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The world is all grown digital.... How shall a man persuade management what to do in such times?[1]

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Abstract

Understanding and communicating the cost and value of digital curation activities has now been recognised by a number of projects and initiatives as a very important factor in ensuring the long-term survival of digital assets. A number of projects have developed costing models for digital preservation but there remains a major problem with information assets (digital or otherwise) in that their value is difficult to express in terms that are readily understood by all the stakeholders, especially those who might fund their preservation. This paper introduces a range of issues concerning information value and business models for sustained funding of digital preservation, with particular reference to the *espida* Project recently completed at the University of Glasgow. This project has developed a model of information value that builds on the Balanced Scorecard approach to business performance developed by Kaplan and Norton. This model casts information curation as an investment where current and ongoing expenditure is incurred in order to produce future returns, benefitting a range of stakeholders. In this formulation, value is seen as multi-facetted and, from the point of view of the individual or organisation funding the curation, explicitly related to the funder's strategic goals. It also recognises that benefits may only accrue over the long term and that there is a risk that information that is preserved may fail to deliver any return. Examples discussed in the paper concern the establishment of an institutional repository and the establishment of an e-thesis service for an educational institution. It concludes that a deconstruction of benefits of this kind can be more quickly and fully understood even by stakeholders not necessarily expert in the curation field. This facilitates the production of a well-constructed case that clearly articulates information value and the benefit that accrues from its curation, which in turn allows senior management or other funders to make funding decisions based on understandable information: the basic premise of good practice in management. This is a commonly understood idea and one that the *espida* methodology helps fulfil.

[1] The title is a modification of a quote from: J.R.R. Tolkien, 'The Lord of the Rings', Book III, Chapter 2. The original quotation is: "The world is all grown strange.... How shall a man judge what to do in such times?"

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Introduction

The preservation of digital materials raises a range of challenges. The technological challenges, as they are brought into sharp relief by the rapid changes in hardware and software design, are very obvious and consequently have been the subject of much attention over many years.[2] More recently, a range of broader issues have been studied by projects such as InterPares and ERPANET[3] and are the focus of such initiatives as the Digital Preservation Coalition and the Digital Curation Centre[4]. An area that all these projects and initiatives have identified as of crucial importance is sustained and sustainable funding, for the active management of digital objects. This highlights the consequences of a start-stop episodic approach that places digital resources at risk. There are now in existence a number of cost models for digital preservation, but articulating the value or benefit that preservation activity produces has proven to be much more elusive. The University of Glasgow, with funding from the Joint Information Systems Committee has been tackling this difficult area in its *espida* Project[5] and this paper reports on that work.

A major problem with information assets (digital or not) is that they are what economists call 'intangible assets'. This means that much of their value is not readily expressed in financial terms and since in post-industrial society businesses are increasingly based around information, the problem of valuing intangible assets is much broader than digital preservation, although preservation of such assets is central to the long-term survival of those businesses. Hunter discusses the issues in detail in his instalment of the DCC Digital Curation Manual (Hunter, 2006) and concludes that:

> "We have observed the increasing recognition of the importance of intangible assets and investment in the business world generally. A major problem lies in the lack of a reliable and objective valuation of intangible assets, which gives rise to deficiencies in the information available to shareholders, business analysts and managers taking investment decisions."
>
> "More and better information on both costs (under different technical and organisational regimes) and benefits is needed to provide the incentive for the managers of investment to take robust decisions."

In this work, we have taken an idea first presented by Kaplan and Norton (1992) - the Balanced Scorecard - originally conceived as a performance management tool and repurposed it as the starting point for a multifaceted approach to the articulation of value. Kaplan and Norton aimed to direct the attention of managers to a wider palette of performance outcomes than simply financial ones and we aim to direct management attention to broad sweep of directions from which value in the preservation of information assets can come.[6]

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[2] See for instance 'Preserving Digital Information'. Report of the Task Force on Archiving of Digital Information. published by the Research Libraries Group at: http://www.rlg.org/

[3] See the wide range of material available at: http://www.interpares.org/ and http://www.erpanet.org/

