An environment for open user innovation in an airport setting

The Idea Box
Index

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Requirements Analysis</td>
<td>5</td>
</tr>
<tr>
<td>User Profiles</td>
<td>5</td>
</tr>
<tr>
<td>Procedure</td>
<td>6</td>
</tr>
<tr>
<td>Qualitative usability goals</td>
<td>8</td>
</tr>
<tr>
<td>Quantitative usability goals</td>
<td>9</td>
</tr>
<tr>
<td>Procedure</td>
<td>9</td>
</tr>
<tr>
<td>Design</td>
<td>10</td>
</tr>
<tr>
<td>Level 1</td>
<td>10</td>
</tr>
<tr>
<td>Work Reengineering</td>
<td>10</td>
</tr>
<tr>
<td>Procedure</td>
<td>10</td>
</tr>
<tr>
<td>Artefacts</td>
<td>11</td>
</tr>
<tr>
<td>Conceptual Model Design</td>
<td>11</td>
</tr>
<tr>
<td>Procedure</td>
<td>11</td>
</tr>
<tr>
<td>Artefacts</td>
<td>11</td>
</tr>
<tr>
<td>Conceptual Model Mock-ups</td>
<td>12</td>
</tr>
<tr>
<td>Procedure</td>
<td>12</td>
</tr>
<tr>
<td>Artefacts</td>
<td>12</td>
</tr>
<tr>
<td>Iterative Conceptual Model Evaluation</td>
<td>12</td>
</tr>
<tr>
<td>Procedure</td>
<td>13</td>
</tr>
<tr>
<td>Artefacts</td>
<td>14</td>
</tr>
<tr>
<td>Level 2</td>
<td>14</td>
</tr>
<tr>
<td>Screen Design Standards</td>
<td>14</td>
</tr>
<tr>
<td>Screen Design Standards Prototyping</td>
<td>14</td>
</tr>
<tr>
<td>Procedure</td>
<td>14</td>
</tr>
<tr>
<td>Iterative Screen Design Standards Evaluation</td>
<td>15</td>
</tr>
<tr>
<td>Procedure</td>
<td>15</td>
</tr>
<tr>
<td>Level 3</td>
<td>15</td>
</tr>
<tr>
<td>Detailed User Interface Design</td>
<td>16</td>
</tr>
<tr>
<td>Procedure</td>
<td>16</td>
</tr>
<tr>
<td>Iterative Detailed User Interface Design Evaluation</td>
<td>16</td>
</tr>
<tr>
<td>Procedure</td>
<td>16</td>
</tr>
<tr>
<td>Installation</td>
<td>17</td>
</tr>
<tr>
<td>User feedback</td>
<td>17</td>
</tr>
<tr>
<td>Artefacts</td>
<td>19</td>
</tr>
<tr>
<td>Time plan</td>
<td>19</td>
</tr>
<tr>
<td>Procedure</td>
<td>19</td>
</tr>
<tr>
<td>Conclusion</td>
<td>20</td>
</tr>
<tr>
<td>Reference</td>
<td>21</td>
</tr>
</tbody>
</table>
**Introduction**

The basis in this assignment is to describe and discuss how a certain type of process, in our case *The Usability Engineering Lifecycle*, could be applied in an environment of open user innovation in an airport setting.

An open user innovation is based on collaborations between different kinds of organisations. It is also a process that is open for everyone to see during the development. In our case the new system to be built is an electronic, web-based idea-box. The main purpose of the idea-box is to make it possible for employees and customers at an airport to give feedback about things they think could be better. The users should be able to point out problems, but also to give suggestions on how the problems might be solved. The suggestions should be available for everyone to see so that other users can improve the suggestions with new inputs. In addition to that, there should also be possible to see if a suggestion has been implemented at the airport.

Our assignment is not to design the system. The assignment is instead to plan how a project like this could be made. We are going to follow the different steps in *The Usability Engineering Lifecycle* and through them plan how the project could be made in a user-centered fashion.
Requirements Analysis

In this part, we will attain three goals which are: identify the user needs and expectations; identify the goals for the online idea box system; identify usability requirements based on these studies.

