ICS 132: Organizational Information Systems

Business Processes and Workflow

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administrivia

- lectures online
- homework grading
- books

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last time…

- introduced Alter's "work centered analysis"
  - six primary components:
    - customers
    - products
    - business processes
    - participants
    - information
    - technology
  - talked about how they fit together
  - today: processes and workflow technology

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business processes

- not simply "what organisations do"
  - they can be formalised and written down
    - people can be required to act according to them
    - performance and deviation can be measured
  - breaking it down
    - individual steps and activities
    - organised into sequences and alternatives
  - remember the machine metaphor
    - processes are a means to *standardise action*
    - processes are a means to *measure progress*

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a formal process

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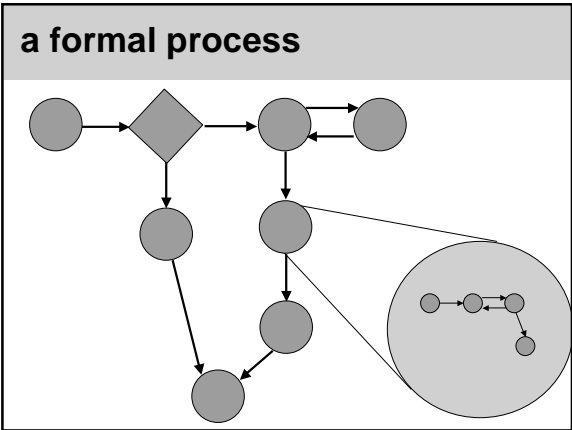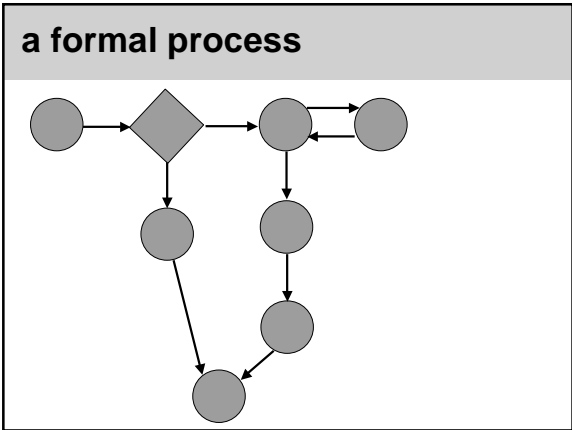
a formal process
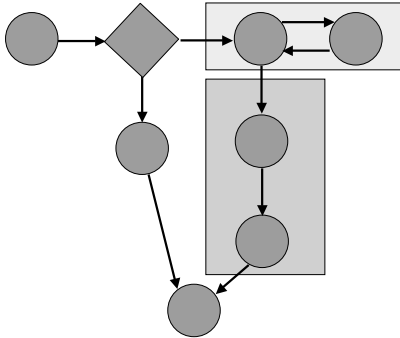
a formal process

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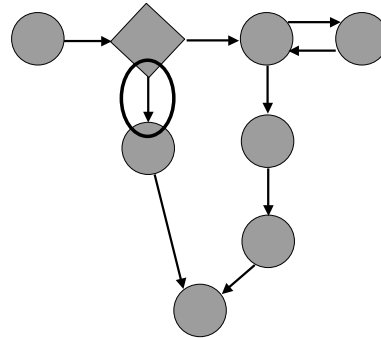
## BPR

- 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
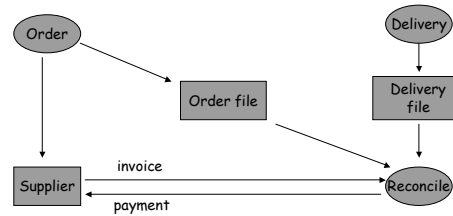
Ford: after
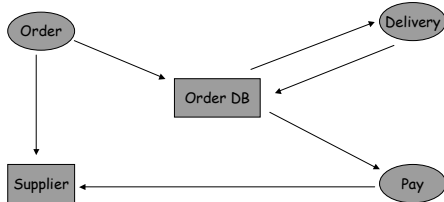
workflow technology

- 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?

speech acts

- language doesn't just describe the world
  - language is also a means for action
    - "I promise to pay you ten dollars"
  - context matters
    - "there's a bull in the field"
      - a description of the state of the world?
      - a warning not to walk through the field to the car?
      - a suggestion about the photograph you want to take?
- describing the consequences of utterances
  - locutionary act (what I say)
  - illocutionary force (what that does)

speech acts

- five basic types
  - assertive
    - commit the speaker to the truth of something
  - directive
    - attempt to get the hearer to do something
  - commissive
    - commit the speaker to some course of action
  - expressive
    - expressing a psychological state
  - declarations
    - bring the world into alignment with the utterance

example #1

A: What's the time?
B: It's six o'clock
A: Aha! So it's time for a drink!

example #2

A: Where is your homework?
B: The dog ate it. Can I give it to you tomorrow?
A: Okay. You have 'til 4pm.

