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# **Draft Guide: First Steps to User Centred Design**

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## **Abstract**

The document outlines the relevance and the benefits of User Centred Design (UCD) for EC projects and offers concrete guidelines for developing user-centred products. The guidelines give stakeholders of EC projects a clear description of UCD and concrete recommendations for a suitable project shaping. For more detailed information about single aspects of UCD, references to resources from UsabilityNet and related projects are given.

Additionally to these guidelines and recommendations, a checklist offers EC project participants the opportunity to self-assess their status and to diagnose potential problems within their project as part of a consultation process.

**Keywords:** Usability, User Centred Design, Guidelines, EU projects

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## Executive Summary

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In this guideline document, the relevance and the benefits of User Centred Design (UCD) for EC projects are outlined. The guidelines give stakeholders of EC projects a clear description of UCD and concrete recommendations for a suitable project shaping.

User Centred Design is an approach that supports the entire development process with user-centred activities, in order to create applications which are easy to use and are of added value to the intended users.

The description of UCD principles and activities, is structured in a way that is applicable for most EC projects within the IST programme:

- Analysis and requirements
- Design
- Evaluation (Test & Measure)
- Implementation
- Management (Planning & Feasibility)

For more detailed information about single aspects of UCD, references to resources from UsabilityNet and related projects are given.

Additionally to these guidelines and recommendations, the completion of a checklist offers EU project participants the opportunity to self-assess their status and to diagnose potential problems within the project. This checklist also serves as a basis of a consultation process by sending it to UsabilityNet.

These draft guidelines will be initially evaluated and if necessary revised in conjunction with an EU project with which CURE has close connections.

## Introduction

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### Objectives

This document has several objectives:

- To show the high relevance of user-centredness within the IST
- To give a short outline of user centred design.
- To recommend concrete steps to reach the goal of user-centredness.
- To provide cross-references to relevant resources for further reading.
- To provide a UCD checklist for participants of EC projects.
- To offer a communication and consultation opportunity for EC project participants.
  - Therefore, the document offers the possibility to describe the respective project status and occurring problems. This may lead to a consultation process offered by the UsabilityNet project.

### User-centredness in the IST programme

The IST programme – both in EU framework programmes 5 and 6 - is strongly oriented to the concept of UCD, as can be seen in the following quotation:

*“Research will focus on the future generation of technologies in which computers and networks will be integrated into the everyday environment, rendering accessible a multitude of services and applications through **easy-to-use human interfaces**. This vision of “ambient intelligence” places **the user, the individual, at the centre of future developments** for an inclusive knowledge-based society for all.*

*(IST in Fp6, <http://www.cordis.lu/ist/fp6/fp6.htm#Roadmap>)*

The three areas of “core technologies” that are to be developed within the IST (Fp6) should be mobile communication infrastructures and computing technologies, intelligent user-friendly interfaces and the optimisation of micro-system components<sup>1</sup>. All these technologies have to be focused on the users’ needs and expectations in order to facilitate success.

### The benefit of User Centred Design for EC projects

User Centred Design (UCD) is an approach that supports the entire development process with user-centred activities, in order to create applications which are easy to use and are of added value to the intended users.

UCD is indispensable for EC projects

- To avoid inappropriate or useless system functionalities.
- To take care that required functionalities are included appropriately.

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<sup>1</sup> The detailed vision of “ambient intelligence” can be seen in the document “IstagScenarios 2010” (<ftp://ftp.cordis.lu/pub/ist/docs/istagscenarios2010.pdf>)

- To prevent problematic development trends (e.g. prevention of the problem that the system does not fulfil the users' demands).
- To increase system quality.

### Typical UCD issues in EU projects

The following issues and questions related to UCD often arise for novices in EU projects.

