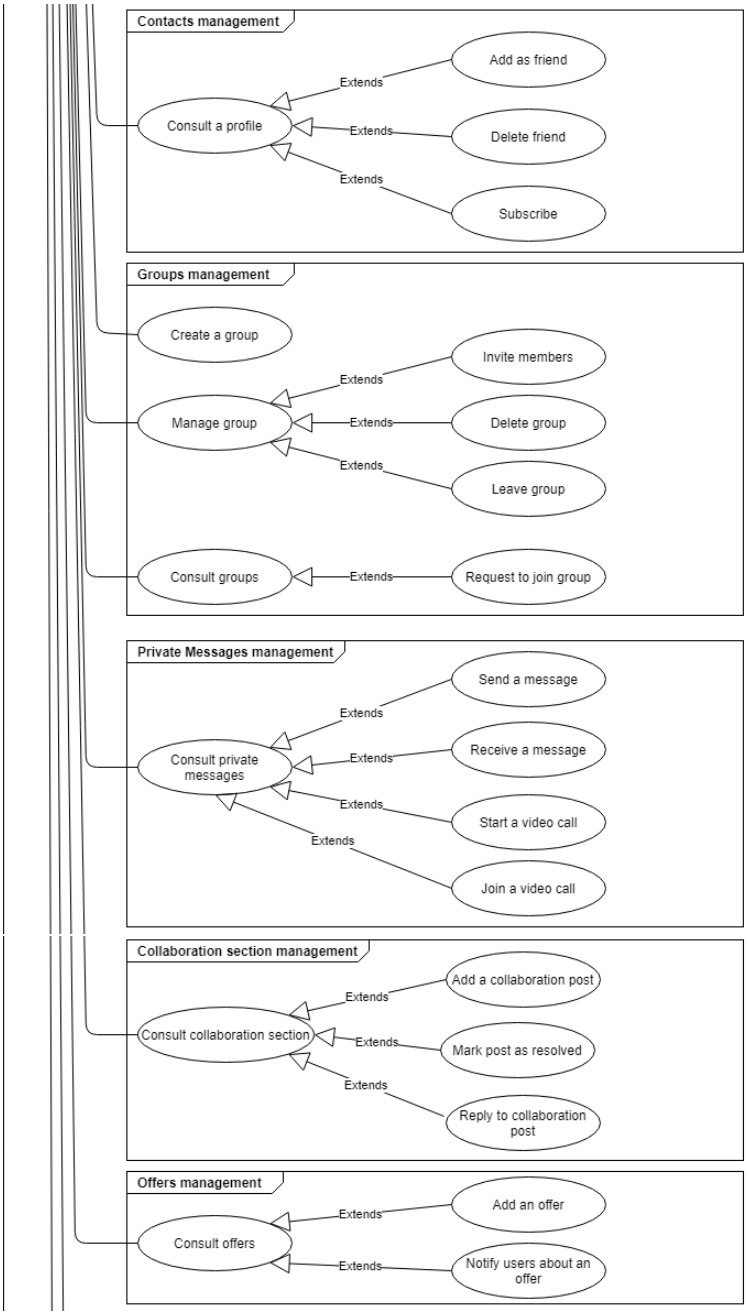


Figure 2.1: Identification of actors

2.4 General Use Cases Diagram

The general use case diagram presents the three actors of our application in interaction with the system, as well as their main actions.
This Figure shows the overall use case diagram of our system.


Access to the platform requires authentication except the home page, and account creation/retrieval.
Unlogged User
Consult home page
Create an account
Request account retrieval
Account management
Deactivate own account
Delete own account
Manage account
Request account verification
Consult account
Report account
Extends
Logged user
Coins management
Consult points
Buy coins
Extract coins
Manage coins
Trade coins
Posts and comments management
Create a post
Modify post
Delete post
Manage a post
React to post
Share post
Report post
Comment to post
Consult a post
Reply to a comment
React to a comment
Edit comment
Manage own comment
Delete comment


Contacts management
Add as friend
Extends
Consult a profile
Extends
Delete friend
Extends
Subscribe
Groups management
Create a group
Invite members
Extends
Manage group
Extends
Delete group
Extends
Leave group
Consult groups
Extends
Request to join group
Private Messages management
Send a message
Extends
Consult private messages
Extends
Receive a message
Extends
Start a video call
Extends
Join a video call
Collaboration section management
Add a collaboration post
Extends
Consult collaboration section
Extends
Mark post as resolved
Extends
Reply to collaboration post
Offers management
Add an offer
Extends
Consult offers
Extends
Notify users about an offer

