Software Requirements Engineering (SE2001)

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Elicitation Techniques

Scenarios - 1

Scenarios are stories which explain how a system might be used.

Scenarios - 2

- Scenarios have been popular as a method of requirements elicitation for many years.
- Now become closely associated with object-oriented development of systems.
- A scenario is a sequence of interactions between a user and the system carried out in order to satisfy a specified goal.

Scenarios - 3

- Scenarios may be recorded in a variety of ways, including diagrams, storyboards or even videos, but they are generally documented in textual form.

Scenarios - 4

Example:

- A customer, Steve Chen, arrives at the shop with a bike to return
- Annie contacts the mechanics to ask for someone to come and check the bike
- Annie gets the bike number, looks out the relevant bike card and checks Steve's name and address
- Annie makes sure that the bike being returned is the one on the card
- She confirms that the bike is being returned on time by checking the return date against the current date
- One of the mechanics checks the bike and confirms that it has been returned in good condition
- Annie returns Steve's deposit.

Scenarios - 5

- End users and other system stakeholders find it easier to relate to real-life examples rather than abstract descriptions of the functions provided by a system.
- It is often useful to develop a set of interaction scenarios and to use these to elicit and clarify system requirements.

Scenarios - 6

- Scenarios are examples of interaction sessions which describe how a user interacts with a system
- Discovering scenarios exposes possible system interactions and reveals system facilities which may be required.

Scenarios - 7

- End user simulate their interaction using the scenario.
- They explain to the requirements engineering team:
  - What they are doing.
  - The information which they need from the system to carryout the task described in the scenario.

Scenarios - Components

Scenarios should include the following information:

- A description of the state of the system before entering the scenario.
- The normal flow of events in the scenario.
- Exceptions to the normal flow of event.
- Information about other activities which might be going on at the same time.
- A description of the state of the system after completion of the scenario.

Scenario – An Example

Consider the following scenario where a user interacts with the EDDIS to order a report from a different library:

- The user logs on to the EDDIS.
- The order document command is issued.
- The reference of the document which is required is entered on the order form.
- The user selects one of the delivery options form the delivery menu.
- The user logs out from EDDIS.