- Project participants may have difficulties in defining and organising UCD activities in the project workplan. An easy way (especially for UCD novices) would be to provide a separate workpackage accompanying the whole project. The responsibility for this workpackage should have an evaluation partner who is experienced in the field of user-centred design (including Human Computer Interaction, Usability Engineering, Human Factors).
- The activities in the project workplan should be iterative, i.e. they should facilitate stepwise accommodation to user-centredness. For instance, one could provide for each of the various project and development stages the following subtasks: (1) assess structure and content of web site, (2) assess graphic design, and (3) assess complete overall design.
- When planning user-centred activities for a EU project, the required effort is often difficult to estimate for inexperienced project participants. For a better orientation, a rule of thumb would be to envisage 6 to 9 person months for user-centred activities (analysis, evaluation, design input, etc.) in an average-sized EU project.
- Once a project is already approved, project participants might think that there is no possibility to increase user-centredness of their project plan. Usually, there are still some possibilities to redefine project tasks or to provide user-centred evaluation by sub-contracting external consultants. Furthermore, support networks (such as UsabilityNet) offer assistance by means of web site resources or consultation.
- Very often, EU project participants underestimate the commission's demand of a detailed documentation of the project activities and outcomes. As a consequence, it is recommended to use standardised formats and to explicitly describe the methodology of development and evaluation. Below, there are many recommendations how to define and document user-centred activities.

## First Steps to User Centred Design (UCD)

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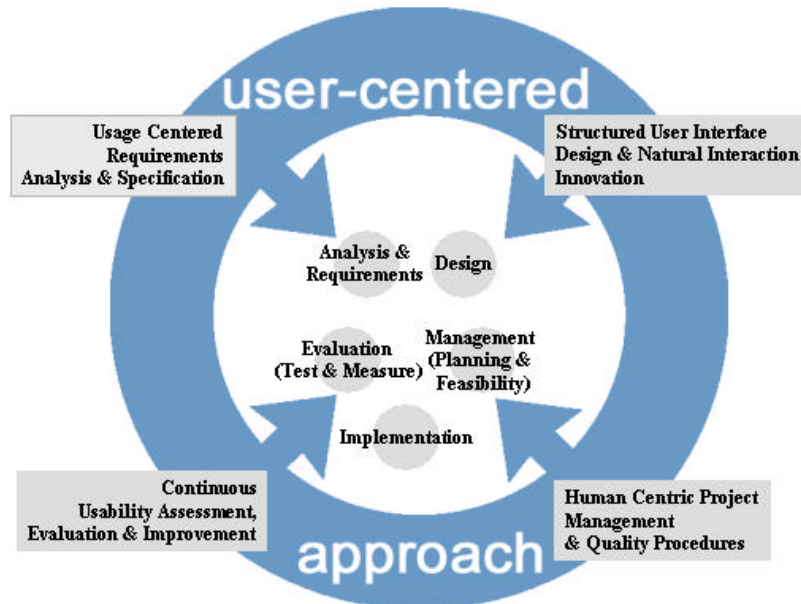
In the following, the UCD principles are explained and their possible application in typical EC project activities are demonstrated.

Figure 1 shows the four most important UCD principles:

- Usage centred requirements analysis and specification
- Structured user interface design & natural interaction innovation
- Early and continuous usability assessment, evaluation & improvement
- Human centric project management & quality procedures

These principles should have an impact on the activities in an EC project in order to reach the goal of user-centredness. They are structured into five project phases:

- Analysis and Requirements
- Design
- Evaluation (Test & Measure)
- Implementation
- Management (Planning & Feasibility)



*Figure 1: UCD principles and IST project activities*

## 1. Analysis & Requirements

For each development project, analysis activities are indispensable. Only when the goal is clear and all important conditions are stated, the development can be directed into the proper direction. However, analysis activities are not always done with enough emphasis on the users and their actual needs. If UCD principles are taken seriously, the following analysis activities should be carried out:

The following types of analysis & requirements activities should be conducted:

- Context Analysis
  - Users
  - Tasks
  - Environment
- Comparative Analysis

From the results of these analysis activities, overall requirements for the system are derived.

### **Context Analysis: Users**

It is important to understand the characteristics of the persons who will use the product/system in order to accommodate human diversity. Some of the most important characteristics in this context are physical abilities, previous experiences, cognitive capabilities, intercultural diversities, as well as education and skills.

