Requirements Analysis

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

Analyzing Users’ Requirements

• Understanding the work being done now
  ➢ Offer function that meets real needs

• Learn about the people themselves
  ➢ Offer function in a way that is convenient and satisfying
Analyzing Work

• Observe and describe people’s **activities**
  - What goals do they pursue, how?
• Collect and study **artifacts** used in these activities
  - Tools, documents, features of the work setting
• Capture the **social context** of the work
  - Groups and organizations, roles and relationships

Hierarchical Task Analysis (HTA)

• Decomposition of complex activity
  - Goals and sub-goals, 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?
  - Are there sources of complexity, bottlenecks? Why?
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: wristwatch, phone, appointment book, badge
Artifacts Support Tasks?
Appointment Books and PDAs

• How not to do it: Apple Newton
  - Do-it-all product does lots of things poorly
  - Unfocused market -- who wants a $700 personal organizer
  - Smaller than previous PDAs but still too large for a pocket
  - Did not consider why people use handheld artifacts and how technology could help

The Doonesbury Effect
Time Tradeoffs

A Successful Design: Palm

- Evolution helped by requirements analysis
  - Developer “used” wood block as a PDA
  - Each meeting centered around a prototype
- Well-targeted audience
  - Four basic applications
  - Inexpensive
  - Data synchronization led to multiplatform
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

Actor: Me
Task: Purchase groceries
Activity goal: Satisfied customer

Artifacts: Flyers, calculator, coupons, shelves, etc.

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

SBD and Requirements Analysis

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