**Report -**

**Community Website**

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# Introduction

This Project focuses on the design, evaluation, and Implementation of a community website for the Men’s shed community situated in the Tranquil Test Valley, Hampshire. The need for the project stems from the digital age where online connectivity plays a significant role in preserving and expanding the essence of a community. Avenues for research will span across crucial project management techniques such as requirements gathering and development methodologies, a thorough exploration of the target community’s intricacies, and a comprehensive evaluation of various technologies. These efforts aim to determine the most appropriate path that aligns with the project’s objectives and requirements, ensuring an optimal and tailored solution.

## Background

Community websites have become increasingly popular ever since the introduction of the World Wide Web in the early 1990s. The internet has provided us with the ability to communicate and share information in a much faster and diverse way when compared to the traditional letter and face-to face conversations. E-mails, video-calls, instant messaging, and social media platforms such as Facebook or WhatsApp are now seen as some of our primary forms of communication, allowing us to communicate with people all over the world (Ahuja, 2023). Consequently, this has led to the growing popularity of community websites. These websites provide a common virtual space for like-minded people to gather and discuss topics of interest, ideas and share their passions wherever they are. This evidently allows communities to grow at a much faster pace. Findings of a study show that 66% of people that are looking to make connections with other people with similar interests is one of the primary reasons why they engage in online communities (Beer, 2020). Furthermore, in recent research, conversations on online communities are seen as more meaningful and respectful where people can feel more like themselves (Beer, 2020). The demand for community websites continues to grow with 76% of internet users now participating in online communities (TROIANO, 2022). According to an article published by Nick Torday, many charities see online communities as a key strategic priority over and above other service delivery and charitable events (Torday, 2011). Similarly, this is also true for sports clubs and gamming societies that take advantage of online communities to expand their knowledge and skills with a diverse range of people that promotes diversity and inclusion. Online communities have also proven to have a positive impact on raising awareness, donations for charitable organisations, and on mental health as a form of relaxation (MintAVibe, 2023)

## Rationale and Justification

The Rationale behind this project reflects the previously mentioned advantages that Community websites have to offer. A certain community benefits greatly from being accessible online. A community website will be a safe and secure environment for all its users to see the most up-to-date news and information about their passionate community. Having this will eliminate many hours of conducting a google search to find out the latest news, skills, possibly recommended equipment, and next steps that can be taken to improve themselves within the Community. All the information and/or upcoming events will be presented on the website in an elegant and easy-to-find way, and users will also have the option to post their own news and queries or ask other members questions within the community. As a result, this will make the community more engaging and increase their members in a much more diverse way from users all over the world. In today’s age, Community websites have become a vital and easy form of communication for users to connect and collaborate with one another on a diverse and empowering level. As technology grows these online communities will become even more in demand, with already 76% of internet users participating in online communities (TROIANO, 2022), making the creation of such websites an important skill to have to keep up with the continuously growing digital era.

# Project Objectives

The aim of this project is to design, develop and evaluate a website. The intended audience of the website will be a community for users to share information, communicate and gather people together in a common virtual space. This will involve requirements gathering, project management, research on user needs and evaluation of various platforms and technologies to determine the most appropriate approach for achieving project goals.

**Key objectives:**

# Objective One: Understand Community needs.

1. **Community Understanding**

* Define the Target Community for the Project
* Conduct research to understand the community’s preferences, goals, and expectations for the website.

1. **Gather Project Requirements**

* Conduct Interviews to collect detailed project requirements from the community.
* Document the project requirements to aid the development process.

1. **Research Online Communities**

* Explore the historical development and trends of online communities.
* Compare examples based on the needs of the target community.

1. **Explore and Compare Technologies**

* Evaluate different technologies for building the website, considering factors such as browser compatibility, ease of use, responsiveness, cost, and flexibility.
* Compare and select the most suitable technologies for the project.

**Objective Two: Design the website.**

1. **Initiate front-end design Phase:**

* Begin the design process, translating project requirements into a visually appealing interface.
* Develop wireframes and design mock-ups to later be used in the website Implementation.

1. **Back-end Design:**

* Identify the data structure and relationships required for the website.
* Choose an appropriate back-end language and database for the website.
* Utilize an Entity-Relationship Diagram(ERD) and a Data Flow Diagram(DFD) to Illustrate the relationships between entities in the system and a clear design on how the data will be processed.

