What’s Different about Requirements Engineering for Web Sites?

S. P. Overmyer  
Drexel University, Philadelphia, USA

1. Introduction

I’ve been plagued by this question for some time, and have been loath to answer, since my answer was usually something irreverent, such as: ‘People designing Web sites don’t do any more requirements engineering than can be accomplished in one visit to the client, and two days of reflection.’ A slightly less cynical answer, but only slightly more thoughtful, is: ‘Since interactive systems nearly all exhibit the same general characteristics from a software perspective, have the same general constraints, and are represented by similar purposeful [1], functional, and non-functional requirements regardless of implementation, then the requirements engineering process and products are the same for Web sites as for other interactive applications.’ Pragmatically speaking, however, there are some real differences between traditional software development and Web site development that may at some level perturb the conventional requirements engineering wisdom.

2. Three Differences

2.1. Different Focus

First, except for Internet applications developed to provide services, Web sites are very often more like magazines or brochures than software applications. Many requirements engineers want to be involved in the so-called ‘dot.com’ revolution, but for small publishing-oriented sites there may be little for us to do that is cost-beneficial.

When you put up a magazine-like site, you are publishing. Virtually all of the important decisions that you must make are publishing decisions. Eventually you will have to select technology to support those decisions, but that is a detail. Philip Greenspun [2]

In the publishing domain, responsibility for this kind of product ‘requirements definition’ typically lies with an ‘editor’ rather than an ‘engineer’. The requirements are loosely situated in the mind of the editor, and turned into an ‘implementation’ through interaction with writers, typesetters and other ‘designers’ within the publication. Yet, in defining requirements for the technology to support the services provided by an interactive publication, it seems reasonable to assume that some editors would need technical assistance in the software portion
of the requirements definition task. Still, the focus is on communication, as opposed to the focus of traditional interactive applications.

2.2. Different Disciplinary Emphases

Three important requirements considerations often exist in Web design that can be at cross-purposes: functionality, usability and graphic design. To most requirements analysts, functional requirements definition and specification is what we do best, and both the process and the deliverables are well understood.

Usability as a quality or non-functional requirements category is fairly well understood, as are the objectives of well-specified usability requirements. Associated with usability, the user interface designer exists in the world of users and their tasks, and is primarily concerned with design activities that occur after functional requirements have been defined.

Graphic design as a requirements category is not well understood at all. Typically, graphic design is treated as a separate entity, and contracted or assigned to a graphic designer. The designer is tasked, after a conversation with the principal stakeholder(s), to come back with one or more candidate designs. The client reviews these designs and either adopts, asks for modifications, or rejects them. An acceptance criterion is usually subjective stakeholder approval. The accepted design then may become a constraint in the analysis process, which may prematurely confine the solution space.

In addition, while graphic designers may chant the ‘form-follows-function’ mantra, as artists they are naturally concerned primarily with aesthetics. What is approved as a graphic design for a Web site may present a difficult challenge for functional requirements engineering and/or usability engineering. Design critiques for usability considerations may in turn suggest significant rework of the graphic design, possibly necessitating a complete redesign of the site.

2.3. Shorter Life Cycles

Finally, except for large, complex Web sites that provide software functionality (e.g., Web-based information systems), the product development life cycle of most Web sites is breathtakingly short. The pressure applied to developers to finish ‘yesterday’ is inordinately high, especially because of a perceived ease of development. Many Web sites, especially those with static content, can in fact be coded by nearly anyone who is computer literate, possibly including the end user or customer. If past experience holds, the likely activities to bear the brunt of a resource squeeze will be in the early life cycle, including system engineering and requirements development.

3. Implications for Requirements Engineering

The implications of the three differences outlined above are very much domain and system dependent. That is to say, the scope of the functionality to be provided by a Web-based system, the importance of the graphic representation and the length of the life cycle will ultimately determine the severity of impact on the ‘traditional’ requirements engineering function.

3.1. Web Publishing

Lately, individuals who are given responsibility for the development of enterprise Web sites may be from a variety of non-software backgrounds. They may come from publishing, public relations, corporate communications, or other area outside of IS. Requirements engineers who expect to be involved need to take the time to understand the publishing life cycle and the goals and objectives of publishing in general, and tailor a requirements process to fit. This may mean taking more of an active role in the defining of functional requirements, actually encouraging the requirements engineer to seek out derived functional requirements that enhance the user experience. Normally, functional ‘gold-plating’ is discouraged, but in this context it is encouraged. Also, in many cases, this functionality will frequently be revised, while content may change weekly or even daily.

An additional role that the requirements engineer may assume in this environment is that of requirements manager, developing an as-built specification that is easily modified, thus facilitating enhancement and maintenance as the site becomes more complex.

3.2. Graphic Design Versus Functionality Versus Usability

This issue presents an excellent example of when multidisciplinary teams are necessary for successful product development. If a graphic designer is in the lead on a development, then the graphical environment will be designed first, and other considerations will be secondary to aesthetics.

If a requirements engineer is in the lead, then functionality will be considered first, and graphical design and usability will be specified as non-functional