- Steps
  - Define user groups: A list with all potential user groups should be created. Also consider indirect user groups, e.g. technicians, trainers, support staff, etc.)
  - Prioritise user groups: The list of user groups should be put into an order according to their relevance for the system.
  - Consider how many user groups you need to optimise the system to. Mostly, a number of no more than three or four is realistically possible.
  - Define user group characteristics: Once the user groups have been defined, their characteristics need to be identified.
  - Derive the system requirements from the user group analysis.
- Methods
  - In case potential user groups are difficult to find, brainstorming methods can be helpful (<http://www.usabilitynet.org/methods/requirements/brainstorming.asp>)
  - When defining user group characteristics, general methods, such as Interviews and Focus groups can be applied. Furthermore, there are forms that help project stakeholders to systematise the process of investigating the user groups. These forms are part of the RESPECT User Requirements Framework Handbook (<http://www.usabilitynet.org/resources/references/context.asp>, see p 28).
  - A useful method to get a clear and tangible concept of the target user and to guide your design decisions is to create personas. Personas are user archetypes that help to visualise and imagine the typical and realistic usage workflow and environment (see for more information:

[http://www.cooper.com/newsletters/2001\\_07/perfecting\\_your\\_personas.htm](http://www.cooper.com/newsletters/2001_07/perfecting_your_personas.htm) and <http://www.cs.utexas.edu/users/almstrum/cs373/general/personas.html>).

## Context Analysis: Tasks

For each user group, the tasks that will be performed with the future system should be identified. This means that the user's perspective (performing tasks) should be taken, rather than the system perspective (in terms of system functions). This also includes the definition of the main goals the users want to achieve. Only when the user's goals, their main tasks and the taskflows are known, the system can be designed to perfectly meet the user's needs.

- Steps
  - Define the goals of the system usage: The main goals the users are to perform should be identified and specified.
  - Define a task list: A comprehensive list of all tasks the users will perform should be prepared.
  - Prioritise tasks: The tasks should be weighted according to their importance (e.g. frequency or safety).
  - Define task characteristics: The main tasks should be subject to a detailed analysis gathering data about the following issues: goal, time of performing, inputs and dependencies, output, variability, frequency, duration, time constraints, flexibility, physical and mental demands, linked tasks, safety, criticality (see RESPECT handbook, <http://www.usabilitynet.org/resources/references/context.asp>).
  - Define and analyse task steps: The basic sub-steps of a task should be found. Based on a partition into task steps, potential problems and obstacles for solving the tasks can be found.
  - Derive the system requirements from the task analysis: Based on the definition and analysis of the main tasks, the requirements for the system can be derived.
- Methods
  - For the understanding of the user's tasks, the RESPECT handbook (<http://www.usabilitynet.org/resources/references/context.asp>) offers fill-in forms that enhance a structured procedure (especially for non-UCD-experienced project personnel).
  - In case there is a need to analyse the tasks in a very detailed and systematic way, a formal task analysis approach can be chosen. A task analysis mainly consists of the decomposition into sub-tasks and taskflow diagramming (see for more detail RESPECT handbook, <http://www.usabilitynet.org/resources/references/context.asp>, 127).
  - A more general, but useful method for the understanding of special and domain-specific tasks are focus groups. Representatives of each user group can express their goals and needs. If the moderator manages to support a dynamic and well-balanced discussion, potential system requirements that support all user groups can be found.
  - The indirect observation of the user in his natural interaction environment (or the analysis of usage log files) may also give valuable data about task frequencies, problems in taskflows, etc.
  - Please confer the methods table of [www.usabilitynet.org](http://www.usabilitynet.org) for further information.

## Context Analysis: Environment

The environment, in which the user interacts with the system, has to be analysed as well. It includes the technical conditions in which a system is used, the organisational influence variables, (i.e. the working atmosphere), the physical conditions, the emotional and mental state of the user, etc. Also legal demands and standards requirements are important in order to make a complete list of environmental requirements.

- Steps
  - Identify the usage environment: The most often occurring usage scenarios and environments are identified.
  - Investigate the environmental characteristics: The properties of the environment (physical, organisational, etc.) are explored and defined in detail.
  - Derive the system requirements from the environmental analysis: Based on the definition and analysis of the environment, the requirements for the system can be derived.
- Methods:
  - Field studies: Potential usage scenarios can be elicited by the observation of users in the actual usage environment.
  - Contextual Inquiry: This is a specific form of interview, combined with field-observational data (more information on <http://www.usabilitynet.org/methods/requirements/contextualinquiry.asp>).
  - Diaries: Users observe themselves and facilitate continuous documentation about their experience of use.
  - Fill-in Forms for project stakeholders: These facilitate a systematic procedure (especially for non-experienced project stakeholders <http://www.ejeisa.com/nectar/respect/5.3/15.htm>)

## Comparative Analysis

Comparable systems are analysed to identify strengths and weaknesses in order to learn for the development of a product.