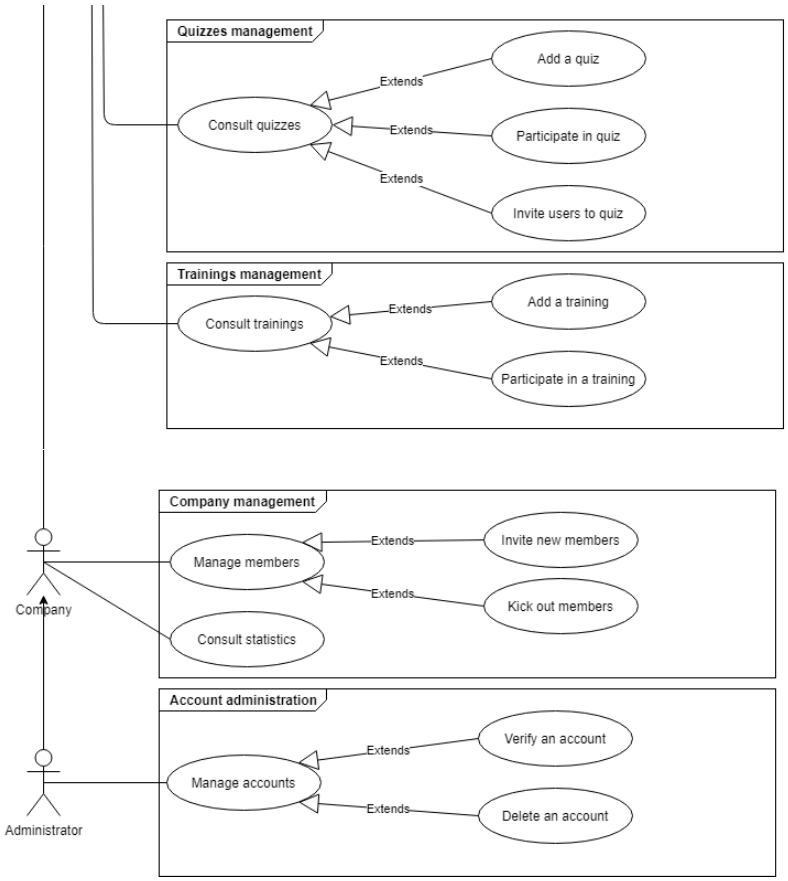


Figure 2.2: General Use Cases Diagram

2.5 Product backlog

The Backlog is a very important artifact in Scrum. This is the set of functional or technical characteristics that constitute the desired product. A Backlog is described by the following attributes:

- ID: This is a unique and auto-incrementing number for each User Story;
- Title: This is the summary of the User Story;
- User Story: This is a short description of the task to be performed and which is defined from the as follows: As <role>, we want to <do something> in order to <get value>;
- The complexity (C) of the realization of each user story is this according to the following Fibonacci. The latter is a sequence of entries, each term of which is the sum of two previous ones, by considering the two initial terms 0 and 1. The start of this sequence is: 0, 1, 2, 3, 5, 8, 13 and infinity;
- Priority (P): This is the importance assigned by the Product Owner to this task (1 is higher priority than 2).

ID	Title	As	I want to	So
1	User Management	User	-Register in the platform -modify my account -Deactivate my account -delete my account -Display an account -request verification of an account -receive an email to confirm my account -report an account -Generate my CV -exchange / buy points	I can have Access to the services offered by the application
		Admin	-Verify an account -delete an account	
	Authentication and password recovery	User	-Authenticate via my platform accoun -Authenticate via my google or linkedin account -Recover my password	
	Coins Management	User	-Buy coins -Extract my coins -Exchange my coins for a service	
2	Publication Management	User	-Add a publication -modify a publication -remove a publication -Display a publication -personalize a publication -act with a post - share a post -report a post	-I can collaborate to solve a problem. -I can Find new work opportunities.
	Comments management		-Add a comment -Reply to a comment -React with a comment -Report a comment -Remove a comment	
	Newsfeed Management		-Display the newsfeed of the collaborative space (display of publications according to my interests and my searches on google) -Display the news feed of job offers (display of publications according to my interests and my searches on google)	
3	Groups management	User	-Add a group-Invite members -Participate in a group -Remove a group	I can Collaborate in a private space
4	Messaging	User	-Send a message -Receive a message -Video discussion	I can communicate with my friends
5	Quiz Management	User	-Add a quiz -Notify the affected user -Prohibit leaving the window of the event	I can test the candidates of a job offer
6	Training Management	User	-Add training -Participate in a training	I can enrich my skills
7	Business Management	Entreprise	-Register -Display statistics	I can search for the best profiles
8	Friends Management	User	-Add a friend -Delete a friend -Subscribe to a user -Display the list of users who can be my friends	I can meet people to making easy the sharing of ideas

