

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING  
THE UNIVERSITY OF TEXAS AT ARLINGTON**

**PROJECT CHARTER  
CSE 4316: SENIOR DESIGN I  
FALL 2020**



**TEAM ABCD  
UTA ACM WEBSITE**

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## REVISION HISTORY

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|----------|------------|----------------|-------------------|
| 0.1      | 09.30.2020 | SA             | document creation |
| 0.2      | 10.04.2020 | KT             | draft             |
| 0.3      | 10.05.2020 | SA, BI, AS, KT | sprint 1 release  |

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## 1 PROBLEM STATEMENT

The problem with the current ACM Chapter website at the University of Texas at Arlington does not function properly. The website is limited, it does not take and store user-input. We want to fix the current problems and add extra functionality to make it a working and presentable website.

## 2 METHODOLOGY

The problem with the website is that it does not store any information and is has limited functionality. We are going to build a database that will store user's account information since the current ACM website does not do that. The database will store everything from a person's contact to billing information. We are going to add an area where user's can post and communicate with other users like a blog. We will be adding a paid member option, that will give perks that the general member option does not offer. We want UTA's ACM website to be a fully functioning website.

## 3 VALUE PROPOSITION

The new website would add more convenience for ACM chapter visitors at UTA and allows the users and sponsors to see what progress is being made in particular areas. In addition, the user have access to website calendars which potentially could attract new members at ACM. The website has a feature where a sponsor can offer projects for students which can be very beneficial for the university and the students. This website will automate almost all the works that is currently being done by actual person. The maintenance cost of the website will be minimal as compared to current payroll to organize the tasks. In addition to that, the website database will have the current contact information of the members and allows a easier communication with members and sponsors.

## 4 DEVELOPMENT MILESTONES

This list of core project milestones should include all major documents, demonstration of major project features, and associated deadlines. Any date that has not yet been officially scheduled at the time of preparing this document may be listed by month.

Provide a list of milestones and completion dates in the following format:

- Project Charter first draft - October 2020
- System Requirements Specification - October 2020
- Architectural Design Specification - November 2020
- Demonstration of <feature or implementation milestone> - December 2020
- Detailed Design Specification - December 2020
- Demonstration of - January 2021
- Demonstration of <feature or implementation milestone> - February 2021
- CoE Innovation Day poster presentation - April 2021
- Demonstration of <feature or implementation milestone> - March 2021
- Demonstration of <feature or implementation milestone> - April 2021
- Demonstration of all features before final demonstration - May 2021
- Final Project Demonstration - May 2021

## 5 BACKGROUND

The current ACM website for the University of Texas at Arlington is currently just a web page with very little functionalities. It is very limited and also has out-dated information currently. The new website will make changes to the current information and will allow the website owner(ACM chapter at UTA) to make changes to information easily. Both the log-in and sign up do not work at the moment. A majority of the click-able options on the web page do not work. This website will have new functionalities and a secure login and registration system. The page currently does not take payments from the website for subscriptions either, one has to send a check addressed to UTA's ACM chapter. All the subscriptions are managed manually in physical paper records. Initially, the website will have a feature to manage accounts for membership holders. However, payment through website will be available in later version. The record should be manually updated when the members graduate or their memberships expire. There is no easy way to contact all the members other than going through the memberships and contacting members individually. This website will allow the ACM chapter at UTA to contact all the existing members and manage the memberships. The current website of ACM chapter at UTA has not been serving its purpose. The separate effort to do the manual work of managing that a website can do is expensive. The new website can reduce the cost and get all the records digitized. The development team is a team of senior students currently at UTA. The team consists of software engineering and computer science students. The individuals on the team are well informed on their roles and responsibilities.