[4] See http://www.dpconline.org/ and http://www.dcc.ac.uk/

[5] Project website at: http://www.gla.ac.uk/espida/

[6] In later work Kaplan and Norton develop their method to encompass organisational strategy (Kaplan and Norton 1996) and later to describe the characteristics of successful and unsuccessful companies (Kaplan and Norton 2001). The *espida* methodology does use the idea of strategic alignment in relation

The Current Situation

'Man' has been quite successful in persuading management that maintaining digital objects into the future is what to do in this digital world; at least, in some specific organisations. Many national organisations around the world have made very successful business cases and secured, in some cases, not insubstantial support for their work in digital stewardship (for example The British Library, the US National Archives and Records Administration, and most recently the National Archives in New Zealand). Why have they been successful? Because a major part of the primary business of these organisations is preservation. Having this clear alignment between a business proposal and the strategic aims of the organisation is a lesson from which those struggling to secure resources for stewardship can learn in order to give their own business case a positive makeover.

The world has all grown digital, and we do indeed create great swathes of information in digital form. The nature of the stewardship of digital materials demands that resources are sustained over time, and in organisations whose primary business is not the preservation, or stewardship, of information objects this has been hard to achieve. Management in these organisations has yet to be fully convinced about what to do in this digital world. Currently, what may be classed as 'digital preservation' actions, tends to be sold on the back of high-level, far-off benefits mixed with compliance and fear of loss and repercussions.[7] Or as Asprey describes; "value propositions that are developed around the notions of 'better managing our information' or based on vague concepts … are too often met with lip-service by executives who are far too busy addressing business problems" (Asprey 2004, p.10). To look at it simply, this quest for sustained resources has not always been successful, and certainly there are examples of this lack of sustained resources in earlier national digitisation programmes.[8] Vast resources within the UK were given to the mass digitisation of many different heritage artefacts and yet, little thought was given to the long-term sustainability of the product created.[9]

to the benefit of information preservation, but not in the same way as Kaplan and Norton.

[7] Over ten years ago, Water and Garrett argued that the "Failure to look for trusted means and methods of digital preservation will certainly exact a stiff, long-term cultural penalty." Don Waters and John Garrett, Preserving Digital Information. Report of the Task Force on Archiving of Digital Information, 1996. More recent examples of benefits are indicated below, but are often still as nebulous, far-off and fear-inducing. A cursory glance at some of the sub-headings for reasons why digital preservation is important, contained within the Digital Preservation Coalition's report *Mind the Gap* backs this: Legal requirements, Accountability, Protecting the long-term view, Protecting investment, Enabling future re-use opportunities, Lost information is lost forever, User expectations in the information age, and Business efficiency, http://www.dpconline.org/docs/reports/uknamindthegap.pdf. Perhaps the most extreme example of fear of loss is: The National Council on Archives, Your Data At Risk, Why you should be worried about preserving electronic records, Sept 2005, http://www.ncaonline.org.uk/materials/yourdataatrisk.pdf.

[8] The New Opportunities Fund digitisation activity in the UK is a case in point.

[9] The GlasgowStory is a good example of a project that is now having great difficulty finding resources to maintain its online presence. http://www.theglasgowstory.com/

There are perhaps three reasons why this is the case for digital preservation:

1) An unconvincing business case has been presented to senior management, who did not understand the importance of the work nor see the benefit to the organisation. [10]
2) A good business case has been presented to senior management, but they did not want to invest in the opportunity as it did not align with their objectives.
3) A good business case has been presented to senior management that was fully aligned with the objectives of the organisation, but the work did not receive a sufficiently high priority.

The work of the *espida* Project is aimed at ensuring that the first does not apply. The second and third offer a valuable lesson for us all: organisational objectives are what drive senior managers' decision-making. If a proposal does not fit into those objectives or hit them strongly enough, it is highly unlikely that it will receive investment (a lesson that has been learned quite successfully by IT professionals).

Some Possible Models of Achieving Sustained Fundings

Sustained funding for the stewardship of information is the ultimate goal for the community. Short-term project funding, so prevalent at the moment, is inadequate and places valuable objects at risk.[11] There are various ways of achieving this goal and although they are discussed as distinct types, there are many possible variants that blur the boundaries between them.

