Design Challenge 2

This assessment is worth 30% of your final grade for this unit and is broken into a group mark, and an individual mark detailed below. This design challenge commences in week 9 and the final presentation is in week 13. You may remain in your current team, or form a new team for this design challenge.

At a glance: what you need to deliver for Design Challenge 2

1. A testable prototype/solution to a problem of your choosing from a domain of your choosing, or a problem chosen from a list we provide in the Alternative Problem Domains section below.
2. A mixed media video clip of your own creation (no more than 1.5-2 minutes) demonstrating idealised user interaction with your prototype and solution.
3. An 8-9-minute team pitch to investors.
4. A 5 page team document illustrating how you applied each step of the Design Thinking process to your project.

Design Challenge Section	Marks Allocated
Group: Design Pitch	15%
Individual: Presentation, Teamwork & Design Deliverables	15%

Content Section	Pages
Problem Description This section clarifies what is asked of you in this design brief – at a high level.	2
Alternative Problem Domains This section provides alternative domains to address and provide solutions for.	2-3
Criteria for Assessment This section provides additional details and context around each element we seek from you in this design challenge. **Please refer to the CRA for detailed information about the weightings of different items.**	3
Design Deliverables This section breaks down the different content we expect to see at each stage of your final presentation in week 13.	3-4
Rough Timeline To aid your planning we provide a rough timeline to guide any activities and efforts you undertake.	5

Please keep in mind that this document, while attempting to address your immediate needs – at one page per design challenge – is not exhaustive. We expect you to consult regularly with teaching staff for additional clarification and assistance. **We are here to help you, your success is our success** ☺

Problem description

There are three options available to you:

1. Choose your own domain and problem
2. Apply for the advanced topic (limited positions available)
3. Choose a problem domain from the list provided below (e.g. Wireless Mesh Networks for Public Safety and Disaster Recovery Applications)

• Choose your own domain and problem

In this final design challenge, you will apply your design thinking skills to address a business or social problem of your own choosing (**your learning facilitators retain final approval**).

The original problem selection criteria is as follows (**you must adhere to these rules**):

- Your team, or a team of your size, must complete the design by week 13.
- Ensure that your solutions are focused on developing a novel and **original IT product or service**. You may build on existing products or services to reach your goal.
- You must develop a testable prototype as part of your solution.
- **Please do not develop a mobile application.**
- Try and refer your prototype/solution back to the four tenants of Design Innovation (physical environment, market segment, business process/model or IT enabled solution). More details on are provided in the week 9 lecture.

We ask that you spend time choosing any problem that you feel could be solved using your newly developed skillset. You must design a testable prototype solving the problems you identify, and demonstrate your solution in a team pitch.

If you are struggling with getting ideas, here are two videos to inspire you to look at designing digital technologies that solve a set of needs.

- The Kano Computer: https://www.youtube.com/watch?v=sgCHUGt97To
- Pacific Place Kiosk: https://www.youtube.com/watch?v=VerMxh_Ouww

• Alternative Problem Domains

We have also provided a number of other problem domains that you may choose to address **as an alternative** to choosing your own problem to solve.

The assessment will be structured as a pitch to potential investors of your idea, and **we ask that you do not develop a mobile application for this design challenge**, as we have already covered this ground during Design Challenge 1.

The provided business or social domains you may address are:

- **Remote Networks and Mesh Networking in Regional Australia**: Major issues facing networking in rural/remote areas particularly – connectivity, data storage and transmission, physical infrastructure maintenance (drones to address extreme distances, weather conditions), and remote population perceptions (technophobia) - http://www.abc.net.au/news/2016-04-22/mesh-technology-could-plug-blackspot-holes/7349330
    - **Sub topic:** Wireless Mesh Networks for Public Safety and Disaster Recovery Applications - http://www.nicta.com.au/pub?doc=930
    - **Sub-topic**: City as a sensor - https://www.nicta.com.au/category/industry-engagement/infrastructure-transport-and-logistics/blogs/internet-of-things/
- **Safe Driving**

