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The Specifics of WEB Project Management

Summary

According to the data announced by the Standish Group the failure rate of software project due to inappropriate management amounts to almost 50%. The authors of this article believe that such a high percentage could be reduced by building a model for choosing an appropriate management model. In order to set up such model, above all, it is necessary to systematise all the specifics of the web software product as the first step and a basis for further identification of key areas in managing web project development. The focus of this article is on presenting the results of the first stage of research, which encompasses the systematisation of the specifics of web software projects, and identification of the key areas that will serve as the source of key indicators of a future model for choosing the appropriate web project management models.

Keywords

Web software project, agile management, traditional management

1. Introduction

In the conditions imposed by e-business and the uninterruptible nature of business operation, developing a company's corporate web site requires a good balance of form, content, function and purpose, so that it can be distinguishable from the competing Internet sites. Extensive funds and efforts are therefore invested in a good visualisation of the site, as it is the first manifestation of a company that the user encounters, as it were, the company's front office, the boundary organisational segment communicating with the environment. If the appearance of the site does not appeal to visitors, they are unlikely to stay on it.

In addition to the site's appearance, additional features are functionality and faultless operation are vital, as numerous transactions with partners, customers, prospects, future employees, suppliers etc., such as ordering products, marketing activities, announcing vacancies, hiring new human resources etc. can be done by means of the web site. Solutions and limited functionalities always result in customer dissatisfaction and weaken their loyalty, which implicates actual fall in sales volume and business income. Such an implication will affect the performance related to the customer perspective in the balanced scorecard methodology, i.e. cause a decline in the organisation's overall performance and the performance of its processes.

In point of fact, traditional software products feature functionality as their key metrics, whereas web products are characterised by 3 equally significant metrics: functionality, design and content creation. It is a well-known and generally accepted fact that these areas must be coordinated and developed together. Therefore, neither the management concepts nor practices of software product management can be a priori transferred to the web management projects.

From the economic point of view, just like any other project, a company's web project must justify all the investment in development and maintenance, i.e. secure return on investment, and therefore needs to be realised within three limitations: within the deadline and predefined quality and cost volume. At the beginning of this millennium, these limitations in software industry are becoming increasingly rigid, resulting in three-quarters of unsuccessful software projects.

In our opinion, more efficient web software development project implementation is feasible through enhancing project management methodology, i.e. building and applying models for choosing appropriate management methods for particular projects.

In the first stage of their research, the authors of this article set out to systematise the key specifics in web project management, in comparison with tradition with traditional software projects, and, in accordance with these, support their thesis that equal failure rate in web project design is induced by inexperienced beginners through ad hoc development, and companies attempting to transfer verified practices and concepts from other areas of software development.

2. The Specifics of Web Projects

Building a corporate website is a multidisciplinary activity, requiring multiple skills necessary for completing highly heterogeneous tasks, such as data modelling, site interface modelling, hypertext modelling, designing a noticeable site appearance, compiling extensive high-performance architectures or integrating inherent application. Building and maintaining these requires implementation of software engineering tools and techniques, appropriate design concepts and methods, and a well-founded methodological framework enabling the appropriate management of all those development activities.

Building a corporate web site includes four components: content, form, function and purpose. Opinions on how these components should be mutually ranged differ, so that the relative importance of each individual aspect differs from one project to another. The common denominator of all projects is that they have their beginning and end (the time factor), with predefined quality and volume of costs, i.e. budget. To complete a project within such limitations, it is necessary to manage it appropriately.

The concepts ad practice of software project management cannot be a priori transferred to the web management domain, due to a whole range of specific characteristics.

The most prominent features of web projects are multidisciplinarity and work in small team. Being a web project manager means managing a small, but complex team of diverse experts of various competences, realising all major project tasks in sub-groups, simultaneously. This implies that a web project manager must invest more communication effort to coordinate and lead the development of such a project well and minimise conflicts and problems, for sub-groups often develop components of similar design, structure and functionality, but from various aspects in relation to the customer.