Table 2.1: ProductBacklog

2.6 Prototypes

2.6.1 User Interfaces

2.6.1.1 Newsfeed

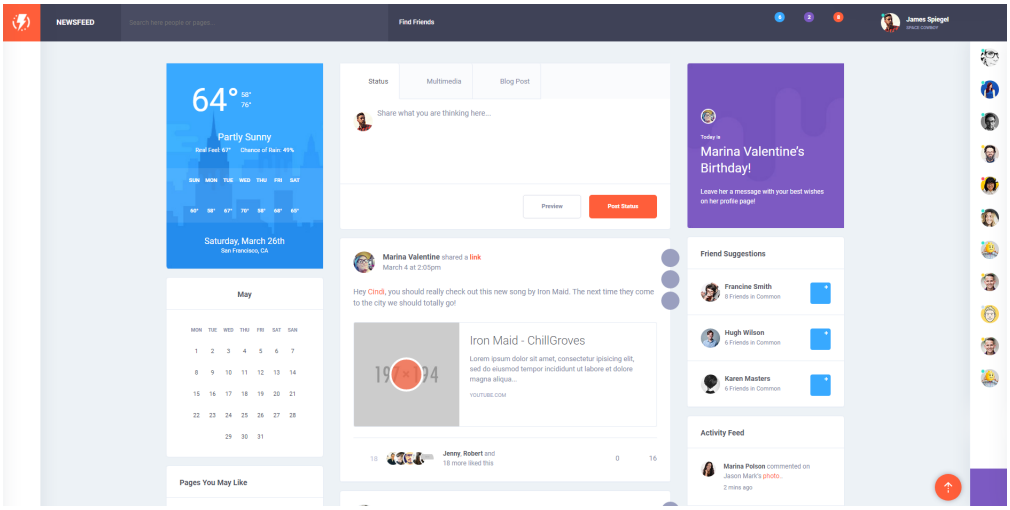


Figure 2.3: Newsfeed

2.6.1.2 Create Topic

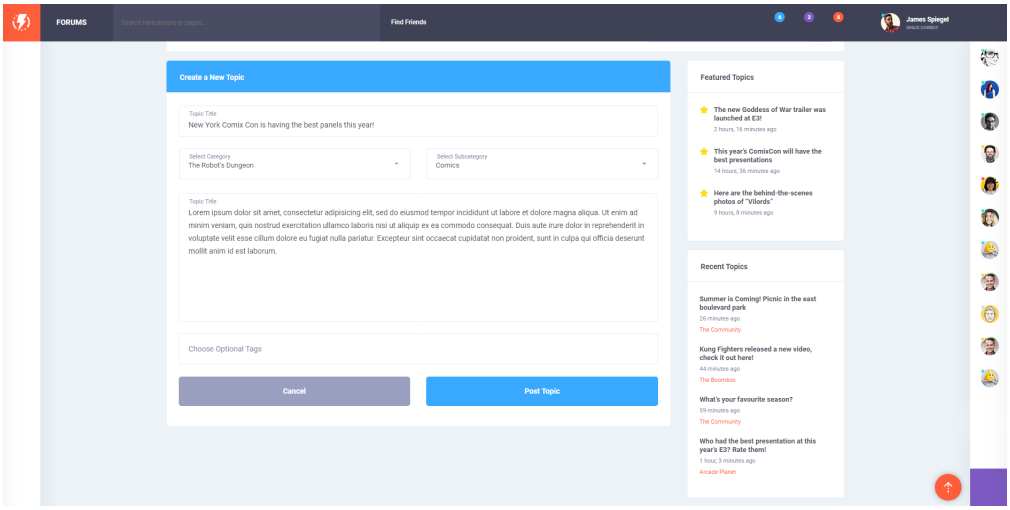


Figure 2.4: CreateTopic

2.6.1.3 Profile Settings

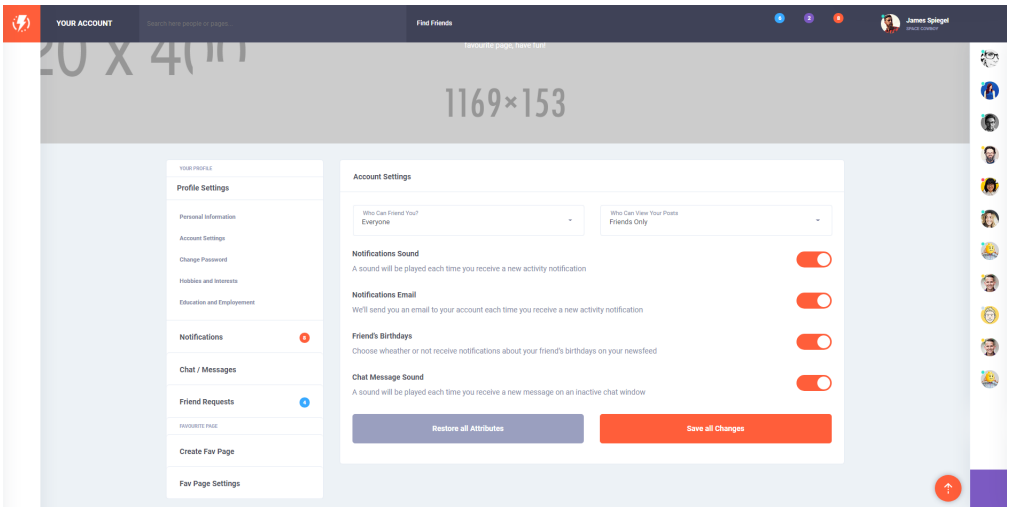


Figure 2.5: Profile Settings

2.6.1.4 Job Offers

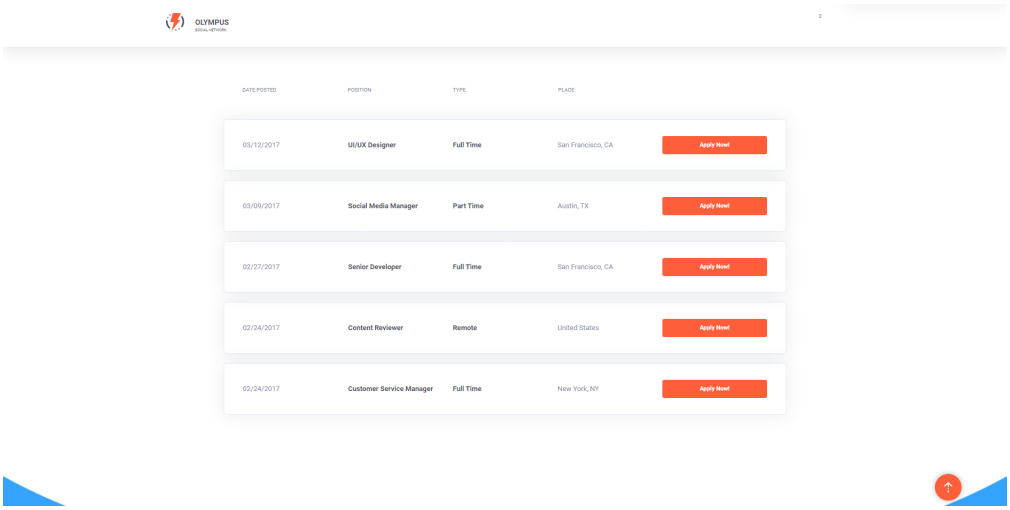


