Pragmatic Qualities of Information Systems
- Actability
Criteria for Design and Evaluation

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Qualities depend on perspective taken
Ways to conceive information systems (1)

A personal instrument?
An artefact to interact with?

Ways to conceive information systems (2)

A communicative instrument?
An artefact for mediating communication?
Ways to conceive information systems (3)

A process instrument?

An artefact to improve business processes?

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Which one to chose?

- Interaction artefact?
- Communication artefact?
- Business process artefact?
- "Informations systems actability" comprises all three perspectives

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**IS Actability**

- A practical theory conceptualizing IT artefacts, users, actions, workpractices and business processes
- Operationalised into methods for
  - requirements engineering
  - user interface design
  - conceptual modelling and database design
  - IS evaluation
- Theoretically grounded in
  - Language Action Perspective & Speech act theory
  - Semiotic theories
  - Pragmatic philosophy
  - Social action theories
  - Activity theory
  - Affordance theory

**Purpose**

- To formulate pragmatic qualities of IS
- To formulate IS actability criteria, to be used for
  - Design
  - Evaluation
Interaction is instrumental to Communication is instrumental to Business process effects

Three layers of IS pragmatic qualities

Interaction quality Communication quality Process quality
Actability conceptualisation of IS

Three groups of actability criteria

- Interaction quality criteria  (9)
  - Fundamental interaction criteria  (5)
  - Navigation criteria  (4)
- Communication quality  (8)
  - Reading criteria  (3)
  - Formulation criteria  (5)
- Process quality  (1)

18 criteria
Interaction quality criteria

Fundamental interaction criteria

Human-system interaction

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Clear action repertoire

- The system should expose its action repertoire in a clear way to the user.
- A clear action repertoire enables the user to be well-informed what do with the system and that he can perform subsequent actions with confidence.
- An actable system should have a clear action repertoire.

Intelligible vocabulary

- The used vocabulary should be intelligible and correspond with the users’ workpractice language.
- This enables the user to act with confidence in many interactive situations and to interpret information from the system accurately.
- An actable system should have an intelligible vocabulary.
**Action transparency**

- The user should **understand in advance** what will happen when he performs different IT-mediated tasks.
- This enables the user to act in confidence when interacting with the system.
- The user becomes well-informed about the action repertoire and can anticipate the consequences of different actions.
- An actable system should be action transparent.

**Clear feedback**

- The user should receive a **clear response** (a feedback) to his intervention to the system.
- This feedback enables the user to post-assess his intervention properly and thus to be sure about the results of his earlier action.
- An actable system should produce clear feedback to the user.
**Amendability**

- The user should be able to **correct** an earlier erroneous action.
- This enables the system to be more accurate and permit the user to make certain errors without severe consequences (a “forgiving” system).
- An actable system should have amendability; i.e. to be possible to recover from identified erroneous actions.

**Interaction quality criteria**

Navigation criteria
**Navigation**

The user can **move around** in the system in a controlled manner.

This enables the user to get to the desired spot in a system easily.

An actable system should be easy to navigate.
**Action stage overview**

- The user should get an overview of the IT-mediated work process and where he is in this process at the moment.
- This makes the user aware of the subsequent stages of a work process and thus what is expected from him.
- An actable system should give action stage overviews.

**Conceptual consistency**

- The user should meet a consistent terminology and other symbology in the system.
- This prevents the user to be confused when using the system - the user can act with more ease and comfort.
- An actable system should be conceptually consistent.
**Action accessibility**

- The user should have **easy access** to action affordances when needed
- This enables the user to perform his tasks fluently and avoid unnecessary movements within a system
- An actable system should have proper action accessibility

**Communication quality criteria**

Reading criteria
Human-through-IS-to-human communication

The user should have easy access to the workpractice memory of the system (= messages from other users).

This enables the user to get informed about different relevant issues in the workpractice.

An actable system should have a clear and accessible workpractice memory.
**Actor clarity**

- The user should as far as possible be aware of **who has said what** through the system.
- This may enable the user to reach contact with originators of messages.
- An actable system should have actor clarity (i.e. visible senders of messages).

**Intention clarity**

- The user should be aware of **intentions** of the conveyed messages.
- This enables the user to properly understand the full meanings of read messages.
- An actable system should have intention clarity.
Communication quality criteria

Formulation criteria

Satisficing communication needs

- The user should be able to realize **communication needs** through formulating messages into the system.
- This facilitates communication in the workpractice and puts it into organised and recognised patterns.
- An actable system should satisfy the users’ communication needs.
**Relevant communication demands**

- The user should **not** be demanded to **re-register** information into the system that is already kept by the system itself.
- This will not put unnecessary burden on the user.
- An actable system puts relevant communication demands on the user.

**Workpractice memory addition**

- The system should process and store input messages in proper ways in order to establish **good communication conditions**.
- This enables later retrieval and reading of messages and intended distribution of messages to targeted addressees.
- An actable system should have an updated workpractice memory, through message addition.
Addressee relevant communication

- Relevant messages should be presented to intended users (addressees)
- This creates a full communication process from sender to receiver
  - The intentions of the sender to communicate something to targeted receivers will be fulfilled
- An actable system should have addressee relevant communication

Addressee adapted communication

- Messages should be presented to intended users (addressees) in appropriate ways
- This enables the addressee to be reached by the message and use it accordingly
- An actable system should have addressee adapted communication
Process quality criteria

Subsequent action support

- Information from the system should be useful to its users.
- Information from the system should thus contribute to process quality of the workpractice through enabling or improving actions that are seemed pivotal.
- An actable system should give appropriate action support to its users.

[Diagram of user interaction with system, showing input and output messages, work-practice memory, and subsequent actions.]
Use of actability criteria

- In design of information systems
  - Possible quality ideals to strive for
  - As inspiration when designing the system together with domain-specific goals
- In formative evaluation of information systems
  - Evaluation of design proposals during the ISD
- In post-evaluations of information systems
  - A yardstick when assessing an IS
- In research on information systems
  - Formulation of pragmatic qualities

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