Loitering with Intent: Dealing with Human-Intensive Systems

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Abstract This paper discusses the professional roles of information systems analysts and users, focusing on a perspective of human intensive, rather than software intensive information systems. The concept of ‘meaningful use’ is discussed in relation to measures of success/failure in IS development. The authors consider how a number of different aspects of reductionism may distort analyses, so that processes of inquiry cannot support organizational actors to explore and shape their requirements in relation to meaningful use. Approaches which attempt to simplify complex problem spaces, to render them more susceptible to ‘solution’ are problematized. Alternative perspectives which attempt a systematic, holistic complexification, by supporting contextual dependencies to emerge, are advocated as a way forward.

Introduction

There is a strand of IS discourse that focuses on software intensive systems, \cite{1}. While the concepts of human activity system and hardware system are both acknowledged, the main focus of attention is put on software intensive systems. Our intention is to shift the focus onto arguments following a human centered tradition in IS, and to discuss analysis and design in a context of human intensive systems. Here we believe it is important to consider whole work systems, including sociological and philosophical perspectives, without losing sight of their relationship to concrete IT artifact design. This is demonstrated by work of e.g. \cite{2} on data modeling, \cite{3} discussion of intelligent machines, and \cite{4} on object oriented design. When viewing IS as human intensive, we need to give careful consideration to human sense-making

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processes [5–7]. This includes giving attention to aspects of sociological and philosophical complexity [8–10]. In this paper, we explore problems of reductionism that can arise from different traditions of inquiry, and present a possible approach to dealing with them in which professional analysts take on an on-going role of ‘loitering with intent’ to support people in creating their own systems. Commonly, developers will ask ‘Who will be using this system? What do those people expect that the system will be able to do, and how do they expect it will do this?’ [11, 12]. However, we believe that these questions alone will not explore what is ‘meaningful use’ from the point of view of the individuals using the system. For this, an inquiry is needed which goes on to address the question ‘Why would this IT system be used?’ [8, 13, 14]. This question goes beyond consideration of functionality or usability to address the socio-technical and philosophical complexities inherent in human-intensive systems [2, 15, 16]. Consider teachers currently using traditional classroom methods, wishing to embrace e-learning. Developers could provide support for existing materials to be translated into a virtual learning environment and ensure that teachers have the appropriate buttons and menus to interact with this system. This is intended to bring about an optimization of existing processes for functionality, usability and efficiency. A better result might be achieved if teachers are supported to design how they want to teach using the characteristics of the new environment and its potential to support effective learning, i.e. create a system that is not just user-friendly but meaningful to use. This is intended to result in systems which are purposeful, useful and efficient in supporting strategic change. IS analysts/developers may have every reason to run away from the concept of ‘usefulness’ and hide instead behind ‘functionality’ (see discussion in [17]). This can be demonstrated by considering how success or failure of IS developments are measured. A team might be proud of their work in a project that is finished on time and within budget, with all the functionality required in the specification. Often, these are regarded as measures of success, both by developers and leaders of organizations. However, in a documented example [18], one such team received a shock when told that the auditors had pronounced the project a failure! The auditors had noticed a factor not even considered by the team or by managers in the organization – the resultant system was not being used! In such a case, management cannot say that the company is deriving utility from its investment – beyond the book value of the assets involved. Going beyond functionality is difficult and raises the complexity of the task of systems analysis and design. Writing specifically in the field of software engineering, [11] asserts:

“… human, social and organizational factors are often critical in determining whether or not a system successfully meets its objectives. Unfortunately, predicting their effects on systems is very difficult for engineers who have little experience of social or cultural studies…. if the designers of a system do not understand that different parts of an organization may actually have conflicting objectives, then any organization-wide system that is developed will inevitably have some dissatisfied users.” p.35.

These difficulties have led IS researchers to focus on human, social and organizational factors, leading some people to fear that relevance to design of IT has been lost [19, 20]. These feelings can be explained as a response to experienced uncertainty, arising from loss of identity and sense of purpose [21]. It is possible that IS