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EDITORS

Western Europe

Professor Barry J. Davies

Professor of Marketing, University of Gloucestershire, UK
bdavies@glos.ac.uk

The Rest of the World

Professor Claudio Vignali

Arnold Ziff Chair in Retailing, Leeds Metropolitan University, UK
c.vignali@leedsmet.ac.uk

Central Europe

Professor Tihomir Vranesevic

The Graduate School of Economics, The University of Zagreb
tvranesevic@efzg.hr

EDITORIAL BOARD

Dr. David J. Bennett

Head of Department, Operations & Information Management Division, Aston Business School, Birmingham, UK
d.j.bennett@aston.ac.uk

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leo.dana@cantebury.ac.nz

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capbox@tin.it

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jpavicic@efzg.hr

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a.reitano@unical.it

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steinqui@msu.edu

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The University of Szczecin Poland
t.wisniewski@univ.szczecin.pl

Dr. Demetris Vrontis

Dean, School of Business Administration, Intercollege, Cyprus
vrontis.d@intercollege.ac.cy

PRODUCTION EDITOR

Gianpaolo Vignali

g.vignali@leedsmet.ac.uk

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IMPLEMENTING ENTERPRISE RESOURCE PLANNING SYSTEMS THROUGH KNOWLEDGE TRANSFER PARTNERSHIPS: TWO CASE STUDIES

MARTIN WYNN

UNIVERSITY OF GLOUCESTERSHIRE BUSINESS SCHOOL

GABRIELA MALDONADO

UNIVERSITY OF GLOUCESTERSHIRE BUSINESS SCHOOL

Abstract

Information systems strategy is becoming an increasingly important component of overall business strategy in both large corporations and small to medium sized enterprises (SMEs). The need for readily available and consistent management information, drawn from integrated systems based on sound and upgradeable technologies, has led many senior company managers to review the business case for root and branch systems replacement. Enterprise Resource Planning (ERP) software packages offer companies the opportunity to achieve these benefits, and also act as a catalyst for wide ranging process improvement across an organisation, as new software systems and associated procedures are introduced.

The track record to date, however, has been mixed, with many ERP projects exceeding original cost and time estimates, with delayed or diluted benefits delivery. This is not altogether surprising when one considers the complexity of such projects – they introduce new software and new ways of working that require training in both the technology and related procedures, and this affects nearly all computer users across the company in different ways. As a result, considerable interest has focussed on the critical issues that need to be addressed to ensure success in ERP projects.

This article examines two ERP projects that have taken place in recent years at Brecon Pharmaceuticals and at Dowty Propellers. Both projects can be viewed as successful, having completed within specified timescales and project

budgets. The article examines the key dimensions of project delivery and then highlights some of the critical management issues that underpinned project success.

Key words

Information systems, enterprise resource planning, ERP, IS strategy, critical success factors, knowledge transfer partnerships

Introduction

Jeffrey and Morrison (2000) recently concluded that 'you don't have to go far to bump into lots of evidence that shows how ERP software has not delivered on the promises of vendors'. It is thus of interest to review two recently completed ERP projects and to distil what lessons can be learned from these case studies. Both these projects have been implemented through the Knowledge Transfer Partnership (KTP) scheme, which provides Department of Trade and Industry (DTI) funding to allow project managers employed by the University to work in industry to deliver projects of strategic value and benefit to the company partner. The two companies both had circa 200 staff at the start of the projects which each ran for two years in the period 2003 - 2005 (Brecon Pharmaceuticals Ltd - BPL) and 2004-2006 (Dowty Propellers Repair and Overhaul - DPRO). A significant difference, however, is that DPRO are part of a larger group – Smiths Aerospace, and this had significant impact on the course and nature of the ERP implementation.

What is ERP?

ERP packages came to market in the early 1990s as the spread of the Unix operating system as a de facto standard for mini computers and the increasing dominance of the Intel chipset led to a massive surge in the packaged software market. Building on the earlier Materials Requirements Planning (MRP) packages, Enterprise Resource Planning systems went much further, providing modules for sales order processing, ledgers, payroll and personnel as well as MRP. Through the 1990s the functionality of these packages from major vendors – notably SAP and Oracle – continued to expand, partly through acquisition of competitors' packages which were, over time incorporated into the mainstream ERP offering. As Koch (1999) has noted, 'ERP attempts to integrate all departments and functions across a company onto a single computer system that can serve all those departments' particular needs'.