The success of a web project also depends on the ability of all members to function as a team. The manager must understand each individual function and contribution of each member of the web project team, in order to achieve more productive operation. Web teams consist of young people with about 2 years of experience, so that they are often inclined to use the most recent technologies and development environment, without previous consideration of their advantages and disadvantages, and without previously determined updating and modifying policies.

The web team manager must, on the other hand, remain continuously attentive to customers' opinions and expectations and incorporate them into the web project. The reason for this lies in highly volatile customers' demands that are more often than not contrary to the company's interests or the application's functionality, so that it is essential for the manager to feel and recognise it.

When developing web projects, it is very difficult to predefine the potential buyers and the site's target groups, and specify all their expectations in advance, and moreover, the company is only a click away from losing a prospect or even a loyal customer. Attempts at attracting new clients and keeping the existing ones in most cases result in changing site appearance in order to follow the web design fashion trends (Pressman & Lowe, 2009). In view of this fact, the manager should avoid coding these site segments and thus prevent disrupting the site's functionality due to frequent changes in appearance.

Web sites are characterised by being developed over a short period, between 3 and 6 months. This feature of web sites stems from continuous developments in the web and technologies, but also the pace of change of the conditions in e-business and clients' demands. This further means that the design stage of corporate web sites is hard to delineate from the maintenance fight. Due to the fact that company sites are subject to constant evolution, it is very important for the manager of such a project to assess which web engineering model would be the most appropriate in development. Modern-day web applications are prone to agile models, which produce the prototype, i.e. the first 'draft' of the application very quickly.

A web application manager should also place emphasis on the use of as broad a range of tools as possible – for request management, planning, design, implementation, risk management etc., still making sure to keep the development process independent from the tools. Software development experts are disinclined to maintain documentation, which is even more present in programmers due to tight deadlines, so that it is also necessary o introduce special tools to this end, although the significance of documenting frequent site changes is invaluable.

One of the most significant performance indicators of a web application is its usability, so that the existence of a unified logic of using the application is essential, as well as simplicity of learning, user error minimisation, downloads speed, ease of search, and finally, the user's positive personal ex-

perience – or individual perception – once the site use is completed. The web project manager must have adequate information on the usability of the web project for clients and introduce user testing in early stages, i.e. initial project prototypes. This testing comes down to defining a representative sample of future application users, establishing tasks to be completed in interaction with the application, and monitoring this process to spot the users' problems in working with the application.

One of the leading metrics, i.e. performance indicators in assessing the quality of a web site is the scalability of the application, meaning that the project manage must also take into consideration this feature of the application, so as to prevent huge tangible and intangible losses caused by the growth in the number of users that the application cannot serve.

Although web applications are characterised by rapid development over a very short time and inexact user group, it is easy to infer that the total development and maintenance costs, and the quality of the application under development, are hard to foresee. The project manager therefore has a very important and responsible task – to apply one of the quality assessment web models, such as Web Quality model, Goal Question Metric model etc.) from the initial development stages.

3. Agile vs. Traditional Web Project Management

The agile approach to management contains several well-known methods: Scrum, DSDM (Dynamic Systems Development Methodology), Extreme Programming etc. Applying these may result in web solutions within the defined triple program limitations, i.e. within foreseen deadlines, with a planned budget and quality.

These are iterative methods, where the delivery time of a single iteration (prototype) is almost on a weekly basis, so that it is suitable for project of independent, frequently changing project requirements and requests, including the projects of building a company's corporate web site.

The fundamental difference between the traditional and agile approaches to project management is the essentially different angle of viewing the project. The basic principle in the traditional approach to management is that the volume of work defined by the project is invariable, whereas time and budget are the project's fluctuating categories, and the quality of the solution depends on the possibilities. The application of this principle has resulted in high losses for companies, caused by delays in

project activities and frequently exceeded budgets. The agile approach presents the categories of the time of completion of individual iteration and completion of the entire project as a fixed category. Two more fixed categories are the price of delivery and the defined quality level of the solution. The sole changeable category in agile project management is the volume of work, which can be reduced by not completing activities assessed as lower priority. The agile approach is based on the principle of developing prototypes and involving the users in testing these.

