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Reconciling the Tensions Between Innovation and the Process Focus in Information Systems Project Management

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Abstract

There are inherent tensions between innovation and the focus on process in modern project management (PM). Efforts to manage processes increase short-term efficiency but may decrease the capacity to harness opportunities for innovation and so have detrimental longer-term effects on organisational prosperity. This paper investigates the ways in which these tensions affect information systems (IS) projects. Two illustrative projects demonstrate how these tensions may be managed and the resulting organisational outcomes. The paper makes three contributions to IS project management: a finer-grained view of innovation than is currently evident in the PM literature, exploration of project structure and temporal orientation as key dimensions of these tensions, and the introduction of the concept of ‘contextual scope’ where acuity to the larger organisational context affects the likelihood that opportunities for innovation are grasped by the project team.

Keywords

IS project management, innovation, process management, contextual scope

INTRODUCTION

There are inherent tensions between innovation and the focus on process in modern project management (PM). The popularity of managing organisational activities through projects, called project-based management, project-oriented organisations or projectification (Davies and Hobday 2005; Maylor 2001; Midler 1995), rests with the aim to increase innovation and creativity. Many organisations seek to implement pre-planned innovations by undertaking non-routine activities through projects. However, problems with managing projects are evident in many domains and have significant economic and social consequences (Hodgson and Cicmil 2008; Love et al. 2008). Recent highly-publicised projects to install complex information systems at the Australian Customs, Defence and RMIT University, for example, resulted in failed strategic initiatives and dissatisfied customers, employees and managers. The PM discipline has responded to these problems by emphasising formal control of the project process (Maylor et al. 2006). Such a response is at odds with findings of management researchers who highlight possible longer-term negative effects of process management, particularly on organisational innovation (Benner and Tushman 2003; March 1991; Smith and Tushman 2005). This suggests that increased efforts to control the project process may decrease the ability to harness opportunities for innovation (Hodgson and Cicmil 2008; Lenfle 2008; Maylor et al. 2006). Thus, the process focus of modern PM may support the implementation of pre-planned innovation but decrease the ability to respond to unexpected opportunities for innovation with resulting detrimental longer-term effects on organisational well-being.

The potential for negative effects of this tension are particularly significant for Information Systems (IS) projects. IS are, by definition, composed of information technology (IT), people, processes and practices (Kling and Scacchi 1982). IS, and each of their composite elements, are highly malleable and so the installation of IT into human systems is characterised by unintended impacts, workarounds, user creativity to shape the emerging IS and tailoring of the technology to suit the particular context (Carroll 2004; Markus and Silver 2008). These adaptations are indicators of the presence of innovative activity by developers, implementers and end users that occur from the start of the installation process through to longer term use. IS projects typically cover the earlier phases of this innovative activity.

Greater control of the project process that is central to modern PM approaches and methodologies may restrict the uptake of these innovation opportunities and so lead to longer-term misfits between the installed system and its organisational context. The research question addressed by this paper is therefore: ‘In what ways does the process focus of modern project management have negative effects on the uptake of opportunities for innovation during information systems projects?’
The approach taken to this question is to critically analyse the tensions between PM’s process focus and the uptake of innovation in projects and then to apply this to IS project management. Two illustrative IS projects are used to demonstrate some of these tensions and the consequences of different PM practices for innovation. Some suggestions for reconciling these contradictory tendencies towards innovation and process control in IS projects are then outlined. The paper concludes by arguing that these unacknowledged tensions between innovation and modern PM’s process focus currently impede IS innovation and so this is an important area that warrants further theoretical and empirical research.

BACKGROUND

Innovation

Innovations are concepts, practices or artefacts that are perceived to be new by an adopting entity (Rogers 1995). Acknowledgement of the role of innovation in creating organisational value led to increased emphasis on flexibility, creativity and dynamic capabilities (Galunic and Eisenhardt 2001).