The increased take-up of ERP software, particularly by large companies operating globally, coincided with the spread of business process re-engineering (BPR) as a management concept employed by many companies to improve efficiencies and reduce overheads. The two became closely linked as BPR projects were frequently combined with the introduction of integrated ERP solutions. As Turban et al (2002) have remarked, 'ERP forces discipline and organisation around business processes, making the alignment of IT and business goals more likely'.

In the 21st century, ERP projects are no longer the domain of large companies alone, nor are ERP products limited to the few major global software players. Many of the smaller software suppliers now offer a fuller range of functionality, and integrated software systems are now on the business agenda of many SMEs. This is true of both the case studies that follow, as both BPL and DPRO invested in new ERP software as part of an integrated strategy to improve efficiencies and underpin significant business growth.

The knowledge transfer partnership (KTP) scheme

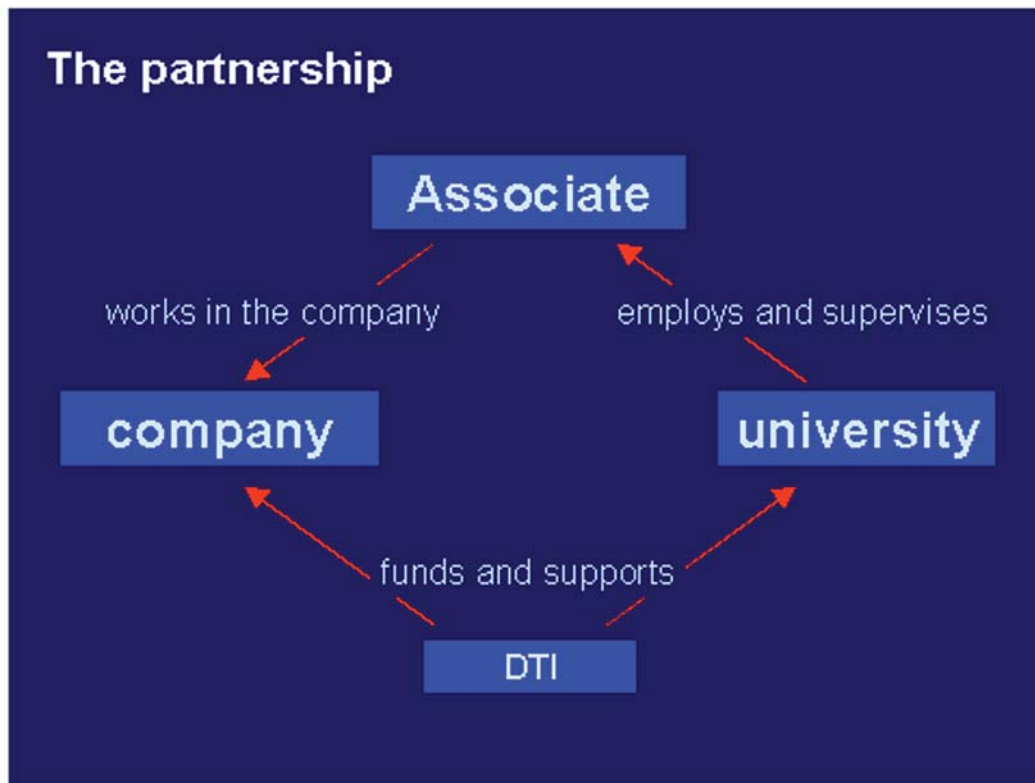
The KTP scheme has been described as 'the best kept secret in higher education', and yet it is now delivering major business benefits for companies working with local universities across the UK. The scheme brings government funding to support a project set up between a company and the university. The project is usually aimed at improving the bottom-line profitability of the company through a strategic initiative linked to delivery of the company's business plan. The scheme can be viewed as a four-way partnership between university, the company, the graduate (or 'Associate' as they are termed), and the DTI, who provide up to 60% of project costs (Figure 1).

A good-quality graduate, often with several years industrial experience, is recruited by the university but works in the company on a specific project which is central to the future growth of the company. 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. Training and equipment are provided, and companies pay 40% to 60% of the project cost, depending on company size. The total value of the scheme to the company is £80k over the two years.

