

DEVELOPING AN IT MASTERPLAN: THE IMPLICATIONS FOR LOCAL SYSTEMS DEVELOPMENT

Robert Moreton, Phil Range and Jane Caddick

School of Computing & IT, University of Wolverhampton, Wolverhampton, WV1 1SB, UK

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Abstract: The paper reviews the issues of developing a policy for local systems development and how this policy impacts the corporate IS masterplan. The key elements of the policy are presented and the benefits that this 'light touch' approach can engender are presented. The process recognises that there needs to be some level of knowledge and management of such systems by the central IS/IT service although functionally and operationally they 'sit outside' formal IS management structures.

1 INTRODUCTION

In 2005 the university of Wolverhampton established a Steering Group to undertake work to create a Masterplan for Business, Learning and Information Systems (BLIS). This was in response to a discussion paper from the Director of IT Services and followed completion of a series of Business process modernisation projects. The discussions involved managers of all the major units in the institution (academic schools and service departments, university executive). This agreement recognised the limitations of the existing approach to the development of processes and systems within the University. There are many processes and systems that need attention and rationalisation and typically these have implications beyond a single department and require a variety of cross-University skills and resources. Many of the issues have a parallel with buildings projects and it was accepted that adopting a similar structure and process to that adopted for the university's major building programme would help the University to understand and prioritise its work on Business, Learning and Information Systems.

The BLIS Steering Group was formed with a balanced membership from the senior management team, plus working members from IT Services and the Project Office.

Through an extensive interviewing process, BLIS working members gathered information about

systems currently in place, work in progress and requirements not currently satisfied by systems. This will continue to be an ongoing process. In particular, whilst the Deans of School on the Steering Group have helped to identify issues with systems within Schools, it has not been possible with the resources available to carry out extensive interviewing with Schools and further effort will be expended to comprehend the 'ever-changing' picture.

Over 100 systems have been identified and documented to date (March 2007). Approximately half of these are unsupported or supported by the owner. One-third are commercial packages with the remaining two-thirds comprising in-house systems using tools such as Microsoft Access, Excel spreadsheets and paper forms. The team found that some critical business functions are well supported by systems and some inadequately supported. Data is frequently duplicated and different versions of the same data may be in existence at any one time.

In producing the Masterplan, it is recognised that creating structures and categories around systems is not an exact science and that there is a degree of fluidity around it. Common sense is applied throughout to bring a degree of sense and structure to a large and complex picture.

As part of the initial work to create a Masterplan for Business, Learning and Information Systems, the University carried out a brief survey of systems in

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use in all schools and departments across the institution. This identified a large number of locally developed or purchased (IT) systems in use. The process recognises that there needed to be some level of knowledge and light-touch management of such systems, which 'sit outside' formal management structures.

The paper reviews the issues of developing a policy for local systems development and how this policy impacts the corporate IS masterplan.

- For purposes of the planning exercise, a local system was defined as having the following features:
- Is largely independent of other systems and processes
- Has no significant data dependencies on other systems
- Is entirely managed and used by a group of staff within one section of the University.

2 PROS AND CONS OF APPROACH

Every organisation or business has a set of activities and associated data that are vital to its existence. For the sake of simplicity we will refer to these as critical business areas. Some are common to most organisations, examples being managing financial transactions and employing staff. Others will be specific to the core business of the organisation. For example, a distribution company will include in its focus activities relating to customers, stock, order processing and deliveries; a charity will have activities relating to communicating with supporters, money-raising and managing implementation programmes. Organisations need to have systems in place to deliver these critical business functions and to manage the data that is created and used.

The systems and requirements identified in the University have been themed to arrive at six of these critical business areas:

- Students and courses
- Academic resources
- External activity
- Physical assets
- Money
- People

These elements broadly reflect different models of the University – its student lifecycle, educational offering, external activity, physical, financial, organisational (human resources). Three are specific to delivering the educational mission of the University and three are concerned with managing the assets of the University to deliver this mission and ensuring that legislative requirements are met.