  - Address an aspect of the Fatal Five (introduced in week 2) - https://www.police.qld.gov.au/EventsandAlerts/campaigns/fatalfive.htm
  - Novel in-vehicle system to advise drivers on their fuel efficient and safe driving behaviour.
- Current National Health Issues
  - National Disability Insurance Scheme plagued by IT issues slowing down care plan rollout - http://www.abc.net.au/news/2016-09-02/ndis-plagued-by-'significant-issues'-in-plan-rollout/7811198
  - Using Gamification and IT solutions to help patients with Dementia.
  - Quantified Self - https://en.wikipedia.org/wiki/Quantified_Self
- Household Recycling: http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0~2010~Chapter~Household%20recycling%20(6.6.7.1).
- Microsoft Holo-lens
  - Sub-topic: Community consultation & Urban Planning - https://www.youtube.com/watch?v=kXVW4sUsh3A apply different technologies to capture ideas about city development.
  - Sub-topic: Interacting with Human Health - https://www.youtube.com/watch?v=SKpKlh1-en0 simple ways to improve teaching techniques through improved tools.

Criteria for assessment

For specific grading criteria see the Design Challenge 2 CRA.

To attain the maximum grades you require an original solution and a testable high-fidelity prototype. Your team must demonstrate use of design methodology and process in order to develop your problem and solution.

Design Deliverables

- ### Week to week competency checking

Competency checking will occur on a weekly basis during workshops, to observe use of design methodology, with critical justification of design choices made by team members (these competency checks will form part of your teamwork mark for this assessment). All aspects of your design should be recorded in your Design Activity Logbook,

- ### Testable prototype/solution

We ask that you do not work on a mobile application for Design Challenge 2. You may wish to explore different methods for prototyping your solutions. We suggest the following though many more excellent options exist:

- Raspberry Pi/Arduino development kits (these have excellent sensor packages available – see lecture week 4 for real-world example).
- 3D printing using open-source 3D models (QUT provides this service to students 50c per cubic CM – see desk on level 2 of the Library).
- Paper models. As simple as this sounds it is where an actual designer might well begin were they to develop a physical object.
- Plasticine or Lego as a medium this provides you the ability to work with your hands naturally.
- Object Oriented Programming language. If you and your team are comfortable with coding, you are welcome to program for this assignment.
- Business Process Models, Universal Modelling Language, or any notation really.

- 5 Page Team Document

As you will submit as a team a 5 page team document which illustrates each step of the Design Thinking process and how you have applied it to your project. We suggest one page per step, though you may consider adding more, **there is no penalty for extra pages if you feel the need**.

Your submission should focus on providing evidence for the Design Thinking steps:

- Understand & Observe – Through observation, interpersonal interaction or research. This step explicitly attempts to involve real-world users to gain vital information and insight into the needs of your target audience.
- Defining – By examining data found through empathising and fleshing out the problem space.
- Ideating – Demonstrate flair of ideas and brainstorming, developing a large amount of potential solutions and ideas. The more radical the better.
- Prototyping – Through the use of digital, physical or conceptual prototyping.
- Testing – Engaging in user feedback, with evidence of that feedback guiding the iterative process of improved versions of the prototype evident in the teams design.
- **It is also worth noting that we expect you to iterate through multiple testing and prototyping phases.**

- Presentation Structure & mixed media video

You must present your prototype in an eight minute team pitch, aimed at the stakeholders or investors that you have identified as key to your problem space. The demonstration of your solution should also include mixed media delivered via a short video clip of your own creation (no more than 1.5-2 minutes). **This video clip will demonstrate an idealised user interaction with your prototype and solution.**

In detail, your presentation should cover the following in eight minutes (you may vary the order as you see fit):

- A compelling introduction outlining your potential solution.
- Your identified problem space, with a clear understanding of the stakeholders or investors, and the issues they face.
- An explanation of the target users and how your solution will enhance or change the user experience.
- An interactive demonstration, through video, of an original interactive prototype/solution which solves the issues your group has presented.
- A section demonstrating the feedback you received in the design process and how it has informed and shaped the final iteration of your work.
- A compelling conclusion focusing audience attention on the importance of your work.

Rough Timeline

Week 9 – Empathy and initial definition work (seek input, problems and needs, from real people and external resources).

Break week – Rest, but also consider working on your prototype/solution

Week 10 – Definition work, ideation work (go for a lot of ideas!) and initial prototyping/solutions (we expect by now that you're showing us low, and medium fidelity prototypes/solutions, whatever form they may take)

Week 11 – Ideation and transition to high-fidelity prototyping/solutions work using user feedback.

Week 12 – Testing and continuing prototype work (we want to ideally see initial high-fidelity shots). Rehearsal this week!

Week 13 – Final presentation & celebration!