

UNDERSTANDING REQUIREMENTS

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Understanding the requirements of a problem is among the most difficult tasks that face a software engineer. When you first think about it, developing a clear understanding of requirements doesn't seem that hard. After all, doesn't the customer know what is required? Shouldn't the end users have a good understanding of the features and functions that will provide benefit? Surprisingly, in many instances the answer to these questions is "no." And even if customers and end-users are explicit in their needs, those needs will change throughout the project.

In the forward to a book by Ralph Young [You01] on effective requirements practices, I wrote:

It's your worst nightmare. A customer walks into your office, sits down, looks you straight in the eye, and says, "I know you think you understand what I said, but what you don't understand is what I said is not what I meant." Invariably, this happens late

QUICK LOOK

What is it? Before you begin any technical work, it's a good idea to apply a set of requirements engineering tasks. These tasks lead to an understanding of what the business impact of the software will be, what the customer wants, and how end users will interact with the software.

Who does it? Software engineers (sometimes referred to as system engineers or "analysts" in the IT world) and other project stakeholders (managers, customers, end users) all participate in requirements engineering.

Why is it important? Designing and building an elegant computer program that solves the wrong problem serves no one's needs. That's why it's important to understand what the customer wants before you begin to design and build a computer-based system.

What are the steps? Requirements engineering begins with inception—a task that defines the scope and nature of the problem to be solved. It moves onwards to elicitation—a task that helps stakeholders define what is required, and then

elaboration—where basic requirements are refined and modified. As stakeholders define the problem, negotiation occurs—what are the priorities, what is essential, when is it required? Finally, the problem is specified in some manner and then reviewed or validated to ensure that your understanding of the problem and the stakeholders' understanding of the problem coincide.

What is the work product? The intent of requirements engineering is to provide all parties with a written understanding of the problem. This can be achieved though a number of work products: usage scenarios, functions and features lists, requirements models, or a specification.

How do I ensure that I've done it right? Requirements engineering work products are reviewed with stakeholders to ensure that what you have learned is what they really meant. A word of warning: even after all parties agree, things will change, and they will continue to change throughout the project.