The design of a web application to act as a hub of services for the transgender community in Liverpool

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A person holding a flag

Description automatically generated with medium confidence

Figure 1 A transgender flag being waved at LGBT gay pride march by ‘ink drop’ used under Standard License from Adobe

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# 1. Preparation and planning

## 1.1 Title and scope

### 1.1.1 Title

The design of a web application to act as a hub of services for the transgender community in Liverpool

### 1.1.2 Revised description

There are many vital services available to the transgender community in Liverpool, but it can be a challenge to find them. This is particularly the case for new members of the community who may be in a vulnerable situation, as the point of coming out is a huge life change that may be accompanied by mental health issues and the loss of relationships. This is compounded by transgender healthcare facing profound ignorance (and in some cases outright bigotry) from many GPs, who may attempt to block or delay attempts at medical transition, alongside extreme waiting lists for appointments at Gender Identity Clinics.

The trans community attempts to solve these issues in numerous ways, mostly informal (e.g. by word of mouth in group chats), but two more formal ways are the Liverpool Trans Wiki [reference?] which catalogues and comments on many services that are available; and the Spirit Level peer support group which invites in guests from services to explain what they offer to the community. The proposed web app will seek to build on these solutions and incorporate this specialist knowledge into it.

The web app will be usable on web browsers and on mobile devices using HTML, CSS, and JavaScript and will utilize the OpenStack Trove DBaaS, consisting of several pages. Firstly, a page that contains a map which displays services on it, which will be filterable by type (e.g. mental health or peer support) and when a service is selected more information and contact details will be provided. The map will also provide directions from the user’s location to the selected service. Another page will contain a search function for a database which will return services based on user queries. There will also be a page that will contain an events calendar. The app will be designed such that information will be one way, to protect the user’s privacy and limit the amount of sensitive data stored by the app. Ethical considerations are vital for the project, since some users may not wish to be open about their trans identity and therefore would need to conceal their use of the app. This must be at the forefront of the final product to reassure users that their identity is safe.

The requirements elicitation will also explore another feature, a map which displays the location of gender-neutral toilets at businesses such as cafes, restaurants, and pubs. However, this will be considered for further work beyond this project and will be considered out of scope to keep the amount of development to an achievable level. The scope of the project is for services in Liverpool & Merseyside due to the ability to engage with services and their users directly and due to already existing knowledge. However, if successful the app could be expanded to cover the whole of the UK, it would be a matter of gathering the data rather than any technical challenges.

Scope – what is in and out of scope

## 1.2 Resources

The resources focused on previously involved gathering feedback from services and members of the community, and while this is very important for a full release, for the purposes of this project it has been scaled back. While feedback is important, too much time focused on it would not leave enough time for other aspects of development. This aspect of the resources list has been condensed and other essential resources added.

* Representatives of services e.g. manager of a laser hair removal clinic
  + Can offer feedback about the events system and the ways in which users can contact their service.
  + May offer vital perspectives of how the app effects the community
  + **Risk** (medium impact, medium likelihood): They may be busy and do not wish to engage with giving feedback or may only engage in a limited way. To mitigate this, try to identify which people will be willing to provide feedback and be respectful of their time, to get as much out of any engagements as possible.
* Members of the Liverpool trans community
  + Different members of the community may have different needs regarding accessing services.
  + Could offer feedback on prototypes of the app.
  + May be a source of information about services that should be included.
  + The Liverpool Trans Wiki (citation) may an essential source of community information about the services, as it documents many of them.
  + **Risk** (medium impact, high likelihood): Feedback may be not useful or relevant. To mitigate this, care must be taken when designing questionnaires with a balance between closed and open questions.
  + **Risk** (high impact, low likelihood): They do not wish to engage with giving feedback or only engage in a limited way. To mitigate this, likely contributors will be engaged with early on. If necessary, a change to the project lifecycle could be considered.
* Programming languages
  + JavaScript – proficient enough to tackle much of the proposed features, but some learning may be required as it will likely extend beyond current knowledge.
  + HTML – reasonably proficient, significant problems are not anticipated.
  + CSS – only minimal experience, may need some time to learn and to use trial and error to achieve goals.
  + SQL – a small amount of experience that should be sufficient for a simple database, but for anything more complex some learning may be required.
  + **Risk** (medium impact, high likelihood): Attempting to code non-routine tasks may cause significant delay. To mitigate this, the schedule will adjusted to include skills development as necessary, particularly for CSS.
* Visual Studio Code
  + A commonly used code editor that will be used throughout the project for all coding purposes.
  + **Risk** (low impact, medium likelihood): Since this is the first time using this software, there will be some adjustment time to using it. No mitigation should be required since the primary purpose of the software is very similar to other code editors, and any shortcuts learned will only speed up tasks.
* Cloud storage and version control
  + Microsoft OneDrive and GitHub can be used to backup files in the cloud and continue work between different devices. GitHub also provides version control with branching and reverting.
  + **Risk** (high impact, low likelihood): Data loss in the cloud, this could be due to several reasons including accidental deletion and server failure. This is not very likely but could be catastrophic to the project if significant amounts of work were lost. To mitigate this, copies of the data will be stored locally on multiple machines as well as in the cloud, so there is no single point of failure.
* OpenStack Trove DBaaS
  + A database solution, which is free and open source and will be used to store all the data for the services
  + **Risk** (medium impact, medium likelihood):

