

# User Centred Design

## Pass Task 1.4

Group: 3

Members:

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Users	User Requirements/Goals	How they currently trying to achieve the goal??	What problems are the users having?	Physical environment	Technical environment	social environment
Students	<ul style="list-style-type: none"><li>• Their main goal location that the need to get to is their allocated classes therefore they may take different routes to the location of their classes. The time they have to travel will vary because of different set times for classes.</li><li>• Student want to get to their destination safely</li><li>• Cheap cost for travel because students do not usually earn that much</li></ul>	<ul style="list-style-type: none"><li>• they are carpooling with friends to university because it is much cheaper than public transport</li><li>• carpooling with friend also makes them feel more safe because they are familiar with their friends</li><li>• high chance of getting to university on time (if it is the main intent of student and friends) because they can drive directly to their</li></ul>	<ul style="list-style-type: none"><li>• not every location has public transport</li><li>• public transport can be inconvenient (multiple interchange locations, no shelter, may be uncomfortable)</li><li>• overcrowded/congested</li><li>• expensive forms of transport</li></ul>	<ul style="list-style-type: none"><li>• City/suburban</li><li>• University</li><li>• Traffic</li><li>• Hostile (overcrowded and influence by the weather)</li><li>• Academic environment</li></ul>	<ul style="list-style-type: none"><li>• Technically advanced (computers and mobile phones give ability to check methods of public transport)</li><li>• PA systems announcing the arrival of public transport</li><li>• Traditional technology (timetables and maps on billboards)</li></ul>	<ul style="list-style-type: none"><li>• Surrounded with friends</li><li>• Also surrounded by strangers catching public transport to other destinations</li><li>• When catching transport at off peak times, the social environment can be hostile and inexistent, hence if the student needs help, it is more difficult to obtain it.</li></ul>

	<ul style="list-style-type: none"> <li>• Be comfortable whilst traveling to their destination, because travel can be long</li> <li>• Get to their destination in a timely fashion</li> <li>• Arrive at the right location</li> </ul>	destination instead of taking different routes like public transport	<ul style="list-style-type: none"> <li>• not having a comfortable ride to university</li> <li>• not feeling safe with sharing transport with people unknown to them</li> </ul>		<ul style="list-style-type: none"> <li>• Public transport timetables on mobile phones</li> <li>• Traffic lights and control within the city</li> </ul>	
<b>Teachers</b>						
Lecturers	<ul style="list-style-type: none"> <li>• Lecturers' goal location is to either get to their office (if it is the first thing that they go to in the morning) or their first class of the day that they have to teach</li> <li>• Be comfortable whilst traveling to their destination, because travel can be long</li> <li>• Get to their destination in a timely fashion</li> <li>• Arrive at the right location</li> </ul>	<ul style="list-style-type: none"> <li>• Ride sharing with other Lecturers that are colleagues</li> <li>• Travelling via public transport</li> <li>• Having their own form of transport (allows them to take control of where they go and satisfies their need for comfort. Also they know that they are much safer when travelling with a form of transport that they can control)</li> </ul>	<p>Same as above</p> <ul style="list-style-type: none"> <li>• Using cheap transport without compromising reputation of being unprofessional</li> </ul>	<p>Same as above</p> <ul style="list-style-type: none"> <li>• May have their own allocated parking space</li> </ul>	Same as above	<ul style="list-style-type: none"> <li>• the environment for lecturers is more superficial (teachers do not want to be that personal because it can compromise their profession)</li> <li>• relationships with colleagues</li> </ul>
Tutors	Same as above	Same as above	Same as above	Same as above	Same as above	
Lab Supervisors	Same as above	Same as above	Same as above	Same as above	Same as above	
<b>Other staff</b>						
Research staff	<ul style="list-style-type: none"> <li>• Research Staff need to get to the facility that they are conducting their research or their office if they have one.</li> </ul>	Same as above	Same as above	Same as above	<p>Same as above</p> <ul style="list-style-type: none"> <li>• Research facilities</li> </ul>	Same as above

