Appendix B Glossary

Affordance is an aspect of an object, which makes it obvious how the object is to be used.

Analytical methods. An analytical method is a method where formal specifications of the system, tasks and context of use serve as input. The results of analytical evaluation can be seen as the output of a mathematical function, which only depends on the formal input specifications. In general analytical methods are objective and access no empirical data. They can be applied very early in the design cycle. The reliability of measures calculated on the basis of these methods is not in question. Analytical methods are often based on simulation: the interaction of a (future) user with the system is simulated.

Application is a term commonly used by computer scientist to refer to a program created to support users to carry out a specific task.

Assessment criteria are critical values for relevant measures, which are the basis for the assessment of an electronic information service or product.

Case-controlled experiments are empirical methods carefully designed to support a particular claim or hypothesis. Any experiment has the same basic form. The evaluator chooses a hypothesis to test, which can be determined by measuring some attribute of subject behaviour. A number of experimental conditions are considered which differ only in the values of certain controlled variables. Any changes in the

behavioural measures are attributed to the different conditions, leading to confirm or invalidate the tested hypothesis.

Cognitive overload refers to excessive demands made on the cognitive processes of the user, especially their memory.

Collocated Groupware is collaborative software that allows users who are located in the same space to work on a shared task organized, presented and contained by the software package.

Command refers to any form of communication with a computer system (usually via a keyboard) in which a request for action is given (usually by inputting a short word or abbreviation).

Computer supported cooperative work (CSCW) is the study of the sharing of software and hardware among groups of people working together so as to optimize the shared technology for maximum benefit to all those who use it or affected by it.

Critical success factors determine the success of the electronic information application for the organisation. Critical success factors can be product oriented (e.g. higher product quality, innovative design), development process oriented (e.g. more efficient and effective development process), standards oriented (e.g. product complies to standards), societal goals (e.g. product can be used by people with special needs).

Dependent variable in an experiment is the variable that depends on the independent variable.

Direct manipulation refers to a communication style in which objects are represented on a computer screen and can be manipulated by the user in ways analogous to how the user would manipulate the real object.

Distribution of a measure describes the statistical distribution of the measure values (normal, skewed, even, other) as identified in real use.

Ecological validity refers to the environment in which the evaluation takes place and the degree to which it may affect the results it obtains.

Ethnomethodology refers to a method that analyses human behavior by observing events in their natural context.

Empirical methods rely on having a number of users experiment with the system in some controlled manner.

Field study is a study that is done in a natural setting as opposed to a controlled laboratory study.

Functional requirements in software design refer to a specification of what the system (both human and computer) has to be capable of doing.

Grammatical clause refers to a group of words containing a subject and predicate and functioning as a member of a complex sentence.

Groupware is software designed to be used by more than one person, for instance electronic mail software.

Gulf of evaluation refers to the distance between the system's be havior and the user's goals.

Gulf of execution refers to the distance between the user's goals and the means of achieving them through the system.

Hierarchical task analysis refers to a technique to describe the task in terms of a hierarchy of operations and plans.

Independent variable is the variable in an experiment that the experimenter manipulates.

Inspection methods are 'cheap' evaluation methods that consist of having a number of 'usability experts' inspect a user interface against a number of usability criteria, stepping through a task scenario and looking for usability problems, or checking the cognitive dimension in the fulfillment of the task scenario.

Interface metaphor is a representation of a familiar domain that presents a system model to the user as a physical world of objects.

Longitudinal study refers to an approach where an individual or groups of individuals are followed over an extended period of time, with observations made at periodic intervals.

Measurement means a repeatable, objective procedure for generating a measure. The resulting measure(s) are scaled in a known way, and reference values, reliability and validity are known.

Measures are operationalised quality factors. Measures can be subjective or objective, direct or indirect, analytical or empirical.

Metaphor refers to a way of describing a concept in a more accessible and familiar form, which is expected to help in understanding an unfamiliar or complex subject**.**

Objective measurement method refers to a validation method classified to be objective because it is based on objective measurement procedures. However, the data can be of subjective (empirical) or objective (analytical) origin. A method based on empirical data (experiments, ratings of users) can be objective if there are objective measurement procedures. The results of the application of a subjective measurement method are influenced by decisions made by the evaluator in a high degree.

Observational methods are empirical methods that rely on the general observation of the user interacting with the system, together with the use of a protocol analysis method such as thinking aloud (users are asked to describe what they think is

happening) or post-talk walkthroughs (a transcript of the session is re-played and the user is invited to comment); or 'simple' recording of user actions and analysis of patterns and relationships.

Paralinguistic (pitch, drawl) refer to optional vocal effects (such as tone of voice) that accompany or modify an utterance and that may communicate meaning.

