
# DR 2: Adding Functionality and Testing

## Project Name: ISS SatTrack APP

### HIT381 HUMAN-COMPUTER INTORACTIONS

Prepared by:

Conner Mostert S233186

Email: S233186@students.cdu.edu.au



CHARLES DARWIN UNIVERSITY

COLLEGE OF ENGINEERING, INFORMATION TECHNOLOGY AND ENVIRONMENT

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## Brief:

This project was created and executed in a very short time frame. This limited the level of testing and improvements made, as the project was rushed to meet the due date. Improvements from the initial design are stipulated here.

Improvements and functionality have been added to the following components:

- Colour and design: the overall look of the website and app.
- Added additional pages: to provide more information and functionality.
- Completed layout: Unified the layout across all pages to match and create uniformity among pages.
- Format: All text is formatted to be identical in typography design.
- Interactive flow: Site page layout flow is complete with return to home design.

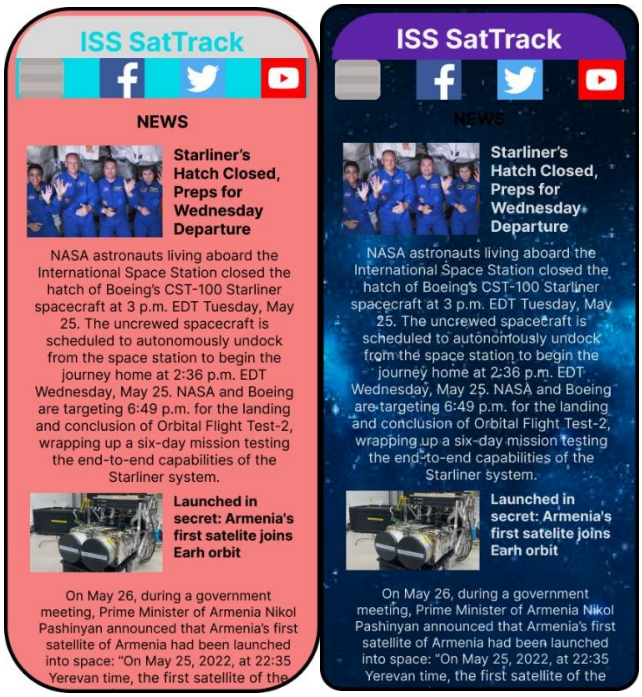
Testing Methods:

- Alpha testing
- Workflow analysis
- Heuristic evaluation of paper prototypes
- User observation testing

## Improvements:

### Colour and design:

The website and webapp has a near identical colour pallet implemented to create a look of uniformity among the different platforms. The colours of the site has been improved to create a larger “Wow” factor and increase the perception of the site. The colours were selected as a theme of space to add to the feel of the User interface. A darker background was selected with text and notable items being lighter to generate the illusion of bright stars surrounded by the darkness of outer space.




*Example of Page, https://www.figma.com/, ISS SatTrack App.*

## Added additional pages:

Added additional pages to provide more information about the service and more interactive use of the service. Added a user sign-in page so users can sign-up for mailing service and other activities. The user can choose to create a new account with their email or use another authentication service to sign up like Google or Facebook. Added an about page to provide some information about the service, why it was created, and how the information is collected and processed. This grants an insight into the technicalities of the service.

Additional pages:

- Sign in: Allow user to sign up.
- About: Provide information about the service.

## Completed layout:

The layout of all the pages desktop and mobile are similar in design. This creates the illusion of uniformity between the different pages and devices. A grid layout approach has been used to create this uniformity between pages. Slight adjustments to the layout of certain elements have been created to slightly break the uniformity and draw attention to that particular element.

Layout design:

- Uniformity between different web pages.
- Uniformity between user platforms.

## Format:

The typography of all the text has been formatted to be identical. The only changes that typography is the size of headings and using all caps for headings. Subheadings has an increased weight to bold but remains the same font and font size as all the text on the page excluding headings.

Text format:

- Identical typography on all pages with only changes to font size, weight, and capitals.

### Interactive flow:

Using the flow chart analysis and user observation testing, the web pages have been redesigned to create a continues flow. All pages have the option to return to the “Home” page by selecting the “ISS SatTrack” logo, except for the large map. The Large map has an “X” on screen that will return the user to the “Home” page. A menu icon is located on every page and can be used to navigate to any other page. This enables the user to reach any page from any location and does not require the user to follow a specific path.

Site flow:

- All pages can be accessed from any other page except for the map that can only return to home page.
- Home page can be accessed from any page by clicking “ISS SatTrack” icon.