2.1 Primary Systems

Every core business activity requires systems to support it. There will usually be one or more primary system. Primary systems have the following characteristics:

- Are used to capture and maintain the critical core data that drives each core business activity (see below for further explanation of core data).
- Provide the majority of the functionality to deliver the core business activity.
- Are used and referred to by significant numbers of users.
- Represent major investments for the University to meet its strategic needs and require considerable investment of resource to implement.
- Link to other systems and processes within their own core business area and with other core business areas.
- Link to external systems such as the Universities' Admissions System (UCAS).
- Are used to produce mandatory returns, such as HESA student and staff returns, and meet legislative requirements such as production of accounts, responses to Data Protection requests etc.
- Are the main repositories of core data for internal reporting and management.

Primary systems are the cornerstones of the University's BLIS provision and therefore merit the application of a high degree of control over their selection and implementation. They should be subject to a formal review and possible replacement cycle in the region of 10 years.

2.2 Core Data

The concept of core data source is a very important one and is best illustrated by an example. The primary system for the 'Students and Courses' area is SITS. SITS is the original source of information about a student and the data on SITS is used to

provide mandatory returns such as required by the UK Funding Agency (HEFCE). It must therefore hold complete and accurate data about students. SITS is where you go to find out the status of a student, the course they are enrolled on, their contact details etc. Other systems may use this information but the critical data about a student should not be created or changed anywhere else unless it is guaranteed to be in line with that held on SITS.

2.3 Major Systems

- Primary systems do not meet all the requirements for delivering the University's core business and are complemented by major systems.
- Major systems have one or more of the following features:
 - Have a strong relationship with the core data held within critical business areas, for example a system that uses data originating in one or more primary systems. Timetabling is a case in point as it combines data about students, staff and rooms to build a timetable.
 - Contribute significantly to the delivery of the University's core business. Examples are the Accommodation system, Conferencing (currently a manual system) and Student Enabling Centre database.
 - Have an impact not confined to one section of the University. For example the Access to Learning Funds database in Marketing needs to connect with processes in Registry and Finance.

The important factor is that major systems do not exist in a vacuum and therefore require a level of control to be exercised over them. For example, it would not be sensible to implement a timetabling system that operated in isolation from the existing systems, processes and data in Registry, Schools and Facilities, neither would it be sensible to have multiple timetabling systems.

2.4 Internal Systems

These are systems that are largely independent of other systems and processes, with no significant data dependencies. They are entirely managed within one section of the University. Examples are the Postal Franking system and the IT Services Facilities Loan System.

It is acknowledged, however, that some Internal Systems have been developed as "stop-gaps" where existing systems have not provided, or not been

perceived to provide, some required functionality and there has not been time or resource to develop a corporate solution. An example is the "Broker/Agents" Database in the International Office.

As a result this major review of its systems and their operational and strategic impact, the following advantages and disadvantages of allowing local development of internal systems were identified.

2.4.1 Advantages

- Allows for more efficient or effective operation of institutional units.
- Can 'fill gaps' in corporate systems and provide useful information on future improvements to such systems.

2.4.2 Disadvantages

- Can divert staff from working on 'Corporate' priorities.
- Become local replacements for corporate systems with a consequent danger of conflicting information etc.
- Can become an inhibitor to changes in the IT infrastructure. For example systems written in an old version of Access may need rewriting for a newer version.
- Can often be critically dependent on a member of staff who has written the system, with consequent problems when that person is unavailable or leaves the University.
- The quality of systems is very variable. For example due consideration may not be given to system design or accessibility issues.
- Costs are often unclear. Typically no kind of cost-benefit analysis is undertaken.
- Issues relating to data protection and data security are often overlooked.

3 OPTION APPRAISAL

Given these pros and cons a number of options were evaluated to determine the approach which would be most beneficial to the university.

3.1 Do Not Allow Any Internal Systems

The positives are:

- No unplanned additional work for IT Services
- Concentrate on University priorities
- No contention with corporate systems.