## 6 RELATED WORK

The state-of-the-art with respect to the UTA ACM Chapter's website are the websites of the other university ACM chapters. These websites are created via website builders like Wix [3] and Squarespace [2] or by the students in the university the chapter resides in. The drawbacks of using a web builder are the expensive subscription plans and the complicated back-end functionalities. These plans can include features such as custom domains, unlimited bandwidth and storage, and the ability to collect payment on the site. With some features requiring the website creator to enroll in higher priced subscription plans. The students at the other chapters' universities created their ACM website from scratch. An option for the customer would be to use one of the existing ACM websites. Although, the drawbacks to this option are that the website would not include all the requirements and specifications for the customer. For example, the University of Houston's ACM website, CougarCS [1], includes several of the customer's requirements, such as a pages to post events and chapter registration. Although, majority other the other ACM chapter websites don't include a section that takes in membership dues or specialized views for each type of user as the customer specified in the requirements. In addition to the lack of requirements, it would take time to understand the preexisting code from the other websites and then add the features the customer wants.

## 7 SYSTEM OVERVIEW

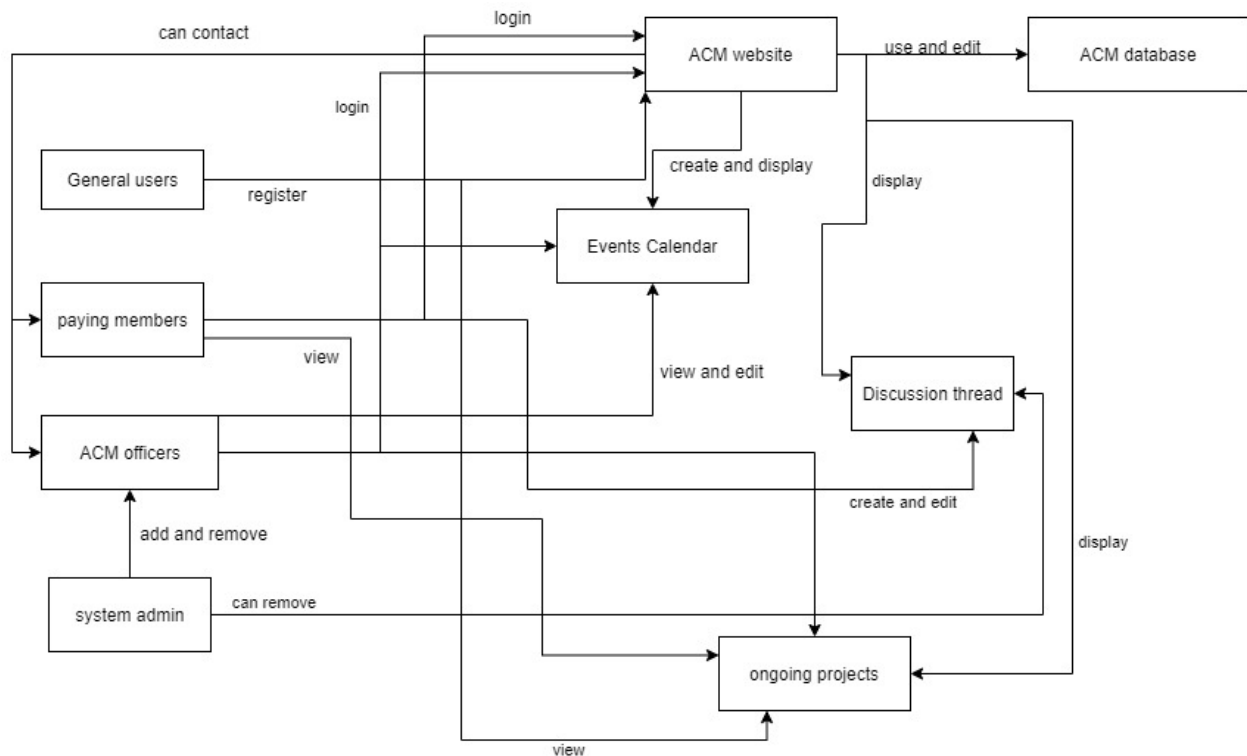


Diagram: ACM Major Components

To meet the client's requirement, we need to implement the following:

1. Events Calendar - where the ACM officers can post events
2. Discussion Thread - where members can interact with each other
3. Ongoing Project - lists the completed projects by the UTA ACM chapter

There are 4 types of users: General users, ACM members, ACM officers, and System Administrator. The General members can register to make an account. ACM members are the paying members that can login to the ACM website, view the ongoing projects, and can create and edit discussion threads. The ACM officers can add remove projects from the project list and can view edit the event calendar. The system administrator can add remove ACM officers and can remove discussion threads.

