



# **User Analysis (UA)**

## **Purpose**

The User Analysis tools provide the designer with perspectives on the different categories of people who will play some role in the product's use. The term used to describe these different groups of people is stakeholder – derived from the notion that these people will have a certain 'stake' or vested interest in the product. The most obvious stakeholder is the end user, in this case the elderly or disabled person, but there are others as well that need to be considered. These include carers, relatives, and the service/product provider.

The User Analysis comprises 3 tools: Stakeholder Overview; Stakeholder Attributes; and Requirements Summary. The purpose of these tools is to record detailed information about the target users of a proposed product. Through this three-stage process users are identified; their stake in the product specified; their attributes or characteristics described; and finally their requirements specified. These tools lead designers through a process of identifying users and classifying them according to the kind of use they will make of the product. The process of using this tool ensures that information and assumptions about the target users of a proposed product are made explicit. This has a number of advantages:

- ◆ It begins the process of considering User needs
- ◆ It contributes to the decision to proceed with a product idea or not.
- ◆ It records User information for use in later stages of the design process.

**A stakeholder is someone who has a vested interest in a product.**



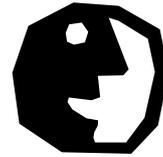
## How to use the tool

The tool is intended to be used in a workshop where ideas can be shared and developed creatively. It is presented in a set of proformas for use in the workshop with accompanying notes which describe the information required. The workshop should be held during the early stages of the product life cycle, when the product idea is under consideration.

The participants in the workshop will need access to any user information relevant to the product which is available in the company.

## Outcome

The outcome should be a documented set of desired attributes which the product should aim to satisfy. These will be used in conjunction with other desired attributes which emerge from a detailed consideration of the activities the product will support. Information from this analysis will contribute to the row headings of the Product Attribute Matrix.



## Stakeholder Overview

# User Analysis 1 (UA1)

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## 0. Source material

Methodology: Activity Analysis

Tools & Techniques: User Mapping tool  
Any background information on user attributes

## 1. Product title and description

First, give the product a title and record the basic information about the product idea. This serves as a guide for other considerations.

Now complete the table below filling in the columns from left to right.

## 2. Stakeholder Category (Column 1)

List the stakeholder groups identified in the User Mapping data gathering exercise. Remember that stakeholders in a development are any groups who can be expected to be influenced by it, and can therefore be anticipated to have an interest or 'stake' in the outcome. The most obvious stakeholder group will be the target user of a product, but other groups may also be relevant due to them being either occasional users, or the use of the product having some direct effect on their own activities. For many AT products this list will often include both end users and such groups as helpers, relatives and service providers.

Use whatever data from analysis, customer contacts etc. that you can but do not be reluctant to use your imagination where data are missing. Mark such assumptions so that you remember which are assumptions and which are based on factual information.

## Procedure

**3. Role in product (Column 2)**

For each group of stakeholder, identify what they are trying to do with the product, why they need it and what their responsibilities might be to other stakeholders.

**4. Design Implications (Column 3)**

Based on the information in Column 2 and on any background research carried out, decide on whether any of your stakeholders have any special requirements or characteristics which, from the onset, must be taken into consideration in the design process. For example, if your target end user population are elderly people it is worth bearing in mind that many people in this category are on low incomes. The product you are designing should therefore not be outside their means if it is anticipated that they will be the purchasers.

**5. Actions Needed (Column 4)**

At the end of the workshop the recorder will need to summarise the discussion in this column and also list the actions which are needed. These will often be the additional data capture activities which are needed in order to resolve an issue, and any research questions that need to be answered. For example it might be realised that the full range of possible users is not known, and an action may be to try and obtain such information by contacting experts working in the area.

At this stage of the analysis some decision also needs to be made which stakeholders need to be analysed in more detail. A good rule of thumb is to include all those parties who would be expected to use a product, whether on a regular or on an occasional basis, and where a product requires an additional party for it to work e.g. a communication aid, to also include their views as well.

Date



# User Analysis (UA1)

Product /Service Title and Description

## Stakeholder Overview

<b>Stakeholder Category</b>	<b>Role in product/service</b>	<b>Design Implications</b>	<b>Actions Needed</b>
eg. Elderly	eg. End user of product	eg. Elderly on low incomes... product needs to be inexpensive	eg. Further information on purchasing habits of elderly people

**Stakeholder Overview**

*Product /Service Title and Description*

<i>Stakeholder Category</i>	<i>Role in product/service</i>	<i>Design Implications</i>	<i>Actions Needed</i>



## Stakeholder Attributes

# User Analysis 2 (UA2)

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### 0. Source material

Methodology: User Analysis  
Tools & Techniques: Interviews; empathic modelling; direct observation; group discussions; questionnaires.

### 1. Stakeholder title and description

First, identify and describe briefly the stakeholder group under consideration. This serves as a guide for other considerations.

Now complete the table below.

### 2. Attribute (Column 1)

Stakeholders are described in some detail in this tool under the headings in this column: age range; gender; capacities etc. The information needed to complete this table is therefore, of necessity, detailed and extensive. Background research into stakeholder groups by members of the design team will be needed. This research will include the analysis of statistical, anthropometric and demographic data as well as survey methods to include the use of interviews, direct observation, group discussion etc.

Use whatever data from analysis, customer contacts etc. that you can but do not be reluctant to use your imagination where data are missing. Mark such assumptions so that you remember which are assumptions and which are based on factual information.

### 3. Functional implications (Column 2)

Against each of the attributes listed in Column 1, note down what you feel the bearing each particular attribute may have on the design of this product. If the target end user population will vary

## Procedure

N.B. This tool is to be completed for each relevant Stakeholder group.

widely in terms of sensory abilities (e.g. hearing and sight) then no feature of the product should be reliant on a single sense for operation. Similarly if the target end user population will vary widely in terms of their educational range and literacy, then written material for the product should be simple and minimal.

Functional implications for design can cover a wide variety of issues and be developed from formal analysis e.g. surveys of users' needs, or come from designers' intuitions. Some of these will be positive in form e.g. the product will need a large door to facilitate the manipulation of washing, whilst others will be negative e.g. the product will not be suitable for quadriplegics.

If you have difficulty with the concept of functional implications it may be better to think of them as problems facing the user group being considered, and to then move towards considering how these may be solved.

#### **4. Desired product characteristics (Column 3)**

Based on information arrived at in Column 2, the design team should now consider how the product might be designed in order to address the issues raised. For example, if the product is not to rely on a single sense for operation then a desired product characteristic might be that an alarm should be **both** a flashing light and a tone or buzzer, not one or the other. Similarly, with users of varying reading abilities, a desired product characteristic would be that the machine should be a 'walk up and use' product and that instructional material for the product should be pictorial, and so not in written form, where possible. This column acts to document any practical ideas for the design of the product, and can be seen as the suggested features of the product needed to satisfy user needs.

#### **5. Actions (Column 4)**

At the end of the workshop the recorder will need to summarise the discussion in this column and also list the actions which are needed. These will often be the additional data capture activities which are needed in order to resolve an issue, and any research questions that need to be answered. For example it might be realised that there is no information available on the size of the group being designed for, and an action may be to try and obtain such information by contacting an interest group representing such users. Pay special attention to issues which you feel may need to be considered in more detail at a later stage of the design process. Areas where different views emerged should be noted, all views again being recorded.