- Steps
  - Identify comparable systems
  - Define an assessment scheme consisting of a set of aspects and criteria (e.g. functionalities, navigation, layout, e.g.).
  - Analyse the system: Investigate the systems in a structured and standardised way, using the assessment scheme described above. In case more profound data is needed, empirical data gathered from usability testing should also taken into account.
  - Derive the system requirements from the comparative analysis: Specify which features and functions of other systems are required and which are not.
- Methods:
  - A special comparative method is to discuss several competitor systems and to assess them with regard to representative tasks (see for further information: <http://www.usabilitynet.org/methods/planningfeasibility/competitoranalysis.asp>)

## Aggregation of Requirements

The requirements that have been specified in the analysis phases described above are aggregated and integrated into a requirements specification document. They include overall and specific system requirements. Overall requirements mainly provide a prioritisation of general system goals (e.g. The system mainly be easy to learn, rather than to support efficiency; Safety and the reduction of usage errors is an important system goal; etc.). Specific system requirements are much more detailed (e.g. The font size of the content area on the web site xy should have at least 12 points, etc.)

## 2 Design

In general, all activities that include the creation of ideas, concepts and solutions within a project are included in this term. It does not only concentrate on the graphical design, but also the information architecture, the interaction design, information visualisation, etc.

- Prerequisites: Before beginning with the design, some preconditions should be fulfilled:
  - The requirements specification has to be completely aggregated from the different analysis activities and it should be documented in an understandable form. If this prerequisite is not followed, the design solutions might contradict the requirements from the analysis phase.
  - There should be clear responsibilities within the design team, as well as in relation to a potential client. A detailed project plan including task allocation and planned resources should be produced.
- Steps
  - Use existing knowledge: A high amount of scientific knowledge exists on the field of UCD, Human Computer Interaction, Cognitive Ergonomics and other disciplines. In addition to this, already existing standards, style guides and guidelines help maintaining consistency with other systems, and they also offer a lot of inspiration.
    - Resources for standards:  
<http://www.usabilitynet.org/resources/references/standards.asp>
    - Resources for guidelines:  
<http://www.usabilitynet.org/methods/design/guidelines.asp>
    - Resources for style-guides:  
<http://www.usabilitynet.org/methods/implementation/style.asp>
  - Use prototypes: The use of models, mock-ups or simulations can make the potential outcome and interaction scenario more tangible. By making the design drafts more concrete and explicit, the team can intercommunicate more efficiently. Furthermore, the interim design solutions can be explored and evaluated by the design team and by users. The range of prototypes can reach from simple paper mock-ups to highly developed computer-based prototypes.
  - Generate iterative design procedures: The design solutions should be assessed and evaluated early in the design process and improved until the requirements are met (see section “Evaluation” below). These design iterations should be planned in advance and the progress of the design iterations should be documented.
  - Separate explicitly between conceptual and detailed design: First concentrate on the overall logical structure of your product (e.g. general paradigms applied, navigation logic and principles, information architecture, etc.). If this conceptual design is agreed upon and evaluated, freeze it. Then begin with the detailed design of your product (layout, specific colours, icons, etc.)

### **3 Evaluation (Test & Measure)**

During evaluation activities, the design solutions are assessed and feedback is given to the designers. There are two possible objectives of evaluation: one objective is to identify usability problems; the second objective is to assess the degree to which the user requirements of the analysis phase are met.

Evaluation activities should begin very early in the development process and continue in frequent steps. Furthermore, users should be included in the evaluation procedures as intensively as possible. Only by means of an early and continuous user-based quality-assuring accompaniment, the goal of being user-centred can be achieved. Of course, the evaluation strategy has to be adapted to the conditions of the project and the respective development stage of the product. For instance, the evaluation of an early design mock-up will be different from the final testing phase.

