Analyzing Users’ Requirements

Goal: understand users’ current activities well enough to reason about technology-based enhancements

- Understanding the work being done now
  - so as to offer function that meets real needs
- As well as learning about the people themselves
  - so as to offer function in a way that is convenient and satisfying

Analyzing Work

- Observe and describe people’s activities
  - what goals do they pursue, how?
  - what errors do they make? what frustrates them?
  - how do they learn?
- Collect and study artifacts used in these activities
  - tools, documents, features of the work setting
  - artifacts support activity, but also constrain it
- Capture the social context of the work
  - groups and organizations, roles and relationships
  - how do different people/groups coordinate work?
Hierarchical Task Analysis (HTA)

- Decomposition of complex activity
  - goals and subgoals, with control logic
  - documents how things are ‘supposed’ to work
  - (much like an algorithm or program for the task)

- Then can carefully study the implications
  - does task really happen this way? If not, why?
  - what are sources of complexity, bottlenecks, breakdowns, work arounds?

Plan 0: Do 1,2,3

0. Check class roll

Plan 1: Do 1.1, 1.2

1. Navigate to registrar.vt.edu
   - 1.1 Open browser
   - 1.2 Enter URL

Plan 2: Do 2.1, then 2.2; if 2.2 fails, do again

2. Open faculty access tool
   - 2.1 Select link
   - 2.2 Logon
   - 2.2.1 Enter PID
   - 2.2.2 Enter password

Plan 3: Do 3.1, 3.2, 3.3

3. Display roll for CS 3724
   - 3.1 Select summary class info
   - 3.2 Select semester
   - 3.3 Select class CRN
Examining an Artifact

- What does it tell you about the task it supports?
  - if at all possible, observe it in use
  - (objects are not always used as intended :-)

- Try to extract task information and procedures
  - what task attributes are apparent or can be inferred?
  - what action sequences are required or possible?
  - what seems likely to be simple or difficult to do?

- Practice on some familiar examples:
  - ex: appointment book, wristwatch, badge
Artifacts and Use

- Ethnographic observation of a control room
  - status slips served as rich “work sites”
  - critical attribute is that they were shared objects
Analyzing the Larger Context

Using an approach like activity theory to examine relations among tasks, artifacts, conventions, and shared goals of a community

- **Artifacts**: Flyers, calculator, coupons, shelves, etc.
- **Actor**: Me
- **Task**: Purchase groceries
- **Activity goal**: Satisfied customer
- **Rules**: Sale dates, payment, item limits, etc.
- **Community**: Krogers and its customers
- **Division of labor**: I browse, cashier rings up, manager oversees, bagger bags, etc.

Getting Users Involved

- Usually there will be multiple “stakeholders”
  - e.g., workers, but also support staff, management
  - each with knowledge, preferences, perspectives
- Observe and/or interview representatives from all relevant groups
  - discuss their typical tasks, their role in the organization
  - as well as technology background and expectations
- **Participatory analysis**: videotapes or other records of activities that participants view and discuss
  - Virtual school requirements
People Know More than They Can Say

- Trouble Ticketing System (TTS)
  - database for tracking telephone line problems
  - relieve need for personal follow-up by staff members
- But, personal follow-up played a key role
  - details of problem filled in, organizational knowledge
  - TTS led to ‘workarounds’, with phone contact made as usual, but TTS used just to document jobs later
- *Tacit knowledge*: engineers were not aware how critical this social exchange was to their jobs

SBD and Requirements Analysis: Project 1

- **Root concept**: vision, rationale, assumptions, stakeholders
- **Field studies**: workplace observations, recordings, interviews, artifacts
- **Summaries**: stakeholder, task, and artifact analyses, general themes
- **Problem scenarios**: illustrate and put into context the tasks and themes discovered in the field studies
- **Claims analysis**: find and incorporate features of practice that have key implications for use
Group Project: Phase 1

First, read VSF example carefully, use as a model

- Organize as a group, develop root concept
- Observe activities, gather artifacts (at store)
- Interview at least 3 stakeholders (e.g., a professor, a student, a departmental staff member)
- Create summary diagrams and tables
- Express understanding in problem scenarios
  - develop hypothetical stakeholders to use as actors
  - integrate concerns and opportunities discovered in a believable usage context
- Extend scenario analysis with claims

garden.com homework due - Thursday

- Before Thursday, spend 20-30 minutes browsing case study
  - complete (for class participation credit) online survey
  - we are evaluating usefulness, usability of browser
- In class you will break into small groups to carry out a requirements-related activity