**Objective Three: Implement the Website**

1. **Front-end Implementation**

* Implement the Front-end of the website that will be visible to the user, incorporating the finalized design and chosen technologies.
* Ensure responsiveness for optimal user experience on various devices.

1. **Back-end Implementation**

* Develop the back-end Infrastructure, implementing functionalities aligned with the community goals and finalized database design.
* Introduce features such as User authentication and Login.

**Objective Four: Evaluate the Website**

1. **Usability and Design Assessment:**

* Conduct testing to evaluate the usability, design, and overall functionality of the completed website.
* Gather user feedback for future improvement.

**Objective Five: Document Project Findings**

1. **Report on Evaluation**

* Document findings from the evaluation phase, highlighting successes and areas for improvement.
* Use insights for future development cycles.

1. **Document Skills Acquired**

* Showcase skills and lessons learned throughout the project.
* Share insights to effective project management, technology selection, and web design principles.

# Project Management:

A hybrid project management approach will be undertaken for the project. The phases of SDLC will be used for the overall project planning and major milestones, while Scrum will be used within many stages of the SDLC for more iterative development.

## System Development Life Cycle

The System Development Life Cycle (SDLC) is a project management methodology that consists of structured stages involved in a development project from initiation through evaluation and maintenance of the completed product. This can be applied to technical and non-technical systems (Gillis, 2019).

The advantages of applying SDLC for project management include (Clark, 2022):

* Enhanced sight of the development process.
* More efficient time management, planning, and scheduling.
* Increased control over risk management and cost estimation.
* A structured approach to meet customer expectations and improved satisfaction.

The stages of the SDLC process includes:

1. **Initiation**

The purpose of this stage is to determine whether there is sufficient justification for the project to be launched. This stage is dependent on a request for the project to be undertaken.

Regarding the current project, the initiation phase refers to the project proposal and ethics form that was presented to the University on the 6th of October 2023. The project proposal consisted of objectives, timeframe, plan, and description of the proposed project.

1. **Project set up.**

In this stage the project objectives are discussed to determine a way for them to be met.

In the case of this project the objectives are detailed, as can be seen in the report, and an updated timeline is reviewed.

1. **Requirement elicitation and analysis**

The requirements for the project are defined and gathered in this stage, including features and functionality.

Interviews with the community were undertaken to gather the project requirements for the website. This started with a pre-written checklist which was filled out throughout the interview, and additional features were added to the list as more was discussed with the community. Topics that were discussed in the interviews include features, functionality, as well as a priority level on each of the features/functionality that were desired by the community. The completed project requirements list with the responses from the community can be seen in Figure 1 under primary research.

1. **Design**

The proposed system is designed, and plans are made for the development process, following the project requirements gathered. Wireframes and design mock-ups are designed to later be used in the website Implementation.

The data structure and relationships required for the website are also detailed and an appropriate back-end language and database for the website is chosen.

1. **Implementation/Construction**

The system is developed, incorporating the finalized design, and chosen technologies.

1. **Testing**

Acceptance testing is used to evaluate the completed system.

These will then be documented.

1. **Project Closure**
2. **Review and maintenance**

## Scrum Agile Methodology

## Timeline:

|  |  |  |  |
| --- | --- | --- | --- |
| **Personal Project Plan** |  |  |  |
| Project Discussion | 28/09/2023 | 28/09/2023 |  |
| Project Timeline Creation / Project Management | 30/09/2023 | 03/10/2023 |  |
| Project Proposal | 28/09/2023 | 06/10/2023 |  |
| **Research (Literature Review)** |  |  |  |
| Gather project requirements | 01/11/2023 | 08/11/2023 |  |
| Community Background | 08/11/2023 | 15/11/2023 |  |
| Compare technologies and hosting | 15/11/2023 | 25/11/2023 |  |
| Community Website Designs | 25/11/2023 | 01/12/2023 |  |
| Explore Evaluation techniques | 01/12/2023 | 04/12/2023 |  |
| **Project Interim Report** | 13/10/2023 | **04/12/2023** |  |
| ***Design*** |  |  |  |
| Prototype design (Front-end) | 15/11/2023 | 02/12/2023 |  |
| Back-end Design | 08/12/2023 | 22/12/2023 |  |
| ***Development*** |  |  |  |
| Front-end | 15/01/2024 | 05/02/2024 |  |
| Database Implementation | 05/01/2024 | 26/02/2024 |  |
| Responsiveness | 26/02/2024 | 29/02/2024 |  |
| Debugging | 01/03/2024 | 08/03/2024 |  |
| **Evaluation** |  |  |  |
| Usability and Navigation Testing | 08/03/2024 | 13/03/2024 |  |
| Design Evaluation | 13/03/2024 | 15/03/2024 |  |
| Performance testing | 15/03/2024 | 20/03/2024 |  |
| Responsiveness testing | 20/03/2024 | 22/03/2024 |  |
| **Document Findings** | 22/03/2024 | 31/03/2024 |  |
| **Project Dissertation Submission** | 15/04/2024 | **15/04/2024** |  |
| **Presentation Viva** | **16/04/2024** | **26/04/2024** |  |

