

Using Scenarios to Gather Requirements

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This document describes personas and scenarios and provides guidance for using them during the requirements-gathering stage of product development.

Personas

A persona is a short description of a specific imaginary person. Usually, a product will have several user types. It is useful to develop a couple of personas for each type. Personas can be used in scenario-building exercises. Each persona should include the following elements:

- Biographical information about the imaginary person (name, age, occupation)
- Brief sketch of a typical day or other block of time
- Personality traits that affect how the person does work related to your product
- Information about his/her level of experience with the type of technology you are using

Personas are useful because they help focus our scenarios. As we work with personas, we become familiar with the background and experiences of each one, and we may think of them as actual people. As we write our scenarios we will begin to notice how the same activity may play out differently depending on who the user actually is.

Personas can be saved and re-used from project to project, so it is useful to keep a library of the ones you have developed.

Scenarios

A scenario is a description of an activity that takes place while someone is using a product or service. Scenarios can be as brief as one sentence or as long as several paragraphs. Each scenario should include the following elements:

- Prerequisites (what has happened prior to this particular scenario?)
- One or more personas (who is involved?)
- Activities (what is happening?)
- Results (what is the ending-state of the scenario?)

Scenarios are useful because they force us to think about how actual people will really use the product we are developing. At the scenario-writing stage, it's more important to focus on what the experience will actually be like from the point of view of the people in the scenario, rather than trying to pin down technical details of how the product will work.

Deriving Requirements from Scenarios

By reading between the lines of our scenarios we can start to compile a list of *assumptions* about our product, user and system *requirements* for our product, and *issues* that we will need to resolve. From this list we will develop our requirements specification.

Assumptions are basic facts or limitations that we know we have to work with. For example, some products assume that all access will be via a web browser. Issues are unresolved questions that arise as we work on scenarios; these questions will need to be answered, either by finding a solution or by deciding not to include something in the current version of the product. Both assumptions and issues should be noted in a finished requirements document.

Requirements are the basic functions that a system needs to be able to carry out in order to perform the task(s) for which it was designed. The meat of a requirements document is, of course, the list of requirements. *User requirements* are functions that someone using the system

will see or do. *System requirements* (also called technical requirements) are behind-the-scenes, technical functions that the system must be capable of doing in order to support the user requirements. You don't need to separate requirements by type in a requirements document, although you can if you wish.

To get requirements out of scenarios, ask yourself the following questions as you examine each scenario:

- What is the user trying to do?
- What part of that task is facilitated by the system or product?
- What part of that task is independent of the system or product?
- What has to happen "behind the scenes" while the user does this task?
- What does the user see on the screen while s/he is working on the task?

The answers to these questions will lead to statements of user and system requirements.

Examples

Here are some examples of personas, scenarios, and derived requirements for an imaginary product (in this case, an online unit for teaching French literature). In this example, "we" are a team of students who are developing the unit with the help of two professors. The professors will serve as *content experts*: people who understand the subject very well, but may not necessarily build the online unit themselves.

User Personas

Our two key user types are *students* and *instructors*. Students work through the unit, ask questions, and complete assessment exercises. Instructors create the materials, answer questions, and evaluate student assessment exercises. A third user type is the *administrator/tech support person*, who has high-level access to the site and who assists in solving technical problems.

These personas are meant to be examples of possible users and are entirely fictitious. Any resemblance to any person(s), living or dead, is coincidental.

Sample Student Personas

Kerry is a third-year student at a CSU. She has been studying French for several years, including high school classes as well as university courses. She is interested in nineteenth-century French literature and plans to double major in French and English Lit. She lives on campus, has a computer of her own, and is familiar with using the web and email.

Todd has returned to school after several years to complete his undergraduate degree. He attended a community college when he graduated from high school, but after his second year there he decided to live abroad for a while. After living and working in France for five years, he has enrolled at a CSU to work towards a degree in viticulture. His love of the French language has led him to take some elective courses in French literature as well. Todd lives off-campus and has a modem and an older computer at home. He also works $\frac{3}{4}$ time at a local winery.

Sample Instructor Personas

Dr. Zauzig teaches advanced French language courses at a CSU. She is not very interested in technology, but she understands that her students are, and she is able to get some help from the IT department when she needs it. One of her graduate students knows how to make web pages and often helps her. Dr. Zauzig has been collaborating with Dr. Wilson, another professor at another CSU, to create an online unit that they can both use in their courses.

Dr. Wilson also teaches French, but not at the same CSU. His IT department put on a series of workshops last year on how to digitize audio and video, and he began to collect digital media he could use in his courses. He made recordings of himself and other teachers reading French

poetry and prose, and when he ran into a French exchange student last spring, he asked her to read for him, too. Now he has quite a collection of recordings. Although he wouldn't describe himself as technologically savvy, he is able to pick things up if someone takes the time to show him, and now he has become the department expert on capturing audio.