1 Sell 'Digital Preservation' as a Special Case and Seek Special Funding

It seems to be the situation at the moment in the Digital Preservation community, that the stewardship of information objects is often sold as a special case. This is, in all likelihood, part of the process of introducing a new concept to funders. In order to achieve a profile it is put forward as very important and requiring immediate attention. Organisations then see that there may be some need, but do not wish to commit fully, funding therefore on a project basis. This is all part of the cycle of introducing new concepts; in this case the long-term stewardship of information created in the new digital world. [12] This is underlined by Ross Harvey:

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[10] This is hinges on communication and enunciating benefits clearly. Something that has been relatively unsuccessful in the digital preservation world: "Regarding proof that resources expended now will result in savings down the road, several discussions hinged around the term 'savings'. Many thought it was difficult to obtain proof, but that the absence of proof should not be sufficient reason for not preserving." ERPANET, Business Models related to Digital Preservation, Amsterdam, 20-22 September 2004, p.15 http://www.erpanet.org/events/2004/amsterdam/Amsterdam_Report.pdf

[11] On the issue of short-term funding, see: Lavoie and Dempsey (2004) and Henty (2007), on the dangers of loss of digital resources, see Chen (2001).

[12] There is a number of indications of the need for a more business-oriented approach to digital preservation, exemplified. 1) in the ERPANET Report from the Seminar on Business Models. "Apart from the complexity of the issue and the lack of proven experience, varying levels of knowledge and understanding to business models shown by both speakers and participants, and the range of sectors and professions represented by attendees supported the idea that still a lot of work has to be done." (p.5) While this is not proof of special case funding, it does show that there is not experience of making cases in a 'normal' organisational environment. 2) in the report of the DPC/DCC Cost Models Workshop. "Participants felt that determining the value of preservation itself rather than simply identifying costs

> "An emphasis on short-term project funding is not conducive to long-term viability of digital preservation. Securing long-term funding requires that funding agencies and political masters must be convinced of the need for the preservation of digital information." (Harvey, 2005, p. 184).

The purpose of stewardship is to ensure continuity over time. Project funding is not a sustainable model. Attempting to keep it in the special factors funding bracket demands that it remain novel and 'the next exciting thing'; something that becomes harder with every passing round of funding, as other cases emerge which appear to have greater immediacy and novelty. It is not a method therefore that we subscribe to, although we do accept that in some organisations, a succession of special projects might seem like continuous funding.

2 Make a Business Case on Traditional Lines, Vying with Primary and Secondary Business Actions for Funds

Successfully using this option demands a careful deconstruction of what exactly "digital preservation" is and the reasons for undertaking it. A business case will be required, focusing on what the benefit will be to the organisation, with specific reference to its strategic objectives. Using the traditional routes for business cases, stewards can point to areas where they will bring a positive benefit. This method places the management of information objects in competition with both primary business needs and secondary actions that support that business. In the public sector, successfully securing resources usually means that another area of the organisation is receiving less. This fixed-sum game means decision-makers will demand returns from their investment, and that is exactly how they will view resources given to stewardship. Making this type of case involves describing positive and negative outcomes of the proposed work, the likelihood of the outcomes coming to pass, the timescale for these outcomes and offering a measure of the meaning of the outcomes.

3 Shift the Business Model of the Organisation to Fit the Goal of Stewardship Better

Supermarkets are moving from selling cheap, attractive pieces of fruit and vegetable to more expensive and ugly ones. The amazement in the strategic meeting where this was decided can be easily visualised. Why are they shifting their business model, and how can this possibly work? In one word: organic. In order to move to selling organic produce, the supermarkets have had to focus on benefits to the customer that have not been part of their traditional business case. No longer are price and the look of the products the drivers for buying them. Customers are sold on responsible consumerism. In much the same way that FairTrade coffee continued to sell in the early days despite its inferior taste, customers are willing to pay a premium price for knowing that they are doing the 'right thing'. Ethical customers do not always go to the shops just to buy provisions; they also go to make a point.

