

## Usability Evaluation Principles

### Introduction

Usability, or more broadly, “user-friendliness”, is generally recognised to be a major factor in the success and acceptance of a system, computer-based or not, which is intended for human use. One way to characterise the usability of a system is attempt to identify the problems which it might embody when users interact with it; another is to observe actual interactions between system and user, recording the problems which arise; and a third is to have users do that identification for themselves. It is the first and last of these aims which this document attempts to address.

This set of Usability Evaluation Principles (UEPs) is intended as a guide to the identification of usability problems by analysts, developers or users. The set is intended as a compromise between too wide a set of evaluative guidelines and too specific a set of design prescriptions. The underlying philosophy is that it is possible to come up with a set of principles for user interface evaluation and design which are sufficiently general to apply to a wide range of interfaces and systems, but which offer practical guidance in making design or evaluation choices.

The principle set is intended as an aid to evaluation. It is not a checklist, but reference to the principles may serve as both a reminder and a focus for problem identification which otherwise would have been omitted. It is meant to expand the evaluative process and to encourage further exploration, rather than as a constraint on the problems that can be identified: it cannot, then, be emphasised more strongly that evaluators **are** free to find issues and problems which do not derive directly from the set here presented, and which represent their own views and emphases.

There are currently 30 principles. They are grouped into 7 larger sets, namely

Requirements and Functionality Principles  
 User - System Principles  
 User Principles  
 Comparative Principles  
 System Performance Principles  
 Perceptual and Motor Principles  
 User Support Principles

each containing between 1 and 10 principles. Some principles are further divided into attributes (currently up to 2), each of which can be considered as a sub-principle; where no sub-division has taken place, the attribute name is the same as the principle name.

## General Aims

The goal is to compare a system or design against the set of evaluative criteria here presented and to score the system according to the criteria. The result will represent a set of priorities for intervention or modification to the system, according to the problems identified and the remedies proposed.

To this end, the aim is to identify as many problems and issues as possible, in such a way as to enable future developers to improve the usability of the system in question. The principles listed below are intended to guide that process by focusing on the criteria which a usable system should embody. The full set includes explanations and illustrative examples; it also includes any exceptions to each principle and trade-offs against other principles. The summary set lists the principle descriptions and groupings.

The problem identification process can be portrayed as an interaction between free and guided exploration. The evaluator is free to identify as many problems and issues as he or she wishes, but may also be guided by the content of the principle set. The precise manner in which that interaction occurs remains open to further investigation, but it is hoped that the number and type of problems which are identified with the aid of the principles will prove to be greater than those without.

## What Constitutes a Usability Problem ?

Considerations which play a part in the problem identification process include the following.

a. How would a user of the system in question react when confronted with a particular situation ? Might the type of user for which this system is intended be unable to understand what has happened, or be able to find a solution unaided ?

b. If a user would not be able to find a solution unaided, what type of assistance is available ? Is this assistance immediately accessible, or would the user have to rely on a larger body of material ? If the latter, is the solution to this particular problem (1) easily located and (2) directly relevant ?

c. How might an improved system prevent the problem from happening in the first place ? Would it be possible to intervene at an earlier stage, to block any user action which initiated the problem ? If the situation occurred without the user's contribution, how might future systems detect for themselves that such a problem was imminent ?

d. What are the contributory factors at work in a particular situation ? Is it possible to identify a sole set of conditions which lead up to it, or are there other possible sets of causes remaining to be investigated ? How much backtracking and investigation of combinations of conditions ("What if ... " questions) would be necessary to uncover a sole cause ?

## How do we Judge Problem Severity ?

Severity is defined in terms of the likely consequences for the user of the problem in question. Considerations include the following.

a. The amount of work which the user might have to do to address the consequences.

b. The imminent effect of the problem, predicted (for a new problem) or anticipated (for one which is known, or is similar to others already encountered).

c. The urgency with which each problem should be addressed in any programme of modifications.