Innovation is a form of change that may be anticipated (planned ahead and the innovation occurs as intended), emergent (arises locally and was not originally anticipated or intended), or opportunity-based (not anticipated but the innovation is introduced purposefully in response to opportunities or breakdowns that arise) (Orlikowski and Hofman 1997). Innovative ideas and insights generally arise with individuals (Nonaka and Takeuchi 1995) who may then diffuse them throughout a group, organisation or beyond. Thus, innovations may be examined at the individual, group, organisation, industry and national level of analysis (Slappendel 1996).

A very substantial body of literature explores various aspects of innovation (Birkinshaw et al. 2008). One stream examines the trade-off between exploration of new possibilities (that leads to innovation and new knowledge) and exploitation of old certainties (that involves reuse of existing knowledge and capabilities to increase productivity) highlighted by March (1991). Exploration includes variation, experimentation and innovation while exploitation includes selection, re-use and efficiency that is associated with process control (Benner and Tushman 2003; March 1991). Exploration without exploitation is wasteful as it incurs the costs of experimenting without gaining its benefits, while exploitation without exploration leads to sub-optimal stability, an inability to respond to new trends and so is destructive in the longer term (March 1991; Smith and Tushman 2005).

March’s argument raises two dimensions on which trade-offs are required. The structural dimension involves activities to either reduce variation and gain efficiency that are central to process management (Smith and Tushman 2005) or to increase variation that is associated with innovation (Couger 1996). The temporal dimension involves attending to the future and new possibilities while capitalising on knowledge built in the past. Application of these dimensions is exemplified by Brown and Eisenhardt (1998) in their work on maintaining organisational competitiveness in times of rapid change. They argue that organisations need to ‘compete on the edge’ by continually managing opposing structural and temporal attractors.

Project-based management

The need for ongoing innovation to create business value and flexibility to respond to changing markets has triggered a shift in organisational design. A project structure is perceived to provide greater innovation, agility and flexibility than a bureaucratic, hierarchical organisational design (Davies and Hobday 2005). Project-based management employs multiple, temporary projects that can be rapidly re-configured as organisational strategy changes.

The shift to project-based management has been accompanied by increased emphasis on the project process (Maylor et al. 2006). This is evident in the increased profile of professional associations such as the Project Management Institute (PMI) and the Australian Institute of Project Management (AIPM), codification of accepted practice into Bodies of Knowledge, and standardised processes for applying this knowledge in projects through PM methodologies such as PRINCE2 (OGC 2005). Such process-centred strategies are underpinned by an instrumental or engineering philosophy that conceptualises the goal of PM as achieving a clearly defined goal within time and cost constraints (Hodgson and Cimcil 2008; Lenfle 2008).

Project-based management aims to produce change through the introduction of planned innovations. The overwhelming majority of analyses of innovation in the PM literature feature pre-planned, top-down implementations of innovation (examples are Aggeri and Segrestin 2007; Beaume, Maniak and Midler 2009). Thus, innovations are designed, projects are planned and the innovations introduced through individual projects that are executed according to plan. If modern PM is applied to these individual projects, they may be linear and inflexible and deviations from the plan are avoided (Maylor 2001; Soderholm 2008). The activities within each project are ‘black boxed’ and not open to examination (see, for example, Davies and Hobday 2005). Therefore,
the planned innovation is implemented as anticipated (Orlikowski and Hofm 1997). Such an approach is incompatible with bottom-up innovation that arises from local knowledge and practice. It appears that both the conceptual and empirical foundations of project-based management rest with projects to implement pre-planned innovations and therefore neglect other fertile sources of organisational innovation: the serendipity or unexpected insights of new possibilities that arise during the course of a project, the conjunctions of constraints that lead to creative workarounds and the emergent requirements that lead to new practices, processes or applications of technology. These bottom-up, situated opportunities for innovation are acknowledged as being important to Australia’s innovation quantum (Cutler 2008) and are crucial to the effectiveness of IS projects.

Applying a broader view of innovation to the role of project-based management in achieving organisational innovation raises tensions related to organisational structure (flexible) and project structure (inflexible); diversity in innovation type (anticipated versus emergent or opportunity-based); and the origins of innovation (top-down at the organisational level versus bottom-up at the individual or project team level). The ways that project teams respond to unexpected change has been examined in relation to events in the external environment (Soderholm 2008); however, this is only one source of opportunities. Opportunities may also arise from the interaction between the project team, new technologies, users and other stakeholders and work practices.