Figure 2.6: Job Offers

2.6.2 Enterprise Interface

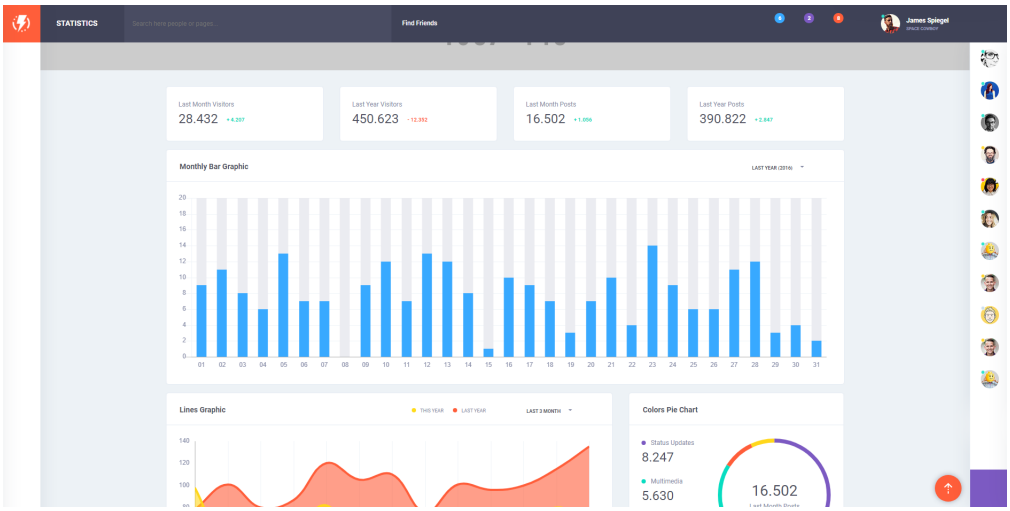


Figure 2.7: Business Dashboard for statistics

2.6.3 Logo

Figure 2.8: Cubicle Logo

2.7 Conclusion

In this chapter, we have presented the methodologies and approaches adopted, the Product Backlog, the different functional and non-functional needs of our application.