- Steps:
  - First evaluation steps at project start:
    - Provide explicit deliverables for the evaluation, such as an Evaluation Plan and an Evaluation Results Plan. A template of such an Evaluation Plan – the User Validation Assistant - can be downloaded (<http://www.ucc.ie/hfrg/baseline/uvaform.html>).
    - Allocate responsibilities for the evaluation: It should be decided who is responsible for the planning, the conduction and the reporting of the evaluation. Furthermore, the evaluation strategy should be communicated to all project team members.
    - Define the constraints of the user evaluation with regard to the resources (budget and personnel).
    - Decide when and what to evaluate: You should explicitly plan how often and in which project stages to evaluate (in terms of start and end time, resources, selected methods, etc.). In an exemplary EC project, for instance, one could plan four evaluation phases: evaluation of (1) the analysis results and requirements specification (early project stage), (2) an early design mock-up (early project stage), (3) an electronic prototype of the system (intermediate stage), and (4) the system in its final version to make adjustments (e.g. two months before the project end).
  - Plan the single evaluation phases:
    - Adapt the goal of the evaluation to the requirements specification (see above). The overall and specific requirements that are specified there should also be the quality goals of each single evaluation step.
    - Identify the target audience of your evaluation activity: Who needs and who will use the evaluation results? If the design team is the only target group for your results, a workshop and intensive discussion will probably be most appropriate. In case the evaluation results also have to be communicated to external partners or clients, a more formal documentation may be needed.
    - Select the evaluation method for each evaluation phase: See below for an overview of evaluation methods.
  - Conduct the evaluation phases:
    - Make sure that persons who are skilled in usability engineering conduct the evaluation.

- Prepare recruiting of a user-based evaluation as early as possible to ensure a representative user group.
- Let other project members observe the evaluation activities. By this means, feedback can be given very efficiently, and especially designers can be convinced more easily of usability problems.
- Analyse the data: In order to deliver results quickly, focus on the most important issues.
- Report the results
  - In case a formal report is required (e.g. if a deliverable for the evaluation has to be produced), the design team should be briefed about the relevant results in order to provide high efficiency. By means of a discussion, many possibilities of improvement can be found.
  - Write an Evaluation Results Report: For an exemplary template, please confer the User Validation Report from the Baseline project <http://www.usabilitynet.org/resources/references/reportformats.asp>.
- Methods
  - There are many evaluation methods. Each method has its strengths and weaknesses. So the right mixture of methods and adaptation to the specific conditions of a development project is crucial. In the following, the most important methods are outlined.
  - Generally, user based methods (i.e. users are involved in the investigation) and expert-based methods can be distinguished:

- User based methods:

#### Usability Test

In a usability test, representative users are observed under controlled conditions when performing typical tasks with a system. Additionally, they are asked about their subjective impressions. The general goal of a usability test is to identify usage problems.

The benefit of a usability test is that real usage problems (and their causes) of the future system can be found. Furthermore, the problems that have been found can be weighted due to their relevance. When obtaining rather quantitative data during the observation, benchmark measures (e.g. effectiveness) can be obtained. The disadvantage of a usability test may consist in the relatively high resources that are needed and the relatively long timeframe (of app. one month for an average web site).

The methods table describes 3 specific forms of Usability Test

1. Participative user based evaluation: a method that is mostly used in early stages with low-interaction prototypes (paper or electronic). The goal is to identify usability problems by asking the users to explain their expectations and to perform typical tasks. Usually, there is a high amount of discussion and interaction between test conductor and the test user, because early prototypes do not allow a lot of interaction.

2. Diagnostic evaluation: User based evaluation of a working system, where the primary objective is to identify usability problems. The test user is observed while he/she is independently performing tasks and interviewed afterwards.

3. Performance testing: a rigorous usability evaluation of a working system under realistic conditions to identify usability problems and to compare quantitative measures such as success rate, task time and user satisfaction with requirements.

#### User field Test

Comparably to the usability test described above, users are observed and asked in a field test, but under realistic, not laboratory conditions. This can give a clearer insight into the real usage context with, however, a limited controllability of the testing conditions. For instance, users are provided with innovative mobile devices and are asked to try them out in their leisure time. By means of diaries, telephone interviews, etc., the usage environment can be elicited in a very effective way.

#### General techniques:

Apart from these methods, there is a number of general techniques (i.e. adapted from the social sciences) that are also used frequently in the usability context (interviews, surveys, focus groups, etc.). These are described in the [www.usabilitynet.org](http://www.usabilitynet.org).

#### ○ Expert based methods:

A small number of usability experts (usually 2 -3) inspect a system according to established usability principles and by performing typical tasks. The goal is to find usability problems and to rank them in terms of severity. This method is very cost-effective and can be applied in all project stages. However, the quality of the results is highly dependent on the evaluator's expertise. As users are not involved, the results cannot be as valid as representative user tests.

