

Managing IS Projects In SMES – Tailoring The PRINCE2TM1 Methodology

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The history of information systems project management is littered with many well documented disasters, and even more that have not been recorded in the literature for a range of political and commercial reasons. Such failures in the public sector gave rise to the development and deployment of the PRINCE2 project management methodology, which is now used extensively in the public sector and increasingly in the private sector also. PRINCE2 is, however, a 'big beast' – a large and quite complex set of concepts, tools, processes and techniques – which can appear rather daunting when undertaking fairly small scale projects in small to medium sized enterprises (SMEs). This paper examines how two companies have adapted the PRINCE2 project management methodology to control information systems (IS) projects in organisations of circa 200 employees, on projects of about 12 months duration. The first case study (Aeroengine Bearings UK Ltd) is implementing a product life cycle management (PLM) system to control and integrate shop floor engineering and design information. In the second case study, a financial services company specialising in electronic funds collection (Allpay.net) has used PRINCE2 to project manage the implementation of a bespoke middleware product that integrates its back office and CRM systems. Both these business projects were undertaken via the Knowledge Transfer Partnership (KTP) scheme, which supports university academics working with industry on strategic projects.

Field of Research: project management, information systems, SMEs, knowledge transfer

1. Introduction

Brychan (1999) has underlined the importance of technology transfer networks in helping SMEs adopt new methodologies, particularly those where technology is transferred into an SME from an external source. Knowledge transfer that promotes technology diffusion is an important way of achieving increased competitiveness, particularly for SMEs (La Rovere, 1998).

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¹ PRINCE2TM is a Trade Mark of The Office of Government Commerce

It is thus not surprising that knowledge transfer between universities and SMEs is a key element of government policy to advance British industry, and in this context, the Department of Trade and Industry (DTI) specified a range of products for supporting and promoting innovation, particularly in the field of technology development and application. (DTI, 2003). One of these products is the Knowledge Transfer Partnership (KTP), which provides direct support of circa £25 million per annum for graduates to undertake specific knowledge transfer projects in firms of all sizes, but particularly in SMEs of less than 250 staff (Wynn and Jones, 2006). It is the deployment of this scheme to use and tailor PRINCE2 to introduce new software products in two companies that is the focus of this paper. Rai et al (1996) note that 'strategic alliances provide an effective means to improve both the economies of scale and scope offered by traditional modes of organisation', and this is evidenced in these two case studies as knowledge transfer between university and company has engendered improved project management.

2. The PRINCE2 Project Management Methodology

PRINCE2 is a project management methodology designed for the public sector in the UK. It is owned by the Office of Government Commerce (OGC), an office of the UK Government. It is now an internationally recognised methodology and trademark.

PRINCE2 provides guidelines for Project Managers to:

- Establish terms of reference as a prerequisite to the start to a project
 - Use a defined structure for delegation, authority and communication
 - Divide the project into manageable stages for more accurate planning
 - Ensure that resource commitment from management is part of any approval to proceed
 - Provide regular but brief management reports
 - Keep meetings with management to a minimum but at the vital points in the project
- (OGC, 2005)

The key features of PRINCE2 are:

- It is driven by the business case for the project – this is clearly set out and supported in the early stages and revisited at appropriate intervals across the duration of the project
- It requires a clearly defined organisational structure for the project, comprising Project Board, a Project manager, and Project teams (with Team leaders).
- It is based on 8 main processes (each with sub-processes) to manage a project.
- There are also 8 main components that are used throughout the processes to support and advance the project
- In addition, there are three techniques that may be used at different stages within a project.

3. The Knowledge Transfer Partnership (KTP) Scheme

The KTP scheme can be used for any project that gives strategic bottom-line benefit to the company partner, but it is often geared to projects that inject innovation and/or new technology into the operations and culture of the company. Essentially the UK government will fund over 50% of the employment, training and support costs of an experienced graduate (called a KTP Associate) to lead these key change projects, and in addition, the government funds consultancy from University academics to support the project and bring transfer of new knowledge from university to the company. The general aims of KTPs are to:

- Improve the competitiveness of the company,
- Enhance the business knowledge and understanding within the university, and
- Advance the career prospects of the KTP Associate.

