HUMAN-COMPUTER INTERACTION — THIRD EDITION

DIX FINLAY ABOWD BEALE

chapter 13

socio-organizational issues and stakeholder requirements
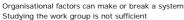
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socio-organizational issues and stakeholder requirements

- 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
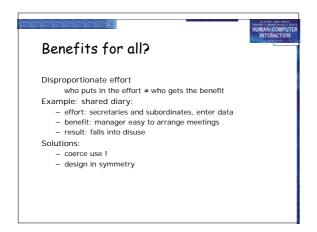 - and more often an accident !

Invisible workers

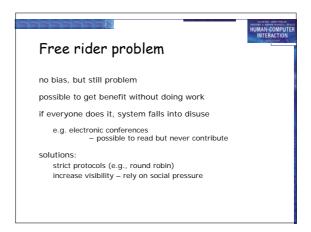Telecommunications improvements allow:
- neighbourhood workcentres
- home-based tele-working

Many ecological and economic benefits
- reduce car travel
- flexible family commitments
but:
- 'management by presence' doesn't work
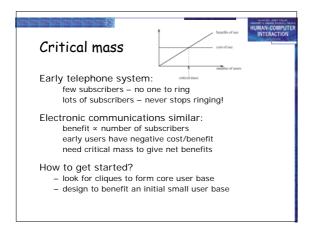- presence increases perceived worth
- problems for promotion

Barriers to tele-working are managerial/social
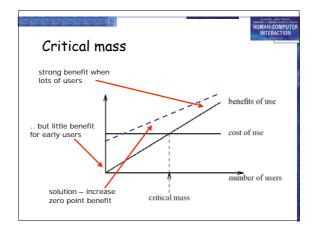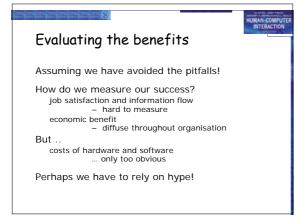 *not* technological

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

solution – increase zero point benefit

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
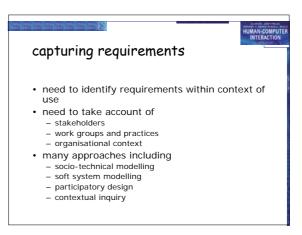   – participatory design
    – contextual inquiry

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

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