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# Structured Methodology Usage in ERP Implementation Projects: An Empirical Investigation.

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This paper reports on the findings of two case studies of ERP implementation. The cases have addressed the questions of whether structured methods are used in ERP implementations, and how they are used. The evidence presented shows that in practice structured methods appear to be expendable in implementation projects. However, they are valued for political reasons (e.g. gaining the trust of senior managers). The authors propose that these findings may be ascribed to the nature of ERP systems themselves: i.e. that they require the organization to adapt to the technology rather than the technology to adapt to the organization.

## Introduction: the debate over the value of structured methods

The development of information systems (IS) in modern enterprises is typically associated with the application of one or more structured methods. The advance of structured methodology is generally viewed as one of the landmark events in the development of the IS discipline. It is well known that these structured approaches have been advocated by many sources over many years. An industry has grown up around them as many different approaches have been developed and compared (e.g. data modelling, object approaches, state based approaches, process approaches).

Whilst the advocacy of structured methods has been strong and their influence profound, their true value has always been a matter of contention. There have been many studies which questioned the level of use of structured methods and, indeed, their usefulness. In 1986, Yourdon noted that only 10% of North American information systems organizations used structured techniques in a disciplined fashion (Wynekoop & Russo, 1993, p.183). More recently, Fitzgerald reports a study wherein 'the development approach often differed from that prescribed by the methodology, but that the work was later retrofitted to comply with methodology requirements' (Fitzgerald, 1997, p.113). Other critical perspectives upon the use of structured methods have been given by Middleton (1994), Sumner & Sitek (1986), Wynekoop & Russo (1993).

Elsewhere, Wastell (1996) gave an interesting commentary upon the value of structured methods from a

psychodynamic perspective. He argues that IS development projects are typically characterised by technical and political pressures. In this context, structured methods act as a 'social defence, i.e. as a set of organizational rituals with the primary function of containing anxiety' (Wastell, 1996, p.25). By following the rigid steps prescribed in the methodology, analysts, developers and users can 'avoid the real risks of engagement with each other and with the task at hand' (Wastell, 1996, p.38). Thus, the method has the potential to 'become a fetish, a procedure used with pathological rigidity for its own sake, not as a means to an end.'

## Today: the changing technical context

Clearly, considerable heat remains in this debate about the value of structured methods. Whilst this debate remains pertinent, the technical context for the use of structured methodology is changing. The work described in this paper is motivated by the rise of Enterprise Resource Planning (ERP) systems. Such systems present a changed technical context for the application of structured methods.

Traditionally, structured methods are associated with large scale design tasks. To various degrees they address a range of issues across software system development and associated organizational change. The development of some bespoke system such as a sales support system or a personnel system would be an archetypal application of a structured method.

ERP systems are different. Rather than requiring that software systems be tailored to a detailed set of requirements, ERP systems place much greater emphasis on the organization adapting around the technology. This is because they enforce the application of certain "best practice" business processes. When an organization buys ERP it is also, in effect, buying its business processes. Whilst many ERP systems do offer some latitude for adaptation, there is much less scope for tailoring the technology than traditional bespoke development. Moreover, in any case, many typical ERP implementations adopt a "vanilla" approach (i.e. one based upon a minimum of customisation effort) (Holland et al., 1999).

ERP systems are significant because of this change in development emphasis. They are also very popular. It has been reported that the market for ERP systems is likely to rise from \$15.68 billion in 1997, to \$72.63 billion in 2002 (AMR Research, 1998). Such projections are supported by the report that ERP is now the preferred method of replacing legacy systems (Deloitte and Touche, 1997).

This paper seeks to contribute to the debate over the use of structured methods by considering them in the context of ERP systems. It asks two questions:

- Are structured methods used or not used in ERP projects?

- How are structured methods used in ERP projects?

The evidence comes from two empirical investigations of multi-national companies who deployed SAP R/3, the market leading ERP system (see also Smethurst, 1998). The first case study at 'Waves' was investigated through two weeks participant observation. The second case study at 'Signal' was investigated through three, one hour interviews with a senior project manager. Pseudonyms are used in both cases.

### **Waves International**

At Waves International an adaptation of a traditional waterfall method was used. It required the creation of a number of linked business process, transaction, organization and systems models. The process models were a core feature of the systems development. These were created at three levels of detail: Level 1 was the most abstract and Level 3 the most detailed.

