Human-Computer Interaction

Week 1 Lecture 1A

Design decisions are based on evidence and experience

COMP 3900 & COMP 6390

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Welcome to the course

Human-Computer Interaction: Design and Evaluation

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The focus of this HCI course

Design of interactive computer systems:

- User and system requirements
- The bigger picture (who will use it, in what context?)
- Applying previous design experience (design principles)

Evaluation of interactive computer systems:

- Evaluate the design of the systems against requirements and design principles
- Conduct user experiments with prototypes or working versions of the systems

Small-group discussion

Introduce yourselves to each other

Take turns to say what you expect to get from this course ("I expect to learn …")

If there is time, talk about one of the expected outcomes

Short class discussion about what you have just done.

Learning from the discussion

You practised speaking about something that is important to you.

You practised listening to others speak about something that is important to them.

In the larger group you learned that some people have similar expectations and that different people might have different expectations.

Learning outcomes from this course

Upon completion of this course, the student will be able to:

- **Describe** and explain design principles for interactive user interfaces
- **Gather** requirements for, iterate over the design of, and evaluate an interactive user interface
- **Explain** the communication skills needed for requirements gathering, team development of interactive software and user evaluation of interactive software
- **Describe** how user interface development can be integrated into an overall software development process
- **Understand** sufficient theory of human computer interaction, experimental methodology and inferential statistics to be able to read modern research literature in interface technology and design.
- **Identify** key design errors in simple user interfaces and suggest alternative designs.
- **Discuss** ethical issues involved in developing and evaluating interactive user interfaces.

Reasons for design decisions

In small groups, talk about the worst interactive system you have seen or used.

- Each of you briefly say what your example is
- Pick one example and, as a group, decide how you would re-design it to fix the problem
- Explain why you think your re-design would fix the problem

[Lecturer's example: the old ANU website]

Outcomes from your discussions

- It can sometimes be easy to see the design problems with someone else's work
- Sometimes you need to actually use an interactive system to discover its design problems
- For each of these examples, the people who designed, implemented and approved the system thought it was OK
- What is the value in asking people to find design problems in systems that you design?

Outcomes from your discussions

Your examples show the importance of running user evaluations of interactive computer systems before those systems are released for general use.

“Why do we need to do a user evaluation? I can test it myself.”

By the end of this course I expect that none of you will be saying things like this.

Three parts to the design solution

- Requirements: Make sure the requirements for your system match the real needs of your intended users
- Design Principles: Use the design principles for interactive systems in a deliberate and thoughtful way so that you take advantage of the past 30 years of interactive design experience
- User Evaluation: Run evaluation studies with real users to make sure that your system works as the users expect it to

Understanding the broad context

The same basic design problem might have many different solutions, depending on context where it will be used. This context can include:

- Culture – people from different cultures may have different expectations
- Scale – a solution that suits a large city may not suit a small town
- Type of user – a specialist system might be great for experts but not so good for ordinary users [for example PhotoShop]

Example: interfaces for public transport systems

We look at Paris, Singapore, Palermo, Canberra, Melbourne

Central Paris served by the Metro

Tourist experience:

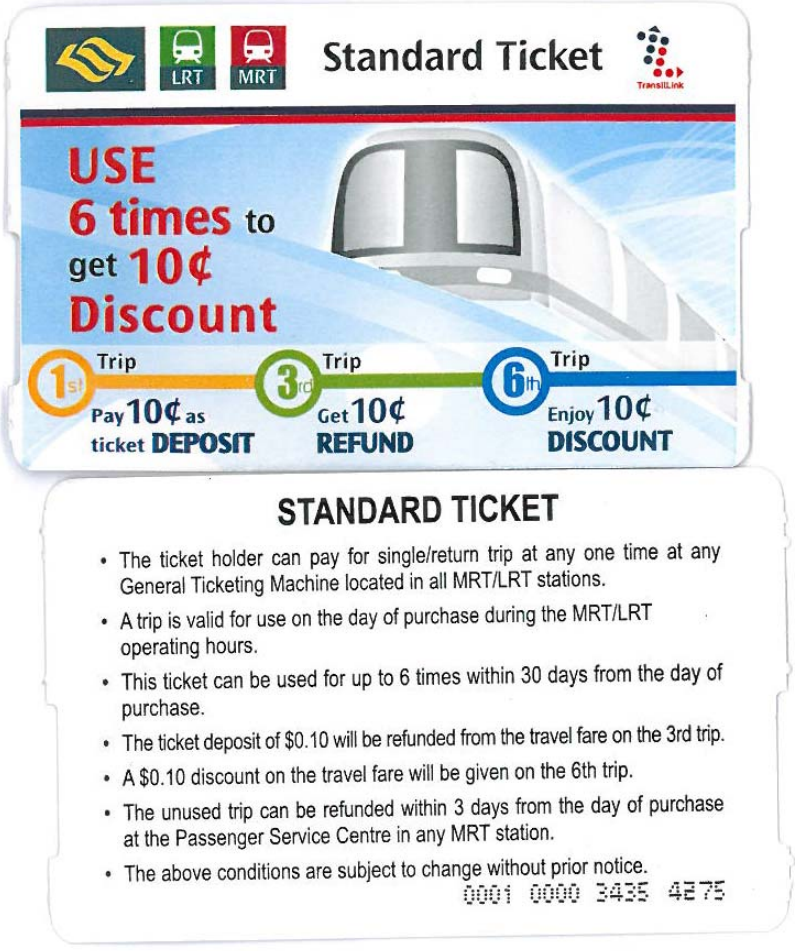
- Single fare within the region
- Complex multi-screen purchase
- Minimal timetable information on entry to the Metro
- No checking on exit from the Metro

Central Paris served by the Metro

Singapore metro (MRT) in 2013

Tourist experience:

- Re-usable paper tickets
- Map-based purchase
- Meaningful information on entry
- Checking on exit with meaningful information
- “Next train” information clearly visible



Singapore 2015

Smart-card solutions in Singapore: stored-value cards

Palermo bus tickets 2011

Tourist experience:

- Purchase from tobacco shops
- Validate on the bus – insert into a ticket reader which stamps it with time and date
- Plan “B” on the back of the ticket

Canberra bus ticket

Local experience:

- Issued at government shopfronts/libraries
- Card reader when you get onto the bus – good information about $ remaining
- Government concern about pricing issues, so you need to “tap off” when you exit the bus
- Recharge on-line

Melbourne bus, train, tram ticket

Local experience:

- This rechargable ticket is the only way to travel on public transport – there are no cash fares
- Purchase at a wide range of unlikely places (e.g. pharmacies)
- Cash recharge – it can be difficult to find recharge places.
- Simplified tap-on/tap-off instructions
- Replaces daily, weekly, monthly and annual tickets
- Recently created Free Zone in the Central Business District

External influences on system design

Small group discussion:

Choose a city that one of you has lived in and discuss what has influenced the design of the public transport in that city (for example, political, social, cultural, practical)

[Example: http://yarratrams.com.au/tramtracker]

[Example: Melbourne free-tram zone]