example #3

A: Let's go see a movie
B: I have homework
A: That's not due for days!
B: I'm going to need more time to work on it, though.
A: We could go tomorrow…?
B: Yeah, let's do that…

example #4

Shall I compare thee to a Summers day?
Thou art more lovely and more temperate:
Rough windes do shake the darling buds of Maie,
And Sommers lease hath all too short a date:
Sometime too hot the eye of heaven shines,
And often is his gold complexion dimm'd,
And euery faire from faire some-time declines,
By chance,or natures changing course untrim'd:
But thy eternall Sommer shall not fade,
Nor loose possession of that faire thou ow'st,
Nor shall death brag thou wandr'st in his shade,
When in eternall lines to time thou grow'st,
 So long as men can breath or eyes can see,
 So long lives this,and this gives life to thee,

it's not always obvious…

- "Does this dress make me look fat?"
- "How 'bout dem Raiders?"
- "I wish you wouldn't do that"
- "Yeah, right"

- similarly:
  - it's not always clear what the effect of an act is
    - its role in the process
    - the consequence of removing it
   - the consequence of enforcing it

## conversation for action
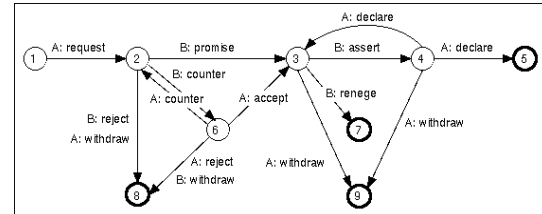
experiences with workflow

- The Coordinator
  - speech-act based email
    - encoded an model of commitment negotiation
    - too rigid to use effectively
  - aimed in the wrong place
    - communication rather than specific activities
- Modern workflow technologies
  - focussed on specific processes
  - coupled to other information systems
  - coupled to other process systems

workflow architectures
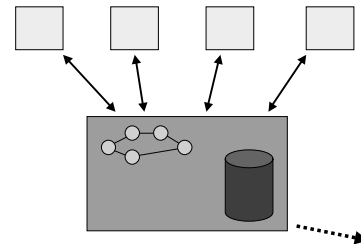
workflow architectures
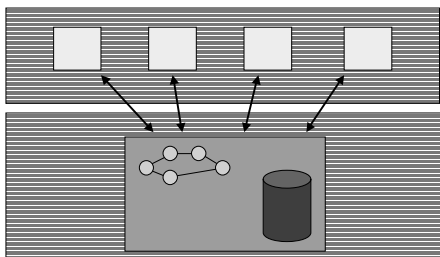
building process-based systems

- process modelling
- analysing processes
- connecting them with work

- an example
  - workflow in factory production printing

process modelling

- what are you going to model?
  - steps and connections
    - the flow of work?
    - the flow of responsibility?
    - the flow of artifacts?
- separating *process* from *execution*
  - where do exceptions fit?
  - formal processes are always idealisations

dangers

- "relieving the burden of coordination"
  - sometimes, the coordination is the important part!
- failing to account for:
  - local contingencies
    - adapting processes to different needs
  - larger organisational goals
    - maintaining customer satisfaction, for example
  - a sense of the whole
    - focus on processes and activities obscures the "big picture"
      - for the modeller
      - for the participants

process characteristics

- structure
- range of involvement
- level of integration
- complexity

structure

- structured, semi-structured, unstructured
  - how formal? how precise? how predictable?
- *uncovering* structure or *imposing* structure?
  - replacing people with technology
  - introducing performance monitoring & real-time management
  - unifying information representations

involvement

- broadening involvement
  - making work *visible*
    - communicating its state to other people (managers?)
    - allowing them to participate
- involvement *over the process lifetime*
  - step-by-step versus case-based approaches

integration

- "mutual responsiveness and collaboration between distinct activities or processes"
  - how closely aligned are two processes?
    - they are conducted in the same organisation
    - one depends on the other's output
    - they access the same information (read? write?)
    - their steps are intertwined
  - tight integration reduces redundancy
    - can be absolutely necessary for some kinds of work
    - but increases interdependence – think failure modes!
  - integration of technology?

complexity

- sources of complexity
  - number of steps
  - number of exceptions & special cases
  - constraints between processes
- complexity *can* be necessary
  - but it's rarely efficient or cheap

measuring effectiveness

- as usual, many metrics
  - output; consistency; security; flexibility
- two roles for the process
  - the process can be attuned to one need or another
  - the process provides the means to measure
    - it provides the terms of reference
      - forms, widgets, approvals… things flowing through the system
    - sets up observable barriers between activities

connecting process to work

- we've taken the information analysts' view
  - but what about the people doing the work?
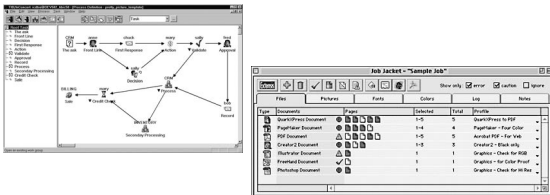
summary

- processes let us regularise and monitor
  - workflow technologies embody processes
  - key steps:
    - modelling the process
    - analysing the process
    - linking the process to the actual work
    - using the process to monitor activity

next time…

- information management
  - Alter chapter 4
  - database readings on the web site