

HUMAN-COMPUTER INTERACTION THIRD EDITION **DIX FINLAY ABOUW BEALE**

chapter 13

socio-organizational issues and stakeholder requirements

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

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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

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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 !

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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

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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

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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

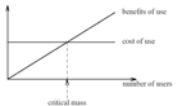
- possible to read but never contribute

solutions:

- strict protocols (e.g., round robin)
- increase visibility – rely on social pressure

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Critical mass



Early telephone system:

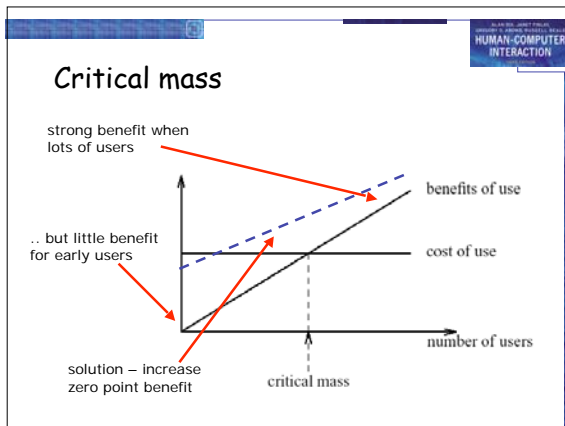
- few subscribers – no one to ring
- lots of subscribers – never stops ringing!

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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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 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

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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

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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

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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

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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

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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

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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