The University of Gloucestershire Business School is a major centre of expertise in management and information technology in the south west of England and is home to over 90 staff and 2,800 students, 600 of which are on postgraduate programmes. Based at the Park campus in Cheltenham, the Business School has spearheaded the development of knowledge transfer activities with local businesses over the past four years. Central to this success has been the approval of 35 KTP projects during this period. The following account examines two of these as case studies, which focus on the implementation of company wide information systems and which highlight the value of the scheme in speeding the delivery of business benefits and improving corporate profitability.

Figure 1. The four-way partnership that underpins KTP projects

Figure 1. The four-way partnership that underpins KTP projects



Case study one: Brecon Pharmaceuticals Ltd

Background

Brecon Pharmaceuticals Ltd (BPL) provides 'outsourced' services to the pharmaceuticals and healthcare industries, principally the packaging of manufactured drugs and of new drugs undergoing clinical trials. BPL's reputation is founded upon a high quality, flexible service. BPL has adopted the vision statement 'growth through excellence' where 'excellence' is defined as 'the customers' confidence in the company's ability to deliver according to their requirements'. The market for outsourcing in the UK pharmaceuticals industry is currently £50m per annum and is expanding by at least 5% per annum. BPL has a 10% share - its main competitors are the other UK outsourced packaging providers, including PCI/Unipack (£20m turnover) and Penn Pharmaceuticals Ltd (£14m turnover). BPL is in the middle of an aggressive business plan to grow turnover from £4m in year

ending 2001 to £22m in 2007, increasing pre-tax profits from £0.5m to £4.4million over this period. With substantial investment in new packaging facilities and successful contracts now agreed with international drug companies (e.g. Eli Lilly), BPL is well placed to pursue its growth ambitions.

The need for integrated, scaleable information systems

The ability to respond rapidly to customer requirements is a key factor in obtaining business. BPL therefore holds some spare capacity, in terms of machinery and facilities, which can be "switched on" at short notice. Typically, the firm order book is only two to three months long; but it takes approximately six months to recruit staff to the required standard or, where necessary, to order and install new equipment. In order to maintain its competitive advantage, BPL had to optimise the management of its resources, making efficient use of existing facilities and timing the introduction of new equipment and qualified staff to best effect.

As the company grew, it became clear that its information systems needed to be robust and scaleable to support the planned increases in business volumes. In line with this growth, the number of employees increased from approx 180 in 2003 to over 300 in 2006, bringing associated challenges in managing employee data, and the administrative burden of an increasing range of employee benefits. BPL had to replace the mix of manual and non-integrated computerised systems, which were inadequate for an expanding business and could have seriously undermined the planned expansion. A new core system, an ERP package, was purchased as part of the KTP project in 2003. The package - EFACS from Exel Computer Systems plc - was selected because it allowed significant 'tailoring' (via its 'Adapt' programming language) of the basic package to meet company-specific process requirements. These requirements were identified in the early stages of the KTP project.

The ERP implementation, together with the introduction of human resource management and intranet systems, formed the basis of this programme. BPL did not have the in-house skills necessary to introduce change on such a significant scale.

Package selection and implementation

The particular requirements of the pharmaceuticals industry in relation to Good Pharmaceuticals Manufacturing Practice (GPMP), stock traceability, and process validation, require a sound understanding of the business and the roles that each department plays in delivering the service to clients. This understanding was key in ensuring an appropriate package was selected and tailored to BPL's business processes. The Associate took charge of the organisation of training sessions, workshops, and process analysis that formed the basis of the software configuration process. He provided the full-time, on-site focus that the project required, and integrated the team effectively and diplomatically within a very short time frame. This culminated in the selection of the EFACS ERP as the core system for BPL's future information systems requirements. Progress throughout the project ran ahead of schedule, 'go live' being achieved

in month 12 – a full six months ahead of the original KTP plan. This was achieved despite the rigorous demands of validation of a modular ERP package.

During the installation of the core ERP system, the company's view of the importance of the secondary IT projects to the business changed significantly. As business priorities changed, the intranet and human resources/payroll projects were put on hold and efforts were refocused on other key initiatives. Secondary focus was diverted to the upgrading of the existing document management system, and to validation and support problems with existing label production software. These two projects (and the ERP project) are governed by GPMP standards and, as such, are subject to frequent audits by clients. It was thus important that these were given priority. Intranet and human resources/payroll systems are still on the agenda, and it is anticipated that both will be completed by the end of 2007.