## 8 ROLES & RESPONSIBILITIES

The stakeholders of the project are the ACM members and officers. Dr. Gieser will be the point of contact from the sponsor side. The team members working on the project are:

Sanjeet Acharya - Team Lead, Database Developer, Backend Developer  
Bojil Ivanov - Database Developer, Frontend Developer  
Andy Sustaita - Quality Assurance Tester, Frontend Developer  
Kierra Thompson - UI Designer, Backend Developer

Each roles' responsibilities are listed:

- Team Lead - maintains contact with the sponsor and manages team members



- User Interface Designer - coordinates the website's appearance
- Database Developer - ensures that database management systems can handle large quantities of data.
- Quality Assurance Tester - ensures that the website is functioning as it should
- Backend Developer - creates, code, and improve the server, server-side applications, and database
- Frontend Developer - produces code for a website so users can see and interact with them directly.

As the project progresses, the role, Team Lead, will rotate to the person of that area of expertise. For example, when the project progresses to the UI Design stage. Kierra Thompson's role will change to Team Lead.

## 9 COST PROPOSAL

The budget for this project is capped at 800 USD. This budget is provided by the project sponsor and is anticipated to cover all aspects of the project. There should be no major expenses for this project because it is a requirement to use open source software on ACM's web server. This means that we will not be paying many expenses for software licenses or for our own server. We are also not expecting to use any lab equipment for developing the website.

### 9.1 PRELIMINARY BUDGET

Table 1 consists of a high level overview of the project budget.

| Item  | Cost in Dollars |
|---|-----------------|
| Software Licenses                               | 0.00            |
| Hardware and Servers                            | 0.00            |
| Tools for Documentation and Architecture Design | 100.00          |
| Resources for Building the Website              | 100.00          |

Table 1: Preliminary Budget

### 9.2 CURRENT & PENDING SUPPORT

The CSE department and project sponsor are giving a total budget of 800 USD. There are no other sources of funding for this project.

## 10 FACILITIES & EQUIPMENT

There will not be any facilities needed for the development of this project. We are not planning on using the engineering lab to work on this project as all of the equipment needed can be installed on a home computer. The equipment needed will be a development environment to work on the website, so that means we will need to set up a database and server for development. Along with that, we will need version control software such as GitHub and Git and software for keeping documentation and tracking requirements in a scrum methodology. For developing this project, we will not need much equipment or hardware. When we deploy the website, ACM will use their own servers for hosting the website so there will be no expenses for that.

# 11 ASSUMPTIONS

The list below contains the 5 most critical assumptions for this project. These assumptions come from the fact that the website will be used by ACM chapter officers and that this website will be developed for ACM’s servers.

- The website will be hosted on ACM’s servers.
- The website will not require any closed-source or proprietary software that will raise expenses, or in other words will be completed through open-source software.
- The website will be designed around UTA’s ACM chapter officers giving out information through the website, students and the general public wanting to view this information, and administrators managing the website’s backend. This will require a login system that gives certain users more privileges than other users.
- The website will be constantly maintained by ACM chapter officers by creating, editing, and deleting content.
- The website will function and be visited by through multiple different browsers and devices.

# 12 CONSTRAINTS

The constraints on this project are due in part because the website will be hosted on ACM’s servers and must follow their rules. Other constraints relate to the senior design course. Below is a list of constraints for this project.

- The website will be completed by May 1st, 2021
- The server will load files through SFTP only.
- ACM’s servers will only allow PHP, MySQL, Tomcat, and Perl as available technologies.
- Total development costs must not exceed \$800.
- The website must be configurable and regularly updated by users with the appropriate privileges.

