10
The Documentary Hypothesis

The Documentary Hypothesis

- Documents for a Computer Product
- Documents for a University Department
- Documents for a Software Product
- Why Have Formal Documents?

## The new manager's realization

- New managers view paperwork as unnecessary
  - (Many documents are), but
  - A small set embodies the management task
- Their preparation
  - Focuses thought and discussion
  - Forewarns of dangers
- Useful documents fill the roles of
  - Checklist; Control mechnism; Database

Documents for a computer product

- Objectives
  - Goals, desiderata, constraints, priorities
- Specifications
  - User manual with performance specifications
- Schedule
- Budget
  - Forces technical decisions and policies
- Organization chart
- Space allocations

Market forecasts

- Feature estimates
  - Determine product competitiveness
    which influences . . .
- Sales volume forecasts
  - Determine unit costs
    which influences . . .
- Selling price
  - Determines gross profitabililty
    which influences . . . feature estimates

Features

Sales   Price
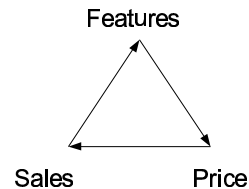
Product management

- If the cost-based price is:
- Below the market-acceptance price – No problem
- Above the market-acceptance price, then
  - Features must improve,
  - Performance must increase, and
  - Costs must decrease, all while
  - Ensuring conceptual integrity
- I.e., the essence of product management

Product management risk

- E.g., every six months in a three-year computer
  design, Brooks saw the CPU program counter
  - Move into registers, to improve performance
  - Move into main memory, to reduce cost
- What costs do these oscillations create?
- How does the manager's response determine the
  fate of the project, i.e., success or failure?
- Effective product management dampens extremes

Documents for a university chair

- Objectives
- Course descriptions
- Degree requirements
- Research proposals and funding plans
- Class schedule and teaching assignments
- Budget
- Space allocation
- Staff and graduate student assignments

The generalized management task

- What
- When
- How much
- Where
- Who

Documents for a software project

- The wise manager starts these early

- What: Objectives
- What: Specifications (trading space and time)
- When: Schedule
- How much: Budget
- Where: Space allocation
- Who: Organization chart

Conway's Law

- "Organizations which design systems are constrained to produce systems which are copies of the communication structures of these organizations."

- What design does the surgical team reflect?

Organize for change

- Conway points out that the organization chart will reflect the first system design
- Brooks observes that the, first system design is rarely the right one
- Consequently, the organization must be designed for change

- Contrast with Beck's extreme programming subtitle, i.e., "embrace change"

Why have formal documents?

- Writing decisions down reveals gaps, and
- Communicates the decisions to others
- Written documents are checklists and databases
- The majority of management is not data-driven
  - E.g., listening, reporting, teaching, exhorting, counselling, encouraging
- However, for the small portion that is data-driven (20%), the identified document content is critical