User Profiles

The purpose of user profiles is to get a better understanding on intended users’ characteristics through certain methods so as to drive user interface design decisions. Despite this, we also need to identify major user categories for further study in the contextual task analysis.

Designer and developers often have a vague and imprecise or even contradictory sense of their users. User profiles provide a way to communicate with users so as to get a better understanding about the intended users and their expectations. Sure enough, these studies can help us to build a successful system with high usability.

Procedure

Because of that the users of a website are not so accessible and could come from any field of work, we divided the users into three categories which is: airport employees, others that are interesting in airport reconstruction and passengers which also can be divided in to different categories: people with high/low computer experience and people whit different kinds of disabilities. After that, we will select representatives from each category. Then we use the user profile data summary template to collect data with certain representatives during interviews.

Here is an example.

<table>
<thead>
<tr>
<th>Scenario: (describe a typical airport experience )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal Information:</strong></td>
</tr>
<tr>
<td>Name: George</td>
</tr>
<tr>
<td>Age: 32</td>
</tr>
<tr>
<td>Sex: Male</td>
</tr>
<tr>
<td>Education: Master</td>
</tr>
<tr>
<td>Location: Sweden</td>
</tr>
<tr>
<td>Occupation: Consultant</td>
</tr>
</tbody>
</table>

| **User Characteristics:**                         |
| George is a business man who is working in IBM as a consultant. He is |
always travelling around due to business.

| Computer skills, knowledge, and abilities: | George always takes business travel with his laptop and he prefers windows operating system. He uses his laptop to write the presentation and reports for his clients and he always spends more than 6 hours in front of his laptop every day. |
| Web experience and preferences: | George is crazy about internet and he is always surfing on the net once he gets time. However, as a business man, he is quite busy every day. Rather than reading the news on the internet, he always scans them rashly. |

Artifacts

Questionnaires, Interview, User profile data entry and analysis, User profile data summary and User profile conclusions

Contextual Task Analysis

Contextual task analysis identified the key actors whose task must be studied based on user profile. Contextual task analysis provides us a powerful way to identify different goals for different task types and identify the bottlenecks and weaknesses in current work processes that can be improved through a good user interface design. Contextual task analysis creates a strong focus on users and work contexts through work environment analysis, task analysis, task scenarios, and current user task organization model.

Procedure

1. Background information gathering

Before we start, we will first review the requirements specification and identify the work boundary. For our project, in order to build an environment for open user innovation in an airport setting, we decide to construct an online idea box system. Then we will meet with project team members to draw up the project approach and share knowledge we acquired in the field. In our project, we use the usability engineering method. After that, we also identify the three key actors and write the use cases respectively. In our project, they are three main
actors: Airport employees, others that are interesting in airport reconstruction and passengers which also can be divided in to different categories: people with high/low computer experience and people whit different kinds of disabilities.

2. Collect and analyze data

Now the online idea box system has been scoped and basic features have been identified. In this part, first, we should interview user representatives and take notes during interviews. Questions of interviews can be designed such as:

- Do you care about airport environment?
- How often do you go to the airport
- Do you often surf on the internet? What do you do there?
- How do you consider your computer experience?
- Do you think it is a good idea to establish an online idea box system for the airport? Would you use it?
- Have you used similar systems before? Say something about them. Is there any specific idea for improvement?

After that we document the data and start to write task scenarios according to previous researches. In the end, we should organize all task analysis and prioritize the tasks. Those steps should be executed iteratively until all main tasks are derived.

3. Construct current user task
After the steps above, we get a better understanding of users’ expectation of the system.

$Artifacts$

Contextual Observation/Interview data collection, Work environment analysis, Task analysis, Task scenarios and Current user task organization model
Usability Goals

Establishing usability goals can help to focus on user interface design by giving designer something concrete to aim for and something precise to assess their design ideas. Articulated usability goals can also streamline the user design and shorten the design cycle.