Date



Stakeholder

**Stakeholder  
Attributes**

<b>Attribute</b>	<b>Functional Implications</b>	<b>Desired Product Characteristics</b>	<b>Actions Needed</b>
Age range			
Gender			
Capacities  cognitive physical affective sensory developmental potential			
Variability within group e.g. high variability of group	e.g. need for redundancy of sensory cues	e.g. audio and visual feedback	e.g. need to define appropriate frequencies and size of fonts to use for feedback
Educational range			
Language			
Culture/socio-economic status			
Size of group			
Assesment of motivation to use			
Experience with technolgy			

**Stakeholder  
Attributes**

Stakeholder

<i>Attribute</i>	<i>Functional Implications</i>	<i>Desired Product Characteristics</i>	<i>Actions Needed</i>



## Requirements Summary

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# User Analysis 3 (UA3)

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### 0. Source material

Methodology: User Analysis 2

### 1. Stakeholder title and description

First, identify and describe briefly the stakeholder group under consideration. This serves as a guide for other considerations.

Now complete the table below.

### 2. Desired product characteristics (Column 1)

List here the desired product characteristics identified and recorded in the previous tool (UA2)

### 3. Possible conflicts (Column 2)

In addition to considering desired product characteristics in isolation, it is also important to explore any conflicts that may occur due to different design features being incompatible with each other. At this stage of design it is useful to document any possible conflicts that might exist in the development of the product as these will have to be resolved in subsequent design.

### 4. Priorities for development (Column 3)

Having identified possible conflicting product features, the next step will be to seek a resolution of the anticipated difficulties arising from these conflicts. Some of these conflicts may not be possible to resolve when a single product is to be used with a wide range of users, and in many cases it will simply be impossible to produce a single product suitable for all disabilities. One solution to this is to produce a range of products matched to the needs of specific groups of users, but in many cases it will be necessary for the design team to decide how such conflicts are to be addressed, and to decide on priorities for development.

## Procedure

N.B. This tool is to be completed for each relevant Stakeholder group.

At this stage in the design process it may be sufficient to rate attributes on a simple 3 point scale e.g. high, medium or low priority. This would provide an initial indication of major conflicts and whether or not an accommodation can be found. Conflicts remaining unresolved at this stage may have to be taken through to the Usability Evaluation stage where more tangible tests of the relative effectiveness of conflicting design solutions may be achieved.

To complete this column, rate each desired product characteristic according to an agreed scale – we would suggest a 3 point scale equating to high, medium or low priority. If the design teams feels that a 3 point scale is not sufficiently sensitive to design priorities then obviously the scale may be extended to 5 or even 7 points.

Date



Stakeholder

**Requirements  
Summary**

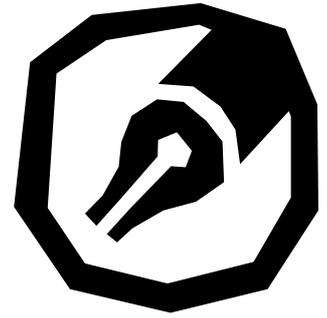
<b>Desired Product Characteristics</b>	<b>Possible Conflicts</b>	<b>Priorities for Development</b>
e.g. Audio and visual feedback	e.g. May make interactions slower?	e.g. High



**Requirements  
Summary**

Stakeholder

<i>Desired Product Characteristics</i>	<i>Possible Conflicts</i>	<i>Priorities for Development</i>



# Activity Analysis (AA)

## Purpose

The Activity Analysis comprises 3 tools: Stakeholder Scenario List; Activity Elements Summary; and Requirements Summary. These tools, which are completed for each category of relevant stakeholder, summarise the developer's understanding of the activities performed by the different categories of stakeholder in their use of this product.

The Stakeholder Scenario List (AA1) summarises the usage scenarios or main activities for each of the relevant stakeholder groups identified in the User Analysis. A usage scenario is a collective name for a set of actions that need to be performed. In our example of the intelligent washing machine, the main usage scenario would be 'washing clothes', another one might be 'coping with a problem'. In order to understand activity-based requirements it is important to understand the context in which a product will be used, and what it will be used for. This tool serves that purpose.

The Activity Elements Summary (AA2) provides a description of each usage scenario by decomposing scenarios down into discrete elements or activities. The functional implications of these activities are then examined and from these the design team can consider how certain design features can be incorporated into the product to meet the demands of those activities. Readers will note that this is a very similar procedure to that carried out in Stakeholder Attributes (UA2). This time, however, we are considering requirements arising from the attributes of activities as opposed to the attributes of users.

The Requirements Summary (AA3) within Activity Analysis performs a similar function to that carried out in the Requirements Summary part of User Analysis (UA3). We are again looking at desired product characteristics, possible conflicts arising from these, and priorities for development.

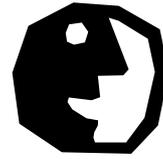
### **How to use this tool**

The tool is intended to be used in a workshop where ideas can be shared and developed creatively. It is presented in a set of proformas for use in the workshop with accompanying notes which describe the information required. The workshop should be held during the early stages of the product life cycle, when the product idea is under consideration.

The participants in the workshop will need access to any user information relevant to the product which is available in the company.

### **Outcome**

The Activity Analysis procedure will act to document the major activities to be performed by each of the stakeholders and to summarise the attributes that these are seen to possess. The summary also includes implications for design arising out of these issues and any requirements for the product that result from a consideration of activity issues. Information from this tool would be merged with that derived from User and Product Analyses and recombined in the Product Attribute Matrix.



# Activity Analysis 1 (AA1)

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## Stakeholder Scenario List

### 0. Source material

Methodology: User Analysis

Tools & Techniques: Task analysis; group discussions; interviews; direct observation.

Any background information on user activities.

### 1. Product title and description

First, give the product a title and record the basic information about the product idea. This serves as a guide for other considerations.

Next, identify and briefly describe the stakeholder group under consideration. This serves as a guide for other considerations.

Now complete the table below filling in the columns from left to right.

### 2. List of Scenarios (Column 1)

In this column, list all the usage scenarios you can think of for the stakeholder group under consideration. As we noted earlier, a usage scenario is defined as a set of activities which logically belong together to perform a task. For an elderly person, washing clothes is one usage scenario that a washing machine is designed to support. Another clearly separate scenario might be coping with problems with the washing machine. These are viewed as being separate scenarios because they have very different characteristics. Washing clothes is a regular activity, for example, whilst coping with problems is normally very infrequent.

## Procedure

**N.B. This tool is to be completed for each relevant Stakeholder group.**

At this stage of the analysis it is useful to list all of the scenarios that you can for all stakeholders and to then decide whether it is relevant to analyse them further. For general products with a wide range of usage this can be difficult however, and in this case it will be better to list a representative set of scenarios i.e. common or important groups of activities rather than trying to list everything. For example a communication aid can be used for almost anything, but common or important scenarios might be calling for help, attracting the attention of a teacher, wanting to go to the toilet, answering questions etc.

