



Usability

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Usability motivations

Why is ease-of-use/ usability an issue?

- Life-critical systems

- Control of power plants, nuclear power plants especially
- Air traffic control
- Airplanes and other vehicles
- Hospital and medical systems

- Requirements

- Speed and accuracy of action
- Good retention of learning



Usability motivations

- Frequently used systems
 - Banking
 - Corporate databases and intranets
 - Transportation tickets
 - Airline check-in
 - Mobile phones and other gadgets



Usability goals

- ISO 9241 standard:
 - Effectiveness, efficiency & satisfaction

Measured by:

- Time to learn
- Speed of performance
- Rate of errors by users
- Retention over time
- Subjective satisfaction



Universal usability, needs

- Variations in physical abilities, disabilities
- Variations in use environment
- Diverse cognitive abilities
- Diverse perceptual abilities (vision, hearing)
- Personality differences
- Cultural and international diversity
- Special user groups: children and the elderly



Eight golden rules of interface design

1. Strive for consistency
2. Cater to universal usability
3. Offer informative feedback
4. Prevent errors
5. Design dialogs to yield closure
6. Permit easy reversal of actions
7. Support internal locus of control
8. Reduce short-term memory load

Usability in ISO standards



- ISO 14915-1:2002 Software ergonomics for multimedia user interfaces. In Tuubi
- ISO 9241 **Ergonomics of human-system interaction** provides requirements and recommendations that contribute to usability, and the ergonomic principles underlying them.
- User interface evaluation
- ISO 9241 - Part 110: Dialogue principles.



ISO 9241 -110 Dialogue principles

- Is the dialogue suitable for the user's task and skill level?
(Suitability for the task)

A dialogue is suitable for a task when it supports the user in the effective and efficient completion of the task. In a dialogue which is suitable for the task, the user is enabled to focus on the task itself rather than the technology chosen to perform that task.

- Does the dialogue make it clear what the user should do next?
(Self-descriptiveness)

A dialogue is self-descriptive to the extent that at any time it is obvious to the users which dialogue they are in, where they are within the dialogue, which actions can be taken and how they can be performed.



Dialogue principles 2

- Is the dialogue consistent?
(Conformity with user expectations)
A dialogue conforms with user expectations if it corresponds to predictable contextual needs of the user and to commonly accepted conventions.
- Does the dialogue support learning? (Suitability for learning)
A dialogue is suitable for learning when it supports and guides the user in learning to use the system.
- Can the user control the pace and sequence of the interaction?
(Controllability)
A dialogue is controllable when the user is able to initiate and control the direction and pace of the interaction until the point at which the goal has been met.



Dialogue principles 3

- Is the dialogue forgiving?
(Error tolerance)
A dialogue is error-tolerant if, despite evident errors in input, the intended result may be achieved with either no or minimal corrective action by the user. Error tolerance is achieved by means of damage control, error correction, or error management to cope with errors that occur.
- Can the dialogue be customised to suit the user? (Suitability for individualisation)
A dialogue is capable of individualization when users can modify interaction and presentation of information to suit their individual capabilities and needs.