chapter 13

socio-organizational issues and stakeholder requirements

Organizational issues affect acceptance
- conflict & power, who benefits, encouraging use

Stakeholders
- identify their requirements in organizational context

Socio-technical models
- human and technical requirements

Soft systems methodology
- broader view of human and organizational issues

Participatory design
- includes the user directly in the design process

Ethnographic methods
- study users in context, unbiased perspective

Organizational issues

Organisational factors can make or break a system

Studying the work group is not sufficient
- any system is used within a wider context
- and the crucial people need not be direct users

Before installing a new system must understand:
- who benefits
- who puts in effort
- the balance of power in the organisation
  ... and how it will be affected

Even when a system is successful
... it may be difficult to measure that success
Conflict and power

CSCW = computer supported cooperative work
- people and groups have conflicting goals
- systems assuming cooperation will fail!
  e.g. computerise stock control
  stockman loses control of information
  ⇒ subverts the system

identify stakeholders – not just the users

Organisational structures

- Groupware affects organisational structures
  - communication structures reflect line management
  - email – cross-organisational communication

Disenfranchises lower management
  ⇒ disaffected staff and 'sabotage'

Technology can be used to change management style and power structures
- but need to know that is what we are doing
- and more often an accident!

Invisible workers

Telecommunications improvements allow:
- neighbourhood workcentres
- home-based tele-working

Many ecological and economic benefits
- reduce car travel
- flexible family commitments

but:
- 'management by presence' doesn't work
- presence increases perceived worth
- problems for promotion

Barriers to tele-working are managerial/social not technological
Benefits for all?

Disproportionate effort
who puts in the effort + who gets the benefit
Example: shared diary:
- effort: secretaries and subordinates, enter data
- benefit: manager easy to arrange meetings
- result: falls into disuse
Solutions:
- coerce use!
- design in symmetry

Free rider problem

no bias, but still problem
possible to get benefit without doing work
if everyone does it, system falls into disuse
e.g. electronic conferences
- possible to read but never contribute
solutions:
strict protocols (e.g., round robin)
increase visibility – rely on social pressure

Critical mass

Early telephone system:
- few subscribers – no one to ring
- lots of subscribers – never stops ringing!
Electronic communications similar:
- benefit = number of subscribers
- early users have negative cost/benefit
- need critical mass to give net benefits
How to get started?
- look for cliques to form core user base
- design to benefit an initial small user base
Critical mass

- strong benefit when lots of users
- but little benefit for early users

solution = increase zero point benefit

benefits of use
cost of use
number of users
critical mass

Evaluating the benefits

Assuming we have avoided the pitfalls!

How do we measure our success?
- job satisfaction and information flow
  - hard to measure
- economic benefit
  - diffuse throughout organisation

But...
- costs of hardware and software
  - only too obvious

Perhaps we have to rely on hype!

capturing requirements

- need to identify requirements within context of use
- need to take account of
  - stakeholders
  - work groups and practices
  - organisational context
- many approaches including
  - socio-technical modelling
  - soft system modelling
  - participatory design
  - contextual inquiry
who are the stakeholders?

- system will have many stakeholders with potentially conflicting interests
- stakeholder is anyone effected by success or failure of system
  - primary - actually use system
  - secondary - receive output or provide input
  - tertiary - no direct involvement but effected by success or failure
  - facilitating - involved in development or deployment of system

Example: Classifying stakeholders – an airline booking system

An international airline is considering introducing a new booking system for use by associated travel agents to sell flights directly to the public.

Primary stakeholders: travel agency staff, airline booking staff

Secondary stakeholders: customers, airline management

Tertiary stakeholders: competitors, civil aviation authorities, customers’ travelling companions, airline shareholders

Facilitating stakeholders: design team, IT department staff

do designers need to meet as many stakeholder needs as possible

- usually in conflict so have to prioritise
- often priority decreases as move down categories e.g. primary most important
- not always e.g. life support machine
socio-technical modelling

- response to technological determinism
- concerned with technical, social, organizational and human aspects of design
- describes impact of specific technology on organization
- information gathering: interviews, observation, focus groups, document analysis
- several approaches e.g.
  - CUSTOM
  - OSTA

CUSTOM

- Six stage process - focus on stakeholders
  - describe organizational context, including primary goals, physical characteristics, political and economic background
  - identify and describe stakeholders including personal issues, role in the organization and job
  - identify and describe work-groups whether formally constituted or not
  - identify and describe task–object pairs i.e. tasks to be performed and objects used
  - identify stakeholder needs: stages 2–4 described in terms of both current and proposed system - stakeholder needs are identified from the differences between the two
  - consolidate and check stakeholder requirements against earlier criteria

OSTA

- Eight stage model - focus on task
  - primary task identified in terms of users' goals
  - task inputs to system identified
  - external environment into which the system will be introduced is described, including physical, economic and political aspects
  - transformation processes within the system are described in terms of actions performed on or with objects
  - social system is analyzed, considering existing internal and external work-groups and relationships
  - technical system is described in terms of configuration and integration with other systems
  - performance satisfaction criteria are established, indicating social and technical requirements of system
  - new technical system is specified
**soft systems methodology**

- no assumption of technological solution - emphasis on understanding situation fully
- developed by Checkland
- seven stages
  - recognition of problem and initiation of analysis
  - detailed description of problem situation
    - rich picture
  - generate root definitions of system
    - CATWOE
  - conceptual model - identifying transformations
  - compare real world to conceptual model
  - identify necessary changes
  - determine actions to effect changes

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**CATWOE**

- **Clients**: those who receive output or benefit from the system
- **Actors**: those who perform activities within the system
- **Transformations**: the changes that are affected by the system
- **Weltanschauung**: (from the German) or World View - how the system is perceived in a particular root definition
- **Owner**: those to whom the system belongs, to whom it is answerable and who can authorize changes to it
- **Environment**: the world in which the system operates and by which it is influenced

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**Participatory design**

In participatory design:
- workers enter into design context

In ethnography (as used for design):
- designer enters into work context

Both make workers feel valued in design
- encourage workers to 'own' the products
**Participatory Design**

- User is an active member of the design team.
- Characteristics
  - context and work oriented rather than system oriented
  - iterative
- Methods
  - brainstorming
  - storyboarding
  - workshops
  - pencil and paper exercises

**ETHICS**

- participatory socio-technical approach devised by Mumford
  - system development is about managing change
  - non-participants more likely to be dissatisfied
- three levels of participation
  - consultative, representative, consensus
- design groups including stakeholder representatives make design decisions
- job satisfaction is key to solution

**Ethnography**

- very influential in CSCW
- a form of anthropological study with special focus on social relationships
- does not enter actively into situation
- seeks to understand social culture
- unbiased and open ended
contextual inquiry

- Approach developed by Holtzblatt
  - in ethnographic tradition but acknowledges and challenges investigator focus
  - model of investigator being apprenticed to user to learn about work
  - investigation takes place in workplace - detailed interviews, observation, analysis of communications, physical workplace, artefacts
  - number of models created:
    - sequence, physical, flow, cultural, artefact
    - models consolidated across users
  - output indicates task sequences, artefacts and communication channels needed and physical and cultural constraints