# 13 RISKS

The following high-level risk census contains identified project risks with the highest exposure. Mitigation strategies will be discussed in future planning sessions.

| Risk description   | Probability | Loss (days) | Exposure (days) |
|--|-------------|-------------|-----------------|
| Imprecise requirements or change in requirements resulting in setback of sprints | 0.15        | 30          | 4.5             |
| Team takes too long to learn the technologies needed to develop the website      | 0.10        | 20          | 2.0             |
| Delays in communication or deployment because of Covid-19                        | 0.50        | 10          | 5.0             |
| Delay in uploading website due to ACM certifying our source code is allowed      | 0.30        | 10          | 3.0             |
| Team runs out of budget and cannot continue development                          | 0.01        | 20          | 0.2             |

Table 2: Overview of highest exposure project risks

## **14 DOCUMENTATION & REPORTING**

### **14.1 MAJOR DOCUMENTATION DELIVERABLES**

#### **14.1.1 PROJECT CHARTER**

The project charter will be drafted before requirements specification. It will be updated if any changes in requirements is made with permission of project manager. The initial version of the project charter will be delivered on October 5, 2020. The final version will be delivered on May 1, 2021.

#### **14.1.2 SYSTEM REQUIREMENTS SPECIFICATION**

System requirements will be drafted in the sprint 2 of the project. The requirements specification will be approved by both development team and the system owner. The requirements may change as per system owner's request and change in budget. The changes in system requirement will be decided by product owner and project manager. The initial version of System requirements will be delivered on October 16, 2020. The final version of the system requirements may change upon customer's requests and will be delivered on May 1, 2021.

#### **14.1.3 ARCHITECTURAL DESIGN SPECIFICATION**

Architectural design specification will be drafted after discussion of the requirements. The architectural design will be agreed upon by both system owner and project manager. In case of change in requirements that will require architecture design to change, the changes will be made accordingly. The initial version of Architectural design specification will be delivered on November 16, 2020. The final version will be delivered on May 1, 2021.

#### **14.1.4 DETAILED DESIGN SPECIFICATION**

Detailed design specification will be drafted in after the architectural design specification. The detailed design specification will change with the change in requirements. The initial detailed design specification will be delivered on December 7, 2020. The final version will be delivered on May 1, 2021.

### **14.2 RECURRING SPRINT ITEMS**

#### **14.2.1 PRODUCT BACKLOG**

The items will be added to product backlog from the SRS on the basis of priority. High priority items will be completed first. The priorities will be set by the system owner with agreement from the project manager. The priorities may change in the later sprints. We will be using "trello" to maintain and share the product backlog with development team and product owner.

#### **14.2.2 SPRINT PLANNING**

Each sprint will be planned in a sprint meeting that may be virtual and physical depending on the situation. There will be eight(8) sprints. Each sprint will have sprint goals.

#### **14.2.3 SPRINT GOAL**

Sprint goal will be decided by the team as whole. The customer will be notified of sprint goals after the meeting.

#### **14.2.4 SPRINT BACKLOG**

The items in product backlog will be moved to sprint backlog with team decision. The backlog will be maintained in "trello". These backlog items will be discussed in brief huddle sessions.

### 14.2.5 TASK BREAKDOWN

The individual tasks will be assigned both voluntarily and according to each team member's specialty. Most of the backend development will be done by all team members. The time spent on tasks will be documented on individual work log and "trello".

### 14.2.6 SPRINT BURN DOWN CHARTS

The team lead in the given sprint will generate the burn down charts. The team leader will have access to individual work logs of team members. The burn down chart will be based on those work logs. The burn down chart will use the format as shown in figure below.