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will be of paramount importance in securing funding for digital preservation." (p.4)

This is quite a dramatic shift for vendors. However, it has been successful and the organic market is expanding markedly. Is this substantial change in business model one that might be used to obtain funding for digital stewardship? Benefits capable of sustaining such a change would need to be very skilfully demonstrated and there are higher risks that would accompany the endeavour. In many ways, the *espida* methodology is as applicable to this scenario as the traditional business case, but at the moment we see this option as a bigger jump for many stewards and their organisations.

4 Other Models

Of course, there are some exceptions to these models of funding. A further example could be to create an individual vision for digital preservation and self-finance it. This model is somewhat akin to that of the Internet Archive. Set up with initial funds over which the creator had full control, the Internet Archive collected a critical mass of materials on the web. However, it has still had to attract external investment, but undoubtedly this was made easier by the existence and success of the archive, and the flair of its creator. It would, perhaps, be interesting to explore the benefits which most impressed financial contributors to the Internet Archive, such as the Library of Congress.

espida has developed its methodology in line with the second scenario, that of using traditional routes to embed practices within the aims of the organisation, and thus focusing on what is of value to the organisation and working within those parameters. The method seems the most viable solution for the majority of organisations. Of course, there will always be some organisations for which the Internet Archive model may be viable; however, most will need to seek sustained resources through traditional routes.[13]

The espida Methodology

The *espida* Project at the University of Glasgow[14] has been grappling with approaches to secure sustained funding for activities that help to manage digital objects, in order that they remain useful, usable and a key element in meeting strategic goals into the future. The project uses a strong underpinning of ideas from economics to frame 'digital preservation' as an investment opportunity (with the associated risks of little or no return) rather than 'a given' that the organisation must fund, irrespective of outcome. The key ideas are: aligning the benefits of preservation with the strategic goals of the organisation providing the funding; and, opening up ways of allowing the decision-makers to assess the performance of that investment through time.

It is unrealistic to expect senior management to learn the specialised language of the information professional and so, for effective communication, the information professional needs to learn to speak the language of management and produce business cases that speak in terms of business alignment and organisational value, rather than in technical niceties.

This approach takes the performance management focus of Kaplan and Norton's

[13] Further discussion of the importance of business models in sustainability of digital preservation can be found in the work that Michele Cloonan and Shelby Sanett carried out with a range of organisations as part of the InterPares Project (Cloonan & Sanett, 2003) and in the papers that are contained in the collection 'Access in the Future Tense' published by the Council on Library and Information Resources available at: http://www.clir.pub/reports/pub126/pub126.pdf particularly Smith (2004).

[14] http://www.gla.ac.uk/espida/

Balanced Scorecard and directs it towards value.

First, the concept of value must be broken down. Value is something that may be intrinsic to an information object, but which may not have any currency with a funding organisation; it is seen through the eye of the beholder. Discovery of what is, or is not, important to a proposed funding organisation can be made through their organisational objectives or strategic plan. These objectives can be more easily understood if they are viewed from four distinct perspectives:

- the customer perspective,
- the internal business process,
- innovation and development of the organisation, and
- the financial bottom line.

These perspectives are those of a Balanced Score Card (Kaplan & Norton, 1992). For most organisations, the key objectives can be placed readily within these four perspectives. For each of these, value can be expressed through a small number of descriptors derived from the strategic purpose of the organisation providing funding for the preservation. In this respect our approach resembles that of Kaplan and Norton, The information is tabulated in 'Scorecards' (one for each of the four value perspectives), there is a row for each descriptor and the columns capture information about how that value will be expressed, its degree, sign, likelihood and timescale. These columns are not part of the Kaplan and Norton formulation but have been developed by the *espida* project to help information project proposers to articulate the benefit (however indirectly) that their project will bring to those funding it.

The columns in the scorecard are:-

Column	*Meaning*
Outcome	Descriptors derived from the strategic purpose of the organisation providing funding for the preservation.
Outcome Indicator	An indication of how the outcome might manifest itself that will help the evaluator to both interpret the proposed outcome and, if required, allow measurement of the performance of the project.
Category of Outcome	Specifies the relative importance of the outcome (relative to the other outcomes) expressed as: 'primary', 'secondary' or 'additional'.
Likelihood of Outcome	Specifies the likelihood of this outcome happening, expressed as: low (<25%), medium (25-75%), probable (>75%).
Positive/Negative	Specifies whether the proposed outcome is a positive or negative one.
Timescale	Specifies at what point the outcomes might be expected to come to fruition (expressed as: short-term, mid-term or long-term).
Longevity	Specifies how long the outcome might continue to provide benefit, there are no specific categories proposed for this.

