

Human-Computer Interaction CMC092

an introduction to the principles
under-pinning the design of
successful computer systems

CMC092 Course schedule

- Classes
 - 11 week lecture course
 - lectures followed by seminars
- Staff
 - Lecture & seminars: Rose Spilberg
 - Seminars: Jo Rodmell

Studying this unit

- lectures
 - concepts, theories, issues in hci
- seminars
 - discussion /exercises / practicals
 - assignment preparation
- your study time (hours per week?)
 - reading (suggested texts week by week)
 - lecture & seminar content review/discussion
 - assignment work

Seminar preparation

- Seminars follow the lecture
- Course schedule gives
 - suggested reading for each week (core collection)
 - seminar activity
- aim to do the reading before your seminar

Assessment

- course-work assessment – no exam
- one individual two-part assignment
 - part 1 submitted half-way through semester
 - part 2 submitted at end semester
- each submission will include 1 or more tasks

Reading

- reading list available on unit web site (SLE)
 - note esp. Baecker
- all texts should be available in the library
- the most important ones are in core collection
- to buy: Shneiderman
Preece
Le People/Scane

Main topics for the unit

- Introduction & background - why/what HCI?
- User-centred analysis & design
- Users - human capacities, user analysis
- Tasks - task analysis & design
- Interface design
- Usability evaluation

Topic order - detail in Course Schedule

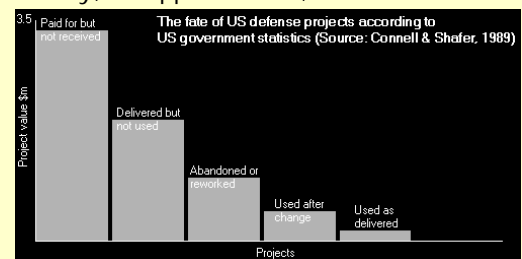
- evaluation
 - why
 - what
 - how
- user centred design approaches
- users, tasks, interface design
- prototyping

Today's lecture - Introduction & background

- history & context
 - first generation dp systems
 - distributed systems
 - costs & failures
 - safety-critical systems
- HCI - introduction: concepts & issues
 - interaction, usability
 - interface

Information systems history

delay, disappointment, failure



Information Systems formerly:

- specialist dp departments - main-frames
- 'expert' users
 - 'operators' not users
 - highly trained
 - repetitive tasks
- command-driven interfaces
- system is paramount

Distributed systems

- h/w costs reduced
- capacity increased
- PC - desk-top computing
- non-expert users
 - task variety, little training
- 'successful' systems increasingly important

Information System failures

- Many causes:
 - failure to meet requirements
 - systems disliked by users
 - systems under-used
- Leading to
 - high error rates
 - absenteeism
 - high staff turnover
 - failure to obtain anticipated gains from IT

IS industry's attempts to improve outcomes

- software engineering principles
 - structured techniques
 - rigorous methodology
- recognition of importance of
 - human factors - usability
 - interface design
- hence, importance of HCI

Introduction to HCI

- HCI stands for
 - Human-Computer **I**nter**a**ction
- covers all aspects of human-computer interaction
 - physical
 - keyboard design
 - screen resolution, colour, refresh rates
 - desks, chairs, lighting

- non-physical
 - software structure & design
 - information presentation
 - screen display structure
 - command sets
- social
 - organisational issues and constraints

- HCI stands for Human-Computer **I**nter**f**ace
 - screen design
 - input devices
 - dialogue design
 - menu structures

Contributions to HCI thinking

- multi-disciplinary, informed by
 - psychology, physiology, sociology
 - ergonomics
 - engineering
 - art & design
 - computer science, AI

Importance of psychology

- cognition
 - how & what we know
- learning
 - how we learn
- memory
 - what & how we remember
- perception
 - what/how we see, hear, sense events

HCI –the human-computer interface

- the interface is
 - what you see
 - what you hear
 - how you input information/commands
 - how you get information/response

The aim in interface design

- to make an interface which is
 - easy to use
 - easy to learn
 - intuitive
 - also
 - comfortable to use
 - pleasurable to use
- invisible ???*

The interface problem: Task-Action mapping

- how to map functionality to system controls
- one control for one action
 - *transparency*
- 40 functions, 40 buttons? Solutions:
 - menus
 - *modes*
 - loss of transparency

HCI - interface design

- dialogue & interaction styles
- design guidelines
 - menus
 - commands
 - colours
 - layout
- GUI design

Graphical user interfaces - development

- Xerox PARC (Star 1981)
- Apple Mac
- Windows
- world wide web

Recap

- history of failed IS points to need for improved HCI
- HCI concerned with all aspects of human-machine interaction
- especially with interface design
- and with GUIs

Importance of HCI

- critical to design of successful systems
- all IS professionals need awareness & understanding of HCI
 - theories & concepts
 - development techniques & good practice
- employability – human factors specialists in demand

Seminar preparation

- reading
 - Norman: 'Psycho-pathology of everyday things' in Baecker
- seminar topic
 - discussion of interfaces