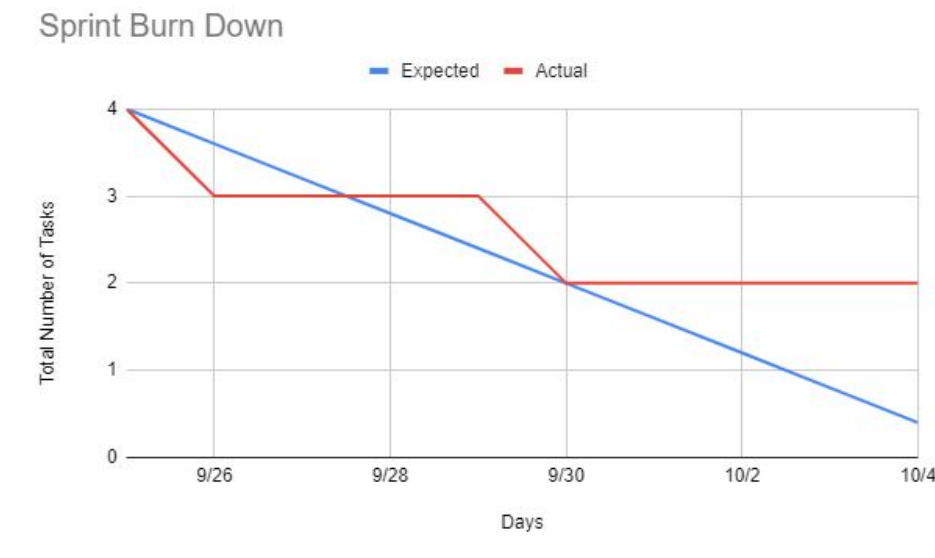


Figure 1: Example sprint burn down chart

### 14.2.7 SPRINT RETROSPECTIVE

Sprint retrospective will be done in a brief team meeting. The meeting will be held before planning following sprint. The retrospective will include the expected velocity vs actual velocity of the project. It will be due every sprint.

### 14.2.8 INDIVIDUAL STATUS REPORTS

Each team individual will report the tasks and time taken to complete the task. The individuals will also report what items may take more time than expected. The tasks may then be broken down and reassigned.

### 14.2.9 ENGINEERING NOTEBOOKS

The engineering notebook should be updated at least once. The further into the project the more documentation that will be written down in the engineering notebook. There should be at least one page per per sprint, and every two weeks a new sprint begins. Prior to each submission of the engineering notebook as a group we will make sure that everyone has there notebook up to date. No witness will be required due to the current pandemic.

## 14.3 CLOSEOUT MATERIALS

#### **14.3.1 SYSTEM PROTOTYPE**

The final system prototype will include Login, registration, event calendar and a basic view of the website. The prototype acceptance test will be done with product owner.

#### **14.3.2 PROJECT POSTER**

The project poster will include project goals, final deliverable, basic overview of the website and team logo. The project poster will be delivered after sprint 4.

#### **14.3.3 WEB PAGE**

A blog post on UTA website will serve as the project web page. It will be accessible to public and it will be delivered after sprint 4. The web page will include team name, timeline, students involved, sponsor, abstract, background, highest requirements, system overview, results, future work, project files and references. The webpage/blog for this project will be found at [www.blog.uta.edu/cseseniordesign](http://www.blog.uta.edu/cseseniordesign)

#### **14.3.4 DEMO VIDEO**

The demo video will show the working features of the website. The video will include footage of a user registering, logging in and viewing the contents in the website. The video will be 4-5 minutes long. The video will cover the features and potential developments in the website.

#### **14.3.5 SOURCE CODE**

Source code will be maintained in version control system. This team will be using GIT version control for the code management. The source code will be provided to the customer at the product delivery.

#### **14.3.6 SOURCE CODE DOCUMENTATION**

This project will use doxygen for documentation of source code. The final documentation will be provided in PDF format.

#### **14.3.7 INSTALLATION SCRIPTS**

The website will be hosted by ACM server. All the files of website will be provided to the product owner at the final product delivery. Everything will be provided with notes to make it easier for the customer to any kind of up keep to the website.

#### **14.3.8 USER MANUAL**

User manual will be provided in a form of a simple webpage. The manual will include content management procedure, basic troubleshooting and contact information of the team. A video will be provided at the end of the project to help the customer if they need further explaining.

## REFERENCES

- [1] CougarCS.
- [2] Squarespace.
- [3] Wix.