## Sprint reviews and adjustments

## Contact with the Community

# Research (Literature Review)

## Primary Research

### Target Community

The target community is a growing community called “Men’s Shed” Based in Laverstoke, Hampshire. This community encourages older gentlemen to get out and work with new people on practical projects of their choice, usually involving woodwork. One of the Men’s shed found its home in the serene Test Valley, Hampshire surrounded by the peaceful countryside. This site ceased its opportunity inside a disused building that the Parish Council thought was too expensive to demolish. Neighbouring Men’s sheds include the Bombay Sapphire Distillery, The Overton Black Arrows Archery Club and The Whitchurch Tennis Club. (Mens Sheds - Another in the growing number of Mens Sheds., 2023)

Woodwork may be one of the main projects undertaken by these gentlemen but its not limited to only this, other activities are metalworking, car maintenance, home computer use, cooking electronics, and much more. No particular set of skills is necessary to take part in this community, just a keen interest in practical things, so the community always welcomes new members along with a good supply of tea and coffee. To name a few projects already undertaken these can be as follows: A solid oak seat for a local project, wooden bird & owl boxes, Christmas ornaments in the village of Overton, and replacement of rotten floorboards with new electrics and sockets.

The Community has received lottery funding and has made appearances in the Basingstoke Gazette, the Andover Advertiser, and even on the BBC South News which conducted a report on the Test Valley Men’s Shed. (News about Men in Sheds - Test Valley Men’s Shed, 2023)

### Project Requirements

The website requirements, extracted from interviews with the selected community during the requirements phase of the Software Development Life Cycle (SDLC), are categorized into the following sections::

* Website business goals / purpose:

The purpose of the website is to provide an accessible online location to showcase the communities’ information, current and past projects, and act as a gateway for new members to easily join and get in contact with the community.

* Features and Functionality

|  |  |  |  |
| --- | --- | --- | --- |
| Feature/Functionaity | Description | Priority | Notes |
| Search Bar | A search bar that finds specific words included throughout the website | Interest given | This will be included at the top of the site. |
| Header | The header to display the Communities’ name | Top Priority | A logo may be added along with the header |
| Menu | A horizontal Menu displaying the menu items, links, and pages of the site. | Top Priority | The menu bar with drop-down functionality for sub-menu items to be considered. |
| User Registration | Registration and login functionality that allows users to sign-in | Priority | This can be added on a separate page or as a sidebar. |
| User Profiles | User profiles displays the members details | Interest given |  |
| Forms | Place that allows users to enter data and personal information | Top Priority | To be used primarily for Community contact page |
| Posts | Ability for members to post new community information | Interest given |  |
| Content Feeds | Internal or external feeds, such as Facebook, containing media content | Not a Priority | No Preference given between Internal or external feeds if one was to be added |
| Visual content | Visual content such as a slideshow across the site.  Other content will include images or videos contained in a post or gallery. | Priority | These can be included within a gallery as well on website pages |
| Sidebar | Column placed on the side of a web page to provide secondary links, user information, or login | Some Interest |  |
| Responsiveness | Adaptable across all screen sizes | Top-Priority |  |
| Map | Visual map revealing the locations of the different local Men’s sheds | Interest given |  |
| Documents/Files | Functionality that allows documents and files to be uploaded. | Priority | Page containing communities’ important documents |

Figure One: The table shows the features and functionality requirements gathered for the chosen community’s website, with its correspondent priority level and additional notes.