Use whatever data from analysis, customer contacts etc. that you can but do not be reluctant to use your imagination where data is missing. Mark such assumptions so that you remember which are assumptions and which are based on factual information.

### **3. Attributes of scenarios (Column 2)**

In this column, describe as best you can each of the usage scenarios that have been identified for this particular stakeholder group. At this stage this can be a general, high level description since that later stages of this tool will provide you with the opportunity for describing and examining scenarios in greater detail.

### **4. Actions Needed (Column 3 )**

At the end of the workshop the recorder will need to summarise the discussion in this column and list the actions which have arisen through the completion of this tool. Pay special attention to activities which you feel may need to be considered in more detail at a later stage of the design process and to any decisions that have been made about areas where further information is needed. Decisions may also be documented not to analyse particular scenarios in more detail if they are not seen to be central to the development. Areas where different views emerged should be noted, with all views being recorded.

Date



# Activity Analysis (AAI)

Product /Service Title and Description

Stakeholder

## Stakeholder Scenario List

List of Scenarios	Attributes of Scenarios	Actions Needed
e.g. perform washing	e.g. large manual aspect of task i.e. transferring washing	e.g. need to consider how these might also be simplified



Date

**Stakeholder  
Overview**

*Product /Service Title and Description*

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*Stakeholder*

<i>List of Scenarios</i>	<i>Attributes of Scenarios</i>	<i>Actions Needed</i>



## Activity Elements Summary

# Activity Analysis 2 (AA2)

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### 0. Source material

Methodology: Activity Analysis 1

Tools & Techniques: Task analysis; group discussions; interviews; direct observation.

### 1. Stakeholder Identification and Usage Scenario

First, identify and briefly describe the stakeholder group under consideration.

Next, record the usage scenario under consideration.

This information serves as a guide for other considerations.

Now complete the table below filling in the columns from left to right.

### 2. Activities in Scenario (Column 1)

In this column, list all the activities you can think of that go to make up the usage scenario under consideration. As we noted above, a usage scenario is defined as a set of activities which logically belong together to perform a task. Washing clothes is one usage scenario so think about all the activities the user must perform to achieve this goal.

### 3. Functional Implications (Column 2)

Note down the implications that you think the activities identified may have for the design of the product. At this stage of analysis you are interested in identifying the design issues that need to be resolved rather than in how they will be solved in practice. This will also assist in setting the boundaries of what the product will and will not do. For example with the intelligent washing

## Procedure

**N.B. This tool is to be completed for each Usage Scenario and for each Stakeholder group.**

machine, the design team identified that such a product would not directly support collecting washing and putting it into the machine but that this was a problem for many elderly people washing their clothes, and that the machine should therefore support this indirectly in some way.

Functional implications for design can cover a wide variety of issues and be developed from formal analysis e.g. surveys of users' needs, or come from designers' intuitions. Some of these will be positive in form e.g. the product will need to support the manipulation of washing, whilst others will be negative e.g. the product will not be suitable for quadriplegics.

If you have difficulty with the concept of functional implications it may be better to think of them as problems or difficulties in the performance of the activities being considered, and to then move towards considering how these may be solved.

#### **4. Desired Product Characteristics (Column 3)**

Based on information arrived at in Column 2, the design team should now consider how the product may possess certain design features that will address the emerging support needs for the activities to be performed. For example, if it were found to be typical that users experienced difficulty in drying washing, then a desired product characteristic to support this activity could be for the machine to possess an integrated tumble drying facility. This column acts to document any practical ideas for the design of the product, and can be seen as the suggested features of the product needed to satisfy user needs.

#### **5. Actions Needed (Column 4)**

At the end of the workshop the recorder will need to summarise the discussion in this column and also list the actions which are needed. These will often be the additional data capture activities which are required in order to resolve an issue, and any research questions that need to be answered. For example it might be realised that there is no information available on the problems that users have in using a product being designed for, and an action may be to carry out some observational studies of users and to examine relevant literature in this area. Pay special attention to issues which you feel may need to be considered in more detail at a later stage of the design process. Areas where different views emerged should be noted, all views again being recorded.

Date



**Activity Analysis  
(AA2)**

Stakeholder & Scenario:

**Activity Elements  
Summary**

<b>Activities in Scenario</b>	<b>Functional Implications</b>	<b>Desired Product Characteristics</b>	<b>Actions Needed</b>
e.g. collect washing	e.g. not facilitated by machine	e.g. system for collecting washing but outside scope of project	e.g. none



Date

**Activity Elements  
Summary**

Stakeholder & Scenario:

<i>Activities in Scenario</i>	<i>Functional Implications</i>	<i>Desired Product Characteristics</i>	<i>Actions Needed</i>



# **Activity Analysis 3 (AA3)**

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## **Requirements Summary**

### **Note**

It will be found that there is considerable overlap between this activity and that conducted during the equivalent stage of User Analysis, and some redundancy of issues raised will be found. This is not a problem, as the two perspectives are different ways of looking at the same problem, and some redundancy should be expected.

### **0. Source Material**

Methodology: Activity Analysis 2

### **1. Stakeholder title and description**

First, identify and describe briefly the stakeholder group under consideration. This serves as a guide for other considerations.

Now complete the table below.

### **2. Desired Product Characteristics (Column 1)**

List here the desired product characteristics identified and recorded in the previous tool (AA2).

### **3. Possible conflicts (Column 2)**

In addition to considering desired product characteristics in isolation, it is also important to explore any conflicts that may occur due to different design features being incompatible with each other. At this stage of design it is useful to document any possible conflicts that might exist in the development of the product as these will have to be resolved in subsequent design.

### **4. Priorities for development (Column 3)**

Having identified possible conflicting product features, the next step will be to seek a resolution of the anticipated difficulties

## **Procedure**

**N.B. This tool is to be completed for each Stakeholder group.**

arising from these conflicts. Some of these conflicts may not be possible to resolve when a single product is to be used with a wide range of users, and in many cases it will simply be impossible to produce a single product suitable for all disabilities. One solution to this is to produce a range of products matched to the needs of specific groups of users, but in many cases it will be necessary for the design team to decide how such conflicts are to be addressed, and to decide on priorities for development.

At this stage in the design process it may be sufficient to rate attributes on a simple 3 point scale e.g. high, medium or low priority. This would provide an initial indication of major conflicts and whether or not an accommodation can be found. Conflicts remaining unresolved at this stage may have to be taken through to the Usability Evaluation stage where more tangible tests of the relative effectiveness of conflicting design solutions may be achieved.

To complete this column, rate each desired product characteristic according to an agreed scale – we would suggest a 3 point scale equating to high, medium or low priority. If the design teams feels that a 3 point scale is not sufficiently sensitive to design priorities then obviously the scale may be extended to 5 or even 7 points.