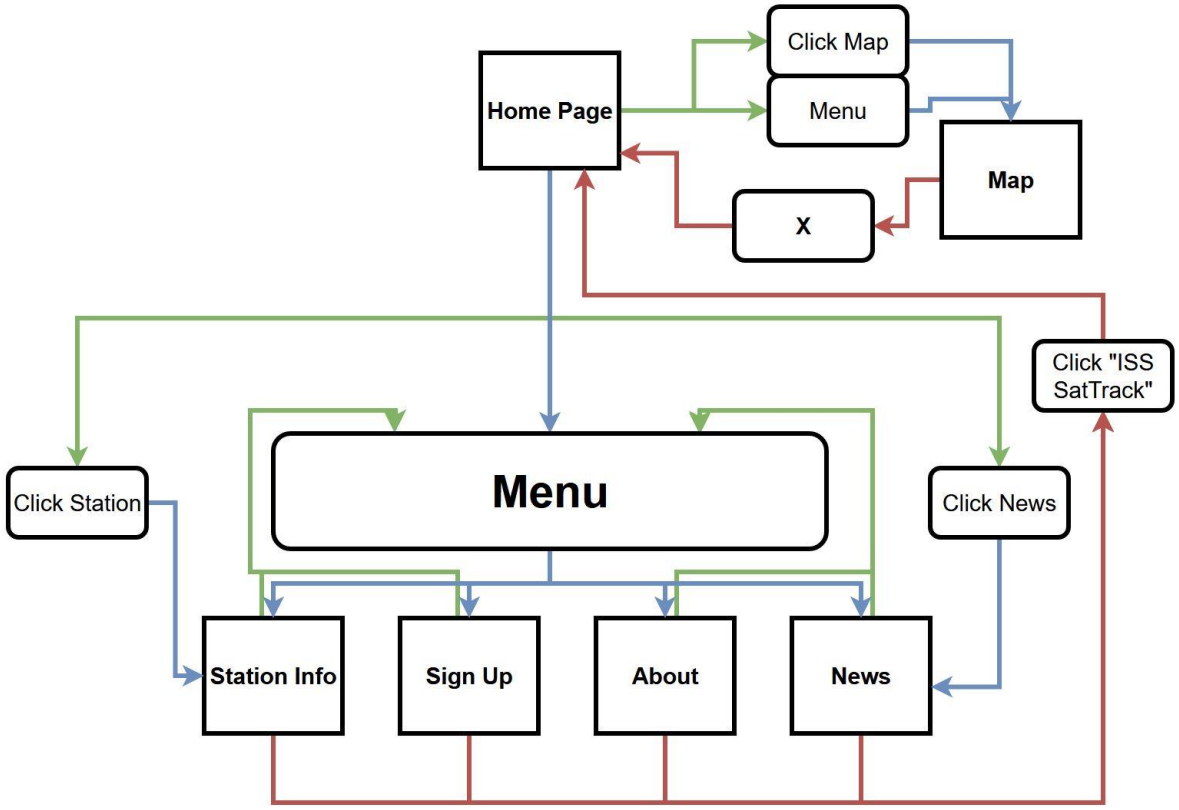
## Testing:

### Alpha testing:

As the designer of this service, I conducted several tests in functionality, usability, and perception. These tests are naturally conducted by the designer as they are creating the project. This method of testing is effective but is limited to a single observation. Designer testing tend to suffer from tunnel vision where the designer has an intermediate understanding of the project and can overlook certain errors. Due to the limited timeframe for this project most testing was conducted as Alpha testing and this may cause errors to exist in the project.

### Workflow analysis:

This diagram represents an analysis of the flow chart of the site. It shows how every page can be accessed from every other page except for the map. The map (Located top right) is unique in the flow chart since it can be accessed from any page by the user but can only return the user to the home page.




*ISS SatTrack flow chart, https://app.diagrams.net/, ISS SatTrack App.*

# Heuristic Evaluation:

## Introduction

Heuristic evaluation is a process where experts use rules of thumb to measure the usability of user interfaces in independent walkthroughs and report issues. Evaluators use established heuristics (e.g., Nielsen-Molich's) and reveal insights that can help design teams enhance product usability from early in development. (https://www.interaction-design.org/literature/topics/heuristic-evaluation)

This report provides the results of a heuristic evaluation of a paper prototype by **Conner Mostert** of **Formed 3a.** The paper prototype is for an application called "Satellite Tracking" which is designed to "website that tracks Satellites in real time by using Maps. The application will take information generated by NASA about Satellites orbiting us currently. The location of the satellite will be displayed on a map and additional information about the satellite will be displayed as well, like Lang, Long, Altitude and current speed." (Project brief)

This report will initially assess the project using Heuristic evaluation to determine usability and estimate and address any potential issues that may arise.