In this step, we will extract goals from user profile and contextual analysis as well as business goals so as to establish a series of specific qualitative and quantitative usability goals that will drive UI design. It can also be derived from marketing groups, competitive analysis, technical support groups, or just informed opinion.

Basically, usability goals fall into two categories:

- Qualitative usability goals: are not general unquantified goals that guide design and often used in guiding initial design efforts
- Quantitative usability goals: objective, measurable, and can serve as acceptance criteria during usability evaluation

Qualitative usability goals

Qualitative usability goals are formulated based on user profiles and contextual task analysis. In our projects, the qualitative usability goals are such as:

- Simplicity: Rather than an entertainment site, the system is designed to provide a more effective and convenient way for users to propose suggestions about airport reconstruction. Therefore the system should be as simple as possible.
- Effectiveness and utility: The online idea box system should provide an appreciate set of functions to enable users publish their ideas about the airport setting and upload their sketch proposals. The user comments should be orderly organized for other users’ review and staffs’ collection.
- Efficiency: The users can find out the information they required and hand in their solutions quickly.
- Easy to use: The system should be easy to use without any confused for users.
• Memorability: The interface should help users to remember how to interact with the system. Quite fast, users should be able to use the system without consulting the online help.

• Visibility and Consistency: The online idea box should become one part of the whole airport website in the end. We will not only focus on our system but also pay attention to keep consistency with the airport website.

• Follow established web conventions: For respecting users' preference, the system should follow the conventions such as layouts and features from existing systems which users are accustomed to use.

• Multi-language support: The users will come from all around the world, the system should therefore provide at least two languages. One is English, the other one is local the language.

• Error Recovery & Prevention: While using the system, a user can recover from an error by using only on-line help to resolve the problem.

Quantitative usability goals

We use the previous qualitative usability goals as a starting point to formulate quantitative goals. Quantitative goals are developed specially to address these four problems:

• Current level of performance
• Minimum acceptable level of performance
• Target level of performance
• Optimal level of performance

Procedure

The usability goals setting can be carried on by following steps:

1. Refer to the user profile: the user profile will help not only to identify the relative importance of ease-of-learning versus ease-of-use goals but also the relative importance of performance versus preference/satisfaction goals.

2. Refer to the contextual task analysis: the contextual task analysis output will suggest usability goals related to the work environment and job context.

3. Research on business goals. User interface goals should reflect basic business goals.
4. Identify and draft qualitative usability goals
5. Prioritize usability goals. We can prioritize the goals according to some principles such as: First level, require for release; second level, important if not excessively expensive or time consuming to achieve; third level, Desirable but only if low cost.
6. Formulate quantitative usability goals
7. Document prioritized usability goals and distribute to all team members
8. Conduct user/management review
9. Establish benchmark data for relative quantitative goals using usability test

**Design**

**Level 1**

**Work Reengineering**

The main purpose of this stage is to transform current user work processes to a workflow model, investigate the possibilities to automate those processes and look for more efficient ways. However, running this stage with website applications, the project is actually not doing "Re"engineering. We have to design our own workflow for the website application type projects.

**Procedure**

We found some particular functions highly relate to another functions in sequence, for example, Feedback delivery function which is for delivering feedback from users to the relative departments. This function is highly relative with how we design the function for users to provide their feedback. Functions like these can be discussed in this step. Once initial release of a Web application is in production, we can perform Contextual Task Analysis again to see how our Web application is used by users. With second times Contextual Task Analysis result, we can reengineer the processes.

We will use Reengineered Task Organization Model to catch each airport department’s structure and this will be important information for later stages.

Because of the nature of this project, we will design initial workflow base on result of User Profile and Contextual Task Analysis. We will involve users into this stage as well by
showing them sketch prototype or initial release, then use the feedback from users and the second Contextual Task Analysis result to reengineering workflow again.

**Artefacts**

Workflow model, Task scenarios, Reengineering Task Sequence Models, Task hierarchy Model, and Reengineered Task Organization Model.