Consequently, this paper examines tensions between project process control and innovation that may be emergent or opportunity-based and occur bottom-up through individuals and project teams. This type of innovation is particularly evident in IS projects. Thomsett (2002:18) identifies fundamental differences between engineering and business (including IS) projects. Business projects are characterised by flexible and informal specifications, poorly established codes of practice, abstract deliverables and unique components, poor performance indicators and metrics and variation amplified through individualism. The uncertainties of business projects are compounded in IS projects. Information systems are intangible, malleable, human-centred and subject to rapid technological change. Difficulties in determining requirements prior to implementation arise from the challenges of visualising a yet-to-be-built systems and changes in users’ needs as a result of interacting with new technology. Therefore, there may be a great disparity between the innovation-as-planned and the innovation-in-use that is a stabilised IS that meets stakeholders’ needs. Changes to the technology and associated processes and practices arise as the result of opportunities for innovation perceived throughout the design, development, installation and training—that are typically within the scope of IS projects—as well as ongoing use that occurs after project completion.

Of particular interest are opportunities for innovation that arise during the course of an IS project that necessitate revision of project aims, intended outcomes, core constraints or relations with other projects. Capitalising on such opportunities may result in new knowledge, technologies or competitive strategies within a narrow window of time (Tyre and Orlikowski 1994). The significance of such a focus is highlighted in the recent Cutler report commissioned by the Australian Government on the National Innovation System (Cutler 2008) that emphasises the need for Australian organisations to give greater attention to innovation throughout their everyday operations that includes ways of cultivating ‘bottom up’ innovation (Cutler 2008:10).

**ILLUSTRATIVE IS PROJECTS**

Two contrasting projects in the Defence context were selected to illustrate the nature and importance of the tension between process focus and opportunities for innovation in IS projects. In the first, capitalising on an unexpected situation had positive outcomes while, in the second, failure to heed users’ frustrations and opportunities to refine the system led to negative outcomes.

The first project, called the FOD trial, was studied from June 2006 to September 2007. Two researchers examined different aspects of the trial by running and attending workshops, observing the project team, interviewing key stakeholders and undertaking a formal evaluation of the project outcomes at the end of the project (reported in Carroll and Fidock 2008; Fidock, Carroll and Rynne 2008). Data were collected from multiple semi-structured interviews with the project sponsor, senior staff and project manager, one-off interviews with managers, members of related Army groups and project team members and an extensive range of documents (including project plans and documentation, diverse Army documents relating to the overall knowledge management strategy and PowerPoint presentations by key stakeholders).

Process research deals with sequences of events over time. Accordingly, it is more ambiguous, complex and imprecise than factor data (Langley 1999). Firstly, a case narrative of the FOD trial was written to organise the data (Eisenhardt 1989). This case narrative captured the researcher’s interpretive reading of the data and so the project process over time ((Mason 2002). The analysis of the case was guided by the research theme relating to the relationship between the PM process and innovation and informed by the qualitative data analysis principles of Miles and Huberman (1994). Key issues (evidence of a process focus and opportunities for innovation) were identified and refined through iteratively re-reading the transcripts.
The second project, called the EDMS implementation, was studied over five months through interviews with four members of the project team, the project manager and a range of managers at the sites; interviews with 27 users across the three pilot sites; a survey of 55 users; and extensive document analysis. The data were analysed using qualitative (as for the FOD trial) and quantitative methods to create a case narrative and a project evaluation report (described in Fidock and Carroll 2006).

Next, cross-case analysis revealed similarities and differences between the two cases in relation to the PM process focus. A key episode was identified in each case where an opportunity for innovation arose. The way that the opportunity was handled and the outcomes for the project were analysed. Extracts from the case narratives for each case are presented below along with a summary of the PM process focus and the identified opportunity for innovation and its outcomes.