* Deliverables

The deliverables to the community will include a sitemap, website design mock-ups, as well as the website upon completion.

* Website layout
  1. Pages:
* Homepage
* Men’s sheds
* Possible sub menu items will include each of the different Men’s sheds, containing community information and opening times.
* News
* Projects
* Gallery
* Documents
* Contact
* User Login
* Drop down menu items may include a “ My profile” page and a Login page.
  1. Layout Consistency:

The pages of the community website will remain consistent across all menu items.

The only exceptions may include the Homepage and any possible sidebars to highlight different aspects of the site.

* 1. Colour scheme:

A screenshot of a computer screen

Description automatically generated

(Fig 2. Colour scheme of the website for the chosen Community, generating on coolors.co at <https://coolors.co/212529-050d85-9ecee6>, (Coolors.co, 2023)

* 1. Sitemap

A computer screen shot of a chart

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(Fig 3. Sitemap of the website for the chosen Community, created on app.diagrams.net at <https://app.diagrams.net/#Wb!5rrxWnChz0mB3dANBSlLLqDtQA0hdS9IqbtsUwgaP_n4B04OBSs2Q42oXMG40_WE%2F016RB7G3EB5IQ64IEGXNALMKYFH3LONMDZ>, (Flowchart Maker & Online Diagram Software, 2023)

### Technologies

Technologies and programming languages were carefully chosen to meet project requirements:

#### **Consideration of Content Management System (CMS)**

A content management system is a software that allows users to create, view, modify and manage content on a website (Tomme and erdfisch, 2016)

There are many different types of Content Management systems such as Software as a service(SaaS), Proprietary and Open source (Pearlstein, 2022).

SaaS is a cloud-base CMS integrated with other services that works well for small businesses to obtain a rapid online presence. This CMS provides user support and requires little technical skills though they can be somewhat restrictive. Examples of these are Wix and Squarespace (Pearlstein, 2022).

Proprietary CMS on the other hand is a closed system with built-in features, such as Adobe Experience Manager(AEM). No control is given with this CMS and is a paid platform (Pearlstein, 2022).

Finally, we have Open-source CMS, popular among developers. This CMS offers a lot more flexibility with continuous support and a large developer community, with source code that is free to use and widely available to view and modify (Tuduo, 2023).

The three most popular open-source content management systems are:

* **WordPress:** This a free, simple, and friendly CMS, popular for creating blog-based websites as well as other web-based applications. This CMS requires no coding knowledge and powers over 40% of all websites online though has been known to have additional costs for hosting & plugins as well as having compatibility issues. Some businesses that use WordPress are: The Walt Disney Company, The New Yorker, and BBC America (Rajput, 2013).
* **Joomla:** Joomla, build using PHP and MySQL, provides a range of modules and plugins to create a personalised website designed for people who code and for those who lack web development skills. Simaly to WordPress this CMS is accessible to anyone and has been known to be reliable & flexible, though requires a difficult learning curb and technical expertise Companies that use Joomla are IKEA, Harvard University, Linux.com, etc (Rajput, 2013).
* **Drupal:** Drupal is a highly popular CMS and is the most preferred for complex eCommerce, social networks & government sites, built using PHP, MySQL, or PostgreSQL. This CMS is flexible, provides tools to code custom pages, and various plugins. Though Drupal can also be used for those without coding knowledge, it also requires a difficult learning curb and more technical expertise. Companies that use this CMS are NASA, Tesla, The Australian Government, The British Council, and even The White House (Rajput, 2013).

The advantages and disadvantages of using a content management system can be seen as (Advantages & Disadvantages of Using a Content Management System, 2021):

Advantages:

* Ease of use and easy to Access.
* CMS can be customised to meet business requirements.
* Improved search engine optimization
* Built-in security
* Ability to collaborate with others.
* CMS system supports creation of vast number of user accounts and registration with login functionality.
* No coding experience required for the backend.
* Some CMS systems offer free hosting and domain.
* User support and community of developers

Disadvantages:

* Maintenance: CMS systems may require maintenance on a weekly basis.
* CMS systems load speed can be slow.
* Limited control, with some functionality’s dependant on available plugins
* Cost: Some plugins and functionality on CMS systems require payment.