Devices – mobile, PC, laptop, tablet

Cordova

Hosting services

## 1.3 Future plan

Restate tasks/subtasks, updated and with feedback from test users

More detail on subtasks

Revisions to plan for TMA01->TMA02

Revisions for TMA02->

# 2. Project work completed

## 2.1 Literature review

### 2.1.1 Requirements

The first part of the literature review was on sources relating to requirements gathering and analysis.

3-4 sources, (include TM354 text book & volaire template??)

### 2.1.2 CSS

The second part of the literature review was on sources related to CSS, so that some learning could take place and the development of the user interface could begin. Prior to this project my experience using CSS was quite limited since the TM352 module did not include anything on it. The goal was to learn enough basic CSS to create a simple, but functional appearance for the app. Since the CSS language is being continually updated, more recent sources were preferred, though some older sources may still be of use since the basics of the language have stayed the same.

Gray (2022) produced an extensive video tutorial for freeCodeCamp on CSS starting at the very basics including fonts and colour changes. It also covers grid layout and flexbox, as well as media queries which may be useful to ensure that the app maintains the intended appearance on different devices. FreeCodeCamp is a charity founded by a teacher to provide free online courses teaching coding and also has other learning materials that may be useful going forward for the project, for example on JavaScript if required. Gray is a lecturer and PhD student at Fort Hays State University and has produced many teaching resources on web development. This source will be a useful starting place to learn the basics of CSS and could be combined with another source such as a textbook to fill out knowledge gaps as needed.

Meiert (2015) in ‘The Little Book of HTML/CSS Coding Guidelines’ provides guidelines for coding, explaining good practise and the reasons for it. For example how to name classes/IDs so they properly reflect the purpose of an element and are ‘as short as possible but as long as necessary’. This will help ensure that the code is consistent and easy to read, both for other people but also for myself as the project goes on, the amount of code expands and there is a need to return to code written months earlier. Similarly the W3C validation service (2023) will help ensure the code is valid and using proper syntax.

These sources will give a solid grounding in CSS, combining audio-visual and written learning. They will also help consider accessibility issues as development continues.

## 2.2 Project Work

### 2.2.1 Requirements elicitation

Some requirements were initially identified by reviewing the project description:

The system shall:

* FR1: display services for the transgender community in Liverpool on a map.
* FR2: provide information and contact details for each service.
* FR3: have tags to show or hide the services displayed on the map.
* FR4: show directions to the location of a selected service.
* FR5: have a searchable database of services.
* FR6: display events related to the services or for the community in a calendar.
* FR7: give the user control over privacy.
* FR8: display the location of businesses with gender neutral toilets on a map.

The next stage was to consult with stakeholders to see if these requirements match with their needs, and how different stakeholders might prioritise different requirements to meet them.

Nilsson & Fagerstrom (2005) suggest constructing a ‘stakeholder and requirements matrix’ which can be used to show “a rich picture of all the stakeholders” and the relative importance of their needs.

Appendix X contains a full copy of the questionnaire that was sent to stakeholders. The questions were designed to line up with each of the requirements previously identified with a feature described that would meet that requirement. The participants were asked how useful the feature would or would not be to them; to rate the importance of it; and if anything could be added to it, as shown in figure x. Some features had additional questions specific to it, for example with the events calendar participants were asked about how they would feel about ways they might interact with it (e.g. if they had to add the events themselves). The goal was to then parse needs that stakeholders might express in their answers and then line up their importance

![Table

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Explanation of questionnaire and choices for elicitation