**Conceptual Model Design**

There are two orientations of Conceptual Model. One is Product-oriented model that fits an application in which there are clear, identifiable work applications. For example: MS Word. The other is Process-oriented model that fits those applications in which there are no clearly identifiable primary work products. Those applications' main purpose is for supporting some work process.

**Procedure**

We start from defining which oriented conceptual model our project belong to. The idea box application has no clearly identifiable primary work products and it's designed for collecting feedback from all the users of the airport for improving work processes in the airport. So it should use process-oriented conceptual model to design. During this stage, we will try to produce several CM designs and compare with each other. There will be two or three CM designs will be kept for showing different trade off of characteristics and those designs are for next stage to do further implementations and evaluation.

In this stage we divide it into three levels.

- Level one: Usability Engineers can make use of Reengineering Task Organization Model and Reengineering Task Sequence Model to design high-level presentation rules.
- Level two: engineers will be working on lower-level screen design rules.
- Level three: Graphic designers will join in level three for helping detail User Interface Design.

**Artefacts**

Conceptual Model Design and User feedback
Conceptual Model Mock-ups

This stage is mainly to support Conceptual Model Design for further implementation. There will be several mock-ups produced for evaluation and involvement of evaluation at this early stage can minimize the possibility of investing time and money in wrong direction. By comparing different Conceptual Model Designs though the mock-ups we build in this stage, that allow us to select a best design to move on and other design may be able to resolve so design issues which can’t only use Requirements Analysis data to deal with.

Procedure

The procedure of this stage is:

- Select the functionality
- Sketch the user interface design
- Build mock-ups

1. Select the functionality

Select small subset of functionality will be selected for mock-up and testing. We select feedback post function and feedback delivery function as the parts we make mock-up because these two parts fit the principles to choose parts from each Conceptual Model Design to build mock-ups, which are parts that all users will use features with mission-critical outcomes, even if infrequently used.

2. Sketch the user interface design and Build mock-ups

These two parts will have detail prototype for building enough context for user to understand each step in the process of navigating through the interface.

Artefacts

Conceptual Model Mock-up in web page types.

Iterative Conceptual Model Evaluation

The main purpose of this stage is to get quick and early feedback on the usability of the CM Mock-ups which generated in previous stages. Through the iterative process which
between evaluation and refine Conceptual Model Design we can minimize the expensive modification after we enter detail User Interface development and in this stage we will start formal usability evaluation by recruit more users and using formal evaluation techniques than just show draft or sketch to users. All the team members should join evaluation as observers and the Usability Engineer will be the leader of evaluation.

**Procedure**

There are two parts in the evaluation. Planning and Preparing and Conducting the Tests. In Planning and Preparing, we first need to decide our expectation for the evaluation: Easy to learn or Easy to use? And the decision will be made based on User Profile and usability goal. Just like we mention before, our project is designed for collect feedback of all people who use the airport, they are usually busy for working, catching plane and so on. So easy to learn will be our first priority when we set up our testing focus for this stage. Novice testers will be given minimal introduction and instruction and focus is on observing how easy to learn the product user interface is for the first time. Then we need to decide range and type of evaluation participants and once again User profile and usability goal will be helpful in here. The participant’s characteristic will be like:

- Airport employees
- Others that are interesting in airport reconstruction
- Passengers
  - People with high/low computer experience
  - People whit different kinds of disabilities.

After that we will start to design test task, Task scenarios from Contextual Task Analysis will be used in here too. Then we will design the test, prepare for materials for test, the environment for test, and recruit participants which fit our setting. Before real evaluation start, we will conduct pilot test then we will refine our test materials and procedure. Then we will conduct refine procedure and gather, summarize, analyze, formulate recommended, draw conclusions. At the end we will document the result for later level reference. There is also another alternative technique which is very suitable for our project: Remote-control evaluation. I think we can use this to involve some foreigner participants.
Artefacts

Observer Briefing, Welcome, Introduction, Pretest Questionnaire, Video Permission Form, Test Task, Data Collection Sheet Template, Posttest Questionnaire, Data Summary Sheet and Data Analysis Sheet

Level 2

Screen Design Standards

In this part of the lifecycle the main focus is to gain knowledge about how the usability can be enhanced in the product. The decisions made in the previous tasks in the lifecycle are here reevaluated so that the product, our idea-box, gets a simpler and more consistently design.