	<ul style="list-style-type: none"> <li>• Research staff can be students as well so they might want to have cheaper transport</li> <li>• Get to their destination in a timely manner</li> <li>• Arrive at the right location</li> </ul>					
Administrative staff	<ul style="list-style-type: none"> <li>• Administrative staff need to be able to get to the customer service desk for the service that they are offering (Student HQ) so that they can provide the services to their customers</li> <li>• Get to their destination in a timely manner, or else the customers that need administrative help will not get their service on time</li> <li>• Arrive at the right location</li> </ul>	Same as above	Same as above	<ul style="list-style-type: none"> <li>• Workplace environment</li> <li>• Office environment</li> </ul>	<ul style="list-style-type: none"> <li>• Office equipment and tools</li> <li>• File/documentation management systems</li> </ul>	Same as above
Maintenance staff	<ul style="list-style-type: none"> <li>• Get to their destination in a timely manner</li> <li>• Arrive at the right location</li> </ul>	<ul style="list-style-type: none"> <li>• Have their own form of transport because they might have equipment and tools that they use to complete their job, essentially making it safer for other people, not just themselves</li> </ul>	<ul style="list-style-type: none"> <li>• Their own form of transport can be expensive, so having an alternative without compromising others or their safety</li> </ul>	<ul style="list-style-type: none"> <li>• On site</li> <li>• Outside (affected by weather)</li> </ul>	<ul style="list-style-type: none"> <li>• Technology, tools and equipment needed for their job. Hazardous environment because of equipment used</li> </ul>	<ul style="list-style-type: none"> <li>• Colleagues</li> </ul>

This product will be created to cater towards university students, teachers and staff. This includes all types of teachers such as lecturers and tutors, as well as the research, administrative and maintenance branches of the staff.

By using this product users are aiming to find a reliable and efficient travel option to or from university. Users want to arrive at their destination on time and not have to sacrifice comfort for efficiency. The goal of the product is to provide an accessible use interface which allows people to connect and communicate with others who want to 'car pool'. By providing the user interface we are giving people the means to organizing an alternative method of travel.

The majority of the intended user base is currently using public transport or a personal vehicle. Public transport can be inconvenient for some depending on their travel distance as well as expensive and occasionally unreliable. Travelling via a personal vehicle can also be expensive due to petrol usage and parking payments. In both instances car pooling would decrease the cost and is more convenient than public transport.

### **ISO UCD Principles**

To ensure that the final product will cater to the needs of users we will be communicating with a sample group of users for the research and testing stages of development. We intend to gather information from users on their ideal final product and what features they would like to see. During the testing phase we would like to gather feedback from users.

The team working on this project consists of members from various academic backgrounds providing a variety of skills and philosophies. Having such a diverse group allows for members with different perspectives to collaborate and design an effective product. Refer to task 1.1 for details on the skills of the design team.

To ensure that the design addresses the whole user experience we will thoroughly research and test the interface. We want to have a comprehensive understanding of the needs of our users. This is a priority to the group as it allows us to create an accessible and effective user experience.

For this project we will apply the following ISO User Centred Design Principles:

- The process is Iterative
  - Reviewing the progress of the project each week both as a team and with our tutor.
  - Making any adjustments and fixes to the project that we feel is necessary after each weekly evaluation.
  - Keeping backup versions of the project before major adjustments are made in order to revert to should the need arise.
- The design is based upon an explicit understanding of users, tasks and environment.
  - Researching similar projects to gather ideas on where they succeeded and where they failed.
  - Investigating the surrounding area of Swinburne to determine the benefits of such a project (Traffic, parking, etc).
  - Surveying potential users about their interest in such an application, as well as features they feel would make it more user-friendly and appealing.

- The design is driven and refined by user-centred evaluation
  - Allowing potential users the opportunity to test the application the earliest possible, in addition to encouraging feedback on their experience.
  - Acting upon the feedback we receive to improve the overall user experience of the application.
- The design team include multidisciplinary skills and perspectives
  - Looking at the progress of the design at weekly meetings and having each team member provide their perspective on the current state of the application.
  - Listening to and considering every team members opinion on the design to achieve a broader more diverse outlook.

### **Team's weekly plan**

#### **Week 1**

- **Introduction to unit**
  - **Introduction and group formation**
    - **Group resources**
      - Team has been introduced in week one. First meeting was determined and ideas were discussed about how the group should be managed
      - Discussion on what each group member had to offer
      - Split the tasks up to have even workload to each team member
    - **Group management**
      - Discussion on how the files will be managed (file management system to use)
      - Discussion on how communication would be conducted
      - Organised weekly meetings to go over tasks that needed to be completed
    - **Group code of conduct**
      - Every group member is required to sign the group code of conduct, so that every group member officially agrees to do what it takes to complete the tasks to a high level of quality
    - **Project description**
      - Group discussion on the scope of the project which is on the theme of car transport
- **User Centred Design**

#### **Week 2**

- **Research context of use**
  - **Research plan for contextual inquiry**

- Prepare set of questions that pertain to contextual inquiry (the environment of the context of use)
    - Will be collating a set of questions that pertain to how the user will interact with the environment that the user is using the system within
  - Prepare materials to use for interviewing people
    - Preparing the consent forms, laptop/paper to record the responses, voice recorder to record the audio of the interview just in case the notes are not fully written down and also a list of all the questions to ask the participant.
  - Get approval from tutor to start interviewing people
- Qualitative data analysis
  - Affinity diagram
    - Group the data that is collected into categories (themes) that will make up the affinity diagram (allows the analysis of the user requirements).
      - Grouping of the participants responses into particular themes, so that the group can determine the user requirements and what the system implementation needs to meet these requirements
- Ethics of human research
  - Ethics test
    - Complete the ethics test and pass, before being permitted to interviewing participants
      - This ensures that each group member is a viable interviewer and will not affect the participant in a negative way (either in a physical or emotional way).