Sample Scenarios

These scenarios demonstrate some of the most common activities that we expect users (both students and teachers) to need to do. For the purpose of these scenarios, we will imagine that the unit we are building has been completed and is already in use. This is not a complete scenario document. If this product were actually to be developed, there are many other scenarios that should be created before we would write requirements.

Scenario 1: Learning a French Poem

Persona: Kerry

Pre-requisites: Kerry has enrolled in the class and has a login/password for the online course materials.

Sitting down at her computer in the dorm to work on this week's lesson, Kerry checks the course syllabus and finds that this lesson focuses on a particular poem. She goes to the resource page for this poem and reads a short description of the context of the poem (the historical and social climate during the poet's lifetime, etc). Kerry sees that there is a link to listen to the poem. She puts on her headphones and clicks the link. The computer shows her that the audio file is transferring, and there is a short wait before the sound starts. Then Kerry hears the poem being read by a native speaker of French. While she listens, she can read a transcript of the poem. She reads the poem and plays the audio several times, speaking parts of it aloud as she explores the piece.

Scenario 2: Completing an Online Assignment

Persona: Ted

Pre-requisites: Ted is enrolled in the course, can log on to the online materials, and has already read and listened to the poem several times.

Logging on from home over his modem, Ted finds that this week's lesson includes an online assignment. He reads the instructions; he is asked to translate the poem. There is a form on the course site. When he goes there, it automatically fills in his name and the name of the poem. There is a field for him to type the translation into, and he can also see the French transcript of the poem while he works. He also sees a link to listen to the poem again if he wishes. When he finishes his translation, he submits the form.

Scenario 3: Reviewing a Student's Work

Persona: Dr. Zauzig

Pre-requisites: Ted has submitted his translation, and he is enrolled in Dr. Zauzig's class.

Dr. Zauzig logs in to the course site to see how many of her students have completed the assignment. It's not due until tomorrow, but she is pleased to see that about half of the class has already finished. She opens Ted's translation and reads it over, then makes a few comments in a form of her own. She saves the comments; she will send them to Ted after the due date for the assignment has passed.

Sample Requirements

This section lists some of the system requirements. The numbers in parentheses after each requirement refer to the number(s) of the scenario(s) from which the requirement is drawn. Note that not all possible project scenarios are included above, and not all possible requirements are listed here.

1. Logging In & Out, Registering, and Profiles

- 1.1 Users must be able to log in and log out. (1-3)
- 1.2 The site must be usable over a modem. (2)

2. Reviewing Course Materials

- 2.1 Students must be able to see at a glance which materials are associated with certain dates and/or units. (1)
- 2.2 The system must allow for inclusion of materials including, but not limited to: text files, digitized audio, digitized video, and web forms. (1-3)
- 2.3 Students must be able to work through material at their own pace, repeating audio/video clips or re-reading text as desired. (1-2)

3. Completing Student Assignments

- 3.1 The system must allow students to complete various types of assignments, quizzes, etc. and to submit them to the instructor(s). (2)
- 3.2 The system should support the user by providing information, when appropriate, so the user does not have to type it in (i.e., including a student's name on a quiz when the student is logged in). (2)

4. Evaluating Student Assignments

- 4.1 Instructors must be able to design assignments, quizzes, etc. (2-3)
- 4.2 Instructors must be able to see easily which students have completed an assignment. (3)
- 4.3 Instructors must be able to easily review a student's assignment and comment on it. (3)
- 4.4 Instructors must be able to save the comments they make on a student's work, and send those comments to the student at a later time. (3)

Other Possible Scenario Topics

In order to complete a useful requirements document, more scenarios should be developed. More instructor scenarios might include creating a new course, adding a module (such as the poem, the audio clip, the transcript, and the historical information), or creating an assignment. Student scenarios might include reading instructor comments on an assignment, or tracking course progress.

Of course, the system described here is very complex. It might not be necessary to allow for students to fill out assignments online, or for instructors to create custom assignments. You could choose to assume that the site will be essentially static, and any assignments would have to be created in advance as part of the site (either simple instructions, or printable templates). In that case, simply list those under "assumptions" in your requirements document. By creating personas and writing scenarios, you can define the scope of your project in clear, easy-to-understand language.

Reference

For more information on scenario-based development, I recommend the following book: Carroll, John M. Making Use: Scenario-Based Design of Human-Computer Interactions. Morgan Kaufmann Publishers, San Francisco, CA: 2002.