Implementation problems

There were a number of difficulties that required particular focus to allow the project to progress. These included:

Sign-off of EFACS validation

The EFACS implementation was delayed with issues surrounding software validation of the system. Due to lack of experience of implementing software within the company, new procedures had to be developed, tested and approved before the application could be signed off as fit for use. The issue of validation was further complicated by the need to comply with pharmaceutical regulations dictated by the EU Guidance on Manufacture.

Network problems

When the application was finally migrated from a test environment to the 'live' environment, it was found that several of the client applications could not gain access to the server. This was because the client PCs had been set to operate on a closed network, and these settings had been hard coded in the registry files of particular client PCs. This issue further delayed the validation of

the application, as the cause of the problem was not one that had been experienced in the past by Exel consultants.

Software bugs in the EFACS ERP

A number of bugs were found in the ERP system, which required either code changes or updates to be received from the supplier. Having pursued the occurrence of these bugs, the supplier responded that constant changes were being made to enhance the application as new versions of the application were released. Despite efforts to release a bug free application, some bugs were missed.

Change of priorities for second-tier projects

A major difficulty occurred as the priority of second tier projects changed. It was no longer possible to achieve the KTP Associate's remit for implementing 3 major software implementations. Instead, the Associate was able to deliver another smaller business critical project relating to document management and taking on more responsibility relating to the management of IT activities. For the Associate, this provided a new learning curve relating to staff management outside a project team and greater understanding of the company IT infrastructure. The second tier projects continue to be a part of Brecon's objectives and are now to be progressed forward.

Systems benefits

There were nevertheless some very significant project benefits. In the course of installing the EFACS ERP system, the company learned a great deal about the benefits that IT can bring to all parts of the business, and about the amount of resource needed to achieve a successful installation. BPL also reviewed existing processes and, in many cases, was able to modify or refine them in order to maximise the benefits from major systems change.

The ERP and document management systems have improved the company's ability to manage the increasing variety of client orders. BPL now routinely processes over 60 works orders every month. Each works order needs a significant amount of supporting documentation, and materials, machines and staff need to be available at the right time, in the right configuration, in order

to maximise outputs and efficiency. This level of activity could not have been sustained without the new IT capability. Staff awareness of the capabilities of IT has been raised significantly, and staff IT literacy has increased as a result. IT-based solutions are increasingly sought when problem solving.

The company's capacity to handle an increasing variety of client orders has increased significantly. Their ability to plan forward is also much improved, allowing important investment decisions to be made with the best possible supporting information. It is important, as a service provider, that the company does not make delivery promises that cannot be achieved, because this undermines the client's confidence in Brecon. Thus planning abilities are extremely important and none of the company's competitors has the level of sophistication for capacity planning brought in with the new ERP system. Specific quantifiable benefits included headcount savings in production, QA, warehousing and finance delivering £80,000 saving per annum (4 staff). The increase in cubicle utilisation brought about by improved scheduling and production planning was quantified as a hard benefit of £640K per annum.

Case study two: Dowty Propellers Repair and Overhaul

Background

Dowty Propellers is a part of Smiths Aerospace. This was a division of Smiths Group when the project was undertaken, but is currently in the process of being sold to General Electric. Smiths Group is a global engineering business, listed on the London Stock Exchange, that focuses on high performance applications, building and sustaining market-leading businesses in growth sectors. Smiths Aerospace is a leading global provider of innovative solutions to builders and operators of civil and military aircraft, from transport to fighters, from unmanned aerial vehicles (UAVs) to helicopters and regional jets. Smiths Aerospace currently employs about 11,000 people in around 40 countries. During the 2005 financial year, it reported circa \$2 billion revenues in Europe and North America.