The FOD Trial

A vision within the Australian Army to provide increased access to knowledge centred on developing a configurable portal to be known as the Army Knowledge Domain (AKD). The portal would bring distributed knowledge sources into one central domain and so facilitate access to the internet, internal defence networks and overseas knowledge sources in a form that could be tailored for the needs of individual users. A proof of concept trial was proposed that focused on one area of army knowledge called Doctrine; a project for the Future of Doctrine (FOD) trial commenced in June 2006. This was an exploratory project (Lenfle, 2008) that aimed to refine requirements for an AKD, create a classification of knowledge elements, resolve any technical issues, produce multimedia and simulation content and deal with major organisational change. Technical risk was to be managed through use of existing technologies including commercial off-the-shelf (COTS); indeed the initial business case recommended the use of a COTS solution. Non-technical risks were assessed as high because the project entailed significant culture change.

The project had a hard end date (November 2007) and budget ($860,000) that were not negotiable. The project manager was supported by a project assistant and an IT team comprising five civilian technology specialists. All except the project manager worked part-time on this project. A range of issues arising from the breadth of project scope, diversity of knowledge sources as well as political issues presented by the IT workers meant that the scope of the project was progressively reduced.

The IT team favoured custom development using open source software (AJAX). They used AJAX to develop a web portal that would accept feeds from various repositories. The open source software was complemented by trials of various COTS, as initially recommended for the project. A commercial search technology called Retina, developed by Autonomy, was selected. Autonomy specialise in ‘meaning based computing’ that is valuable for knowledge management, particularly searching unstructured data. However, the IT team decided to link Retina to the custom-developed portal interface rather than use the Retina interface. As the time drew near for a critical milestone in the project, the initial demonstrations of the prototype portal to senior staff, integration of Retina with the open source web portal ran into difficulties. It appeared unlikely that the portal would be operating reliably in time for the demonstration. The project manager faced a choice: either delaying the demonstration and affecting the ability to deliver the project on time or presenting the search technology separately from the portal interface. She chose to separate Retina from the web portal rather than risk failure of the prototype during demonstrations to senior staff.

As a result, the FOD prototype presented for the demonstration was a somewhat clumsy combination of two distinct components accessed via a web browser: the prototype portal (developed in-house using AJAX, that provided access to stored data) and Retina (for search and information retrieval). This prototype gained approval from the Army hierarchy at the initial demonstration. Both the Retina interface and its search capabilities later received very positive feedback in a series of evaluation trials with user representatives; there was a clear preference for the Retina interface over the custom-developed interface of the web portal. The outcome was strong support for further development of the AKD portal using COTS technologies and clear reduction in the power of the IT group to dictate the nature of technological options that were implemented.

FOD Summary:

Process focus: There was clear focus on the project management process. The project was planned, actively tracked and re-planned but controlled with flexibility. Key elements of the project process were modified; the project scope was progressively narrowed, some initial requirements were scrapped as unnecessary or secondary to the main requirement of delivering a workable prototype and new requirements were added as different technical possibilities were explored.

Innovation: The nature and composition of the prototype changed over the duration of the project.
The EDMS implementation

The aim to fulfil legal requirements and trace decision-making through a transparent document management system meant that an electronic document management system was mandated for a large Australian public organisation. Such systems are designed to support the document life-cycle from creation through to deletion; functions offered include document tracking, version control and distribution control. A pilot project was initiated to implement an electronic document management system at three sites within the organisation. A particular system, called EDMS here, was selected that was an extension of an existing records management application. The choice was influenced by perceived cost savings (licenses for the system had already been purchased) and organisational experience in implementing the system. However, to date the records management system had been used by only a small number of users.

The project manager derived the requirements by examining the claimed functionality of the existing records management system. Although called a pilot project, it was actually a partial implementation; there was no ability to roll back the EDMS because legacy files had been written over. The rollout was sequential, site by site and there was little evidence that the project process was modified as a result of learning or feedback from any of the sites; the exception was the funding by the project of one information manager to assist with new standards and processes.