Developing traditional software products was managed by traditional methods, i.e. by plan-driven development. Due to rapid development and emergence of highly complex web applications revealed numerous shortcomings in relation to the described specifics of web projects. The newly arisen conditions saw a more intensive utilisation of the new agile approach to development management. In a very short time, the agile approach to management gained popularity in relation to the traditional management methods. However, in time, practice has showed that using this method does not always produce a positive outcome of a web project development, thus leading to a conclusion that neither of the methods warrants absolute dominance in practice (Magdaleno, 2010).

Such an overview in literature can also be corroborated by the fact that many great IT companies worldwide are bound to have used some of the approaches to corporate web site development management, but there is virtually no written record on how large and successful IT companies choose methods for managing their successful web projects.

The authors of this article agree with prominent authors dealing with this issue that the combination of these two approaches to IT project management is necessary (Hayata & Jianchao, 2011), as well as a the inevitable methodological tenet that would point the manner and extent of mixing them in managing the development of a particular project. In his book, *Effective Project Management: Traditional, Agile and Extreme Methods,* Wysocki based his IT project management model generally on the assumption that the characteristics of an IT project determine the method of managing it. He based this model on two variables: aims and solutions, which can be clear and complete or unclear and incomplete. His model, termed "project landscape" generates four different IT project management methods: Traditional Project Management (TPM), Agile Project Management (APM), Extreme Pro-

ject Management (xPM), and Emertxe Project Management (MPx).

SOLUTION			
	clear	incomplete	GOAL
unclear	MPx	xPM	
complete	TPM	APM	

In our opinion, this approach is a good springboard for developing a model related to web projects exclusively, for the category of IT projects included into this model is too diverse despite the fact that web projects are characterised by a whole range of specific characteristics, systematised in the first section of the article. Extending this model, and including other important parameters of web projects, as a sub-category of IT projects, would produce a more precise and comprehensive multicriteria model.

Within the first stage of our research, we identified the key area that could serve as a source in the following stage for identifying the key indicators that should be included in the future model of choosing a web project management method. Having studied the literature and conducted interviews in leading Serbian IT companies, the first research stage resulted in differentiating three key areas:

1. The specifics of the IT company, its web teams and technologies used in developing;
2. The specifics of the client the project is developed for; and
3. The specifics of the project itself – the type and main characteristics of the application developed for the user.

In our opinion, there is a high correlation between the above areas and the choice of the appropriate web project management method, i.e. every project is characterised by a set of different specific features in all three areas, so that the mix of the two key methods will also be unique to each particular project. Furthermore, this means that the practice will produce a set of newly induced management methods, based on two key methods. Such a personalised approach to web project management would reduce the percentage of web projects failed due to inappropriate management.

4. Conclusion

Applications of both traditional and agile approach to web project management are equally present in IT industry, despite the fact that these two approaches differ significantly. The ratio of software projects whose failure resulted from inappropriate management amounted to more than 50%, which indicates that opting exclusively for one or the other method is currently virtually impossible, and the professional and academic literature recommends a mix of the two. As each web project is characterised by a whole range of specific features, just like the IT company developing it and clients who are the project stakeholders, it is essential to assess all these specifics in relation to the model systematising and scaling them within these three areas in the first stage of the project, and then methodologically induce the method appropriate for the particular company, the particular client and the particular project.

Setting up the model and applying it in practice would induce a mix of the two included methods, depending on the assessed specifics. The authors are currently conducting the second stage of the research, which is to result in key indicators of each of the three above mentioned key areas that will determine the avenues of model construction.

References

Hayata, T., & Jianchao, H. (2011). A hybrid model for IT project with Scrum. Service Operations, Logistics, and Informatics (SOLI),2011 IEEE International Conference (pp. 285 - 290). IEEE Conference Publications.

Magdaleno, A. M. (2010). Balancing collaboration and discipline in software. ACMIEEE International Conference on Software Engineering ICSE 10 (pp. 331-332). ACM Press.

Pressman, R. S., & Lowe, D. (2009). Web Engineering: A Practitioner's Approach. Columbus: McGraw-Hill.

Wysocki, R. K. (2009). Effective Project Management: Traditional, Agile, Extreme. Indiana: Wiley.

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