Dowty Propellers is part of the mechanical systems business of Smiths Aerospace, with over 60 years

experience in the production of aircraft propeller assemblies. The company is recognised as the industry leader in the manufacturing of composite blades using resin transfer moulding (RTM) technology. The company currently employs over 200 people split into the two main value streams of the business - the manufacture of original equipment (OE) and the aftermarket business. 70% of the business is related to OE and the remaining 30% is aftermarket. The ERP system (Syteline) had already been installed in Dowty OE, but the remaining functions of the aftermarket business, namely the repair and overhaul business, was functioning under a different ERP system (Fourthshift) and hence the need to integrate it to the rest of the business, via standardisation on one ERP. Combined with this, was a broader initiative at Group level to migrate the company over a period of years to the SAP ERP product.

Dowty Propellers 5 year plan shows a doubling of turnover from 2003 to 2008. Integrating the business systems and streamlining the business processes are essential to support this business plan. Dowty Propellers repair and overhaul (DPRO) is a separate facility where the repair and warranty work and the overhaul of the propeller systems are undertaken. DPRO is part of the aftermarket stream of the main Dowty Propellers business.

Smiths Group ERP strategy

A key objective of Smiths Aerospace overall business strategy is to strengthen their position as a 'Tier 1' global supplier of integrated aircraft systems. Both Smiths Group as a whole and Dowty Propellers have recognised the need to underpin their business strategy with improved systems and business processes. As a result, Smiths Aerospace is undergoing a major restructuring with departmental functions such as human resources, finance and IT being centralised as 'shared services'. SAP been chosen as the ERP solution that will ultimately support all of the Group's main functions and processes, although initially this will be implemented to run the finance function only. The current plan is to migrate all

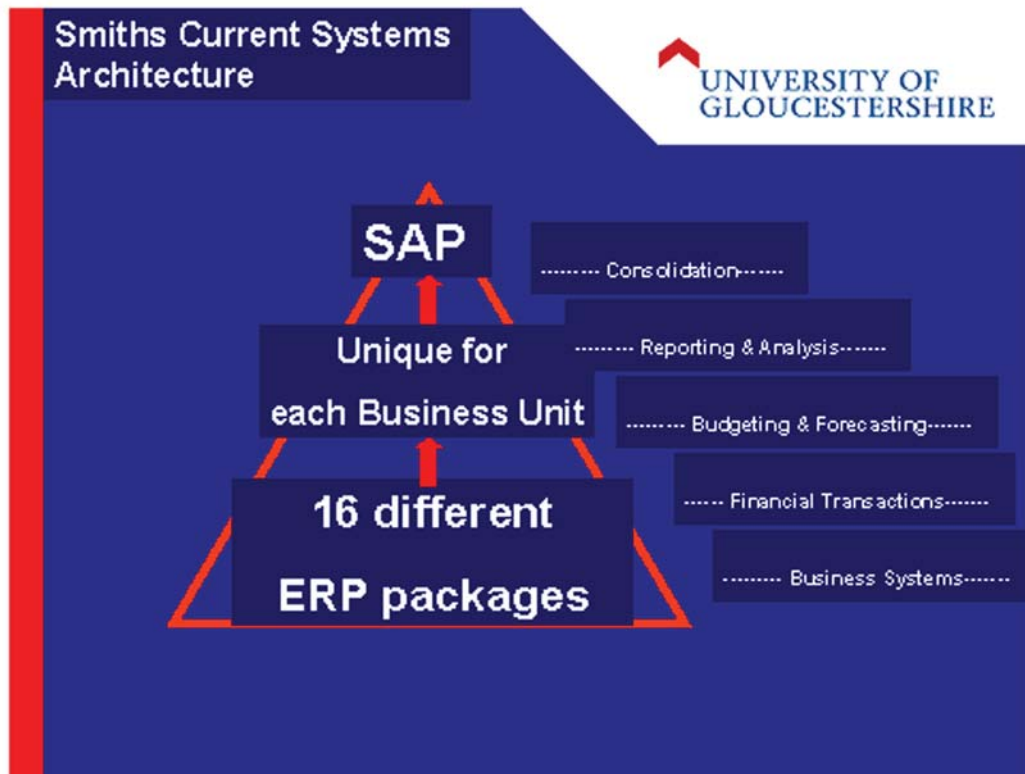
major businesses across the Smiths Aerospace division to the new 'shared services' by the end of 2008, and hence implement the SAP Financials module and integrate it with their existing business systems. This would be the first step in the staged migration to the entire SAP suite (See Figures 2 and 3).