Once these areas of potential benefit are outlined, the proposed outcomes of the

business case are communicated through them.[15]

Figure 1 below shows these perspectives in relation to an information asset, but any sort of object or proposal can be placed in the centre. For example, it could be the creation of a new dedicated stewardship 'team' whose purpose it would be to embed better practices as regards the creation of information objects by the organisation. The purpose of the methodology is to identify areas of benefit that the proposal will bring while looking at the organisation's priorities through four differently coloured pairs of spectacles (the four perspectives). Will this work bring benefit to the external customers of the organisation (perhaps through increased access), will it make the company's processes perform better, can it help the company develop its primary business and expand its knowledge, and will it impact on the finances of the organisation (perhaps bringing revenues, or indeed, costing the organisation more money)? It should be noted that it would be extremely rare for a proposal to impact strongly on all four of the perspectives.

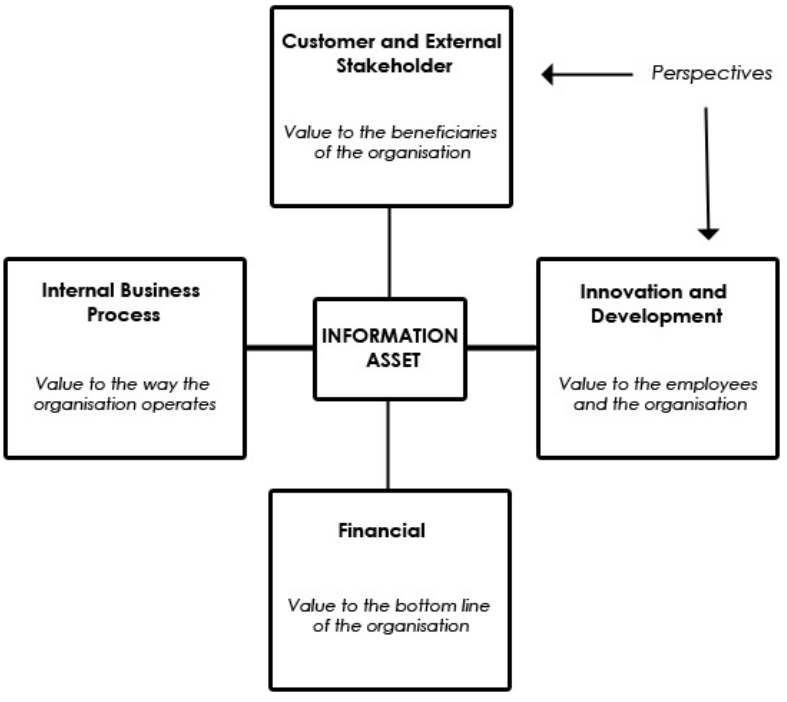

Figure 1 Perspectives of the *espida* Balanced Score Card

A full account of the methodology outlined in this section is to be found in the *espida* Handbook (Currall & McKinney, 2007).

The espida Model and Effective Stewardship

There are many key challenges in the stewardship of information, but for the most part these are not the actions that should be sold to the decision-makers. The resulting benefits from the stewardship must be marketed. That is, what is it that the action of stewardship is going to achieve? Benefits of digital preservation have always been offered, but mostly in vague and unrefined terms. A quick survey of websites and literature reveals some that have been suggested:

[15] Examples of Scorecards can be found in the *espida* Handbook (Currall & McKinney, 2007) at: http://www.gla.ac.uk/espida/model_download.shtml.

