ICS 105:
Project in HCI

Techniques III:
Interpretive Evaluation and
Contextual Enquiry

techniques

- we've covered a number so far
  - paper prototypes
  - interviews
  - questionnaires
  - predictive evaluation
  - walkthroughs

what's the problem?

- investigator leads the process
  - questions only get asked if the investigator thinks of them
  - evaluation according to metrics that investigator has cooked up
  - the investigator sets the bounds of the investigation
- laboratory settings are unnatural
  - unnatural tasks and unnatural performance
  - a famous example – Millgram's experiment

looking for alternatives

- taking "user-centered design" seriously
  - not enough to let user guide us to solutions
  - user can also guide is to the problems
- interpretive approaches
  - why "interpretive"?
    - you as the investigator
      - relevance of objective measures is open to question
    - the user as interpreter
      - our knowledge of reality is interpreted
        » what we see around us & how we understand consequences for ourselves and our action

contextual enquiry

- understand how technology used in context
  - laboratories strip context away
  - unnatural picture of the work
  - need to understand context as well as task
- context?
  - where the work is done
  - for whom, when and why the work is done
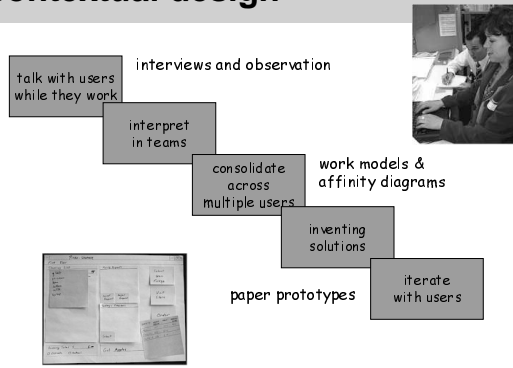 - what else is going on around

examples

- consider information retrieval tasks
  - looking for specific information items
  - laboratory-based studies:
    - retrieval accuracy
    - time to completion

examples

- consider information retrieval tasks
  - looking for specific information items
  - laboratory-based studies:
    - retrieval accuracy
    - time to completion
- now put it in context
  - looking for a video to rent
  - locating medical records for patient during surgery
  - researching a new laptop purchase
  - finding a customer's records in telephone support

contextual enquiry

- technique for examining and understanding:
  - users
  - workplaces
  - work
- directed towards design
  - not pure seeking after knowledge...
- valuable when?
  - early stages of design
  - evaluation of existing technologies

contextual design

talk with users while they work

interviews and observation

interpret in teams

consolidate across multiple users

work models & affinity diagrams

inventing solutions

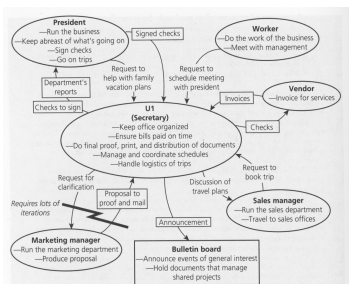paper prototypes

iterate with users

work models

- work models let you visualise activities
  - graphical models reveal structure
  - common focus for attention and discussion
  - five sorts of work model
    - flow
    - sequence
    - artifact
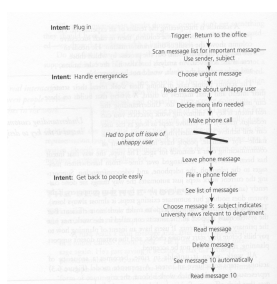   - culture
    - physical
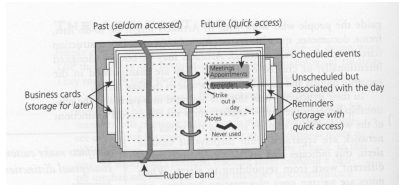
flow model

- artifacts, people and interactions

sequence model
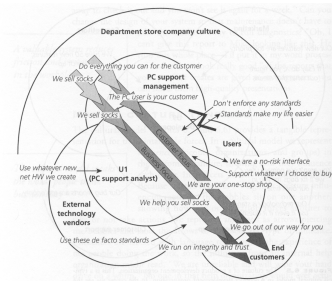
- steps, triggers, barriers

2

artifact models

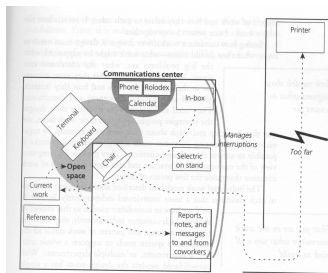- physical artifacts and arrangements

cultural models

- attitudes, perspectives, influences

physical models

- spaces, artifacts, movements

affinity diagramming

- uncovering structure
- procedure
  - write each item on card or postit
    - items might be functions, tasks, people, applications
  - add them to a vertical surface one at a time
    - allows everyone to stand and see what's going on
  - as each card goes up, place it near to similar items
    - may have to rearrange items as you go
  - depending on time, topics and patience, iterate
  - focus on groupings and relationships

affinity diagramming

- can get pretty complex…

consolidation

- these techniques help you consolidate
  - get from observations to general patterns
  - get from individual cases to generic situation
  - incorporate a lot of information
    - different models reveal different "cuts" through space
    - point to different needs and problems
    - affinity diagrams help analysis
    - affinity diagrams help communication

cooperative design

- engage with users as experts
  - users are experts on their own work
  - you're an expert on computer system design
  - getting it right is going to take both of you
- users as co-designers
  - also as liaisons to a larger user community
  - we've already covered many of the techniques
  - the issue is the status of the user
    - an experimental subject?
    - a potential customer?
    - a member of the team?