This will undoubtedly be a difficult and lengthy process involving a number of interim solutions and short-term interface developments. As a result of company acquisition over many years, Smiths IT portfolio included no less than 16 different ERP packages. A significant first step in rationalisation was to select just 4 of these 16 ERP packages that could co-exist alongside SAP, and would integrate, for the mid-term, with SAP Financials. These four packages are shown in Figure 3 and include, significantly, the Syteline ERP package.

Syteline was implemented in the Dowty Propellers OE company in 1998, and was reasonably successful in supporting core business processes, albeit with significant package modification, and with a Progress database engine. As DPRO previously resided in a different part of the organisation, it had implemented the Fourthshift ERP. Dowty Propellers had identified the need to re-engineer its business processes into two value streams, aftermarket and OE. A common IT platform was identified as a fundamental building block of the reengineering process.

Dowty Propellers was the second business unit chosen by the Group to roll out SAP Financials. The business had to undergo extensive business process change to allow for a smooth implementation of Syteline and decommissioning of Fourthshift so that the SAP roll out would encompass both business units – Dowty OE and DPRO – running on a common system – Syteline. The problem was compounded by the fact that the version of Fourthshift being run was very near to being 'out of maintenance' and this added more urgency to completion of the project. The OE and aftermarket business process re-engineering and integration, alongside the implementation of a new ERP system at the DPRO business, were at the centre of the KTP project.

Figure 2. Current systems architecture at Smiths Aerospace



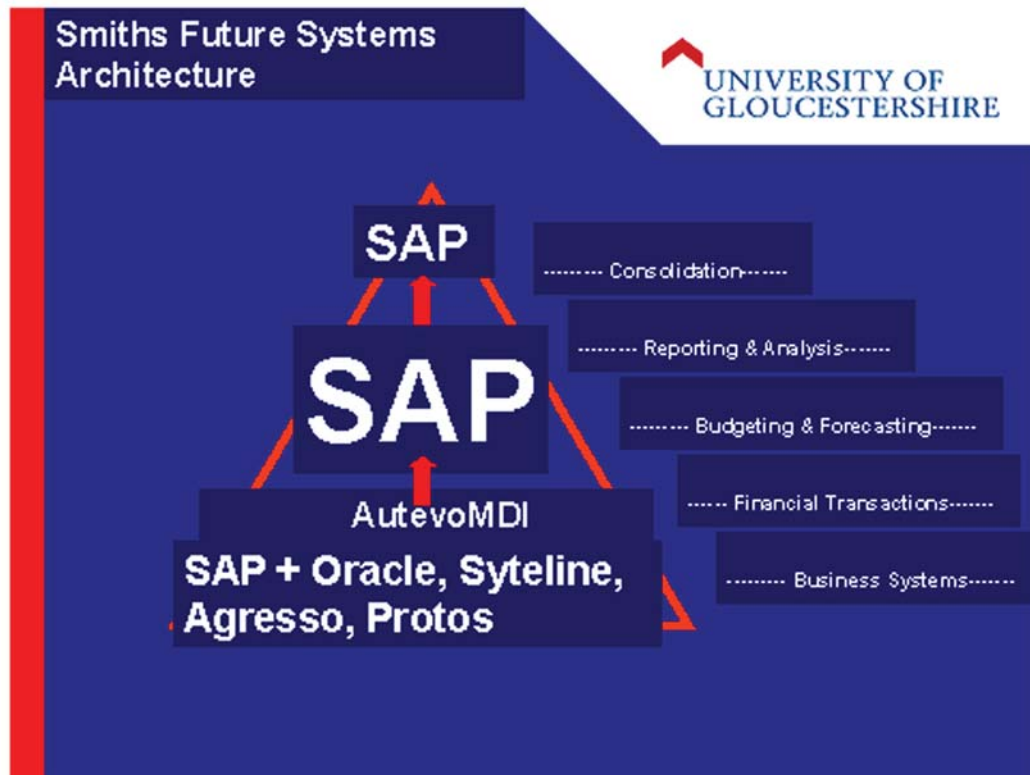
The Implementation of Syteline ERP in DPRO

Business analysis was carried out at an early stage of the KTP project to identify the current status of the IT architecture at DPRO; this was key to determine and plan how best to link the two businesses together within the given short timescales. The business analysis revealed a system that had grown organically to support the needs of the business as it experienced a period of rapid growth. As Fourthshift was unable to fulfil all business information requirements, enterprising computer users had developed a suite of databases and spreadsheets to help them run the business. Whilst this scenario supported the business at the time, management recognised the need to rationalise and simplify the company's information

systems as the business entered the new phase of growth. The improved functionality of Syteline reduced the reliance on end-user databases.