Refer to lit review

Analysis of results of elicitation

Volaire template

Needs/requirements matrix

Limits of elicitation and what would be needed for a full release

### 2.2.2 User Interface design

During the initial stages of development, Microsoft OneDrive was used as a simple form of version control, to make it easier to keep everything updated when working on the project on different devices. This was done by saving separate folders for the project code noting the date, as shown in figure x. The alternative of using GitHub was not felt necessary at that time, since the project has only a single developer and shouldn’t require much, if any, branching. However, after some several days, it started becoming difficult to keep track of which version was the most up to date as there were three places where the code was stored (PC, Laptop and OneDrive) that didn’t automatically sync up. Therefore, at this point GitHub was used instead, as it is much simpler to keep everything up to date on all devices and branching could be used to preserve specific development states, which might need to be referred to for reflection and analysis. Figure x shows the use of GitHub and some early commits.

Graphical user interface

Description automatically generated

Graphical user interface, text, application

Description automatically generated

On reflection, since CSS did not feature in TM352 and would therefore involve some learning, the schedule was changed so that some of the CSS would be tackled first to give more time to deal with any issues that might arise. Initially, the YouTube video by FreeCodeCamp (reference) provided a basis for learning some basic CSS and then referencing textbooks as needed such as xxx (reference).

The goal was to gain enough knowledge to produce a simple, but effective layout that would maximise screen space to ensure that information is legible to the user. Previously three types of designs were considered, a design similar to google maps, a design with menus that slide in from the sides and a very simplified design and the conclusion was that a balance would have to be struck between investing time on learning how to produce these designs and spending time on other critical aspects of the project.

The first task was to create a simple menu bar and decided to start by using an unordered list to do this, as shown with the markup in figure x. Initially a horizontal bar was attempted, but on reflection this may have taken up unnecessarily screen real estate. So instead, this adapted into a drop down ‘hamburger’ menu utilizing a hidden checkbox as shown in figure x. While this would be adequate, it seemed relatively simple to change this to have it instead pop in from the side rather than drop down to emulate the ‘sliding menus’ design. This opens and closes by tapping/clicking the ‘hamburger’ icon, though the original concept conceived of it also opening using swipe gestures, this is something that could be added later in the project.

The same technique was used to add an info box that pops out from the other side which would contain the information and contact details about a service selected from the map. Since the scripts to implement the map and pins have not yet been implemented, a visible checkbox was placed in the header to use as a placeholder trigger for it to pop out. As with the navigation menu, the use of gestures to interact with the info box could be added later in the project.

Issues – having menus not overlap the viewport; sizing of info box and flexing of the elements.

HTML template

CSS learning and attempts at different styles

Lots of images of development

Code snippets

# 3. Review and reflection

## 3.1 Ways of working

Things that have gone well/badly

Effective ways of working and factors preventing progress – day planner?

Ask craig – should I discuss personal issues here? To what extent?

## 3.2 Evaluating project management

Project lifecycle

Ask craig – should I address the feedback from TMA01 on lifecycle here?

## 3.3 LSEP and EDI

LSEP in context of questionnaire, anonymity and data handling

EDI considering how the app will be safe for LGBT (also gender/racial bias)

Also consider accessibility issues (ideally look at this while developing UI)

While developing the user interface, accessibility was considered throughout in several ways. As Gray states in his tutorial (reference), if the font size is set to a specific pixel size then it will stay at that size regardless of what settings the user might have. This may cause issues particularly for partially sighted users, but also for any user who simply prefers to have larger font. Instead using ‘rem’ unit, so that the font size is relative to the font size of the root element and will scale accordingly. Additionally, setting fallback fonts improves accessibility by ensuring the text will always be displayed with a ‘web safe’ font lowest in order. In a situation when a browser cannot display the desired font or a character from the font, it will attempt to display the next listed font and so on. By having a ‘web safe’ font listed last i.e. a font that is ubiquitous across browsers and devices (reference?), the text should always display even if it is less aesthetically pleasing.

It was also important to consider how it would be read by a screen reader and with particular care taken when using a property such as ‘display:none’, which not only hides an element from view but also from being read by a screen reader. The pop-in side menu is triggered by toggling a checkbox (by pressing the hamburger menu symbol) and initially this was hidden from view by using ‘display:none’, which made it un-selectable by tabbing through elements. To change this, a style was added to the checkbox so that when it is in focus, the hamburger icon changes background colour as it does when hovered over and the checkbox was then hidden by setting the opacity to 0. The code snippet below shows this change.

.side-menu {

    /\* display: none; \*/

    opacity: 0;

}

.side-menu:focus +.hamburger{

    background: #85888c54;

}

# 4. References

# 5. Appendix