A comprehensive collection of other expert based methods can be obtained in the UsabilityNet methods table. The ELPUB 105 Usability Study (<ftp://ftp.ucc.ie/hfrg/baseline/elp105.zip>) provides a detailed list of available (also user-based) methods.

## **4 Implementation**

The objective of usability activities at the implementation stage is to ensure that detailed design takes account of usability principles. Although the emphasis of UCD is placed on the earlier project phases, the implementation phase also has to follow several principles:

- Ensure a clear specification and documentation of the implementation steps.
- Establish concrete guidelines and styleguides for the implementation: This can be a powerful means to support the implementers in achieving consistency within the application, but also to other systems.
- Choose usable technologies for the implementation (e.g. try to decrease the number of needed plug-ins, etc.)

## **5 Management (Planning & Feasibility)**

Naturally, planning and management must initiate and support the user centred activities described above. The following principles may help the project manager to enforce UCD during the project development.

- Facilitate interdisciplinary work: UCD is an interdisciplinary approach. Various disciplines are involved: designers, psychologists, ergonomics specialists,

technicians, economists, etc. These groups should be integrated, dependent on domain-specific needs.

- Involve all relevant team members: A practical guideline for a project manager would be to initiate a stakeholder meeting at the beginning of the project and to repeat these meetings regularly (<http://www.usabilitynet.org/methods/planningfeasibility/stakeholder.asp>).
- Conduct a cost-benefit analysis or consult already existing cost-benefit studies of projects with comparable conditions. The demonstration of evidence concerning the high cost-effectiveness of UCD will facilitate its argumentation. Furthermore, the methodology can be adapted to financial constraints. For further information, please see <http://www.usabilitynet.org/management/costbenefits/calculate.asp> and [http://www.usability.serco.com/trump/case\\_studies/ircostbenefits.htm](http://www.usability.serco.com/trump/case_studies/ircostbenefits.htm).
- Manage the design iterations: Another challenge for a UCD-oriented project manager is to manage the design iterations. The iterative nature of UCD, i.e. the stepwise approximation of the design to the requirements, is a precondition to ensure that the final product is really oriented to the users' needs. In order to achieve this iterative procedure, an explicit plan containing the schedule for the design and evaluation steps should be produced. This plan should be regarded as a working document that is to some extent flexible to changes of conditions and constraints.
- All relevant information should be recorded and documented: the sources of pre-existing knowledge (e.g. ISO standards), as well as the design steps and the usability problems found in the different evaluation phases. This is especially important for EC-funded projects, because the progress and the reasons for decisions have to be transparent.

## UCD Checklist

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The following checklist gives IST project members the opportunity to diagnose if the UCD principles described above have already been applied. Furthermore, specific problems within the project should be described. The checklist can be sent to UsabilityNet as part of a consultation procedure, in which the specific conditions, motivations and potential obstacles could be identified. In this consultation procedure, appropriate UCD methods and procedures for the respective project can be recommended by UsabilityNet.

### 1. Background information

#### Project data

*Please specify the EC-funded project you are referring to in this checklist? Please give the programme, the acronym, and the project number*

*Describe the product you are developing in your project briefly:*

*Describe your project workplan (or attach the information to this document): Please focus thereby on the activities that are intended to ensure user-centredness.*

Contact Person

Name of Contact Person (*who completed this checklist*):

E-mail:

Telephone:

Fax:

Non-Disclosure Declaration

I declare that the Contact Person described above is mandated by the Project / Company to provide the enclosed data and that the Project / Company allows the UsabilityNet project to use the enclosed data in order to pool data on user validation techniques and methods, costs, and benefits in an anonymised format so that the identity of the participating organisations and projects is not revealed.

I recognise that UsabilityNet will send the following signed non-disclosure declaration:

*We, the Usabilitynet partners declare, that any information which is made available to us within our consultation role for EU projects will be kept strictly confidential and will not be made available to any third parties.*

*"Information" comprises any data or knowledge by any means, electronically, verbally or paper, concerning the project, its partners, financial aspects or technical developments as well as any other insights or learnings.*

*(Please keep a copy of this non-disclosure declaration from the project in your files.)*

Name:

Date:

Position in Project:

Position in Participant Organisation:

## 2. Analysis & Requirements

- User-centred analysis & requirements specification activities are incorporated in the project workplan. (see p. 8).
- Context Analysis: Users

