INVESTIGATING HOW TO DEVELOP WEB-BASED INFORMATION SYSTEMS IN AND FOR EMERGENT ORGANISATIONS

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Abstract:

The aim of this study is to develop an emergent web-based information systems tool that aids both web developer and manager when encountering dynamic organisational change. In this research, it considers contextual issues relating to the problem of developing web-based information systems in and for emergent organisations. It postulates that the methods available suffer because of sudden and unexpected changing characteristics within the organisation. The Theory of Deferred Action is used as the basis for the development of an emergent development tool. Many tools for managing change in a continuously changing organisation are susceptible to inadequacy. The insights proposed are believed to assist designers in developing functional and relevant approaches within dynamic organisational contexts.

INTRODUCTION

Developing Web-based information systems in today’s changing work place is a problem that needs better tools to accommodate dynamic organisational change. By investigating the problem in the work place it will give the opportunity to understand the problem and propose a solution that can be continuously tested in its environment. This is the aim of the research in progress being investigated.

The notion of whether current development methods are able to adequately handle today’s organisation, emerged from the work of Truex, Baskerville and Klien (1999). Since then Bello (2002) highlights the increase in today’s fast pace environment and its development of technologically innovations and the need for emergent development tools. This need is further evident from Kautz, Madsen and Norbjerg (2007) argument on Web-based Information Systems (WBIS) needing new concepts, methodologies and tools. The need for these changes may seem
obvious on the surface level, but the problems and conditions facing today’s organisations are not, they are different from the challenges previously experienced.

Today’s organisations demand increasingly more multimedia features and tailored Web-based Information Systems (WBIS). This increased demand puts the web developer under extreme pressure for multimedia features (video, audio, graphics) which can make development methodologies inadequate (Lang, 2002). Further Barry and Lang (2001a) reveal that the graphic design role is a significant process within the development cycle. Though more crucially web developers and graphic designers have different perceptions and values. This creates importance of developing a common resolution of cross-cultural paradigms.

Patel and Hackney (2008) give further impetus to the lack of understanding of emergent properties in current system analysis and design. To this effect the incorporation of emergent properties within methodologies is logically flawed, as the very act of modelling assumes it can be predicted. Truex et al (1999) define this unpredictability within an organisational context as “constantly seeking stability, while never achieving it”. Truex et al (1999) goes on to construct this notion as being “emergent”. Bello (2002) agrees the construct of “emergent” organisation are those that are in continuous evolution and transformation.

Following no predefined pattern it is difficult to research and develop emergent development methods that accommodate actual emergence in a continuously changing environment. A stable structure does not underpin the organisation in this context. In effect the phenomenon needs a research methodology that is designed to capture and modify change iteratively. Action research may be defined as an emergent inquiry process in which applied science knowledge is integrated with existing organizational knowledge and applied to solve real organizational problems (Shani and Pasmore 1985: 439).

THE PROBLEM AND RELEVANT LITERATURE

The problem is developing in and for emergent organisations when the web developer is under increased demand to design WBIS in a dynamically changing environment (Bansler et al, 2000; Carstensen et al, 2001; Holck, 2002; Lang, 2002; Murugesan et al, 2001; Vidgen, 2002; Kautz & Norberg, 2003; Kautz et al, 2007). Investigating how an emergent organisation develops WBIS
with Web-based aesthetics and Internet Speed being problematic for the development process generates a problem focus that needs investigating to aid the development of knowledge for both theory and practice (Howcroft and Carroll 2000; Baskerville et al, 2002; Baskerville et al, 2003; Baskerville et al, 2004; Kautz, Madsen & Nørbjerg, 2007). These critical aspects of WBIS development (Web-based Aesthetics & Internet Speed) is predominantly implemented by the web developer. Centring the research investigation on the web developer is key to understanding the problem in its volatile organisational context.

The need for an appropriate research methodology like action research is needed to learn about the actual and situated practice of WBIS development through first-hand experience as it’s critical to the development of applicable knowledge. This criticality is needed in order to draw on theory, gain feedback, modify the theory to practice and try it out again. Using this type of investigative methodology can give new insights into understanding the problem in its context and derive new emergent development tools. Coghlan and McDonagh (2001) suggest this form of action research to confront major dilemmas facing organisational change when specifically related to integrating information technology into organisations and making major contribution to their resolution.

The research looks to help web developers understand and develop solutions for environments where emergent organisational change, Internet Speed and Web-based Aesthetics are prominent, as defined below. To generate such a solution (development tool) the research aims to utilise existing emergence theory to provide the basis and backbone for developing an appropriate web developer tool.

**ACTION RESEARCH PROJECT**

At Brunel University, the Student Services section has increasingly changing regulations. In one instance the University wants to provide continuously better support to the students which involve the development of a Student Services WBIS, wherein many different services are collectively incorporated.

How Brunel University Student Services section creates this whilst, at the same time, managing organisational change, fast paced deadlines and delivering media features is a problem that is
situated in both theory and practice (Baskerville et al, 2007; Kautz et al, 2007). Having the web developer placed at the forefront of the development process lends itself to understanding and improving the development process in the context of dynamic organisational change.

**INVOKED THE THEORY OF DEFERRED ACTION AND EMERGENT WEB DEVELOPER TOOL**

Patel’s (2006) Generalised Deferred, Real, Autonomous and Specified Systems (gDRASS) matrix models emergent organisations and possible system design types. The synthesised interrelations which are themselves correlated postulate design principles and the development of appropriate design techniques. Hence it can be used to describe, analyse, and explain systems design and design domains.

The constructs of the gDRASS matrix creates interrelationships among the design dimensions. This type of tool enables the developer to model design systems in actuality. By invoking The Theory of Deferred Action (ToDA) as the basis of developing an emergent Web-based Information System development tool, this research aims to adapt constructs of the gDRASS matrix to be applicable in a WBIS development context. The constructs from the Kadar matrix are adapted from the gDRASS matrix.

**CONTRIBUTION TO KNOWLEDGE**

The research conducted identifies WBIS development problems through literature and action research data, with an adaptation of the gDRASS matrix as a possible WBIS web developer tool (Kadar matrix) to help position the web developer potential contribution throughout the development process. With this knowledge the web developer can advise more accurately with the manager about meeting today’s volatile demands for WBIS development.

This research extends ToDA by utilising the constructs of the gDRASS matrix and adapting them for the purpose of developing a Web-based Information System development tool (Kadar matrix) that web developers use in actuality (emergent organisations).
The Action Research data reaffirms the Web-based development position of the web developer when using the Kadar matrix in an emergent organisation. This aids the web developer, manager and organisation by having a collective overall position.

Further action research is currently being undertaken to investigate how the Kadar matrix can improve the speed to time-to-market. This will be done through monitoring (data-gathering) its effect within different WBIS development projects. This will give more rigour to its actual effectiveness in actuality.

**Bibliography:**


