Concise paper

Exploring E-Commerce Development: Lessons learnt from a Case Study

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ABSTRACT

More and more companies are using e-Commerce Information Systems (eCIS). There are a number of eCIS development processes (e-Processes) in existence. The extent that these e-Processes are being applied has not been researched extensively. Although the same challenges that exist for traditional Information Systems also exist for eCIS there are substantial differences between the two. Often a combination of e-Processes is used when eCIS development takes place. This paper lists the findings obtained by a study into practices being followed at one Development Company and analyses these practices with the aim of assisting future decision making actions. Further the prototype tool that has already been successfully applied to other problem domains will once again be briefly described to assist future e-Process selection decisions.

KEYWORDS

E-commerce Information Systems, development processes.

1. INTRODUCTION

An E-Commerce Information System (eCIS) can be defined as a system that allow for goods to be bought and sold by means of electronic media – usually using the internet (Gruhn and Schope, 2002). ECIS is capable of enhancing the competitiveness of a business and the efficiencies of its operations (Pflughoeft, Ramamurthy, Soofi, Yasai-Ardekani and Zahedi, 2003). The developed eCIS needs to be of high quality while quick completion of the resulting product is expected (Sharma, Sugumaran and Rajagopalan, 2002).

Limited research is available on eCIS development processes (e-Processes) being used by developers. Existing research (Butler, 2003; Vidgen, 2002; Vidgen, Avison, Wood and Wood-Harper, 2002) emphasizes that eCIS development requires the traditional development processes such as database design and program design combined with a mix of web site development techniques such as user profiling. The researchers (Kaschek, Schewe, Wallace and Mathews, 2004) conceptualize the use of the term WIS as opposed to IS. The e-Process selection methodology and tool briefly defined in section 4 of this paper builds on this conceptualization. Both have been applied to select the e-Process best suited for developing a business process assembler (Albertyn and Zlatkin, 2004).

This paper reports on research done in May 2005 into the eCIS development practices (e-Processes). Section 2 focuses on the practices being used at a software development company in Napier. In section 3, the e-Process used is analysed to determine whether the company uses a specific e-Process or a combination of e-Processes, whilst in section 4 a prototype selection tool is briefly defined that can be used to assist developers in their decision making on which e-Process to use. Conclusions are drawn in the last section.

2. E-COMMERCE DEVELOPMENT PRACTICES

Xplore.net is a company that is expert in web design, web development, databases, content management systems, e-commerce and email marketing. They are involved with the analysis, design and implementation of customized intranets or extranets, document management systems and workflow as well as productivity tracking systems. Using a range of services they provide their clients with internet, web and

e-commerce solutions.

The author interviewed the business development manager to determine the company's practices for developing e-commerce solutions. The manager explained that the company has four different client types that need to be accommodated and each client type needs to be approached differently. The first type is companies that have limited funds - this type usually needs a staged process approach to develop all the aspects required. The second type is larger companies that usually have existing systems that need to be accommodated in their eCIS development process. These companies need to have their existing mailing lists exported and their transaction files linked to the newly developed systems. Budget is usually not a problem with this type of company.

There are also companies that form a middle ground between these two types. These companies usually have a budget of around $15000 for development and have 1-8 employees. Xplore.net needs to interface with other companies for accounting and point-of-sales solutions when developing e-commerce solutions for this third group.

The last type of companies is those that do not have any internet presence in place yet. Development for these types of companies is the most rewarding, since the whole process can be strategically planned using stepwise development.

According to the manager, Xplore.net is currently planning to work smarter and faster and maybe franchise some of their solutions.

2.1 The e-Process Used

An E-Commerce Information System (eCIS) is identified by Xplore.Net from the extensive network they have with other organizations, referrals by clients and people contacting them either on their 0800 number or through their website. On average if takes Xplore.net 6-8 weeks to develop an eCIS solution.

After the initial contact, a business developer makes an appointment with the client to identify technical and strategic issues and to develop a business brief. The client is required to complete a briefing sheet that defines, from their perspective, the background of their business, their site objectives, the organization's features including target markets, selling point, and benefits of a eCIS, company culture, and brands. Further, the client provides information about their site, its exposure (advertising and promotion) as well as other competitor sites. Finally, the briefing sheet requires them to provide some technical details about their current domains and logos.