Based on the project requirements, if a CMS was the be chosen for the project, Drupal is the optimal choice of CMS, providing flexibility through PHP, plugins, and custom pages, proving useful for the community’s visual content requirements and to showcase the Men Shed projects. It also supports user accounts via MySQL for easy registration. However, it has limitations on both front and back ends, and requires ongoing maintenance.

#### **Consideration of building a custom website**

Upon thorough investigation of Content management systems, it becomes clear that opting for custom websites, despite requiring more time to develop, may provide greater flexibility and control to meet project requirements. This approach outlined by crooks (2019), offers the following advantages:

* Cost avoidance: While CMS do offer free platforms, they often come with limited access to features and functions, along with advertisements. This can be avoided by building a custom website.
* Control over hosting services: A custom website offers freedom in sourcing my own hosting service that’s most appropriate for the site requirements.
* More freedom to features and functions: Writing a website with your own code allows for the endless possibilities to customise the features and functionality of the website, to better meet project requirements.
* Code is less likely to be attacked by hackers.
* Helps grow as a programmer / web developer: In the development of a custom website, through programming challenges, valuable coding skills and design techniques will be earned.

In conclusion, after a comprehensive investigation, the decision to opt for custom websites emerges as the preferred method to meet the project requirements for the community website. Though time-consuming, this strategy aligns with the project goals, ensuring flexibility and control over the websites design and functionality, and providing enhanced opportunity for personal growth as a developer.

#### **Front-end languages and frameworks**

The front end of the community website will be developed mostly using html, CSS, and JavaScript, with some features making use of jQuery. The chosen framework for the website is Bootstrap 5.

Bootstrap is a popular HTML, CSS, and JavaScript front-end framework that allows the development of fully responsive websites and web apps. This framework was built in 2011 and since then has become the most used CSS framework and the second most used JavaScript framework (Abdaladze, 2023). It has been reported that Bootstrap was used to build more than half a million websites in the US (Samuel, 2022). Some websites that use Bootstrap are Fox News, Spotify, LinkedIn, Udemy, MasterCard, and Twitter (Samuel, 2022).

Some of the benefits of using the Bootstrap framework are (Jordana, 2021):

* Grid system: The Bootstrap framework includes a grid system consisting of rows and columns, reducing the number of media queries needs to develop a fully responsive website.
* Browser compatibility: The framework is consistently compatible with all the most popular web browsers, making websites very accessible.
* Bootstrap Image system: The framework handles image display and responsiveness using predefined CSS classes such as .img-responsive.
* Documentation: This framework offers some of the best documentation for developers for best practices, tools, and features

#### **Back-end languages and database**

The backend of the site will be developed using languages such as PHP that will draw data from the MySQL database.

PHP is a widely used back-end programming language commonly used to communicate between databases such as MySQL and dynamic web pages (ISLAM, 2022). This programming language , being of the oldest programming languages, comes with a wide community of developers (ISLAM, 2022). Some websites made with PHP include Facebook, Wikipedia, WordPress, and Etsy (Fleury, 2020).

Some advantages that PHP provides, as outlined by ISLAM(2022), are:

* Open-source software: Making the server-side language accessible to everyone.
* Platform Independent: Works efficiently on all platform which, again, will add to making the website more accessible.
* Performance and Stability: This programming language is quick and reliable when connecting to chosen database, with faster loading speeds than any other programming language even thorough slow connection issues.
* Community: As mentioned, PHP comes with a vast community of developers, providing aid to any solution.

PHP and SQL will be used primarily in the development of user registration and login on the community website. Secondary uses will include dynamic web pages, footer, and search engine.

## Secondary Research

### Similar sites

### Website Evaluation techniques

### Search Engine Optimization (SEO)

# Initial Design

* Homepage:

A screenshot of a computer

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# Summary and Conclusion

Upon Completion of the Project, the expected result will be an elegantly designed and fully responsive community website where users will be able to easily access information and create user accounts. This will be achieved using the Bootstrap framework with HTML,CSS, JavaScript, and some jQuery for the front-end of the website, and PHP as the server-side language that will communicate with the MySQL database to satisfy the objectives and the project requirements gathered.

# LSEPI

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