The structured method was a fundamental part of the SAP project at Waves. However, despite this, it quickly became apparent that the value of the structured method was problematical. It might be envisaged that the method served to promote rigour and structure in the design process. In fact, certain parts of the method were not followed rigorously at all (e.g. the three levels of process model were not developed sequentially). Peer review of deliverables was required by the method but were not undertaken. Weekly team meetings were abandoned and different teams quickly lost sight of what each other were doing. Not surprisingly, project timescales were prone to slippage and on more than one occasion this was 'remedied' by altering the start-date of a project stage after it had already commenced.

Given this state of affairs, what was the value of having the structured method? The evidence presented in this case study suggests that the structured method did have some value. In particular, the method was useful as a political marketing tool. The existence of an apparently rational method, inspired confidence amongst the senior

managers sponsoring the project. It allowed the project managers to answer a multitude of questions about the development of the project simply by reference to the lifecycle that was, notionally at least, being followed.

### **Signal Equipment Limited**

The project manager at Signal also utilised a structured method. This 'home-grown' methodology had been developed by the manager himself, as a result of several years project management experience. It grouped the project tasks into several logical groups and provided descriptions of how each of these should be carried out. It was quite unlike traditional structured methods developed for bespoke systems. It focused almost exclusively on the implementation phase of the software lifecycle. Within this there were a number of subsidiary stages. One of which was requirements. In this context, requirements was seen as a relatively minor activity that would contribute to the configuration of the ERP solution. It considered the scale of the system to be implemented, the project timescales and networking issues. The functions of the system were already given, and so the requirements phase contributed little to this issue.

When asked about the value of the structured method, the project manager agreed that it gives guidance to his team members. It also helped him lead his project team by teaching them what is expected of them, and stated that it helps them to grasp the dependencies between different activities. However, he emphasised the need to take a pragmatic approach and to cope with the expediciencies that each different project throws up. Any part of the method would willingly be sacrificed if another, alternative route to implementation became preferable. Overall, when questioned about the value of the method, the project manager emphasised its political value: "the key to all implementation is trust and the methodology is used to show that it's all in control, to get the business to trust me, to gain their trust."

### **Discussion and Conclusion**

The implementation of a SAP system differs from conventional system development because there is less emphasis on the technical design of software. The implementation of a SAP system focuses more exclusively upon business design, on changing the business so that it is able to deploy the new system, on system configuration and legacy data clean up.

The project team at Waves seemed to be consumed by the difficulty of this task. They were obviously struggling to follow the method, but nonetheless remained committed to it: different teams were very interested to find out any information about each other's progress and to compare their (lack of) progress in each step of the method. It is not

clear why the project managers allowed this state of affairs to continue. Perhaps they were not fully aware of what was happening; they were seduced by the “power of the method” (Wastell, 1996), trusting in it and expecting that if sufficient resource is devoted to it, the project would ultimately be a success. Alternatively, perhaps, they were using the method for their own sake; to provide a semblance of structure for the project and because of its high value as a marketing tool.

The value of the method as a marketing tool also emerged strongly in the Signal case study. The project manager exploited the existence of the method in order to gain the political trust he saw as being fundamental to any successful project. Above and beyond this, he also reported the value of the method as an instrument that facilitated his leadership of a project. Overall, his was a wholly pragmatic account of the value of the structured methodology. It was clear that the implementation of SAP is a complex and stressful activity. In confronting this complexity, the project manager would not be bound by the method. He would discard any part of it he did not find useful in the pursuit of his one goal: to have the system implemented on time and on budget. It follows that in the work of this project manager we have the antithesis of the anxiety avoidant behaviours described by Wastell (1996). Project management is all about dealing with anxiety, engaging the tasks at hand and getting the necessary tasks done. In the context of such anxiety confrontation, structured methods will always be subservient to the exigencies of the project. Structured methods were used, but in a tactical, expedient and, indeed, rather unstructured way.

These findings are interesting and promote many further questions. The working hypothesis is that the partial and pragmatic way in which structured methods have been used at ‘Waves’ and ‘Signal’ is due to the fundamental characteristics of ERP systems. These systems invert the traditional model wherein a software system is tailored to the needs of an organization and, instead, require that the organization to tailor its practices to the functions of the ERP implementation. In this context it is likely that the role of structured methods is quite different to the role that has traditionally been espoused for them. Witness, for example, how in both case studies the value of structured methods was associated with the need to secure political credibility for the projects. Moreover, as we have seen in the Signal case study, the structured methods may themselves be quite different to traditional methods based upon the software lifecycle. Further investigations shall seek to shed light upon the credibility of this hypothesis.

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