chapter 13

socio-organizational issues and stakeholder requirements

Organisational 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 looses 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 vs. 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

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**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

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**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

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**Critical mass**

![Graph showing critical mass]

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

solution — increase zero point benefit

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**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!

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**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 affected 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

who are the stakeholders?

- 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

**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

**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
  - Collaborative
  - 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