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Course : COMP6176 / Human - Computer Interaction

Year : 2019

ESTABLISHING REQUIREMENTS

SESSION 08

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LEARNING OUTCOMES

- LO 3 : Choose the data gathering technique from user to develop successful interaction design

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OUTLINE

- Introduction
- What, How, and Why?
- What are Requirements?
- Data Gathering for Requirements
- Task Description

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INTRODUCTION

- Discovering requirements focuses on exploring the problem space and defining what will be developed.
- In the case of interaction design, this includes: understanding the target users and their capabilities; how a new product might support users in their daily lives; users' current tasks, goals, and contexts; constraints on the product's performance; and so on.
- This understanding forms the basis of the product's requirements and underpins design and construction.

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INTRODUCTION

- It may seem artificial to distinguish between requirements, design, and evaluation activities because they are so closely related, especially in an iterative development cycle like the one used for interaction design.
- With short, iterative development cycles, it's easy to confuse the purpose of different activities. However, each of them has a different emphasis and specific goals, and each of them is necessary to produce a quality product.

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WHAT, HOW, AND WHY ?

WHAT

What are we trying to achieve in the Requirement Activity ?

- There are two aims :
  1. To understand as much as possible about the users, their activities, and the context of that activity
  2. To produce a set of stable requirements that form a sound basis to start designing.

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WHAT, HOW, AND WHY ?

HOW

How Can We Achieve This ?

- Step by step Requirement Activity :
  - At the beginning : a lot to find out and to clarify
  - In the middle : concerned with data gathering, analysis, interpretation, and presentation.
  - At the end : there is a set of stable requirements that can be the basis of the design activity.

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WHAT, HOW, AND WHY ?

WHY

Why 'Establish' Requirements ?

- The activity of understanding what a product should do has been given various labels, for example requirement gathering, requirement capture, requirement elicitation, requirement analysis and requirements engineering.
- We choose the term establish requirements to represent the fact that requirements have been established from a sound understanding of the users needs and that they can be justified by and related back to the data collected.

WHAT, HOW, AND WHY ?

WHY

Why 'Establish' Requirements ?

- This fig.08.01. illustrates what can go wrong if requirements are not clearly articulated

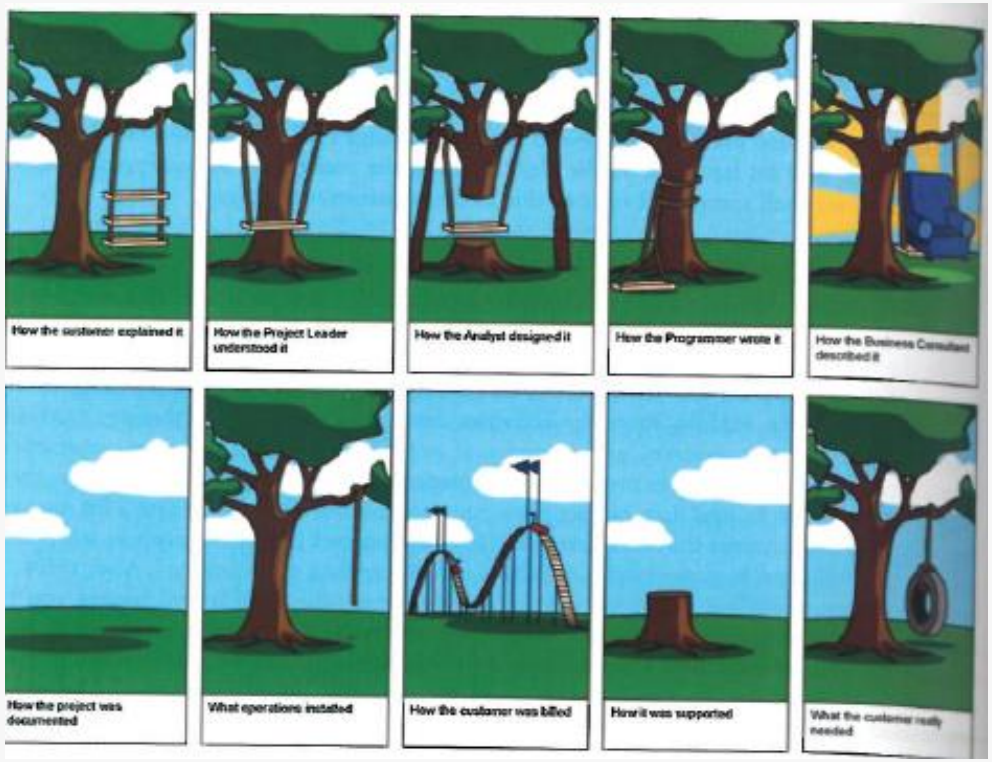

Figure 08.01 Cartoon related with requirements

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WHAT ARE REQUIREMENTS ?