During the roll-out, serious issues surfaced around ease of use, ease of learning, reliability and responsiveness. An unfamiliar, non-intuitive interface led to severe usability problems; rather than altering the system, significant training costs (one-to-one for many users) were later incurred in an attempt to embed use of the system. The infrastructure, Microsoft NT4, was “very unreliable, always crashing”; implementing a distributed system on an outdated server infrastructure with weak communications between sites led to many problems and negative effects on job performance. There were widespread workarounds rather than compliance with the organisational document management requirements. Lack of acceptance by users threatened legislative compliance.

Further, the implementation of EDMS involved major changes in business practices, introducing increased steps (and so time and effort) when creating or modifying documents. The project manager tried to differentiate between the technical aspects of the project (implementing EDMS) and process changes although he believed both were core to the project: “We drive them through this process as part of supplying the system. Tools to help them show them what they can do to modify/adjust business processes. Understanding the business rules that will be applied... We integrate our clients as part of delivering the solution.” However, there was little empathy amongst project team members for the users and the difficulties they were experiencing. One project team member emphasised the organisational imperative behind the EDMS rollout: “Do they understand why they have been given this tool? Using this tool enables [the organisation] to comply with legislation for records management”; such an imperative has little positive effect on users who need to understand individual benefits that may arise from their investments of time and effort. Another project team member described complaints about the user-unfriendly interface as: “just a general whinge.”

The sequential implementation at three sites meant that these issues became clear to the project team who took no action to deal with them. Opportunities for innovation relating to both the technical system and work practices were ignored. The EDMS project represents a failure to achieve process and practice change by implementing a new IT system. It was technically successful (in that it met the requirements) but the project manager requested an independent evaluation that led to reconsideration of the intention to roll EDMS out to all organisational sites. When the organisation was revisited in 2009, there had been a partial roll out across some but not the whole of the organisation.

EDMS Summary:

Process focus: There was strong adherence to the project management process that was not modified over the life of the project: once requirements, budget and schedule were planned, the project was undertaken largely according to that plan.

Innovation: EDMS was implemented as planned with little alteration to the project process, the technology or the change management process related to the technology even in light of clear difficulties and dissatisfaction on the part of the target users. The organisation subsequently funded one-on-one user training to try to increase acceptance of the system.

DISCUSSION

There are two dimensions to the tension between innovation and process focus: structure and time. Structural tensions arise from the way that organisations—and projects within organisations—manage communication,
allocate responsibilities, and coordinate and control organisational functions (Senior 1997). This may be reflected in the nature and paths of communication; layers and rigidity of hierarchy; pervasiveness, complexity and detail of process specification; and the presence of, and compliance with, rules. Too much structure leads to rigidity that has been associated with process-focused organizations that prevents capitalising on opportunities (Smith and Tushman 2005). Too little structure facilitates flexibility and generation of innovative ideas at the expense of the ability to capitalise on these innovations. The challenge for project managers is to identify what aspects of the project to structure at what project stages so that functional needs are satisfied while remaining flexible to harness opportunities for innovation. One suggested approach of ‘pockets of flexibility’ (Sadiq, Orłowska and Sadiq 2005) involves identifying sections within rigid workflow models that can be loosely defined to accommodate flexibility. However, such an approach is not suited to the unpredictable and unanticipated nature of opportunities for innovation in IS projects, where it appears that project managers must exercise their judgement in identifying and responding to such opportunities. In the FOD trial, the project had sufficient structure to ensure that a working prototype was delivered on time and to budget. There was strong project management in terms of planning and monitoring but the structure had sufficient flexibility to adapt scope, requirements and technical elements as different possibilities were explored and evaluated. More importantly, the structure of the project was sufficiently flexible to allow major change in the composition of the prototype shortly before the initial demonstration, without losing control of the project or its overall objectives.

The EDMS project was managed to reduce variation, following pre-planned rules, procedures and a rigid project process. Communication was primarily one-way: project team to users. Ongoing user feedback about serious shortcomings of the EDMS was dismissed.

