HUMAN-COMPUTER INTERACTION THIRD EDITION

DIX FINLAY ABOWD BEALE

chapter 13

socio-organizational issues and stakeholder requirements

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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

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 $\overset{?}{=}$ 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
$\Rightarrow$ 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
$\Rightarrow$ 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

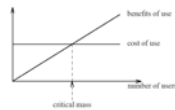Early telephone system:
  few subscribers – no one to ring
  lots of subscribers – never stops ringing!

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
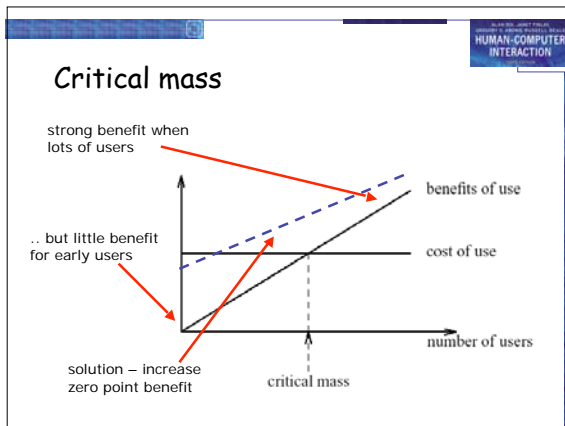 – design to benefit an initial small user base

Critical mass

strong benefit when
lots of users

.. but little benefit
for early users

benefits of use

cost of use

number of users

solution – increase
zero point benefit

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

who are the stakeholders?

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
  - brain-storming
  - 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