**Date**

**Stakeholder**



**Activity Analysis (AAB)**

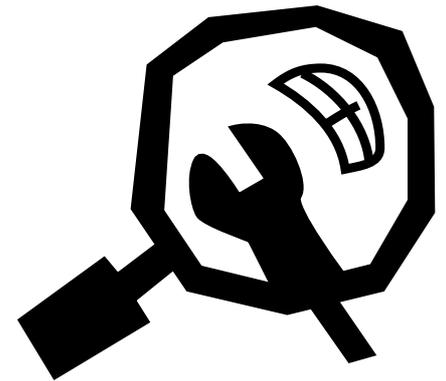
**Requirements Summary**

<b>Desired Product Characteristics</b>	<b>Possible Conflicts</b>	<b>Priorities for Development</b>
e.g. large door to washing machine	e.g. weight of door for frail elderly	e.g. high

**Requirements  
Summary**

Stakeholder

<i>Desired Product Characteristics</i>	<i>Possible Conflicts</i>	<i>Priorities for Development</i>



# Product Analysis (PA)

## Purpose

Up to this point we have described the design process as one which is inherently user-centred and which promotes significant levels of user involvement throughout. This approach helps designers form an understanding of the users, their needs and the activities they wish the product to perform. From that, designers can begin to formulate a requirements specification. When we come to create the Product Attribute Matrix of USERfit, this information will form the row headings and thus become one axis of the Matrix.

With the Product Analysis tool we now turn to the functional aspects of the proposed product in terms of design objectives and its broad specification and how these rest with issues such as: standards conformance; available technology; market considerations; and functional comparisons with competing products or services.

The Product Analysis Summary will serve to summarise design information about the product which includes the creation of a list of detailed operational features, along with a summary of any actions that needed to be taken. These detailed operational features will be used to complete the Product Attribute Matrix and form the column headings.

## How to use this tool

The Product Analysis tool can be used to list what is known about the product under consideration, and should be used when some technical

## **Methodology**

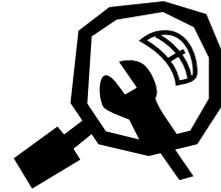
### **Product Analysis**



design decisions have been made about the product's specification and operational features. This can relate to physical features e.g. size and shape, through to operational characteristics e.g. type of control panel and interface design.

### **Outcome**

Information from this tool is designed to be entered in the Product Attribute Matrix and cross-referenced with the information derived from User and Activity Analyses.



# Product Analysis (PA)

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## Procedure

### 0. Source material

Tools & Techniques: Task analysis; brainstorming; user trials.  
Any background information on the product.

### 1. Product title and description

First, give the product a title and record the basic information about the product idea. This serves as a guide for other considerations.

Now complete the table below, filling in from left to right:

### 2. Broad specification/ design objectives (Column 1)

In this column, list all items of product specification that have so far been identified and decided upon during your earlier work with the methodology. In collecting this information you are likely to draw on information recorded in all the previous tools you have used. You may also call on information collected from other sources e.g. market research, competition analysis etc.

Use whatever data from previous tools, from analysis, from customer contacts etc that you can but do not be reluctant to use your imagination where data are missing. Mark such assumptions so that you remember which are assumptions and which are based on data.

### 3. Rationale (Column 2)

In this column, explain briefly how you have arrived at the technical decisions that have so far been made about this new product. This should be done for each of the product specifications listed in the previous column. You may find it useful to note whether a particular design feature is innovative or whether it already exists in a similar form in other products.

#### **4. Detailed operational features (Column 3 )**

In Column 1 of this tool you have listed a series of broad specifications and design objectives. The task now is to describe these in terms of concrete operational features. For example, in the design of the intelligent washing machine a design objective would be for the machine to allow easy access for the loading and unloading of washing. A possible operational feature to support that requirement would be a large door with an easy open and close mechanism. You may even specify the exact measurements of the door if that can be known at this stage.

Make note of any design implications and requirements that will depend on certain technologies being available to you and similarly on the limitations that available technology may place on the product. You might think about the impact any limitations of the product might have in terms of trying to support the user in a particular activity.

#### **5. Actions Needed (Column 4)**

At the end of the workshop the recorder will need to summarise the discussion in this column and list the actions which have arisen through the completion of this tool. This may include any technical issues which remain unresolved and may need further investigation e.g. conformance to standards. Pay special attention to issues which you feel may need to be considered in more detail at a later stage of the design process. Areas where different views emerged should be noted, all views being recorded.

Date



## Product Analysis (PA)

Product /Service Title and Description

<b>Broad Specification/ Design Objectives</b>	<b>Rationale</b>	<b>Detailed Operational Features</b>	<b>Actions Needed</b>
e.g. automatic selection of wash	e.g. useful for elderly just to have a simple on/off	e.g. single key press, but a separate button for woollen washes	e.g. check whether it's acceptable

Page of

# Product Analysis (PA)



Date

*Product /Service Title and Description*

<i>Broad Specification/ Design Objectives</i>	<i>Rationale</i>	<i>Detailed Operational Features</i>	<i>Actions Needed</i>



# Environmental Context (EC)

## Purpose

The Environmental Context tool is a high level summary of initial ideas and assumptions about a product which designers may find particularly useful to record at a relatively early stage of design. The tool demands that the developer thinks about what the product or service will be, who will use it, why there is a need for it, and where and how it will be used. In addition the tool will require that the developer makes explicit their confidence in the information they have.

NB The product/service may already exist and require only modification, alternatively it may remain to be designed and developed.

## How to use this tool

One way to complete this tool is after a group discussion within a project development team, where the initial assumptions about the project are listed and discussed. This has value in identifying what is well understood about the development and what still needs to be clarified. Where there are no clear views as to certain aspects of the product, these should be listed as issues requiring attention. Appropriate actions can then be decided.

## Outcome

Answering these or similar questions with a degree of confidence should ensure that the designer has a concrete notion of the nature and scope of

the product/service to be designed or modified. Even at this early stage, the designer should be encouraged to know who the intended users of this product might be thus establishing a user-centred approach early in the development cycle.



# Environmental Context tool (EC)

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## 0. Source material

Tools & Techniques: Empathic modelling; brainstorming; group discussion.

Any background information on how the product will be used.

## 1. Product title and description

First, give the product a title and record the basic information about the product idea. This serves as a guide for other considerations.

Next complete the table below as far as you can, filling in the columns from left to right. Do not be overly concerned if, at this stage, there are gaps in your information. Some issues will not arise at this stage, those that do are recorded and considered during the User and Activity Analyses stages of the Methodology.

## 2. Initial queries (Column 1)

This column contains a series of questions designed to test early assumptions about aspects of the product. These questions are basically the who, what, why, where and when of the products use and are largely self-explanatory. For examples of typical answers to these questions the reader is directed to the worked example of USERfit in Appendix 1.

## 3. Details (Column 2)

In this column, answer the questions listed in column 1. Use whatever data from analysis, customer contacts etc. that you can but do not be reluctant to use your imagination where data are missing. Mark such assumptions so that you remember which are assumptions and which are based on factual information.

## Procedure

This step will be particularly important for products which are designed for specialised markets e.g. aids for specific disability groups. In such cases you may find that this process poses more questions than it answers. However it is important to record what underlying assumptions are being made about a product early in design, and the activity will assist in identifying areas where more discussion and data capture is required. Unresolved issues will be addressed later in the design activity however, and at this stage it is sufficient to note them and then continue.

For generic products where the goals are very general and well understood, there may be far fewer issues for clarification, but it is still important to record the basic assumptions that have been made.