Procedure

To enhance the consistency and simplicity of the idea-box, standards in the graphic design are set. The detailed design across all displays in the idea-box is thereby decided. In our case that could for example be standards such as standardized colors and fonts in message boxes or in the discussion forum. All this standards are documented in the Style Guide which main purpose is to ensure that things in the design aren’t forgotten or redone along the way. It also helps the designers to know if they are on the right track and because of that, costly revisions to completed design or code may be minimized.

Screen Design Standards Prototyping

In the Screen Design Standards Prototyping-step some of the idea-box’s functions are prototyped. The decision about which functions this should be is based on two things. The first one is how frequently a specific feature is supposed to be used. Functions that are supposed to be used often are selected. The second one is if a function is suspected to be problematic to understand. During the valuation it will show and solutions for that will be found.

Procedure
The *User Interface Designer* should take the lead role in the design and specification of the prototypes, but all project team members should participate and provide input and feedback on the prototype design specifications. In our case it might be a good idea to use low-fidelity prototypes. The reason for that is that it cost less and that the iterative process probably will go faster if we don’t have to write the code and then rewrite it for each iteration. It might also be easier for the participating users to give feedback. While a high-fidelity prototype might be intimidating, a prototype on paper could be easier to criticise because it doesn’t “feel” as ready as the high-fidelity one.

**Iterative Screen Design Standards Evaluation**

The prototypes from the previous step are tested in the *Iterative Screen Design Standards Evaluation*. This is to get some quick and early feedback on the usability of the prototyped features and to validate the functionality of the *Screen Design Standards*. The *Usability Engineer* is the task leader in this step.

**Procedure**

One technique for evaluation is the *Formal usability testing*. According to that technique, three to ten representative users should run through a set of realistic test tasks. The instruction of the test shouldn’t be more than a one-or two-page manual, and during the test the users should be asked to “think out loud” so that their thought patterns can be observed. In our case the evaluation is supposed to give us information about how the users guide their way through the system, what they think is complicated and what they think works well. The idea-box is supposed to be a web based feedback tool, open to use for both employees and passengers. A well represented test group is of course desirable, but the *user category* includes many different kinds of people. The system has to be customized to fit actors with different interests, with both high and low computer experience and different kinds of disabilities. Therefore the test group probably have to be quite large (ten people is the largest recommended number) and selected with the previous characteristics in mind.

When the test is done collected data is gathered and analysed and new design recommendations can be formulated. The iteration is terminated when all major problems have been identified and eliminated.
Detailed User Interface Design

Through the whole lifecycle all the tasks aim at accomplishing the Detailed User Interface Design as efficiently and effectively as possible. We want a user interface design that optimizes user performance and satisfaction. This steps task leader should of course be the User Interface Designer.

Procedure

To accomplish a design that optimizes the usability, the designers of the system use the product Style Guide where documentations from the previous levels in the lifecycle are collected. Those documentations are used to identify and complete all pathways within the system. This could be pathways between different features in the idea-box such as how a feedback response should be interconnected with the suggestion it responded to. But the documentations in the Style Guide is also used to complete the overall design such as the menu and other controls, or the design of all interactions with different input devices, and this time in real code.

Iterative Detailed User Interface Design Evaluation

At this level a final iterative evaluation is made before installation. The main focus here is to evaluate the final interface towards the usability goals and it should hopefully, if the process has been conducted in the right way, reveal mostly simple cosmetic problems.

Procedure

This evaluation will be more formal and structured than the evaluations before. The users will be selected in the same way as in the Screen Design Standards Evaluation, but this time the idea-box is an actual program. In the previous evaluation there was just a low-fidelity prototype on paper, this time the idea-box is practically finished.