Participatory design and prototyping means making users part of the design team or letting them participating in the prototyping process as "subject matter experts". It is not reasonable to expect users to come up with design ideas from scratch. However, users are very good at reacting to designs and prototypes. Participatory design is particularly effective when designing customised software in-house.

Pilot study is a small study carried out prior to a large-scale study in order to test the procedure or technique.

Phonemic (clause) refers to sounds that are members of the set of smallest units of speech that serve to distinguish one utterance from another.

Prototype in software engineering refers to an experimental incomplete design of an application used for testing design ideas.

Qualitative data are data which can be categorized in some way but which cannot be reduced to numerical measurements.

Quality factors are features by which a product can be assessed such as efficiency of use, task adequacy, cognitive workload, robustness, learning cost, user acceptance. Quality factors are the result of the decomposition of the term "quality of the application". They are variables which reflect different independent quality aspects of the application. Validation questions must be formulated in terms of quality factors in order to allow meaningful measurement.

Quality of use is used synonymously to usability to make clear that quality of use is a concept, which consists of multiple dimensions. The dimensions are measurable. An application's overall quality of use is then determined by specifying the dimensions which are relevant in a certain usage context, adding priorities to the different quality dimensions (this is optional), defining assessment criteria for dimensions.

Quantitative data are data that are comprised of numeric values.

Reliability of a measure describes the degree of stability of the measurement procedure. A measure is reliable if the application of the measure yields reproducible results. Factors which could reduce the reliability of a measure could be for example number or attributes of subjects involved in experimental tests or subjective decisions made by the evaluator.

Scale type of a measure can be ordinal, interval, ratio, absolute. It influences the interpretation of the measurement values to a high degree. For example the scale type of measures must be known for a number of statistical procedures to be applied to the values.

Sociocentric sequence in the study of collaboration refers to related social activities governed by the social settings in which they take place.

Sociolinguistic solidarity in the study of collaboration refers to the tendency of people to express their involvement through verbal expressions, especially phatic communications, in order to raise the group cohesion.

Software engineering refers to the application of engineering principles and methods of design to the production of software.

Subject-predicate combination refers to that part of a sentence or clause that expresses what is said about the subject and that usually consists of a subject and a verb with or without other modifiers.

Summative evaluation refers to evaluation, which takes place after implementation and has the aim of testing the proper functioning of a product.

System in software engineering refers to a software application and the necessary hardware as presented to the user to perform a certain task. Often used synonymously with application.

System control refers to a style of interaction with the computer system where it has temporarily taken control away from the user in order to perform a certain task.

System feedback refers to information provided by the system to reassure, guide and inform the users.

System requirements specification refers to a document that clarifies the program ‘s requirement in an unambiguous form by precisely formulating the necessary system functions and the constraints under which the software developer has to work.

Task refers to the activities required, used or believed necessary to achieve a goal using a particular device. The task is described in terms of the goals a user wants to achieve, and can be broken down into sub-tasks. More than one user procedure may exist to solve the task.

Task analysis refers to the process of investigating a system by breaking down tasks that potential users of a system do or would do, into sequences of actions and objects.

Usability and other more traditional terms such as user friendliness, usefulness, ease of use, have in common that they are vague and fuzzy terms. They give the impression of just one single dimension. In fact users have different needs and requirements and perform different tasks with an application. An application which is usable by one user may be tedious to use by another user. Usability is a narrow concept which does not take into account cost / benefit issues. Hence, the term quality of use is used synonymously to usability.

Usability engineering is a well-defined process, which is performed as part of the application development process. It can be part of the development process of any

type of electronic information application. Usability engineering is a standard process that uses approaches, methods, techniques and activities applied to achieve usability that are well documented.

User-centred design emphasises on early and continuous involvement of users in the design process.

A user procedure is a sequence of commands to be executed to carry out a task or to reach a goal.

User requirements specification refers to a document that clarifies the anticipated user's requirements of the system in unambiguous form by specifying the user's task and the constraints that the user has to work under.

A **user validation process** is a set of ordered activities that contribute to a defined objective of a validation project. A user validation process takes place over time and has precise objectives regarding the results to be achieved. A User Validation Process Model is a description of the structure and the elements of a validation process in terms of stages and steps, dependencies and data.

Validation criteria refer to the criteria used to assess whether a certain product conforms to the users requirements.

Validity of a measure. A measure is valid for a given quality aspect if there exists a correlation of the measurement values and that quality aspect.

A validation method is a repeatable, systematic procedure to produce a given result. The specific aspect of validation methods as opposed to a general view of method is that user validation always starts with an objective and validation criteria, i.e. a question such as ‘Is design alternative A more efficient to use than B?’, ‘Does the electronic application fulfill the minimum health and safety requirements?’. A quality general factor such as enjoyability, cognitive workload or efficiency is implied by the validation question, and the resulting measure must be shown to be a valid measure for such a quality factor.