#### **4. Issues requiring attention (Column 3 )**

Make notes in this column of any issues arising from your responses which are felt at this stage to have some influence on the creation of the product. For example in response to the query “Who will purchase this product?” you may have answered “Elderly people”. An issue requiring attention might be that as this group of people are often on low incomes, how will they be able to afford this product?

#### **5. Actions Needed (Column 4)**

At the end of the workshop the recorder will need to summarise the discussion in this column and list the actions which have arisen through the completion of this tool. These may include decisions that need to be made strategically regarding the product's exploitation and its practical implementation into the marketplace. Pay special attention to issues which you feel may need to be considered in more detail at a later stage of the design process. Areas where differences of opinion emerge should be noted as these will also need to be resolved at some stage in the design cycle.

Date



**Product /Service Title and Description**

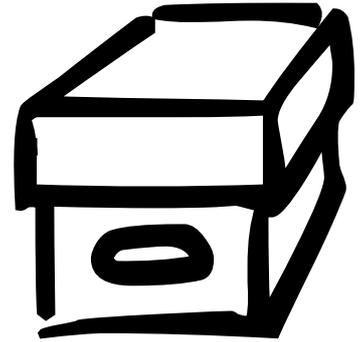
<b>Initial Queries</b>	<b>Details</b>	<b>Issues Requiring Attention</b>	<b>Actions Needed</b>
<b>What is the product/service?</b>	e.g. an intelligent washing machine forming part of a wider home automation initiative	e.g. some details of the specification need checking	e.g. involve experts on elderly people
<b>Why is there a need for the product/service?</b>			
<b>Where did the idea for the product originate?</b>			
<b>Who will purchase this product/service?</b>			
<b>Who are the primary end users?</b>			
<b>How and when will this service be used?</b>			
<b>Where will this product/service be used ?</b>			
<b>How will the development of this product/service be financed?</b>			



<i>Date</i>
-------------

<i>Product /Service Title and Description</i>
---

<i>Initial Queries</i>	<i>Details</i>	<i>Issues Requiring Attention</i>	<i>Actions</i>
<i>What is the product/service?</i>			
<i>Why is there a need for the product/service?</i>			
<i>Where did the idea for the product originate?</i>			
<i>Who will purchase this product/service?</i>			
<i>Who are the primary end users?</i>			
<i>How and when will this service be used?</i>			
<i>Where will this product/service be used ?</i>			
<i>How will the development of this product/service be financed?</i>			



# Product Environment (PE)

## Purpose

This tool considers in more detail what is known about the environment in which the product will operate, and any implications that this may have for design. This tool reminds developers to consider the wider implications of how the product will be supported, and also documents some of the likely implications of these decisions.

NB The product/service may already exist and require only modification, alternatively it may remain to be designed and developed.

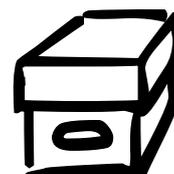
## How to use this tool

The tool should be used as part of the conversations that need to take place between developers and other relevant parties, and which are likely to involve the use of group discussions and/or personal interviews. This summary should be used when there is a reasonably clear idea of the product to be developed, but is still appropriate for use early in the design cycle. Arguments for the early use of this tool are that some of these wider issues may have implications for the design and specification of the product itself.

## Outcome

Answering these or similar questions with a degree of confidence should

ensure that the designer has a concrete notion of the wider environmental aspects of the product/service to be designed or modified. Even at this early stage, the designer should be encouraged to understand the service provision aspects of their product. The tool highlights issues for clarification and implications for design which are considered in other more detailed stages of the Methodology, namely the User Analysis and Activity Analysis tools.



# Product Environment (PE)

---

## 0. Source material

Tools & Techniques: Empathic modelling; brainstorming; group discussions.

Any background information on product support.

## 1. Product title and description

First, give the product a title and record the basic information about the product idea. This serves as a guide for other considerations.

Now complete the table below as far as you can, filling in the columns from left to right. Do not be overly concerned if, at this stage, there are gaps in your information. Some issues will not arise at this stage, those that do are recorded in the fourth column, Design Implications, and can also be considered during the detailed User and Activity Analyses stages of the Methodology.

## 2. Function (Column 1)

This column contains a list of the wider considerations of the design and use of the product i.e. training in its use; installation; maintenance; support needs for users; decommission when the product becomes obsolete; service provision and instructional documentation for users. These considerations are particularly important in the assistive technology market, where many products are of a specialist nature, and will require considerable support in their use. It is therefore important for designers to test early assumptions about these aspects of the product.

## 3. Who will do this (Column 2)

Try to identify the person or organisation you feel may be responsible for the functions listed in Column 1. Use whatever

## Procedure

information from analysis, customer contacts, enquiries etc. that you can but do not be reluctant to use your imagination where this information is not readily obtainable. Mark such assumptions so that you remember which are assumptions and which are based on factual knowledge.

This step will be particularly important for products which are designed for specialised markets e.g. aids for specific disability groups. In such cases you may find that this process poses more questions than it answers. However it is important to record what underlying assumptions are being made about a product early in design, and the activity will assist in identifying areas where more discussion and data capture is required. Unresolved issues will be addressed later in the design activity however, and at this stage it is sufficient to note them and then continue.

**4. How will this be done (Column 3 )**

Make notes in this column of any ideas you have about how the functions will be achieved/supported. Note any issues which have some influence on the creation of the product. In particular, consider situations where the design team may have to consult with other organisations, e.g. Social Services; Standards bodies , e.g. to confirm the viability of a product or service.

**5. Design implications (Column 4 )**

In this column you begin to consider the initial design implications of the issues raised, how these might impact on the development of the product and how that might impact on the intended users. In a sense you are checking assumptions arrived at in the previous column. For example, why is there a need for training and support; is it necessary to provide users with specialist installation and maintenance services etc.?

**6. Actions Needed (Column 5)**

At the end of the workshop the recorder will need to summarise the discussion in this column and list the actions which have arisen through the completion of this tool. This could include support issues which needed to be considered, and actions on other parties to resolve their unanswered questions. Pay special attention to issues which you feel may need to be considered in more detail at a later stage of the design process. Areas where differences of opinion emerge should be noted as these will also need to be resolved at some stage in the design cycle.

Date



**Product Environment (PE)**

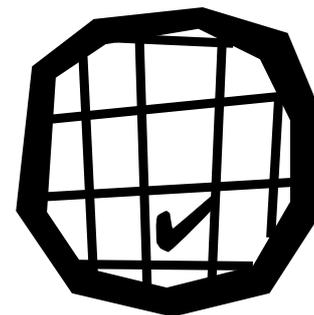
Product /Service Title and Description

<b>Function</b>	<b>Who will do this?</b>	<b>How will this be done?</b>	<b>Design implications</b>	<b>Actions Needed</b>
<b>Training needs</b>	e.g. installers/ electrical contractors	e.g. informally	e.g. product needs to be simple	e.g. ensure simplicity to design
<b>Documen- tation</b>				
<b>Installation</b>				
<b>Maintenance</b>				
<b>Support</b>				
<b>De- commission</b>				



*Product /Service Title and Description*

<i>Function</i>	<i>Who will do this?</i>	<i>How will this be done?</i>	<i>Design implications</i>	<i>Actions Needed</i>
<i>Training needs</i>				
<i>Documentation</i>				
<i>Installation</i>				
<i>Maintenance</i>				
<i>Support</i>				
<i>De-commission</i>				



# Functional Specification

## Purpose

The functional specification phase of USERfit contains three components which are interdependent on each other. These are:

- The Product Attribute Matrix (PAM)
- ▲ The Requirements Summary (RS)
- The Design Summary (DS)

The Product Attribute Matrix cross references the product specification, derived from the Product Analysis tool, with the desired attributes of products obtained from User and Activity Analysis. The Matrix is a cross-referencing tool to assist in matching the intended functionality of the product with user needs. The idea is to produce a simple summary matrix for each major user group where attributes of the product act as column headings in a table, and desired attributes act as row headings. The developer then evaluates whether the product being produced appears to match user needs.