The proliferation of these databases had increased the support demands on the IT department, and the department had also lost much of its Fourthshift expertise. The migration to Syteline therefore made support easier to deliver, and within the core skill set of Smiths Aerospace. It also facilitated change control and standardisation of the IT architecture. A common ERP platform also delivers the ability to implement standard business procedures and controls at both geographical locations. By adopting Syteline, the DPRO business area was brought within scope of the Group strategic information systems solution.

Figure 3. Future systems architecture at Smiths Aerospace



The project reviewed, improved and standardised core processes across the two businesses so that both companies could be supported by one configuration of Syteline. Gap analysis was carried out to identify the business requirements and map these to the functionality offered by the new ERP system. Wherever possible, system changes were kept to the minimum as Syteline had already been mapped to SAP in the OE business. A new IT architecture was devised and peripheral databases were reduced to the bare minimum, leaving just four additional Access databases connected to the main ERP system. The communications between the two sites in Gloucester were also addressed, as the DPRO site was linked to the ERP server hosted at the OE site. Systems piloting, user acceptance testing and training were progressed in accordance with the project plan.

The system was delivered as per plan and in time to allow work to continue integrating Syteline at the OE site with SAP. The new system went live at DPRO in March 2006, and has been operating successfully since then. No major problems

were reported after go-live, only teething issues that are directly related to system configuration and user access rights. This was recognised as a potential issue on the plan as there was not enough time to cater for all the necessary system administration work before the go-live date. Business management agreed to compromise in some areas in order to have the DPRO business integrated into the OE business by the agreed date, and so a post-implementation phase was agreed to address minor issues.

Risk factors

There were a number of difficulties that required particular focus to allow the project to progress. These included:

The impact of short timescales

This project was on the critical path for the rollout of SAP Financials, and hence was constrained by the go-live date of the latter project. This did

not allow enough time to complete a thorough reengineering of business processes, and in addition the scope of the system implementation had to be restricted to the minimum to achieve the project end date.

Due to the tight time frame, there was very little contingency built into the programme and so any issue could have put the overall project at risk. The project go-live date was delayed on two occasions due to external factors, but the resultant small slippage had no significant impact on the SAP project.

Competition for key resources

One major issue that put the project in jeopardy was the competition for resources due to the large number of projects currently going on at Smiths, in which input from the same people was required. The Finance Department centralisation, together with the IT Department centralisation, system changes to support a significant new customer of Smiths Aerospace, and the support of day-to-day business operations, all required certain key resources, which were all also involved on the DPRO systems project. Prioritisation proved to be a great challenge as the business had to constantly revise the allocation of resources and take decisions that allowed all projects to move forward at an acceptable pace.

Systems benefits

Systems integration across the two businesses helped the organisation to align IT with their business strategy. At the same time, the move to Syteline allowed compliance with the Group decision of implementing SAP as the main financials package, without this representing a challenge to the individual businesses, and hence sacrificing profitability, transparency and internal control.

An integrated systems strategy - instead of discrete, project-based activities managed as separate functions in departmental silos - enabled the company to achieve agility and drive revenue and competitive advantage across the Division, enhancing productivity and ultimately optimising business performance. Integrating the two businesses on a unified systems platform, allowed the organisation to reduce its IT complexity and obtain more business value

from their IT investment, by allowing the DPRO business to be included in the SAP roll out.

In summary the main business benefits drawn from this systems and business integration were:

- Processes realigned to deliver business strategy - re-engineering to the aftermarket and OE value streams
- Enhancing customer service by enabling one point of contact within Dowty Propellers
- Reducing the complexity of the existing IT infrastructure and architecture by integrating the two business functions around one ERP system
- Streamlining operations and optimising the use of corporate resources
- Consolidating and standardising data across the businesses, facilitating improved access and reporting
- Supporting Group's strategy requirements by preparing the businesses for an SAP implementation, and also ensuring the flow down of benefits from the SAP project to the Dowty Propellers' business
- Improved IT efficiencies by reducing the number of databases and systems requiring support

Concluding remarks: CSFs for ERP project implementation

The KTP project initiatives outlined above illustrate some critical success factors (CSFs) for the development and implementation of ERP systems. First and foremost, business leadership and commitment are essential. This is probably the single-most important factor in ensuring project success. At both Brecon Pharmaceuticals and Dowty Propellers, the Finance Director took personal leadership of the ERP projects, and chaired the project steering groups (called local management committees in the KTP scheme). This allowed the project to have a direct route into the managing director that was particularly significant in resolving prioritisation and resourcing issues, and coordinating activities in different business areas.