The users in the test group should get realistic test tasks just as in the last evaluation, but this time they should work exactly as if the idea-box already were implemented. It is probably a good idea to videotape the test. In that way it’s easier to analyze the way the test users is working with the idea-box later on. When the analysis is made and error data is collected, new redesign recommendations are made and the designers and developers modify the Detailed User Interface Design and the code. This is of course made as an iterative process, and it will go on until all the Usability Goals are fulfilled.
Installation

User feedback

After the new product is installed the User Feedback is conducted because we need to maintain and improve the product lifecycle and prepare to upgrade a new version. We also could use it as reference when we need to design and develop another products which should be used by similar users and learn about usability that might be applicable on the future development effort. As the author mentions in the description part, there are two options we have to choose between:

1. Ease of use: get the feedback when their performance as “experts”.
2. Ease of learning: we catch users during their first-time usage.

For the passenger category we select ease of learning. This because a considerable number of passengers will not use the system frequently. We'd better get feedback after their first use. On the other hand, aim to staff in the airport, we select ease of use. They operate the systems almost everyday, they would be very familiar with advantages and disadvantages of the systems after three months, and they definitely could give some constructive suggestions.

Procedure

There are some techniques: usability testing, interviews, focus groups, questionnaires, and usage studies. The leader of all these tasks is the usability engineer. After receive all the feedbacks and analyzed them, we try to give a revised user interface.

In our project, we choose questionnaires technique for passengers. First, we develop a draft questionnaire, then we have a meeting with the project team members and decide which kind of questions should be involved in the questionnaire and we write an explanation of the advantages of the questionnaire to the passengers before they start to do the questionnaire. That might lead to that some of them does it more carefully, and that would improve the reliability of the questionnaire. Secondly, we upload the questionnaires to the website of the airport by providing a link on the site, and also offering direct email from the site and asking users to provide free-form feedback. We might also have a survey question pop up window when passengers finish booking or paying. After the passengers finish the questionnaires, the...
email of incentives information would be sent, we give them some possible incentives: entry in a raffle, for example.

For the airport staff which operates the systems frequently, it is easier to gather them together, so we could select usability testing, interviews, focus groups.

Compare to passengers, staff are easier to meet. This is the main reason we choose usability testing technique. First we run the test and collect data, we could record the data on the data collection sheet; we should follow the rules that do not lead the users or remind them how the interfaces work, etc. Then we summarize and calculate the data and that will give us an idea of the satisfaction of the users. In the third step, we analyze and interpret data, we focus on the parts that don't fit the requirements of the users and the failure reasons, interpret the problems by analyzing. After that, we draw conclusions and formulate recommended design changes, we summarize the reasons of problems and give suggestions to solve such problems. Finally, we create a document and present results, we document the results and have an executive summary.

Sometimes we even could have a face-to-face interview with staff by using interviews technique. First, we design interview format. Usually, there are two ways to do it: one is specific issues you want feedback on and the other is just want to determine what issues users have. In our project, we select the first one because it is impossible to meet the users frequently, so we'd better improve the efficiency of interview. If we select the second method, we interview out of the context, they would have difficulties in remembering the scenarios, so the aim of the interview would not reach. After designed the interview format, we need to design data collection forms, we need to prepare document which include multiple-choice and rating scale format, and also leave spaces for users' comments. After finish the interview design part, we start to conduct interviews. We should conduct it in users' way, because it could help them to remember work scenarios. After we finish the interviews, we need to analyze data, as we use structured interviews, we analyze data by calculating. At the end, we draw and document conclusions, after we analyze data, we could write some suggestions by creating a document.

Focus group technique is similar as interviews technique, but we could get different types of feedback.

The first step is to design focus group format, we select different groups of staff who are operating different systems to do the interview and we also select the same method as the interviews (we have specific issues we want feedback). Then, we design data collection
forms, we should prepare a list of specific issues and leave white space for users' comments. We also need to conduct a focus group. I think we'd better select two employees in each area, for instance, if there are 3 different operating system in passenger process, we select 6 staff in a focus group. After that, we analyze data which is almost same as interview technique, we analyze the specific issues and summarize them. We draw and document conclusions, we write some suggestions at the end.