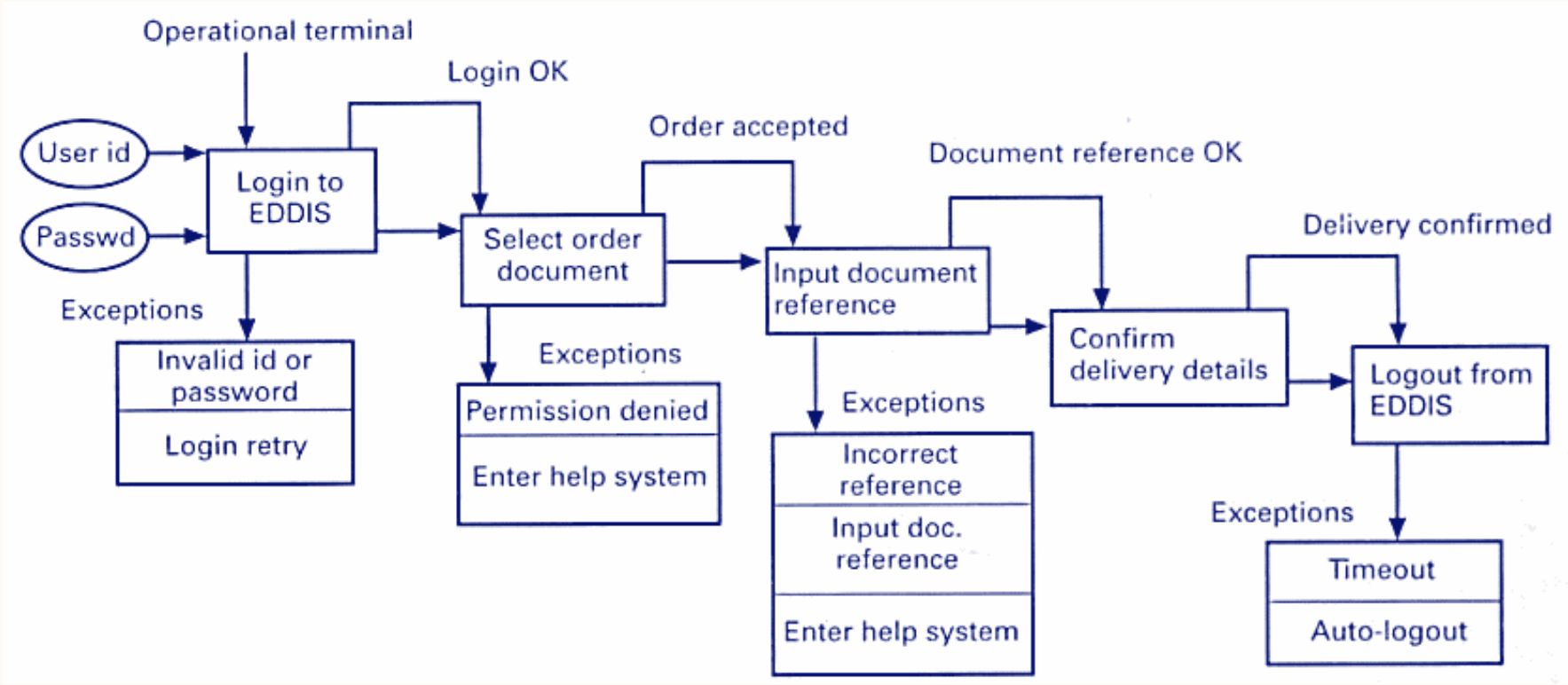
Scenario – An Example

- This is a simple scenario but it doesn't cover what should happen if something unexpected happens.
- We could add this to the natural language scenario by including if clauses with each steps.
- For example, step 3 could be amended as:
  - The reference number of the document which is required is entered on the form. The system checks this number and, if it is incorrect, offers the user the opportunity to re-enter the document reference.

Scenario – An Example

- This gives more detail but information such as some inputs and outputs are still missing.
- These could also be added but as more and more information is included the natural language scenarios becomes harder and harder to understand.
- As an alternative, a graphical representation of the scenario may be developed.

Scenario – An Example



Use case & Scenarios

- The term use-case (i.e., a specific case of system usage) is sometimes used to refer to a scenario
  - A use-case is a scenario.
  - A scenario is a collection of use-cases. Therefore, each exceptional interaction is represented as a separate use-case.

Observation & Social Analysis

- People often find it hard to describe what they do because it is so natural to them.
- Sometimes, the best way to understand it is to observe them at work.
- Observing people carrying out their normal work is sometimes the best way to understand what support they need from the computer based system.

Observation & Social Analysis

- Ethnography is a technique from the social sciences which has proved to be valuable in understanding actual work processes

Observation & Social Analysis

- Actual work processes often differ from formal, prescribed processes
- An ethnographer spends an extended time observing people at work and building up a picture of how work is done

Ethnography Guidelines - 1

- Assume that the people you are studying are good at doing their jobs and look for non-standard ways of working.
- It is important to spend time getting to know the people involved and establish a trust relationship
- Keep detailed notes of all work practices during observation and written up on regular basis.
- Analyze them and draw conclusions from them

Ethnography Guidelines - 2

- Combine observation with open-ended interviewing
- Organize regular de-briefing session where the ethnographer talks with people outside the process
- Combine ethnography with other elicitation techniques

Requirements Reuse

- Reuse involves taking the requirements which have been developed for one system and using them in a different system
- Requirements reuse saves time and effort as reused requirements have already been analyzed and validated in other systems
- Currently, requirements reuse is an informal process but more systematic reuse could lead to larger cost savings

Requirements Reuse Situations

- Where the requirement is concerned with providing application domain information
- Where the requirement is concerned with the style of information presentation. Reuse leads to a consistency of style across applications
- Where the requirement reflects company policies such as security policies

Prototyping

- A prototype is an initial version of a system which may be used for experimentation
- Prototypes are valuable for requirements elicitation because users can experiment with the system and point out its strengths and weaknesses. They have something concrete to criticize

Prototyping

- An essential requirement for prototype is that it should be possible o develop it quickly so that it can be used during the development process.
- This means that functionality may bee left out, normal mechanisms of management and quality assurance may be ignored, and non-functional requirements such as security, reliability may be not considered

Prototyping - Types

Throw-away prototyping: It is intended to help elicit and develop the system requirements.

The requirements which should be prototype are those which cause most difficulties to customer and which are the hardest to understand

Prototyping - Types

Evolutionary prototyping is intended to deliver a workable system to the customer.

Those requirements are included which are well-understood and which can deliver useful end-user functionality.

THANK YOU

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