participatory design

- origins in Scandinavia in 1970s
  - legislation required organizations to involve employees in decisions affecting work conditions
  - information systems encode work policies
- users actively involved in design
  - so, similar to cooperative design approaches
    - but a different set of motivations
    - workplace democracy as a central concern
    - avoiding alienation of employees
    - involvement throughout the lifecycle

participatory design

- techniques
  - many of the ones we've already seen
    - paper prototypes, storyboards, scenarios
    - "future workshops"
- difficulties
  - "hostage"
    - users overwelmed by technical language, withdraw
  - "indoctrination"
    - users "brainwashed" by developers, automatically agree
  - "teaching"
    - users viewed as pupils who need to be "taught" by developers

participatory design

- more widespread adoption?
  - strongly rooted in Scandinavian culture
    - strong sense of social responsibility
    - strong trade unions
  - less successful in the US
    - democratic participation seen as business interference

ethnography

- field technique from anthropology
  - a way of studying and analysing social settings
  - emphasis on direct experience of the setting
    - typically, long-term exposure
- focus on "the member's point of view"
  - not just what they do, but what they experience in doing it

anthropological influence

- ethnography arose as anthropological technique
  - means for understanding different cultures
  - in particular, trying to see a culture in its own terms
    - setting aside your own prejudices or opinions
    - example: magic and the Azande
- emphasis on direct contact and observation
  - earlier anthropology was library-work
    - based on field reports from colonial officers
    - perhaps augmented with surveys
    - very much an outsider's perspective

ethnographic fieldwork

- combination of interviewing and observation
  - keep detailed field notes
  - continual coding and analysis
  - use interviews to follow-up
- different styles
  - pure observation
  - participant-observer
- it's different in HCI...
  - we're never doing "pure" ethnography
  - always got an eye towards design opportunities

ethnography and design

- the trick is in turning results into design
  - ethnography describes what's there already
  - design is about putting something new there
    - inherently, this transforms the situation
- the key is the analysis
  - typically, what informs design isn't the observations
  - rather, it's the analysis
    - what do the observations reveal about the setting?
    - what do tell you?

air traffic control

- air traffic control
  - managing civilian air space
  - integrated radar and computer system
  - flights "handed off" between controllers
    - each controller has a sector of space to control
- study commissioned by UK equivalent of FAA
  - team of computer scientists and sociologists
  - original focus on computer systems
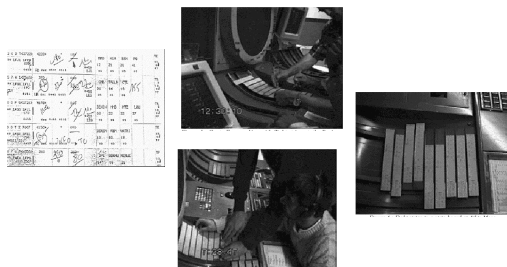 - increasing interest on flight strips

flight strips

- paper strip records flight information
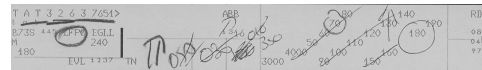
  - flight number
  - heading
  - altitude
- controller has one strip for each current flight
  - keeps them in a strip bay

flight strips

flight strips

- externalized view of the work
  - accessible to others
  - historical record
  - reminders of
- flight strips:
  - provide others with awareness of what's happening
  - allow controllers to tailor surroundings to their work

flight strips – analysis

- observation
  - *a range of practices around flight strips*
    - rearranging the strips as the work progresses
    - making some strips visually distinctive
    - watching what each other do
- analysis
  - *strips are an externalised representation of work*
    - makes it easier to remember what's going on
    - makes work visually accessible to others
    - an aid to coordination

flight-strip based design

- original design premise
  - *get rid of the strips*
  - *focus on integrating computer and radar information*
  - *automatically generate flight info*
- revised design
  - *maintain various features of the flight strips*
    - controller controls ordering, alignment
    - public display (through collaborative toolkit)

summary

- lab & predictive techniques decontextualized
  - *seeing a very unusual form of the work*
  - *how much predictive power do they really have?*
- interpretive techniques look at context
  - *how does work really happen*
  - *what is the context in which it gets done*
    - social, physical, organizational, etc.
- techniques to help uncover what's going on
  - *contextual enquiry as part of cooperative design*
  - *ethnographic*

for next time

- next time
  - *experimental methods (briefly)*
  - *comparing techniques*
  - *review*