## Procedure

To evaluate the prototype, the **Formed 3a** team has outlined the use of the following heuristics:

- Match between system and real-world functions
- User control and freedom
- Consistency and standards
- Recognition rather than recall

As part of the evaluation, I have been asked to perform the following tasks:

1. Language use to determine if it is user friendly and can be understood by most audiences: Steps taken
    - Read through site pages to assess language use
    - Read through any error messages that might appear
    - Read through site development documentation
    - Read through site description

2. Test resources that users have access to and what resources users can't access. Determine if access to certain resources needs to be limited or removed, determine if addition resources need to be added, and if access to certain resources should be granted.
    - Follow all available links in the site
    - See if any files can be accessed using the URL extensions
    - What access the users have to manipulate and use a database
    - What user input security measures are in place

3. Check for consistency of language, standards, format, design, and Headers on all pages and relevant documentation.
    - Investigate every page on the site checking for Header standards
    - Checking for similar design format
    - Checking language use is similar across all pages
4. Investigate if user history is saved and can be accessed at a later stage by the user. In web pages this is traditionally done using cookies.
    - Is the user's history saved on the page?
    - Can the user access previous usage to save time?
    - Can user set up desired tracking to appear when accessing the site

### Results of Expert Review:

The expert review on the paper prototype resulted in the following findings:

### What worked:

Initial designs show uniformity across the different pages and that Headers are identical and design format on all pages are similar. The language use currently is appropriate for the website users but will have to be investigated further once complete design is in place.

### Major Problems:

- User input authentication and filtering needs to be put in place.
- Error messages needs to put in place and checked for language use
- User access restrictions needs to be put in place
- Better paper prototyping design

### Minor Problems:

- Check if any files that should not be public is accessible to the users
- Check that web API's and other external resources are loading correctly

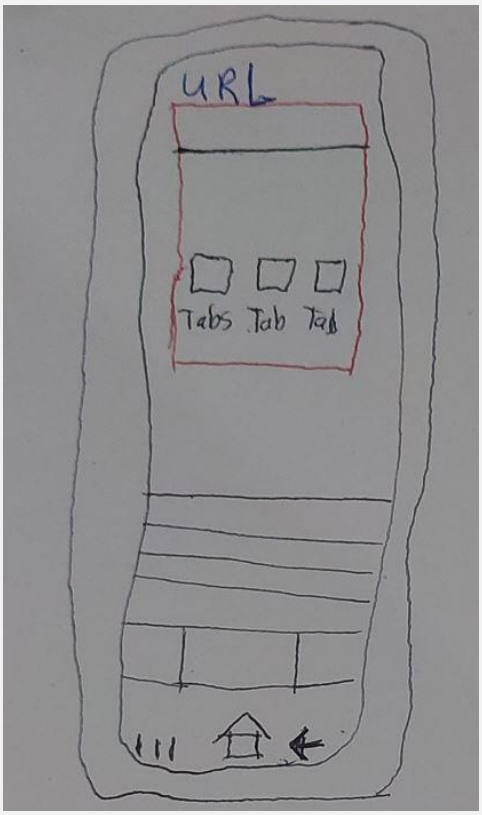
### Recommendations:

Additional testing needs to be conducted when the design is active on a server and client-server interactions can be investigated. Language use and design format uniformity must be checked once all information is added to the site

### Still Needs reviewing:

- Security on data handling of client-side information input to be handled by the Server
- Check local storage and web storage cookies on different browsers to ensure information is being saved

## Detailed Heuristic Evaluation:

<table>
<tr><td><u>Violated Heuristic:</u><br>User Access restrictions</td><td>Frequency:<br>Repeatedly</td><td>Persistence:<br>Constant While service is running</td><td>Impact:<br>Security Vulnerability</td><td>Severity Rating (SR):<br>Severe</td></tr>
<tr><td colspan="2"><u>Prototype Screen shot</u><br> 
</td><td colspan="3">Description of Problem(s):<br>• Without Proper user authentication a user or hacker can gain access to information the could be confidential or gain access to resources that might cause issues<br><br>User Comments: (explanation of problem)<br>• Regular user will not be impacted negatively<br>• Potential hacker would not have access to restricted resources and information<br><br>Ways to Rectify:<br>• Access restriction to resources and information<br>• Filter user inputs<br><br>Answers to Questions: HOW DOES THIS RELATE TO THE HEURISTIC ASPECT BEING EVALUATED<br>• User control and freedom: Certain restrictions needs to put in place to limit the access that users have to resources and information. This would not negatively impact legitimate users but will limit the vulnerabilities available for hackers to exploit.</td></tr>
</table>

## User observation testing:

Using the Figma design wireframes, I conducted an user observation test using an external party. This third-party individual has limited knowledge of IT but is a constant user of websites and web apps. Following this testing method, improvements were made in the Format, Site flow, and design. Using the Figma interactive wireframes is helpful but more testing is required when the webservice is complete.

## Project URL Links:

https://github.com/Cornmos/ISS-Tracking-Website

https://www.figma.com/file/7BLIqZc5aBwt8DWxUjsSkt/ISS-SatTrack-Improved?node-id=0%3A1