The partnerships involve the Associate working in an organisation, normally for two years duration. During this period an academic from the University is assigned for 20 days per annum to support and supervise the project, and bring in specialist knowledge and expertise as appropriate to ensure project delivery. The benefits to the company include the potential identification of new opportunities for development and growth, and the stimulus to research their outcomes. KTPs also provide dedicated additional resources to enable organisations to deliver project benefits; and they allow organisations to access new developments in specialist fields and to exploit innovative concepts and thinking in business.

Universities can derive a number of collective and individual benefits from participation in KTPs. Many of these derive from the use of KTP projects as case studies for both teaching and research. The case study method is well established as an educational technique in both higher education and continuing professional development, and some of the documented case studies coming from KTP projects can be used in both situations. For teaching-led universities, which nevertheless have a clear commitment to research-informed approaches, KTPs offer particular benefits in providing new and interesting materials for inclusion in the curriculum. KTP projects also provide opportunities for academic staff to work on live business challenges, which allow them to maintain an up to date knowledge of business thinking and methods.

4. Case Studies

4.1 SKF Aeroengine UK, Stonehouse, Gloucestershire

Background

SKF Aeroengine UK has a turnover of circa £15m and employs 210 staff in Stonehouse, Gloucestershire. It is part of the SKF group, which is considered the largest bearing manufacturer worldwide. SKF Aeroengine UK decided to make a

partnership with the University of Gloucestershire to develop a KTP project with the KTP Associate working at the company for a two-year period to support the company to deliver strategic value through process change and new systems implementation.

The Project

“To plan, develop and demonstrate an integrated engineering information system to support future business competitiveness based on improved customer responsiveness” is the project mission statement, which drives the project. The implementation of a new Product Lifecycle Management (PLM) system as well as a new CAD/CAM both linked with ERP and shop floor data systems is judged the best way to support the company in delivering a big contract to its main customers. The main software product will be NX (CAD/CAM) and Teamcenter (PLM). The Project was baptised as “Engineering Systems Integration” (ESI). The objectives of the ESI project are to:

- Create a Business Process Map which includes contract review process, design/development, production engineering, quality planning, production planning, purchasing;
- Create a future process map based on project findings
- Implement NX (CAD/CAM) and manage the NX project pilot
- Implement the basic Teamcenter (PLM)
- Verify the need for other software packages
- Define/implement the integration of NX and Teamcenter with Coordinate Measuring Machines (CMMs) and Computer Numerical Controls (CNCs) (MAIN OBJECTIVE)
- Speed the provision of customer quotations

The Use Of PRINCE2

At the project outset, the project manager was trained and accredited in PRINCE2 and he decided to use some processes, components and techniques in the project. Some processes were already used due to the way KTP projects are submitted and approved by the Department of Innovation, University and Skills. The PRINCE2 tools used on this project are summarized as follows:

PRINCE2 Processes

Starting Up a Project (SU)

Usually done in all KTP projects, even before recruiting the KTP associate the company in conjunction with the university decide who will be appointed as the project executive. Therefore, after recruiting the KTP associate who would be the project manager, SKF used the SU1 PRINCE2 sub-process (Appointing an executive and a project manager). One of the project manager’s first tasks was to appoint the project management team – the Project Board (SU3). For this task, it was not necessary to design the project management team because there were just one or two options (SU2). The project brief (SU4) also was one of the project manager’s first steps. Its first version detailed a project approach, which used a

waterfall project lifecycle. However, the approach that looked most suitable was the spiral lifecycle, which became the final approach (SU5)

Directing a Project

Two directing a project sub-processes are also normally used at all KTP projects. To be approved as a KTP project, it needs to have authorization to initiate (DP1) which is a decision between the Company partner and the University on whether they want to have a project. After submitting the project detail to the DIUS, Company and University wait for the project to be authorized (DP2). The document submitted to DIUS can be considered as project mandate. This particular project was divided into eight stages and each stage needs to be authorized to start and to end (DP3). When the project manager requires advice, a project board meeting is called and they give him Ad Hoc Direction (DP4). Because this project hasn't finished, the sub-process Confirming Project Closure (DP5) has not been followed but it is expected to be used in the appropriate time.

Initiating a Project (IP)

To submit a project to DIUS, both company and university need to make an agreement on what will be the business case. At the initiation stage of this project, a plan was developed and approved by the project board (IP2). From time to time, project updates are given to the Project Board. With a detailed understanding of the scope, the project manager was able to refine the business case (IP3).

Manage Stages Boundaries (SB)

Unlike the project at Allpay, this project did contain a number of formal stages. The project manager prepared stage plans when at the stage start (SB1). During the stage and at its end, updates to the project plan are frequently done (SB2). At this moment, the project completed the first stage and a presentation was given containing a report of the stage end (SB5).

