

by Jill Gilbert

Jill Barson Gilbert, QEP,
is president of Lexicon
Systems, LLC. E-mail:
jbgilbert@lexicon-
systems.com.

Good Requirements Lead to Better Software

If you have ever been involved in a software implementation—particularly, an environment, health, and safety (EH&S) or enterprise resource planning (ERP) system—you know that the process is complex, involves many stakeholders, and can take months or even years to see results. According to information technology (IT) research group InfoTech Advisor (www.infotech.com), 70% of information systems projects fail because of flawed requirements, and up to 50% of project rework is due to problems with requirements.

Doing requirements well is difficult. An effective requirements management process can help you to identify and mitigate risk factors and ensure your systems initiative becomes a success, instead of another statistic.

Characteristics of Requirements

Business requirements, or needs, establish an understanding of user needs, establish the groundwork for software selection (or a development plan for in-house projects), and provide the basis for measuring the success of a software effort. Requirements state what the system will or won't do, and who will use the system.

Business requirements come from many sources, in many forms, and at varying levels of detail. Requirements can relate to business process, design, training, documentation, and users. Requirements can have interrelationships; they can be geographically sensitive (e.g., languages, local regulations), time sensitive, and organizationally sensitive.

Good requirements set software project scope boundaries and minimize unbudgeted scope

creep. They also reflect an organization's needs, are clear, accurate, prioritized, and represent the consensus of key stakeholders.

Requirements that align with an organization's business and EH&S strategy and separate the "needs" from the "wants" lead to good system specifications, which, in turn, lead to better software.

Requirements Management

Software requirements are difficult to define. More often than not there is a difference between business requirements and the implemented system. For example,

- end users may have only a vague idea of what the system should look like;
- IT staff often lack knowledge of the business functions the system must support;
- requirements come from all directions, and managing them is complex; and
- many organizations use tools that are not well suited to managing requirements.

Requirements must be managed to be of value to an organization. Requirements management is the process of determining, capturing, and tracking changes to software requirements (see Figure 1). *The purpose of requirements management is to maximize the likelihood that an application development or maintenance initiative will deliver applications that function as desired.* Requirements management helps accomplish this by storing requirements in a secure and central location, tracking relationships among requirements artifacts, and controlling changes to requirements. More often



Figure 1. The requirements management process.

than not, business analysts and project managers accomplish these three objectives without any specialized tool support, relying instead on manual effort or combinations of office software and network drives.¹ MKS, HP, IBM, Borland, Telelogic, and Compuware offer requirements management software either within their Life Cycle Management solutions, or as stand-alone solutions. These tools can help organizations to create, test, and track requirements that meet business goals and objectives.

Requirements Capture

Requirements capture is the means to arrive at a consensus set of prioritized software needs and capabilities. It includes the first four process steps shown in Figure 1 and involves more than asking people to describe their needs and then selecting or developing software. It calls for experienced analysts who speak the languages of business and IT.

Systems analysts knowledgeable in the subject matter (e.g., EH&S) work with software end users to capture requirements. Seasoned analysts provide a buffer between IT and the ultimate software users. They understand what requirements are, and are not (see Figure 2), and keep requirements capture on track.

The analyst records the requirements in a business requirements document, which typically contains an overview of the proposed system, a list of prioritized requirements organized by business process (e.g., EH&S incident management, compliance task management, air emissions management), a description of software users and job roles, business process flow diagrams, and data flow maps.

Requirements Traceability

Collecting a set of negotiated, prioritized business requirements, analyzing them, and documenting them is only the beginning. Tracing these requirements throughout the system's life cycle is critical to ensure that the resulting software truly meets the needs of end users (see Figure 3).

After using the business requirements document to evaluate and select software, an organization then develops software use cases—that is, realistic scenarios of how a user interacts with the software to perform EH&S tasks—to test the software and verify that the requirements are met. Once the



Figure 2. What requirements are/are not.

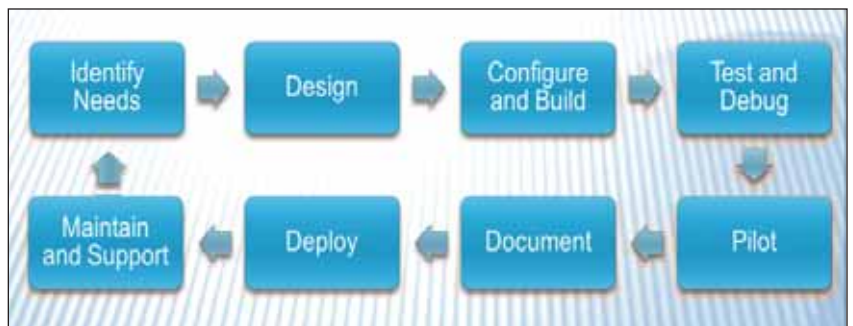


Figure 3. Systems Life Cycle.

software is deployed throughout an organization, the requirements should be stored in a secure location for future reference.

Change Happens

Requirements often change as an implementation project progresses and business needs evolve. Change is inevitable, so anticipate and manage change. Implement a change control process to ensure that potential changes are reviewed and occur for the right reasons. Changes that occur early in the life cycle are much easier to manage than those that occur later.

Project teams often think they lack the time to effectively elicit and capture requirements, but somehow find the time and money to fix problems that result from poor requirements. There is no such thing as a perfect set of requirements. Good approaches and managed processes can produce higher quality software systems that better meet business objectives and result in better user adoption. **em**

Reference

1. Schwaber, C.; Gerush, M. The Forrester Wave: Requirements Management, Q2 2008; HP and IBM Lead, with MKS, Telelogic, Compuware, and Borland Close Behind; Forrester Research, Inc., May 30, 2008; www.forrester.com.