Process re-engineering, although important, should not become a distraction to what is the main task of getting a new system in and implemented. Koch (1999) has humorously remarked that 'the inherent difficulties of implementing something as complex as an ERP is like teaching an elephant to do the hootchy-kootchy'. His point is clear - it is difficult enough to get a large piece of software, including new cross-company systems functionality, implemented, without an over lengthy re-engineering phase. Business process re-engineering can help ERP projects deliver dramatic benefits in terms of efficiency gains and customer service, but there is a danger that the BPR stage sucks in a disproportionate level of resources, delays implementation and stalls the project. At BPL, this was not allowed to happen, and much of the reengineering phase took place after the main software modules were implemented; and at DPRO, the need to go live with Syteline to meet the SAP Financials implementation timescales again meant that process reengineering was curtailed, although its impact was still significant.

Building in contingencies is important in three main areas. The extent of data rationalisation issues is always difficult to estimate until all old systems are uncovered and investigated, and the extent of data duplication and misrepresentation is established. It is wise to get most of these issues sorted out before going live, so that the new system starts with a clean bill of health from the data perspective. This was particularly significant at DPRO where an array of end-use databases and spreadsheets held multiple versions of key data items, notably product, job and customer data. The extent of new systems and skills training is another key activity which is difficult to estimate up-front, as is the need for third party resources (possibly from the software vendors), for installing and configuring the system (avoid specific customisation!) and building interfaces to any point solutions that may remain. Although, as Davydov (2001) notes, 'the challenge is to integrate the whole set of enterprise wide applications into a single integrated information network', ERP systems rarely provide 100% of the functionality required, and some interfacing to old systems or new point solutions is normally required. In these case studies, links were installed or built to a label production system at BPL and to both the SAP Financials module and end-user Access databases at DPRO.

As regards the KTP scheme, its great value is that it provides a dedicated supervised resource to instigate, promote and manage key initiatives to drive a business forward. This is particularly valuable with cross-company systems and process change projects such as ERP implementation. The university supervisors and the DTI consultants provide additional guidance and back up and attend regular steering group meetings. This is particularly valuable with such projects that are multi-faceted and involve not only change in technology, but also change in working practices and sometimes in core business processes. Turban et al (2002) have noted that 'with the advance of enterprise-wide computing comes a new challenge: how to control all major business processes with a single software architecture in real-time'. The KTP scheme has helped both Brecon Pharmaceuticals and Dowty Propellers make considerable progress towards this goal.

References

- Davenport, T., (2000). *Mission critical – realizing the promise of Enterprise Systems*. Harvard Business School Press.
- Davydov, M., (2001). *Corporate portals and e-business integration*. McGraw-Hill.
- Jeffrey, W. and Morrison J., (2000). ERP – one letter at a time. *CIO Magazine*, Sept 1st
- Koch, C., (1999). The ABCs of ERP. *CIO Magazine*, Dec 22nd.
- Turban, E., King, D., Lee, J., Warkentin, M. and Chung, H. M. (2002). *Electronic commerce 2002 – a managerial perspective*. Prentice Hall

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Biographical notes

Martin Wynn, BA, MA, PhD, PGCFHE, is Principal Lecturer in the Department of Computing at the University of Gloucestershire Business School and was academic supervisor for both the case studies discussed in this article. He was formerly IT Director at drinks manufacturer HP Bulmer, now part of Scottish and Newcastle plc.

Gabriela Maldonado, BSc, MSc was also in the Department of Computing at the University of Gloucestershire, and worked as the KTP Associate at Dowty Propellers. Gabriela is now Systems Programme Manager at Man ERF, Swindon.

Both are qualified PRINCE2™ Practitioners.