Managing Design Processes

- Organizational Design to Support Usability
- Four Pillars of Design
- Development Methodology
- Ethnographic Observation
- Participatory Design
- Scenario Development
- Social Impact Statements
- Legal Issues
Organizational Design to Support Usability

- Competitive products with similar functionality?
  - Usability engineering is critical
  - Result: usability labs
    - Expert reviews
    - Usability tests
- User-interface architects, usability engineering managers (but typically no CUOs yet)
- Evidence, data may be required to show the business case for usability to managers
- Studies show usability testing can pay dividends
Organizational Design to Support Usability

- General usability labs, but per project user-interface architects
  - Centralized expertise, decentralized application
  - Different application domains...

- User-interface-building tool choice is vital to success
Organizational Design to Support Usability

- Characterization of design (Rosson and Carroll, 2002):
  - Design is a process
    - Not a state, or static
  - Design process is non-hierarchical
    - Not strictly bottom-up or top-down
  - Design is radically transformational
    - Some temporary solutions may have no role in finale design
  - Design involves discovery of new goals
- Bottom-line: design is *dynamic*
Four Pillars of Design

- Successful user interface design process involves:
  - User-interface requirements
  - Guidelines documents & process
  - User-interface software tools
  - Expert reviews & usability testing
Four Pillars of Design

- User interface requirements
  - Soliciting, clearly specifying user requirements always important development!
  - Methods to solicit, specify different across organizations
  - Common goals however, such as clearly specified:
    - user community
    - tasks that users perform
  - Without properly defined requirements, we might be solving the wrong problem!
Four Pillars of Design

• User interface requirements
  • Don't make human operator actions into user interface requirements
    – e.g. User must purchase a ticket within 1 minute (incorrect)
    – e.g. System will go to standby mode if ticket not purchased within 1 minute (correct)
  • Consider ethnographic observations to determine user-interface requirements
Four Pillars of Design

• Guidelines documents and processes
  • User-interface architecture should create set of working guidelines
  • Guidelines can be created for:
    – Words, icons, graphics
    – Screen-layout issues
    – Input and out devices
    – Action sequences
    – Training
  • Guideline creation == group work, involve everyone -> gains visibility, builds support!
Four Pillars of Design

- Guidelines documents and processes
  - Controversial guidelines?
    - Expert review, review by co-workers
    - Test them empirically in the lab
  - Concerns: enforcement, exemptions and enhancements
  - Flexibility from “rigid practice” to “subject to change”?
- Multiple levels of guidelines for organization-wide standards, application-specific standards?
Four Pillars of Design

• Guidelines documents and processes
  • “Four Es”
    – Education
      • How to train users of guidelines?
    – Enforcement
      • What process to verify interface adheres to guidelines?
    – Exemption
      • How to exempt new creative ideas quickly?
    – Enhancement
      • What process to review, update guidelines?
Four Pillars of Design

• User-interface software tools
  • Problem: development expensive, going back on design decisions is too
  • Give customers early stage feedback
    - Printed versions...
    - On-screen displays...
    - Prototype menu, form-fill systems...
    - PowerPoint slides, Flash, Ajax....
  • How will software development tools support UI aspect of project?
Four Pillars of Design

• Expert reviews and usability testing
  • Not that different an idea from other things really!
    – You rehearse a play before opening night...
    – You practice before the big game...
  • Carry out small and large pilot tests of the UI
  • Have the UI reviewed by UI, domain experts
  • Experiments, tests with expected users, record results meticulously
  • Surveys, interviews, automated analysis tools
Development Methodologies

- Estimated 50% of software projects fail to reach goals (Jones, 2005)
  - Bad communication often to blame...
- Software-engineering methodologies are effective in facilitating software dev. process
  - But have they been as effective at understanding users, creating usable interfaces?
- Agile development responsive to user-interface development, usability needs
Development Methodologies

● Different development methodologies might include...
  ● Approaches to specify detailed deliverables
  ● Incorporate cost/benefit, ROI analysis
  ● Management strategies
  ● UI design only one part... may have to co-exist with software-engineering methodologies

● Many, many methods exist, are advocated for different reasons
Development Methodologies