The tables are summarised using a Requirements Summary (RS), which lists the desirable attributes of the product based on users needs, and a Design Summary (DS), which lists the functionality to be implemented.

To avoid creating overly complex tables and summaries, produce a separate matrix for each major user group likely to use a product. For many products this may be a single user category, but for many AT products a wider range of potential users may be identified e.g. carers

and members of family. In these cases, you can construct additional matrices and summaries. Decisions whether to include these other parties in the analysis will largely depend on their anticipated role in the use of a product, and whether an analysis of their needs has already been conducted as part of the User and Activity Analysis activities.

### **How to use these tools**

The Matrix and Summaries are designed to be used in a workshop setting which would aim to involve all interested parties. The approach may be used to check whether an existing product specification is well matched to users needs. Whilst not only useful when refining an existing product, it can also be valuable in performing some initial checks to ensure a product specification will satisfy end users needs before a product has been built. Here the columns of the PAM are generated from the outcomes of the Product Analysis (PA), and the rows from the User and Activity Analysis forms (UA3 & AA3). This is a basis for subsequent discussion when completing the RS and DS. The second way to use the matrix is to assist in the specification process, where attributes emerging from User and Activity Analysis are entered into the rows of the table. You can then discuss the functional specifications which will match these needs. Here the columns in the table are constructed gradually, resulting in a description of the functional specification that has finally been agreed.

### **Outcome**

The outputs from this activity are summaries of each of the two assessment processes conducted during the matrix exercise. The RS represents assessments recorded in the right hand summary column of the matrix. This also shows the degree to which desired attributes (row headings) are being met by the product specification (column headings). The DS summarises the products specification (the bottom row of the Matrix) and how well specifications are seen to be serving a useful purpose in meeting user requirements. This document also moves towards making operational these specifications, by describing how they will be implemented.

The output from this process is a detailed specification for design. The completed Matrix will serve to do the following:

- ◆ outline the required functionality
- ◆ identify superfluous functionality which may be designed out of the product
- ◆ rate the degree to which the specification will match user needs

Output from this activity are also fed into the Usability Evaluation planning process.



# The Product Attribute Matrix (PAM)

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## How to use the Matrix

### 0. Source Material

Methodology: Product Analysis, Activity Analysis 3, User Analysis 3.

### 1. Preparing the Matrix

#### Step 1.

Across the row marked 'Product Specification' enter all items of product specification as they appear in Column 3 of the Product Analysis tool. These items will now act as individual column headings along the Matrix.

#### Step 2.

Down the left hand column, desired attributes are entered from the Requirements Summaries of the User and Activity Analyses tools (UA3 and AA3). These items will now act as individual row headings down the Matrix.

#### Step 3.

Assessments are made for each desired attribute in terms of their perceived importance to the user.

### 2. Completing the Matrix

#### Step 4.

Ratings are now made in the body of the Matrix which cross-reference aspects of the specification against the full range of desired attributes. A simple tick is placed in a cell if the desired attribute is supported by an element of the specification, and the cell is left blank if it makes no contribution. Conversely a cross may be placed in the cell if an element of the specification actually contradicts a desired attribute. Where it is unclear whether there is a match or conflict, a question mark may also be placed in the cell.

## Procedure

It should be stressed that it is the **process** of doing this exercise that is important. All design proposals or decisions taken should be recorded explicitly for later reference.

**Step 5.**

In the right hand Summary column, an assessment is now made of the degree to which each desired attribute is being adequately met by all of the elements in the product specification, and as before ticks, crosses and question marks should be used. It should be stressed that there may be differences of opinion when these issues are discussed, and again it is the process of going through this exercise which is of particular importance.

**Step 6.**

Along the bottom row, a summary assessment is also made of the degree to which items in the product specification satisfy desired attributes. This is slightly different from the previous analysis, as it helps identify those areas where product features appear to be superfluous and not providing any value to the user.

**Step 7.**

Assessments are made for each of the elements of the product specification in terms of:

- anticipated cost of development
- priority rating of feature

This step is useful in deciding on any trade-offs that will subsequently have to be made between features. For example a high cost and low priority feature could be removed from the development if resources were limited, and conversely low cost and high priority features should not be removed because they add value at low expense.

**3. Outcome of the PAM**

The use of the Product Attribute Matrix is an iterative process. The design team must add or subtract items of product specification (across the Product Specification row) where there is a failure to address end user needs or where there is evidence of superfluous specification. The process of working through the Matrix may then be repeated until the design team is satisfied that they have resolved any serious conflicts and are happy that the specification process is complete.

**4. Requirements Summary**

Each revision of the Product Attribute Matrix is summarised in the Requirements Summary (RS). This document lists all of the desired

features (row headings), and describes in detail how the emerging specification matches these. In addition the document lists any actions that are still outstanding for further investigation and development.

## **5. Design Summary**

An additional Design Summary (DS) form is used to list the details of the emerging specification, and to summarise the priority given to their development. At this stage of the development it is important to start considering in detail how broad specifications may become operationalised in detailed design. Having identified what should be achieved, the developer needs to consider how this will be achieved, and discussions about this should be encouraged at this phase of design and recorded.

This document has a considerable overlap with the Product Analysis, and it is recommended that they be used together. The Product Analysis provides information which is fed into the PAM, whilst the Design Summary records the outcome of the discussion process that results.

Thus the Product Analysis is largely used to document an existing product's specification, whilst the Design Summary documents any design decisions made during the process of using the USERfit methodology.

# Product Attribute Matrix (PAM)



*Product /Service Title and Description*

<b>Product Specification</b>									
<b>Product Specification</b>									
<b>Cost of development</b>									
<b>Priority</b>									
<b>End User Requirements (UA3)</b>									
<b>SUMMARY</b>									





# **Requirements Summary and Design Summary**

---

Tables for these two tools follow below.

Date



## Requirements Summary (RS)

Product /Service Title and Description

<b>Desired Feature</b>	<b>Degree of Match with Specification</b>	<b>Actions Needed</b>
e.g. simple controls	e.g. fairly good, but made more complex by having two operating buttons	e.g. need to determine whether this is acceptable - small pilot study?