### Week 3

- Requirements specification
  - Using data collected with the themes that were determined and grouped (affinity diagram), to define the requirements needed for the product that will be developed. (these requirements will be incomplete and the need to re-determine the requirements will be essential, because the needs and wants of the user may change, or a realisation of new needs may be discovered later on)
- Model construction
  - User model
    - Determining the personal set of data which is associated to a specific user.
      - Allows the group to analyse a user group and how they interact with the system. What steps are taken in order to complete the task needed to be completed and if they have more than one option of doing that task
  - Workflow model
    - This model depicts the sequence of operations that have a repeatable pattern, that the users will perform
      - The team will use this model to analyse the habits and repeatable behaviours of the user groups, for the purposes of creating features in our product to cater for these operations
  - Task models

- This model displays an array of necessary tasks that need to be completed to meet the set goal of the user group
    - Team will use this model to analyse the crucial tasks that are needed to be completed by the user groups, so that the solution product can implement functions that allow the user to complete their tasks with efficiency and also efficacy.
- Environment models
  - This model depicts what steps that are needed to be taken for the system to be implemented, so that it can successfully be integrated into the environment (take into account the harshness of the environment, and have systems for the solution to maintain the durability of the solution).

#### Week 4

- Conceptual design
  - Requirements Extraction and conceptual design
    - Conceptual design
      - A design to show the very first concept (how the program is going to look)
      - A story board to explain how the user will interact with the product to solve the problem that they currently have
    - Wireframe
      - Layout of the application for the solution to the problem
    - Requirements document
      - Extracting user requirements from the data that was collected from the contextual enquiry
- User interface design: Design guidelines

#### Week 5

- Prototyping
  - Design guidelines
    - User requirements from contextual enquiry and affinity diagram is insufficient to say how the design layout of the application should be designed (graphically), therefore guidelines for the platform and usability design principles will be used (guidelines that are known to work).
  - Prototype
    - Creating a prototype for the solution to the problem
      - Creating the application main functionality and layout with the use of PowerPoint and implementing the designs that were determined at the conceptual design stage

## Week 6

- **Usability Evaluation**
  - **User interface design**
    - **Prototype demonstration (prepare for week 7)**
      - Be able to demonstrate the prototype of the system in the tutorial week 7
      - **NOTE: there is no re-submission**
    - **Iterative design**
      - To make improvements to the prototype depending on the feedback gained from the review of the prototype
      - Use the design cycles to make these improvements
- **Rapid Evaluation**
  - Get users to quickly evaluate the produced prototype. Evaluations are done in succession of each other so that adjustments can be made to the software/application.

## Week 7

- **User Evaluation: Method**
  - **Expert review**
    - **Expert review**
      - Tutor will check over the functionality of the prototype and if it has helped solved the solution in a professional manner
    - **Evaluation plan**
      - Plan on how to get users to evaluate the product so far and gain feedback from them (ask for consent first)
    - **Usability evaluation tasks**
      - Different types of evaluations will be used to gauge the success of the product (surveys – quick and dirty, short interviews on opinions etc.)
    - **Demographic questionnaire**
      - To interview users that the product is meant for. These questions will gauge the characteristics of the users
    - **Satisfaction questionnaires**
      - To interview the users on what they think about the product/application that would be used to solve the problem.

## Week 8

- **User Evaluation Analysis**
  - **Preparing and conducting usability evaluations**
    - **Swinburne usability laboratory Tour**



- Ensure pass task 7.2-5 is signed off

#### Week 9

- User Interface Design: Cognition
  - Usability evaluation of prototypes
    - Evaluation to see if the prototype that is developed by the group finally meets the requirements and finalise the solution of the product.
    - Evaluation done under a controlled environment (No resubmission)

#### Week 10

- Special Interest Area 1
  - Usability evaluation of prototypes
    - Usability evaluation raw data
      - The data from the controlled evaluation will be collected and new requirements will be determined from them.
    - Evaluation problem identification and redesign
      - After the main evaluation is done from the controlled environment, problems with the usability with the program will be determined and that function of the application will be redesigned, to meet new criteria (that is determined in the controlled examination of the product).

#### Week 11

- Special Interest Area 2
  - Data analysis and redesign
    - Redesign the application so that it meets the new specifications that it needs to meet

#### Week 12

- Review