- the 'public good' (for future citizens)
- compliance with legislation
- the existence of a 'record' (be that of culture, decisions, or organisations)
- access to information for all
- the continuing existence of national intellectual output
- the assurance of long-term business continuity
- the protection and exploitation of institutional investments
- the sharing of innovation and information
- the aiding of decision making
- the risks and costs of not retaining digital assets[16]

While these are indeed promising some sort of 'benefit', they seem to point to more questions than answers. How would the actions aid in decision making for example? To what degree would the intellectual output of a nation suffer if the investment were not made? How much would the company be fined if found to be non-compliant, and would this be less than the cost of the actions required to be taken? Can the benefits associated with the existence of 'a record' be extrapolated any further?

These listed benefits are wide-ranging and at too high a level to be of great use in a business case; many of them have been created from the perspective of the steward with little regard for practical application and definite realisation. In addition, they lean heavily on the benefits for a 'silent' stakeholder. This stakeholder is a future user, someone much further down the timeline. Mostly, they are envisaged as historians, researching our period; the argument being that if no action is taken, a large hole will be left where this era's footprint should be. It is our contention that these stakeholders often hold little sway in a business case. While certain organisations do have within their strategic aims the retention of materials for the public good into the long-term future, many others do not, and will not see any benefit to be gained from investing that far into the future. This issue is approached by Lavoie (2004) in his discussion of incentives to preserve and suggests that where an 'incentive gap' exists, that is, where the benefits are not seen to justify the investment required, that artificial incentives should be offered (government subsidy) or legislation created to ensure the preservation of the materials. This information gap can very definitely be created by the invocation of the future stakeholder. It is clear though, that if such artificial forms of incentive are necessary, hard (and in all probability, fractious) discussion will arise about the true value of the materials in question. What can the true value be if it requires a contrivance to ensure preservation?

The concept of "public good", listed above is an interesting one and becoming more pertinent to a wide range of public bodies. Both the Culture Secretary and the Minister for Culture in the United Kingdom have clearly stated that there is no "convincing language" for the articulation of the value of culture and its place in society.[17] It is one of the great intangible benefits upon which governments rise and

[16] For example, the DPC Survey furnishes us with a number of benefits: http://www.dpconline.org/docs/reports/dpcsurvey.pdf Also see the presentation by Andrew Wilson on the Arts and Humanties Data Service website at: http://ahds.ac.uk/preservation/why-preserve-assets-nov-2005.rtf

[17] Jowell, Tessa. (2004). *Government and the Value of Culture*. Lammy, D. (2006). Speech by Minister for Culture, David Lammy at the launch of Demos 'Cultural Value and the Crisis of Legitimacy'

fall, but is only now beginning to be assessed in a serious and more systematic fashion. In many ways this is symptomatic of the movement of the public sector towards the private sector's way of doing business.

Corporate governance, accountability and the consideration of the public as "shareholders" are becoming more of a feature. The often intangible nature of the work of the public sector makes it very hard to demonstrate public good deriving from investment in services. This issue of demonstration is much akin to that faced when valuing the preservation of digital resources. However, the long-term, future (or "silent") stakeholder discussed above representing some type of "public good" should not be confused with the short to mid-term benefits that the public sector understands it to be. In this public sector sphere, the *espida* methodology could have a useful role, but we would argue that it cannot be used to make value claims that are simply too nebulous to be realised and at such a removed period as to be effectively non-existent. Future stakeholders cannot therefore be included in an assessment of value, unless they are specifically mentioned in the organisation's strategic aims.[18]

The *espida* work proposes a different approach. Stewardship of information objects must serve a purpose, and it is logical that it should be that of the funding organisation. Simply then, when defining the benefits of stewardship, they should be expressed through the objectives of the funding organisation. This does not however imply that value itself is only financial, it is simply a recognition that organisations, like individuals, will pay for things that provide them with something that they want. What they want is frequently an intangible benefit.[19] We have developed a methodology that helps stewards of information objects align their business case with their organisation through a close examination of what stewardship brings to the party.

Examples of the Use of the espida Methodology

During the course of the project a number of case studies were undertaken to explore the effectiveness of the methodology and better communicate how it could be used. For the purposes of this paper, two of the studies will provide some depth to the above discussion. Example 1 is the business case to build an institutional repository within a Higher Education institution, and the second focuses on an optional appraisal for the management of electronic theses, where there are three different ways to implement a service and thus emphasises the usefulness of the methodology in the comparison of different courses of action.[20]

publication. Both contribute to a more comprehensive treatment, Capturing the Public Value of Heritage. (2006).The Proceedings of the London Conference, London.