Controlling a Stage (CS)

During each stage, an assessment of progress was completed by the project manager and presented to the Project Board, who would assist in issue resolution as appropriate (CS2). When requested or during control meetings, the project manager reviewed the stage status reports with the Project Board (CS5).

Manage Product Delivery (MP)

Because of the nature of the project objectives, the Project Board decided to not use the manage product delivery process. However, all projects deliverables will be approved by them. Each stage is considered a work package and the project manager plans it.

Closing a Project (CP)

When the project closes there will probably be a task to Identify follow-up actions (CP2). It is also predicted there will be a project closure meeting to evaluate the project and its deliverables (CP3).

Planning

According to the PRINCE2 methodology, the Planning process is a support process for Starting up a Project (SU), Initiating a Project (IP) and Managing

KTP programmes, it is to help Allpay.net Ltd to improve their competitiveness and productivity through better use of knowledge, technology and skills that reside within the University of Gloucestershire. This project aims to enhance the service that Allpay.net provides, and may establish the company as a software provider. A thorough feasibility study confirmed that a range of in-house legacy systems that support the Payment Information Files (PIFs) were in need of urgent replacement by a configurable, scaleable middleware product. The legacy systems transfer and manipulate data in an unwieldy way that requires much manual operation and intervention. It has a big maintenance overhead. Developing a new middleware application using up to date technology would reduce maintenance overheads and provide improved software architecture, which will help the company deliver a more robust customer service in the mid-term (Figure 2).

PIF move top level structure

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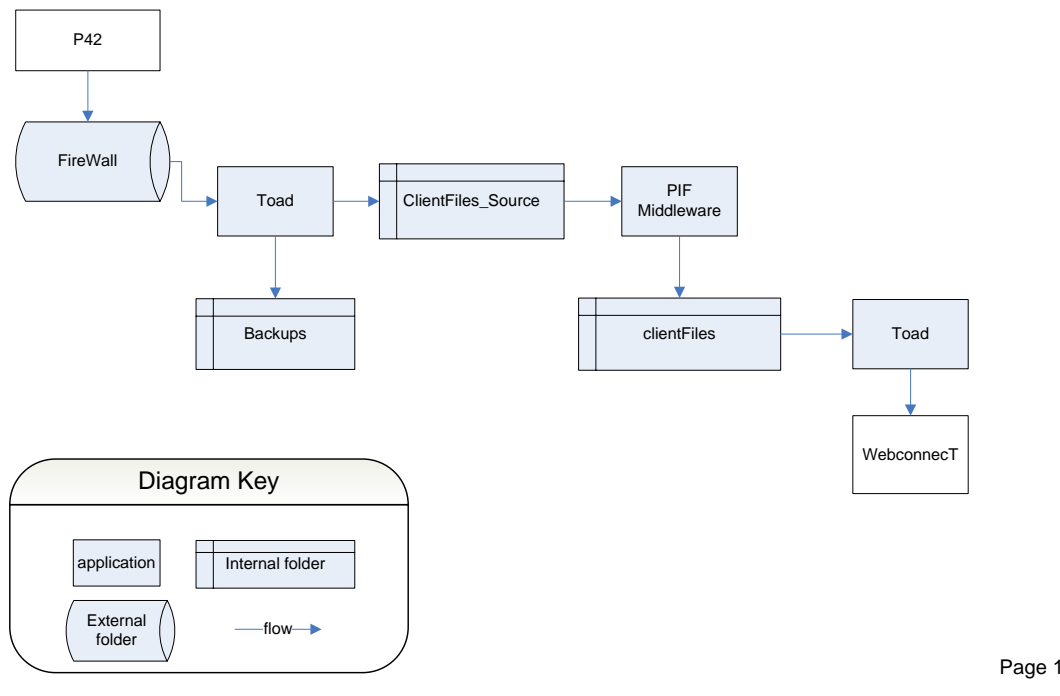


Figure 2. Systems Architecture for the new Middleware product

The Use Of PRINCE2

The middleware project is a 14-month in house software replacement project. The core project team is just three staff, with the KTP Associate playing a hybrid role of project manager and developer. Compared to many projects conducted in the public sector, this is a small, low profile project. Because of its scale, it would be impractical and an administrative burden to use the whole set of PRINCE2 processes, components and techniques to manage the project. From the outset of the project, the project team resolved to adapt the

methodology to fit the project scope and scale. In the initial main processes of Starting Up a Project (SU), Initiating a Project (IP) and Planning (PL), only a sub-set of the sub-processes were used.