Time relates to the temporal tensions that affect human action. Emirbayer and Mische (1998) argue that humans have multiple, conflicting temporal orientations to the past (what has been learned or experienced previously) and the future (that offers uncertain possibilities) while navigating the contingencies of the present (Carroll 2008). However, temporal issues are seldom analysed in PM research (Engwall 2003). Focusing only on the present ignores the past, so that project teams must always start from scratch, treating each project as a novel undertaking, building new processes and skills, and making the same mistakes repeatedly (Brown and Eisenhardt 1998). One of the most powerful ways of capturing past experience is through formal, prescribed processes. Project managers can capitalise on the wealth of prior experience encapsulated in widely-promoted PM process prescriptions and bodies of knowledge. However, over-reliance on past experience and exploiting past learning stifles innovation (Smith and Tushman 2005). Organisations also need to look to the future. Planning is one strategy for dealing with the future. Modern PM centres on planning: trying to anticipate the actions that lead to achieving project aims on time and within budget (Maylor 2001). PM planning always precedes action (Williams 2005). Spending significant time on planning for a single future assumes that we can know or predict the future. However, this vision of the future may never eventuate and so excessive planning is counter-productive (Brown and Eisenhardt 1997) and may blind us to unexpected opportunities (Soderholm 2008). Thus, choosing to deal with an uncertain future by planning alone, and so failing to continuously scan for future opportunities and threats, or to heed the unexpected consequences of our actions, will jeopardise emergent or opportunity-based innovation. The challenge here is managing projects ‘in the flow of time’ (Emirbayer and Mische 1998), where orientations to the past, the future and the present all inform current project activities.

The FOD project manager articulated a strong focus on the future throughout the project, cognisant that this was a proof of concept project that would be succeeded by further projects through to 2012. However, at the time of crisis, when the prototype was not working, her temporal horizon shifted to the present and resolving the current problem. Her chosen solution involved balancing future risks related to maintaining a constructive relationship with the IT team (who favoured open source, in-house development) and the longevity of the AKD program (that was threatened if the outcomes of the proof of concept trial were not conclusive). The outcomes of her decision to capitalise on the innovation (the Retina interface) had interesting long-term implications that were not apparent at the time. In the EDMS project there was a strong focus on the present: the future was dealt with in a one-off planning process and the past informed the project through strong process control. Unfortunately, the project team failed to consider the future consequences of dismissing opportunities for innovation during implementation with resulting high-cost training, ineffective use of EDMS and failure to comply with legal requirements due to limited use of the system and widespread workarounds.

These tensions between PM’s process focus and innovation in IS projects are not mutually-exclusive alternatives that need to be resolved in favour of one alternative over the other. Rather, they are essential qualities of PM that may have contradictory or paradoxical outcomes. For example, Weick (2004:660) argues that ambivalence to both exploitation and exploration is preferred to selection of an intermediate position. Abernathy (1978) argued that a firm’s focus on productivity gains inhibited its flexibility and ability to innovate, so long-term well-being rests not just with ability to increase efficiency but its ability to both innovate and sustain efficiency. Brown and Eisenhardt (1998) emphasise ‘balancing on the edge’ that involves ongoing adjustments between opposing structural and temporal attractors. Clearly, projects need ‘sufficient’ structure along with attention to multiple
time orientations so that both exploration of opportunities for innovation and exploitation of the strengths of a process focus are achieved. The EDMS project illustrates the primacy of process control over innovation and the long-term costs of pursuing efficiency over exploration. The FOD trial demonstrates how process control coupled with openness to alternative possibilities – what Weick (2004) would describe as ambivalence to the extremes of exploration and exploitation – was effective in completing an exploratory project on time and to cost with clear business benefits to the organisation.

This raises a crucial lesson for project management: reconciling the tensions between process focus and innovation requires understanding not just of the particular project and the initial project specification, but also of the organisational context in which the project is initiated. In particular, what is called ‘contextual scope’ in this paper is crucial; this is the awareness of the organisational strategies and goals that triggered the project and the intended business benefits that the project will deliver to the organisation. In the EDMS project, the team was focused on the project, not the organisational context that shaped whether business benefits would accrue. In contrast, the project manager in the FOD trail was driven by the larger organisational strategy, the characteristics of that context and the nature of the potential users of the AKD. Her focus was on both the project and the business benefits that would arise from the project.