- Requirement :
  - Is a statement about an intended product that specifies what is should do or how it should perform.
- The example requirement shown in figure 08.02

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WHAT ARE REQUIREMENTS ?

- An example requirement using the Volere Shell

Figure 08.02 Cartoon related with requirements

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WHAT ARE REQUIREMENTS ?

- Different kinds of Requirements :

1. **Functional Requirements** :
   capture what the product should do.
2. **Data Requirements** :
   capture the type, volatility, size/amount, persistence, accuracy, and value of the required data.
3. **Environmental Requirements** :
   refer to the circumstances in which the interactive product will operate.

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WHAT ARE REQUIREMENTS ?

- Different kinds of Requirements :

  Four aspects of the environment must be consider when establishing requirements :

  a. **physical environment** such as how much lighting, noise, movement an dust is expected in the operational environment.

  b. **social environment** regarding the social aspects of interaction design

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WHAT ARE REQUIREMENTS ?

c. **organizational environment** e.g. how good is user support likely to be, how easily can it be obtained and are there facilities or resources for training ?

d. **technical environment** e.g. what technologies will the product run on or need to be compatible with, and what technological limitations might be relevant ?

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WHAT ARE REQUIREMENTS ?

4. **User Characteristics** : capture the key attributes of the intended user group.
5. **Persona** : rich descriptions of typical users of the product under development that the designers can focus on and design the product for. A persona will include the description of the user's skill, attitudes, tasks, and environments.
6. **Usability Goals and user experience goals** : These are another requirements and should be captured together with appropriate measures.

DATA GATHERING FOR REQUIREMENTS

The overall purpose of data gathering in the requirements activity is :

- To collect sufficient, relevant, and appropriate data so that a set of stable requirements can be produced.

There are some forms of data gathering :

1. Interviews
2. Questionnaires
3. Direct and Indirect Observation
4. Studying documentation
5. Researching similar products

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DATA GATHERING FOR REQUIREMENTS

Data Gathering Guidelines for Requirements :

1. Focus on identifying the stakeholders' needs
2. Involve all the stakeholder groups
3. Involving more than one representative from each stakeholder group especially if the group is large.
4. Support the data gathering sessions with suitable props, such as task descriptions and prototypes if available.

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TASK DESCRIPTION

- Task Descriptions are used throughout development, from early requirements activities through prototyping , evaluation, and testing.
- There are three of common description types :
  - Scenarios
  - Use cases
  - Essential user cases (task cases)

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TASK DESCRIPTION

Scenario

- A scenario is an ‘informal narrative description’ (Carroll,2000).
- It describes human activities or tasks in a story that allows exploration and discussion of contexts, needs, and requirements.
- The scenario that we refer only in their role of helping to establish requirements.

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TASK DESCRIPTION

Scenario

- Example of scenario that might generated by potential users of a movie rental club :

Say I want to find a movie directed by Martin Scorsese. I don't remember the title but I know it came out in the cinemas around 2006 or 2007.I go to the club website and choose the director option. A huge list of directors is displayed- I had no idea there were so many directors with surnames beginning with S! After scrolling through the list find Martin Scorsese and choose to see further detail about him. Another long list of movies eventually leads me to the movie I was looking for – The Departed. As an existing club member, I need to enter my username and password to be able to rent the movie. Once my password has been confirmed, I am given a choice of rental period and payment method I have my preferences already registered in the system, so I just choose the defaults and download my movie.

