

IS AGILE APPROPRIATE? AN INVESTIGATION OF WEB DEVELOPMENT

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ABSTRACT

In the fast-paced environment of the Internet and World-Wide Web (WWW or Web), rapid development, deployment, and modification of Web applications is a priority for many organizations. The number of pages and organizations on the WWW has increased dramatically through the last few years, further exacerbating the problems associated with Web development by reducing barriers to entry and increasing competition and variety of choice for the consumer. Organizations relying on their Web applications must react swiftly to any threats to their competitive advantage, driving Web development toward ever increasing speeds. This rapid rate of change to applications has led many to the conclusion that Agile methodologies (which pride themselves on rapid and flexible response) are a natural choice for development efforts. There is some question about the appropriateness of using Agile methods for developing Web applications, however. This paper investigates the factors and features behind successful Web development, compares Web development to traditional (or non-Web) development, and investigates the appropriateness of Agile methodologies for use in Web application development.

INTRODUCTION

The Internet has experienced phenomenal growth in the past few years and the number of World Wide Web (WWW) pages published on the Internet has reached into the billions. At one time, Google.com, one of the top WWW search engines, indicated that it was indexing more than four billion pages (www.google.com). The number of available choices gives customers the opportunity to pick and choose who to buy from, leading to reduced customer loyalty to any given organization. Because of this, organizations must design web pages which will attract a visitor, capture his attention, and convince him to purchase something. This has led to rapid development of WWW pages which must constantly change to keep pace with competitors. Such a fast paced, rapidly changing development environment has led to developers to believe that WWW development is a natural candidate for Agile methodologies. There is even an Agile based methodology specifically called "Internet Speed" [1]. The question arises as to whether WWW development is different from non-Internet related application development, leading some researchers reluctant to agree that Agile is appropriate for Web development.

LITERATURE REVIEW

The Internet and WWW technologies have grown at phenomenal rates, leading to numerous studies in a variety of areas. The primary area of concern is how to attract customers and keep them satisfied and coming back for more [7]. Customers also have a huge impact on the successfulness of a Web application [4] [8]. Other topics include Legal issues [10], Security from a variety of perspectives including, but not limited to, hackers, viruses, credit card fraud, personal information, as well as security of transactions [9] [11], and an interesting perspective comparing online businesses with physical buildings is presented by Kim et al [6] which compares dimensions of architectural metrics to Internet businesses.

There have been several approaches researched for Web architectures, and implications that Web development is different from traditional programming. But is Web application development really is

any different from traditional business application development? The answer to this question may be both “yes” and “no”. Perhaps the biggest difference between Web application development and traditional business application development is the users. Traditionally, the user of an application is also an employee of the organization. In Web applications, however, the user is often a customer to the organization, making it much more difficult to obtain data from the user about their experiences with the application, as well as their opinions of the product. Interestingly, there does not appear to be much literature dedicated to who the customers are and what their roles are in the development process.

DIFFERENCE BETWEEN WEB AND NON-WEB APPLICATIONS

There are a variety of technical differences between Web and non-Web applications. Typical business applications are developed for specific operating system architectures (Windows, Apple, Sun, etc.) and several versions may be developed for each, while Web Development, on the other hand, utilizes a single version which must be functional across many possible platforms, architectures, web browsers, screen sizes and resolutions, and access devices, such as cell phones and PDAs. Web development is highly graphical in nature, while typical business applications (with a few notable exceptions such as gaming) have generic or plain textual user interfaces. Since web applications operate in a highly public environment (i.e. on the Internet) security is usually a much higher concern than with other business applications. The trust factor a customer has for the Web site, especially when dealing with financial and personal information is another factor for Web design. Ease of use is also extremely important in Web applications, since web users may have never seen the web application they are accessing and will not continue to use, visit, or purchase from a Web site which is hard to use. This differs from many non-Web applications which are often difficult to use and require extensive training to operate.

Even though several differences between Web and non-Web application development have been identified, these differences are often very minor and it is possible to find traditional applications which exhibit characteristics similar to Web applications. Web systems are, basically, a type of Information System (IS) and, therefore, can be treated and evaluated as such when examining IS success, quality, use, and user satisfaction. The same is true for features and/or functions of the Web IS, which really are no different from other IS's with similar features and functions. The graphical nature of Web applications, for instance, can correspond to the graphical nature of gaming applications. In fact, gaming applications often have even higher graphical requirements than most Web applications. Security features are gaining in importance and consideration in “normal” business applications, again reducing or eliminating the differences between Web and non-Web development. So, Web applications can be treated as no different from other IS's when evaluating development methods, including Agile.

APPROPRIATENESS OF AGILE FOR WEB APPLICATION DEVELOPMENT

Agile methodologies are quickly becoming the development processes of choice for many organizations and programmers. There are, however, many who do not believe Agile is appropriate for all development endeavors, and Web application development is one of those areas in question. From the Agile Manifesto [3] [5], we get a general idea of the basic concepts behind Agile methodologies, which have been used to develop several different versions of Agile [1] [2]. Each of which follow Agile principles in general, but from different perspectives.

The rapid change and highly competitive nature of the Internet seem to drive us toward a flexible programming methodology, and an Agile approach seems to be appropriate. However, this may not be true, so an investigation of the critical features of Web development is required to discover if there is an applicable Agile approach to each. As each of the features of a Web application are examined, we begin

to discover that they are simply “stories” which can be used to design an applicable function. There really is no feature required by Web design which cannot be described through a story.

CONCLUSIONS

We have identified many obvious (and not-so obvious) differences and similarities between Web and non-Web applications, as well as some of the methods and techniques used in Agile software development which may be applicable and appropriate for developing Web applications. Throughout this paper we have discussed various aspects of Web development and whether Agile methods are appropriate. It has been discovered that Web application development is not much different (if any) from other types of applications. There also does not appear to be any reason why Agile software development methodologies should not be used in Web application development. For nearly all of the issues discussed, there are corresponding Agile methods which support development efforts in that area

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