*Please check if you have considered the recommended steps:*

- Define user groups
- Prioritise user groups
- Consider how many user groups you need to optimise the system to
- Define user group characteristics
- Derive the system requirements from the user group analysis

*Please specify the user analysis methods you are planning:*

*Please fill in some general comments, specific problems, questions, etc.:*

- Context Analysis: Tasks (see p. 9)

*Please check if you have considered the recommended steps:*

- Define the goals of the system usage
- Define a task list
- Prioritise tasks
- Define task characteristics
- Define and analyse task steps
- Derive the system requirements from the task analysis

*Please specify the task analysis methods you are planning:*

*Please fill in some general comments, specific problems, questions, etc.:*

- Context Analysis: Environment (see p. 10) :

*Please check if you have considered the recommended steps:*

- Identify the usage environment
- Investigate the environmental characteristics
- Derive the system requirements from the environmental analysis

*Please specify the respective methods you are planning:*

*Please fill in some general comments, specific problems, questions, etc.:*

- Comparative Analysis (see p. 10)

*Please check if you have considered the recommended steps:*

- Identify comparable systems
- Define an assessment scheme
- Analyse the system
- Derive the system requirements from the comparative analysis

*Please specify the comparative analysis methods you are planning:*

*Please fill in some general comments, specific problems, questions, etc.:*

### 3. Design

*Please check (✓) if the following activities are incorporated in your project workplan:*

- UCD principles are applied in the design procedures (see p. 8)

*Please check if the following prerequisites for beginning with design activities are considered:*

- The requirements specification is aggregated
- Clear responsibilities concerning the design activities have been defined

*Please check if you have considered the recommended steps:*

- Use existing knowledge (standards, guidelines, style-guides, etc.)
- Use prototypes
- Generate iterative design procedures
- Separate explicitly between conceptual and detailed design

*Please specify the design procedure and methods you are planning:*

*Please fill in some general comments, specific problems, questions, etc.:*

#### 4. Evaluation

- Early, continuous, and iterative user-based evaluation activities are incorporated in the project workplan (see p. 12).

*Please check if you have considered the recommended steps:*

(First evaluation steps at project start)

- Provide explicit deliverables for the evaluation
- Allocate responsibilities for the evaluation
- Define the constraints of the user evaluation
- Decide when and what to evaluate

(Plan the single evaluation phases)

- Adapt the goal and strategy to the requirements specification
- Identify the target audience of your evaluation activity
- Select the evaluation method for each evaluation phase

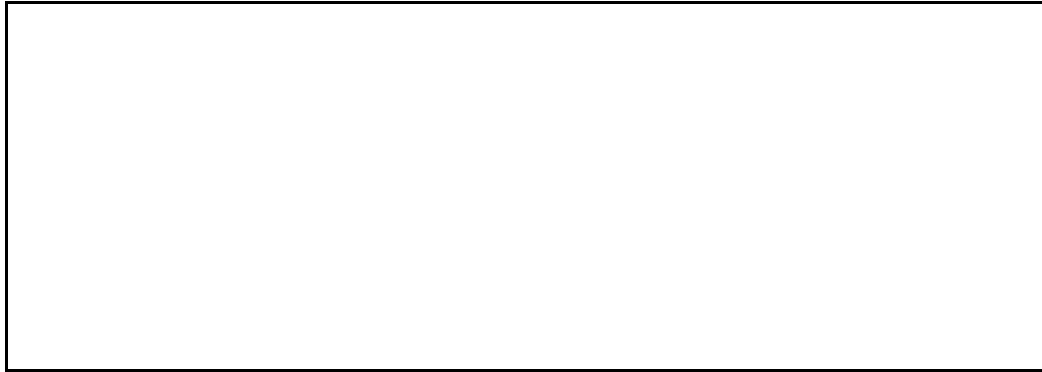
(Conduct the evaluation phases)

- Make sure that persons who are skilled in usability engineering conduct the evaluation
- Prepare recruiting of a user-based evaluation as early as possible to ensure a representative user group
- Let other project members observe the evaluation activities
- Analyse the data efficiently

(Report the results)

- Design team is briefed informally
- Write an Evaluation Results Report

*Please specify the evaluation procedure and methods you are planning:*



*Please fill in some general comments, specific problems, questions, etc., concerning your evaluation phases:*



Please send the completed checklist and your comments to the following UsabilityNet partner:

CURE - Center for Usability Research and Engineering.  
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