Contextual scope, an additional dimension of the tension between a PM process focus and innovation, is unique to PM. Previous work on the tension between process management and innovation, outlined by Benner and Tushman (2003) and Smith and Tushman (2005), is directed at the organisational level of analysis with a focus on organisational learning and survival (see also Brown and Eisenhardt 1997, 1998; March 1991). In contrast, projects are embedded in organisational environments. Consequently, attention to project and organisational (and even inter-organisational) aims may be crucial in harnessing opportunities for innovation during a project.

CONCLUSION

This paper has drawn attention to fundamental tensions between the process focus of modern PM project and organisational innovation. This was achieved partly by bringing together two disparate bodies of literature—from PM and management—to highlight the tensions and then explore their implications. The research question, ‘in what ways does the process focus of modern project management have negative effects on the uptake of opportunities for innovation during information systems projects?’, is addressed both conceptually and by drawing on two illustrative IS projects that indicate that too great a focus on process can have negative effects on uptake of opportunities for innovation while a careful balance of structure and temporal orientations can achieve effective process focus coupled with productive use of opportunities for unplanned innovation.

The paper makes three contributions to the field of IS project management. The first relates to the nature of innovation. On closer analysis, it became clear that exhortations to use project-based management to achieve organisational innovation refer only to one, specific form of innovation. This is pre-planned and pre-designed innovation that is to be implemented as anticipated, with no adaptations for local needs or contextual requirements and no changes that arise from the learning gained during the course of the project. The research reported in this paper draws upon Orlikowski and Hofman’s (1997) classification of change as anticipated, emergent or opportunity-based in order to highlight the variety of innovation types. Thus, the paper has demonstrated that existing prescriptions of project-based management for innovation are underpinned by a simplistic view of innovation; and that efforts to control the project process may diminish the likelihood of successful uptake of opportunities for innovation that arise during the course of a project. This is significant in opening up more comprehensive examination of possibilities for innovation in project work and highlighting impediments to innovation arising from contradictory tendencies towards innovation and process control in IS project management.

The second contribution relates to two dimensions of the tensions between innovation and modern PM’s process focus that are implicit in the literature: structure and time. Structural issues address how projects are organised while temporal issues address the project manager’s orientations to the past, present and future. This approach is significant because it provides a much richer, multi-dimensional view of managing projects than is represented in many of the linear, engineering prescriptions for PM.

The third contribution is to identify a possible additional dimension of these tensions that arose while comparing and contrasting the two illustrative projects. Both were pilot projects with significant organisational consequences arising from project outcomes. In the EDMS project, the project team had a strong focus on the project and the project goal of implementing an IS. In the FOD trial, the project manager was clearly cognisant of the organisational context, strategy and imperative in which the project was undertaken. Thus, ‘contextual scope’ affects the way in which the tensions between process and innovation are managed. Looking upwards and outward, beyond the boundaries of the project to the organisational context for which the project will deliver benefits, increases the likelihood that opportunities for innovation that support organisational strategies will be
grasped. In contrast, looking inward and focusing on activities within the boundary of the project increases the likelihood that opportunities for innovation will be ignored in order to achieve efficiency and productivity in the short-term.

Together, the finer-grained understanding of innovation and the richer view of the dimensions of the tensions between process and innovation provide the foundations for effectively managing these tensions in IS projects. They impact organisational attempts to compete through innovation using project-based management. This has great significance for Australian organisations that may be unaware of the ways that project-based management provides for top-down innovation yet inhibits opportunities for other types of innovation.

Having identified and clarified these tensions as they are expressed in IS project management, there is need now for further research. The concept of ‘contextual scope’ needs empirical investigation that builds on existing research on business value and benefits management in IS project management. Also, the practical implications of the process/innovation tensions in modern IS projects should be examined further. This will enable organisations and project managers to identify, evaluate, monitor and adapt PM practices that negatively affect innovation within IS projects and organisations. This will provide opportunities to embed a rich and comprehensive view of innovation into PM and so overcome the unconditional process focus that is currently dominant.

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