But the negatives are:

- Individual staff become increasingly frustrated by some aspects of corporate systems
- Local systems will happen anyway!

3.2 Allow Only Single User Systems Making Use of Standard University Software

The positives are:

- No unplanned additional work for ITS, but could increase demand for staff development.
- Individual staff can improve their own working practices.

But the negatives are:

- Staff misunderstand the difference between having the skills to use software and being able to design and support systems.
- Danger of duplication of core data.
- Danger that this will become an essential system that has no proper support.

3.3 Allow Locally Developed (or Purchased) Networked Systems

The positives are:

- A group of staff can improve their working practices.

But the negatives are:

- Significantly more complicated to specific and develop than single user system, with increased risk of poor quality.
- May lead to the creation of duplicate data and processes
- There is a high risk that this will become a system on which people depend, but is not properly supported.
- Will require some server space for which there may be a cost. There will be consequent implications for the IT infrastructure and ITS support.

4 RESOURCING ISSUES

If either of the first two options are accepted as the way forward, there is a potential decrease in IT Services (ITS) demand as time will not be used to advise on systems or set up servers etc.

If the third option is preferred, and needs ITS input, this will reduce ITS staff time available to corporate projects unless additional resources can be provided which will need funding. Perhaps the users should be asked to pay for this!

In all but the first option, there is a cost associated with the work. Should there be a formal process by which unit budget holders should approve such work?

There is a further question here about use of resources – if University staff members have the time to do system development work, why can't they be used to accelerate existing priorities? This would need an element of management and staff development from IT Services, but the benefits could outweigh the costs. This was tried in the early stages of Business Process Modernisation work, when a number of staff were trained to 'do BPM' and worked on a number of projects. Many of these staff are still employed within the University, but it is difficult to get their time to work on projects outside their Service or School.

5 A POLICY ON LOCAL SYSTEMS

Given the scale of the Masterplanning process, clearly it is not possible to tackle all the requirements identified at the same time. In identifying and proposing recommendations for projects, the BLIS Steering Group has been mindful of the University's strategic aims. This originally includes reference to the Three Year Plan 2005/06 – 2007/8 and more recently the revised university Strategic Plan for 2006-2012.

The BLIS Masterplan in seeks to prioritise system development and integration across the University, having due regard to affordability and strategic, operational and infrastructure priorities.

Within the context of the masterplan, it was agreed that:

- Local systems may be developed or purchased where the issues of support have been addressed and a clear understanding of the costs (including IT costs) and benefits developed. This should be via a simple business case which would be used by the relevant budget holder to decide if the proposed system should go ahead.

- All such systems should be notified centrally as part of the information which supports the Masterplanning process.
- Systems should be delivered and maintained by local resources.
- Systems should use the current IT infrastructure.
- Systems should place no obligation on IT Services time.

6 BENEFITS OF THIS APPROACH

This 'light touch' approach delivers benefits in a number of areas:

- The more that there is a central awareness of the systems needs of staff within the University, the more opportunity there is to incorporate these needs into corporate solutions which have a broader benefit.
- Saving of time, effort and cost of implementing new systems where suitable systems may already be available or planned.
- Opportunity to benefit from others' knowledge and experience.
- Assists budget management.
- Enables local needs to be met locally.
- Non-bureaucratic and does not prevent or delay progress - helps you to do the things you would have done anyway.

7 CONCLUSION

Through its IS masterplan, the University is seeking to follow a sensible institution-wide approach to systems and processes. The University is a complex organisation with multiple systems, duplicate data, patchy dataflows and inconsistent approaches to return on investment in systems. In the past, systems development and implementation has often been approached locally and in isolation. The masterplanning process has been put in place to start to address this. However, there is much system-related work going on, not all of which is yet within the view of the central steering group.

This paper identifies the issues related to locally developed systems and provides a recommended way forward and identifies the benefits which can be achieved by such a 'light touch' approach.