The initial discussions include the client's marketing strategies – whether the marketing of the eCIS will be taking place offline or online; define profiles of the client's potential users; define the communication processes to be used as well as communication strategies; the budget for marketing and advertisements; identification of the required processes in the eCIS and whether an email marketing tool will be used. Another issue that needs to be specified at these initial meetings is the client's budget and administration expertise after implementation of the eCIS. Any specific requests need to be defined clearly for inclusion in the project proposal document. Development time up to the signing of the final contract is between 1 to 4 weeks.

As soon as the proposal and strategy has been defined, Xplore.Net builds the client's record and the e-process is closely managed until implementation. Next, the client is required to complete a technical and design briefing document called the design brief. The client specifies the number of pages to be developed, categories of products required for their eCIS, photos to be used, etc. The client's likes and dislikes are analysed and specified. At this stage technical specifications are also defined which includes the structure of the company's database as well as interfacing that needs to be done with other existing IS. This part of the process takes about one week.

The production team consists of designers, technical experts, developers etc. The designer will most probably spend some time with the client to define the basic home page as well as an inside page template. The production team will also be checking all the technical specifications as well as developing the required interfaces. Modeling tools such as UML diagrams and detailed storyboarding are developed. A schema is developed for the database layout using modeling.

Digital Payment Services are incorporated

into the eCIS to accommodate payments. Merchant detail will be entered into the eCIS database before going live. Pre-implementation detailed testing also takes place.

If the client has an existing website, then this will be combined with the new eCIS. The client is expected to test all order forms, dependencies and all possible scenarios before signing-off on the final product.

The process of identifying the keyword links and organizing the search engine links are organized before implementation. The client's budget determines whether sponsored links, etc. can be afforded.

Xplore.Net is in the process of standarising their development practices.

3. ANALYSIS OF DEVELOPMENT METHODS USED

The method described above follows a well defined development life cycle. Emphasis is placed on the development of a proposal. The definition of the project brief as well as defining the project design brief shows a commitment to do detailed analysis. The user is actively involved in the whole process, which is advantageous for developing high quality eCIS.

Technical as well as strategic issues are identified in detail. Designers develop front pages as well as a framework as prototypes for the actual development process. Storyboarding and page navigation is also done. The depth of database analysis and its design could not be determined. Furthermore, the depth of modeling tools and UML diagram usage could not be defined.

It is clear that a well-defined e-Process is being used based on traditional and web development processes. More study into this specific scenario will be required to define it as a specific process, but it is clear that standards and best practices are in place at this company. The question to be addressed in the next section is how developers get support in deciding on which e-Processed to select when no development process is in place.

4. E-PROCESS SELECTION

Albertyn (2004) and Albertyn and Roland (2004) introduce an e-Process methodology and tool is introduced. The methodology supports developers in selecting an e-Process for their specific eCIS application. A list of quality aspects are used as a basis for choosing between available e-Processes. This is defined as a set of groups each with a number of characteristics. The seven defined groups are application, conception of the eCIS, documentation available with e-Process, methodology support provided, modeling systems available, the organization and specific tool support. Each of these groups consists of a number of characteristics. This selection methodology allows users to apply a weight to each characteristic to define its importance. The selection methodology has a set of e-Processes defined in terms of a vector of numbers for each specific process and for each characteristic to indicate its importance. Multiplying the weight and each of the vectors of numbers and then adding the totals provides the developer with an indication of the most suitable e-Process. Sensitivity analyses and then weak-point analysis (see Böhm and Wenger (1996) for more detail about applying these techniques) are then executed on the recommended e-Process to further confirm its validity.

A prototype tool has been developed based on this methodology. This tool assist developers on deciding on the e-Process that will best suit their needs.

5. CONCLUSION

A major aim when developing a new eCIS is to achieve a good quality product. The e-Process selected influences the quality of the final product. As seen in this paper, developers need to use e-Processes when developing eCIS. Developers need to be supported in making a decision on which e-Process to use. The prototype tool briefly described in this paper can be applied to support the e-Process selection.

Further research documenting case studies in the usage of this selection methodology and tool will be conducted. Refining the features of the methodology will also be included in future research.

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