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TASK DESCRIPTION

Scenario

- **In the limited scenario of existing system use, there are some things of note :** the long lists of names and movies that the user has to scroll through, the lack of detailed search possibilities, the importance of choice around rental period, and the usefulness of having default settings chosen by regular users. These are all indicators of potential design choices for the new system.
- Capturing scenarios of existing behavior and goals helps **in determining new scenarios** and hence in gathering data useful for **establishing the new requirements.**

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TASK DESCRIPTION

Use Case

- **Use case** is associated with an actor and it is the actor's goal in using the system that the use case want to capture.
- For example : A use case for retrieving the visa requirement using the travel organizer, with the normal course being that information about the visa requirement is available, might be :
  1. The system displays options for investigating visa and vaccination requirements
  2. The user chooses the option to find out about visa

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TASK DESCRIPTION

Use Case

3. The system prompts user for the name of the destination country.
4. The user enters the country's name.
5. The system checks that the country is valid.
6. The system prompts the user for her nationality.
7. The user enters her nationality.
8. The system checks the visa requirements of the entered country for a passport holder of her nationality.
9. The system displays the visa requirement.
10. The system displays the option to print out the visa requirements.
11. The user chooses to print the requirements.

Use Case

- Figure 08.03 shows the use case diagram for the travel organizer showing four use cases and two actors

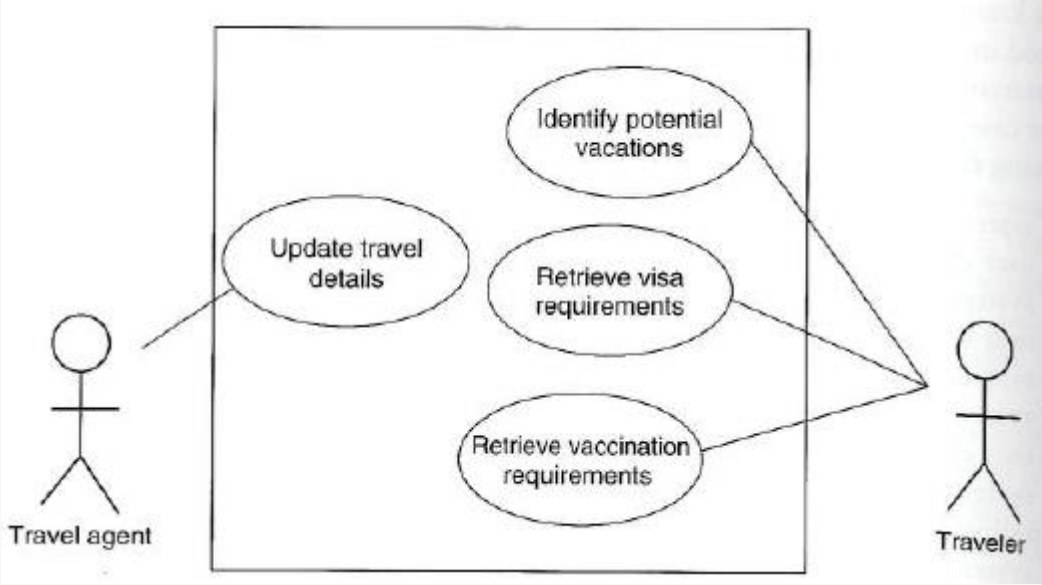

Figure 08.03 Use case diagram for the travel organizer

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TASK DESCRIPTION

Use Case

- To develop a use case, first identify the actors, i.e. the people or other system, that will be interacting with the system under development.
- Then examine these actors
- Identify their goal or goals in using the system.
- Each of these will be a use case.

Essential Use Case

- Developed by Constantine and Lockwood (1999) to combat what they see as the limitation of both scenarios and use cases as described above.
- Represent abstractions from scenarios, i.e. they represent a more general case than a scenario embodies and try to avoid the assumptions of a traditional use case.
- An essential use case is a structured narrative consisting of three parts :
  1. A name that expresses the overall user intention

Essential Use Case

2. A stepped description of user actions
3. A stepped description of system responsibility

- This division between user and system responsibilities can be very helpful during conceptual design when considering task allocation and system scope.
- An example essential use case based on the visa requirement example given before.(see table 08.01)

Essential Use Case

Table 08.01 An essential use case for retrieving visa requirements in the travel organizer

USER INTENTION	SYSTEM RESPONSIBILITY
Find visa requirements	Request destination and nationality
Supply required information	Obtain appropriate visa information
Obtain a personal copy of visa information	Offer information in different formats
Choose suitable format	Provide information in chosen format

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TASK DESCRIPTION

Essential Use Case

- Instead of actors, **essential use cases** are associated with user roles.
- An actor could be another system.
- **User role** is a role that a number of different people may play when using the system.
- As with use cases, producing essential use case begins with identifying user roles.

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