# Requirements Summary (RS)

Date



*Product /Service Title and Description*

<i>Desired Feature</i>	<i>Degree of Match with Specification</i>	<i>Actions Needed</i>

Date



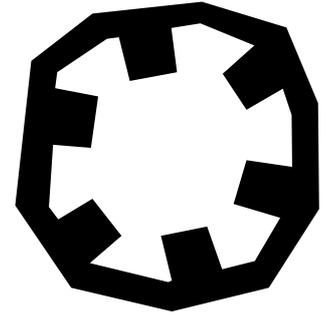
## Design Summary

Product /Service Title and Description

<b>Functional Specification</b>	<b>Priority</b>	<b>Operational Details</b>
<p>Conventional door with lock release activated after a time delay and only when machine is off</p>	<p>High</p>	<p>Use of existing washing machine door and release mechanism is anticipated unless radical change is needed. Door is 40 cm in diameter with a lever operation. The force needed to operate this is unknown, but earlier recommendations will be complied with where possible.</p>

**Product /Service Title and Description**

<b>Functional Specification</b>	<b>Priority</b>	<b>Operational Details</b>



# Usability Evaluation (UE)

## Purpose

Usability Evaluation comprises three tools: Overall Evaluation Strategy; Usability Evaluation Planning; and a Usability Evaluation Summary. The first tool and second tools cover the planning of the evaluation, whilst the final tool summarises the outcome of the evaluation process and any actions that need to be taken.

## How to use the tool

Evaluation is a creative exercise which involves an understanding of how specific users are likely to use a product and the way in which different activities may interact with each other. The overall aim of this tool, therefore, is to describe the common activities that will take place when the product is used and from that design test procedures that will measure how well the product supports those activities. In the Overall Evaluation Strategy the design team sets out the broad aims of the evaluation process, the type of evaluation required and an overall plan of how these activities will be carried out.

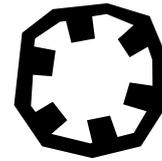
With the Usability Evaluation Planning tool, outputs from the Requirement and Design Summaries are used to identify usability goals and associated activities which are then enacted, tested, observed and measured during the course of the evaluation procedures. The resulting

data are then entered in the Evaluation Summary at which point the design team can decide on whether or not further design input is required for the product. It is entirely likely that the design team will proceed through a number of iterations, passing through the processes of design - build - evaluate - redesign etc. a number of times.

It is anticipated that the evaluation plan would be developed in a workshop held with developers and other relevant parties, and that normally this would take place when there was a reasonably good understanding of what the product was going to be, the activities that would take place, and the attributes of any users.

### **Outcome**

The outcome of this exercise should initially be a plan showing what usability goals have been identified for the product and a summary of how these will be measured in practice . Once evaluation activities have been conducted the results of these are also documented to produce a summary of the evaluation findings with a list of actions that are needed. As mentioned above, this process is commonly iterative with the findings of any evaluation being fed back into the design process with the aim of refining the product further.



# Usability Evaluation 1 (UE 1)

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## 0. Source material

Methodology: PAM, Requirements Summary, Design Summary.

Tools& Techniques: User Trials; Direct Observation; Questionnaires; Interviews; Group Discussions; Field Trials, Expert opinion

## 1. Product title and description

First, give the product a title and record the basic information about the product idea. This serves as a guide for other considerations.

Now complete the table below filling in from left to right.

## 2. Purpose (Column 1)

In this column, list the general purposes of the evaluation according to what you want to observe, what you hope to achieve and what information you want to gather about the product. For example, it is very likely that you will wish to observe usage of different aspects of the product; usage of the product in different settings; and what might happen if the product fails or if the user uses it incorrectly. All these scenarios may be listed here. You may also wish to consider wider aspects of the usage of the product e.g. tests of the effectiveness of user documentation etc.

## 3. Type of Evaluation (Column 2)

Based on what you have entered in Column 1, decide here what type of evaluation procedure is going to tell you what you need to know. For example, if you wish to observe what happens when a product fails or when a user commits an error, then the most informative procedure will be laboratory-based user trials where

## Procedure

there can be a very high level of control over events. Because of the level of control over events, laboratory-based trials can be carried out within a comparatively brief period. Detailed observations and the logging of events is also more easily achieved in a controlled environment.

Conversely, there are often strong arguments for observing the usage of a product in its natural setting. This points clearly to the need for field trials over an extended duration.

Details of different evaluation methods are described in the tools and techniques section. These include User Trials; Direct Observation; Questionnaires; Interviews; Group Discussions; Field Trials and Expert opinion.

#### **4. Details of Plan**

In this column, specify what will go to make up the trial procedures you have listed in Column 2. For example, if a laboratory-based user trial, you should record here information about your intended subjects (the number; their age; sex; ability levels etc) and say what you expect them to do.

If designing a field trial you can list similar information: subjects; duration of the trial; setting; activities to be performed etc.

Date



**Usability  
Evaluation (UE 1)**

**Product /Service Title and Description**

**Overall Evaluation  
Strategy**

<b>Purpose</b>	<b>Type of Evaluation Planned</b>	<b>Details of Plan</b>
e.g. To observe use in a natural setting	e.g. Field trial	e.g. Intended to install the product in the users own homes and to monitor usage over a 3 month period

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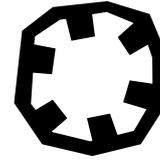


*Date*

**Overall Evaluation  
Strategy**

*Product /Service Title and Description*

<i>Purpose</i>	<i>Type of Evaluation Planned</i>	<i>Details of Plan</i>



# **Usability Evaluation 2**

## **(UE 2)**

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## **Evaluation Planning**

The Evaluation Planning tool is a summary of the evaluation plan for the product in which the usability goals that the product must satisfy are listed, along with specified activities associated with those goals. Test procedures and measurement criteria are also specified.

The Product Attribute Matrix and in particular the two tools Requirements Summary and Design Summary are used in conjunction with Usability Evaluation Planning (UE2). The former acts to provide a summary of the desired attributes of the product, which can then be used as the basis for agreeing the usability goals that need to be satisfied. The latter acts as a reminder of what will actually be constructed, and therefore assists in deciding which attributes it is reasonable to try and evaluate.

Having decided on the usability goals to be measured it is important to consider how these will be measured. A starting point for this is to consider what activities users should engage in order to demonstrate whether a goal has been satisfied. The Activity Analysis (AA1 and AA2) can also assist here by reminding the developer what activities it was agreed the product should support. The next phase of this planning activity is then to consider what kinds of investigations will be used to answer these questions, and the measurement procedures that should be adopted. As well as deciding the ways this information will be captured it is also necessary to agree on what would constitute a successful or conversely a poor outcome of a trial.

Note that the process followed in developing evaluation strategies may in itself identify new requirements for the product and so this should be viewed as part of the iterative design cycle. Forcing developers to think explicitly about evaluation early in the development cycle may also act to crystallise design objectives and developers perceptions of what will constitute a successful product.

## **Procedure**

It is anticipated that the evaluation plan would be developed in a workshop held with developers and other relevant parties. Normally this would take place when there was a reasonably good understanding of what the product was going to be, the activities that would take place, and the attributes of any users. The following gives the steps to be carried out during the workshop.