- Rapid contextual design method (Kaufmann, 2005):
  - Contextual inquiry
    - Plan\prepare\conduct field interviews, review business practices
  - Interpretation sessions and work modelling
    - Group meetings, discussions, draw conclusions
  - Model consolidation and affinity diagram building
    - Take resulting conclusions to larger target population, gain more insight, consolidate models, create work patterns
Development Methodologies

• Rapid contextual design method (Kaufmann, 2005) con't:
  • Persona development
    – Develop fictitious characters to represent different users, bring their needs to focus
  • Visioning
    – Use media to revive and walkthrough all the data from perspective of personas
  • Storyboarding
    – Initial user-interface concepts, business rules, automation assumptions
Development Methodologies

- Rapid contextual design method (Kaufmann, 2005) con't:
  - User environment design
    - Single, coherent representation built from storyboards
  - Interviews and evaluations with paper prototypes, mock-ups
Ethnographic Observation

• Ethnography:
  • Qualitative method to listen, observe the knowledge, workings and system of meanings of a group

• Traditional ethnographers emerse themselves in a culture for weeks or months

• UI designers do for days or hours
  • To obtain relevant data
  • Focus is to change, improve UI
Ethnographic Observation

- Challenges to ethnographic observation
  - Misinterpretation of observations
  - Disrupt normal practices
  - Overlooking important information
- Steps: preparation, field study, analysis, reporting
  - Require situational interpretation
  - Learning the technical, non-technical codes
  - Data collection: qualitative and quantitative
Ethnographic Observation

- Benefits of ethnographic observation:
  - Increased trust \ credibility
  - Designers learn complexities of target environment
  - Designer-user working relationships develop
  - Users may become active participants in design
Participatory Design

- Participatory design
  - “Direct involvement of people in the collaborative design of the things and technologies they use”

- Positives
  - Brings accurate info into the process...
  - But the “investment” in the implementation seems to most influence\increase user acceptance

- Negatives
  - Costly, lengthened implementation period
  - Bruised egos over rejected designers
  - Incompetent users may influence design
Participatory Design

• How to select users? Carefully...
  • Competitive process
    – Emphasizes seriousness
  • Repeated meetings
  • Clear guidance on roles, influence
Scenario Development

- Distribution of task frequencies and sequences is helpful knowledge
- Task frequency
  - Table with user communities, tasks
  - Each box contains relative frequency of tasks per user
- Task sequence
  - Flowchart
  - Transition diagram
  - Thickness of line can indicate frequency
Scenario Development

- Day-in-the-life scenarios
- Write scenarios down, act them out
  - Particularly important for co-operative interfaces (e.g. Control room)
  - Common or rare situations can be represented
  - Novice and expert users
  - Personas can be used
- Example scenario: Microsoft – Health Future Vision
  - Seamless integration of I/O into environment, etc.
Social Impact Statement for Early Design Review

● Social impact statement
  ● Statement of anticipated impacts on users
  ● Risk minimizing if circulated among stakeholders

● Concerns like...
  ● Privacy invasion
  ● Restriction of information
  ● Poor security
Social Impact Statement for Early Design Review

- Potential outline (Schneiderman & Rose, 1996):
  - Describe new system, benefits
    - Identify stakeholders, goals
  - Address concerns, potential barriers
    - Security, privacy
    - Potential layoffs, job changes?
    - Individual rights vs societal good
  - Outline development process
    - Estimated schedule
    - Migration?
    - Measuring success
Social Impact Statement for Early Design Review

• Concerns:
  • Evaluation by who?
    – Review panel, managers, designers, end users, anyone affected
    – E.G. regulatory agencies
    – Public meetings? Opportunities to propose alternatives?
  • Enforcement how?
    – Review panel typically enforces
  • Effort, cost, time in-line with project?
Legal Issues

• Privacy concerns
  • Medical, legal, financial
  • Protect from unapproved access, illegal tampering, inadvertent loss
  • Laws can be complicated, hard to understand

• Safety, reliability
  • Life-or-death decisions
  • Lawsuits possible

• Copyright protection, patent protection
  • Can users take info, images, music?
Legal Issues

- Freedom of expression
  - Can users say whatever they want?
  - Can users access whatever they want?
  - Who is responsible for libel, defamation of character, etc?
- Accessibility
  - For disabled users
References