*Artefacts*

User interface

**Time plan**

Usability project planning

This is a standard management technique on most product development projects. It could help us manage our project more efficient. The usability engineer should take the lead role in this task.

**Procedure**

First, we need to decide which tasks we need to complete in usability engineering lifecycle. After clear all the tasks, we should decide the techniques that we need to use in each task. Usually, we don't have such luxury to obtain the most developed technique for each task. So, in our project, I think we could try to conduct shortcut versions of each tasks. Then we estimate the resources for each task, which means we need to estimate the number of hours and the type of skill set required for each step. We merge all the steps together and calculate the totally hours at the end.

Following the procedure above, we draw the time table below:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Hours</th>
<th>Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>User profiles</td>
<td>140</td>
<td>Usability Engineer, User, User Interface Designer</td>
</tr>
<tr>
<td>Contextual Task Analysis</td>
<td>272</td>
<td>Usability Engineer, User</td>
</tr>
<tr>
<td>Usability Goal Setting</td>
<td>170</td>
<td>Usability Engineer, User Interface Designer, Project Stake Holder, User</td>
</tr>
<tr>
<td>Platform Capabilities</td>
<td>44</td>
<td>User Interface Designer, Usability</td>
</tr>
</tbody>
</table>
and Constraints | Engineer, Technical Staff
---|---
General Design Principles | 15 | User Interface Designer
Work Reengineering | 88 | User Interface Designer, User, Usability Engineer
Conceptual Model Design | 204 | User Interface Designer, Usability Engineer, (A Proficient Prototyper is a plus)
Conceptual Model Mock-ups | 80 | User Interface Designer
Iterative Conceptual Model Evaluation | 144 | Usability Engineer, User Interface Designer
Screen Design Standards | 180 | User Interface Designer, Usability Engineer
Screen Design Standards prototyping | 152 | User Interface Designer, Usability Engineer
Iterative Screen Design Standards Evaluation | 144 | Usability Engineer, User Interface Designer
Style Guide Development | 256 | User Interface Designer, Usability Engineer
Detailed User Interface Design | 240 | User Interface Designer, Developer, Usability Engineer
Iterative Designed User Interface Design Evaluation | 144 | Usability Engineer, User Interface Designer
User feedback | 110 | Usability Engineer, User Interface Designer, User
Total Hours | 2383 |

**Conclusion**

The book provides a complete process for involving usability engineering into software development process, from catch requirement to development. Advantages of this methodology are that the users participate in the development process in a early stage. The iterative process at all three levels can reduce problems along the way. It also has thorough thinking in many aspects. Like adapting itself to different types of projects by having a section in each chapter (stage) for website type project, provide how this process integrates with OOSE and so on. However, some of the advances of this methodology could be unnecessary to some type of projects and some stage may have difficult to carry out because of limitation of resource.

This process includes users into the project plan almost from first stage and has a complete process to catching target user group profiles and requirement and not just show prototype to users after developers already done something. The iterative process in all three
levels can minimize investing time and money on working in the wrong direction. The author also consider integrating general software development process (OOSE), which provide a seamless way running usability engineering and development process together. The methodology in the book is mainly for developing software but not for website application, but there is a part for website type project in every chapter providing suggestions about how to adapt each stage to a website type project. This part is very helpful since most websites applications are not so complicated.

Just like we mention before, this methodology have three levels iteratively to refine design. It may be too much for some projects which scale is not that big or complicated. In the book, they talk about involving users in all the stages, that means a lot of time and money which most projects can’t afford. We think that will be a problem to carry out this process in practical.

Our project is a website application and in small scale. We have tried to go through the whole process from the book, but it is too much for a simple projects. We think that most website projects and simple projects should go through the requirements analysis part and then directly from the first level in development/design/testing to the last one. That should be enough to cover enough usability problems.

Reference

Mayhew, 1999  The Usability Engineering Lifecycle, Deborah J. Mayhew, 1999, Morgan Kaufmann