ICS 132: Organizational Information Systems

Business Processes and Workflow

what happens...

• ... when you walk into Starbuck's?

• and why?

machines and processes

• the machine metaphor at work
  – standardization, measurement, repeatability
  – standardize outcome by standardizing process
• two key elements
  – a formal description of the process
    • so it can be analyzed, transformed, shared, exchanged
  – embodiment in software tools
    • tools are constrained to follow process
      – e.g. just as a wizard guides you through a step-by-step sequence of actions and prevents deviations

finite state machines

petri nets

petri nets
petri nets

synchronization

concurrency

petri nets

resource sharing

process modeling languages

subprocesses?

process modeling languages

what happens at a transition?
modeling trade-off

complexity of modeling language

complexity of execution environment

BPR

- Business Process Reengineering
  - late 1980s to mid 1990s
  - focus on information flow
  - identify redundant or unnecessary steps
    - ... and eliminate them
  - critical role for technology
  - once your process has been redesigned, you need to make sure it’s followed
  - you want to retain centralised control of the processes that are put into effect
  - workflow technology can accomplish this

Ford: before

Ford: after

what does it take to achieve this?

process optimization

- that’s half the story
  - eliminating redundancy
  - reducing round-trips
    - notice too that this works by turning your problems into the other guy’s...
- and the other half?
  - need to ensure that the new process is carried out
  - a matter of control

workflow architectures
workflow architectures

dominant issues: control & change

workflow technology

- technology for managing processes
  - embody an explicit representation of a process
  - database of process instances
    - record details of each process
      - history, state, documents, etc
    - ensure the orderly execution of processes
      - turn process and tasks to to-do lists and action items
    - some design questions
      - to what extent do people see the whole?
      - how can exceptions be managed?

a major problem

- the basis for all this is finite-state technology
  - but the world is not finite
- exception management
  - trade-off again -- modeling or execution?
  - exceptions aren’t exceptional
  - exceptions are often *good*

a case study

- workflow in factory production printing
  - the work from the systems’ perspective
  - the work from the users’ perspective
  - creative exception management
    - jumping the gun
    - balancing the load over machines
    - doing each others’ jobs
    - blocking out time
  - where does the "smooth flow of work" come from?

an alternative for workflow

- workflow as an integration technology
  - focus less on automating internal processes
  - instead, on coordinating interactions
    - amongst organizations, clients, customers, suppliers
  - alternative view of process languages
    - a lingua franca between different technologies

workflow and integration
however…

- degree of specification
  - balancing control with autonomy
  - different process languages vary
    - put the smarts in the language
    - put the smarts in the environment that executes it
- integration with existing practice
  - analysis of practice often focuses on what rather than why
  - we'll see this on Tuesday…

next time

- more on the machine metaphor
- machine management of data
  - database systems
  - ER modeling
  - normalization