## **0. Source Material**

Methodology: Usability Evaluation 1; Requirements Summary; Design Summary; Activity Analyses 1 and 2

## **1. Product title and description**

First, give the product a title and record the basic information about the product idea. This serves as a guide for other considerations.

Now complete the table below filling in the columns from left to right.

## **2. Functionality (Column 1)**

The listed functionality of the product may be taken directly from the Requirements Summary.. This process ensures continuity between the design and evaluation activities. List the functions as they appear on the Requirements Summary. There may be some repetition on the list you create in which case you may simply remove any duplications. In addition discussion may also identify further functionality which were not included in the original lists, and these can be added to the evaluation plan. Some of the features may also not be relevant for inclusion in the evaluation plan, as it may have been decided not to implement some of the desired functionality of the product for technical or other reasons. Thus it is important to decide on the relevance of each feature by looking at the details of the Design Summary. This approach has been taken in order to keep the emphasis of the evaluation plan firmly on whether the product actually satisfies user needs or requirements. If you find this difficult to do, you may prefer to concentrate on identifying features to test from the Design Summary. If you find this easier to do, then this is an acceptable alternative strategy but please try to consider the evaluation from the perspective of whether human needs are being met or not.

## **3. Define Usability Goals for Product (Column 2)**

Usability goals represent the totality of what the user is trying to achieve with this product and how easily and effectively they can achieve it. It is important to decide upon the goals which the product must meet if it is to be attractive to users and successful in the market. State these as firm, product-specific goals. Many of

these goals will be based on the list of desired attributes taken from the Requirements Summary, and these will need to be operationalised so that they can be measured. For example, the objective that a product is easy to use needs to be made more tangible. We might say that ease of use means that the user can operate all of the functionality of the product within half an hour of exposure to it, that they do not forget how to use the product after one month of non use etc. It can be seen that this activity is closely allied with requirements capture, but differs in that the emphasis is on the characteristics that the product must have in order to satisfy desired attributes of the product, rather than the attributes or requirements per se.

Goals will vary from one product to another but there is a considerable degree of overlap in that the same kinds of issues are raised in many different types of developments. The following is a list of topics that arise frequently. These should be considered at this stage of the development process:

- ◆ Time to learn to use the product
- ◆ Product is usable by the target population
- ◆ Product does the right job.
- ◆ Provision of appropriate support, i.e. instructional material.
- ◆ Attractiveness to users.

#### **4. Activities (Column 3)**

In addition to defining usability goals it is also important to operationalise the actions or activities which users will need to engage in order to assess whether the product is usable, and to also define how usability might be measured.

In this column, list activities that are to be performed during the evaluation which have a direct relationship with usability goals. For example, if a usability goal is that a product is easy to use then it is necessary to decide what user activities should be monitored in order to determine whether this objective has been met. The scenarios identified in Activity Analysis (AA 2) provide a logical basis for deciding on the activities to be used, as subsequent design decisions will have been based on the intention to support these activities in the product. For example, ease of use might include a range of activities from putting the washing into the machine, selecting programmes and switching the machine on, through to removing clothes from the machine and drying them.

Please note that any given usability goal may have several activities associated with it, and obviously all would need to be tested.

## **5. Measurement procedures (Column 5)**

As noted above, in some cases a usability goal may be a rather abstract concept – for example, that a product be easy to use is a rather bare and not very helpful statement. So in addition to listing the goals which are to be met by the product, it is also necessary to represent these goals in more tangible, and therefore measurable, terms. For each goal and associated activity it is necessary to set one or more tests which may be made to find out whether the product meets its goals or not. For each test it is then necessary to decide what is to be used as a measure. Potentially useful measures include the following: time to perform a given activity; error rates; number of activities successfully completed; understanding of the product; problems encountered; usage of different facilities; and comments from users.

## **6. Setting Criteria (Column 6)**

Finally it is necessary to decide on the criteria for success or failure in each test and to consider the desired levels of performance. In addition the minimum acceptable levels also need to be defined as a fall back position in the event of the product not performing as well as hoped. The minimum acceptable level should be considered as a firm limit below which remedial action must be taken before product release.

Criteria fall into three general categories:

- ◆ established criteria for product design: this includes Standards and other product design guidelines.
- ◆ operationally defined product performance criteria: as derived from the technical specification of the product.
- ◆ operationally defined user performance criteria: e.g. that 95% of users can perform a given task within a given length of time and commit no more than 2 errors.

## **Outcome**

The outcome of this exercise should be a plan showing what usability goals have been identified for the product, and a summary of how these will be measured in practice. Also included are criteria for acceptance of the product and the levels of performance which would be considered unacceptable.

Date



**Product /Service Title and Description**

**Evaluation  
Planning**

<b>Desired Feature</b>	<b>Product Usability Goals</b>	<b>Activities</b>	<b>Measurement Procedures</b>	<b>Pass/Fail Criteria</b>
e.g. Use of sound and visual indicators for displays	e.g. Whether visually impaired and hard of learning, can use the product	e.g. Switching on the machine	e.g. Subjective opinions	e.g. No major problems observed or reported

*Date*

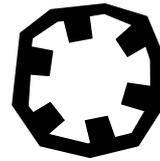


*Product /Service Title and Description*

**Evaluation  
Planning**

<i>Desired Feature</i>	<i>Product Usability Goals</i>	<i>Activities</i>	<i>Measurement Procedures</i>	<i>Pass/Fail Criteria</i>

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## **Usability Evaluation Summary**

# **Usability Evaluation 3 (UE3)**

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### **0. Source Material**

Methodology: Usability Evaluation 2, Results of evaluations

This tool is used after the evaluation phase of the design in order to summarise its outcome. The Usability Evaluation Summary (UE3) acts to record how well the product has satisfied the usability goals. It also lists the actions needed i.e. the changes to the product which are needed as a result of the evaluation.

### **1. Evaluation goals from UE2 (Column 1)**

List here the Usability Goals which were specified in Column 2 of the Usability Evaluation Planning tool (UE2).

### **2. Have the usability criteria been satisfied? (Column 2)**

This column should be completed by those responsible for conducting the evaluation. In doing this they must exercise their judgement in deciding whether or not the product has achieved a satisfactory level of performance against the criteria stated in the Usability Evaluation Planning tool (UE2).

### **3. Actions needed (Column 3)**

It is recommended that a list of actions be produced as a result of discussion within the design team, where the implications of the evaluation are discussed and changes needed agreed. Where appropriate, end users and other stakeholders could also be involved in this process.

If deficiencies in the product have been revealed, this information should be fed back to the appropriate phase of USERfit for further examination. The eventual result of the completed evaluation process will be an enhanced specification for design.

## **Procedure**



**Product /Service Title and Description**

**Usability Evaluation Summary**

<b>Product's Usability Goals</b>	<b>Have these criteria been satisfied?</b>	<b>Actions Needed</b>
e.g. Whether it is easy to learn to use the machine and whether errors are made in use	e.g. Some concern about separate woollen wash button	e.g. Can the technical problems be solved?

**Date**

**Product /Service Title and Description**



**Usability Evaluation  
Summary**

<b>Product's Usability Goals</b>	<b>Have these criteria been satisfied?</b>	<b>Actions Needed</b>