In the Set UP (SU) stage, PRINCE2 contains:

- Appointing a Project Board Exec & Project manager
- Designing a PM Team
- Appointing a PM Team
- Preparing a Project Brief
- Planning an Initiation Stage

In the very first project meeting, the KTP Associate was appointed the Project Manager, and the Project Board Executive was established, comprising the Project Manager, the IT Director (main user), the Systems Manager (main supplier) and University supervisor. Responsibilities were agreed and clearly and formally documented. Designing and Appointing a PM Team was omitted and a project feasibility study phase was added up front, in which we confirmed that a valid Business Case exists for the project. We prepared the Project Brief, containing a formal definition of the project, highlighting its objectives and deliverables, scope, constraints and known risks; as well as formally identifying the project stakeholders. We selected Microsoft Project as the main tool to plan the project. At this early stage, based on our findings and known facts, we drafted the initial plan. We completed the SU stage.

In the Initiating a Project (IP), PRINCE2 contains:

- Planning Quality
- Planning a Project
- Refining Business Case & Risks
- Setting up Project Controls
- Setting Project Files
- Assembling a PID

In this stage, we planned quality thoroughly, involving all relevant parties, e.g. the team leader of the Quality Assurance. We documented and published the Quality Plan, which defined Quality Expectations, Acceptance Criteria, Quality Responsibilities, Standard, Control and Audit Processes and Tools. We revisited the project plan, and published a more detailed Project Plan in MS project. As regards the Planning Process in PRINCE2, we used almost all the elements. We carried out planning and re-planning throughout the project. We designed the plan, defined and analysed the end product, identified activities and dependencies, estimating and scheduling activities. We refined the Business Case and set up Risks and Issues log. The Planning Process develops, while the project unfolds. The plan itself was circulated and discussed at weekly project progress meetings.

Once underway, a big project in the PRINCE2 environment often goes through a number of stages which are managed via three main processes –

Controlling a Stage (CS) and Managing Stage Boundaries (SB) – i.e. at the end of one stage and start of another; in addition, Managing Product Delivery (MP) focuses on different products produced within each stage. However, in this project, once the feasibility study was signed off, there was only one main stage and thus the SB process became unnecessary; and the MP process was similarly not required as the main deliverable was the new piece of middleware - and resources, milestones and dependencies were planned and managed via the Microsoft Project plan. Throughout the project, the Project Board met weekly or fortnightly and undertook a range of management tasks contained in the Directing a Project (DP) process. Elements of the Closing a Project (CP) process will also be used in July 2008 when the project will be completed.

5. Concluding Remarks: Checklist For PRINCE2 For Small Projects

Both SKF Aeroengine UK and Allpay.net illustrate how SMEs can use elements of the PRINCE2 methodology to effectively control and manage their projects. A summary check-list for those wishing to attempt this for IS projects in SMEs might be:

- Focus on the selective use of the main processes – let the components and techniques be driven by need
- Build a platform for the project around the SU, IP and DP processes, which set up the Project Board and define responsibilities. Look to combine the Project Brief, Project Approach and Project Initiation Documents into one consolidated brief. But do include a Quality Plan and a Business Case.
- Use a Risk Log and probably an Issue Log – but employ the other logs only if necessary.
- Use Microsoft Project as the Planning tool and thus shape the Planning process accordingly. The Product based planning technique may not be required.
- If appropriate, reduce the project down to one main stage. This means you will use the Controlling a Stage (CS) process only once and will not need the Managing Stage Boundaries (SB) process.
- Only use the Managing Product Delivery process if you have to.
- Use Highlight Reports and Exception Reports to flag up key achievements, issues and concerns to the Project Board and other stakeholders.
- Use elements of the Closing a Project (CP) process at project end.

As regards the KTP scheme, it has consistently delivered major business benefits for companies working with local universities across the UK for over 25 years. Indeed, in recent years, the scheme has brought an average bottom-line benefit of over £200K per annum (DTI, 2006) to the companies participating in the scheme. It brings government funding to enable organisations to take advantage of the wide range of expertise available within universities, and these case studies highlight the potential of the scheme to

introduce best practice as well as bottom-line benefit to participating companies.

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