[18] While exploring the idea of investing in intangible assets, Hunter suggests that "…for some types of information, the time lag between investment and the accrual of benefits may be lengthy, tending to make the investment proposition less attractive for funders." (2006, p. 10).

[19] In our personal lives, much of our income is spent on intangible benefits, such as entertainment, holidays, eating out, which do not provide financial benefit, but we spend the money because of the benefit that we derive from such expenditure.

[20] These studies are explored more fully in the '*espida* Handbook' (2007). "Expressing project costs and benefits in a systematic way for investment in information and IT".

Both cases are made within the context of a University, therefore the strategic aims of a University were used. The four perspectives are composed of the following elements:

Customer and external stakeholder perspective.

- Enrichment of local, national and international culture, the community, and a reflection of these within the University
- Recognition of, and confidence in the University's brand and a reputation as being among the best Universities in the world
- Strong customer satisfaction and high quality service delivery (students, parents, public, etc.)
- Academic attractiveness to potential students, staff, academic partners and funding agencies
- Commercial attractiveness to potential sponsors and collaborators

Internal business process perspective.

- Information accessibility and open communications with staff and customers
- Operational efficiency and productivity (within existing resources)
- Effectiveness of decision making and responsiveness of leadership
- Process potential and organisational flexibility to take advantage of future change
- Compliance with legislation and regulation

Innovation and development perspective.

- Intellectual capital of staff and the organisation through internal generation or external procurement
- Motivation, fulfilment and satisfaction of staff and development of a climate of continuous improvement
- Quality and potential of research activities and outputs
- Quality and potential of teaching
- Responsiveness to change (flexibility and ability to manage change)

Financial perspective.

Income Generation through:

- selling assets
- licensing/rights to assets
- teaching and research
- contracts, grants, fees, donations

Cost Saving in relation to:

- labour, time
- space
- direct expenditure

In each of these examples value is derived from different features of the service being valued. If broken down by perspective, the outcomes (both positive and negative) can be communicated clearly.

Example 1: An institutional repository.

The majority of the benefit from the establishment of an Institutional Repository (IR) was judged to derive from the **Customer and External Stakeholder** and **Innovation and Development** perspectives.

Within the **Customer and External Stakeholder** perspective, a prominent feature is the access it offers the public. Open access itself is not a benefit nor a positive outcome, but rather a means of achieving benefits, so this perspective focuses heavily on benefits that can be derived from this access. The two positive outcomes are the opportunity for cultural engagement of the community and an increase in the reputation of the institution through higher exposure of academic papers. To define these outcomes fully, the indicators must be carefully framed. While metrics such as the number of external users of the repository indicate usage of the repository, they do not assess engagement with the work, nor any increase in reputation. For the enrichment of culture and community two outcome indicators are suggested: non-academic usage of the repository numbering 1,000 per month, with an additional increase in correspondence from members of the public.

For an increase in recognition of the University brand and reputation, a good indicator would be a growth in the use of University staff as experts by the media at the same time as an increase in invitations to speak at conferences. While a definite figure of increase could possibly be given for both of these indicators, it would be difficult to gauge such a figure and find a strong precedent on which to base it. It is likely that any increase would be welcomed by senior management and so it is left as 'an increase'. Growth would be benchmarked against a snapshot taken before implementation of the repository.

Such indiscriminate access to academic outputs does bring the possibility of negative outcomes. There is a likelihood that material of a sensitive nature could be made available, thus impacting on the reputation of the University and confidence in its brand. While a well-managed repository would have processes in place to ensure sensitive materials would not be released, indicating the negative outcome allows any fears that the decision-makers may have to be allayed. Indicators for this are defined as an increase in complaints to the University referencing pieces of academic output.

Within the **Innovation and Development** perspective, it was argued that the motivation and satisfaction of staff would change for the better with the implementation of the IR; at least, there would be a high probability of such a change. Monthly figures of the number of downloads of their work will give insight to staff about usage of their work and hopefully increase their satisfaction – this type of feedback is practically impossible in journals. The converse of this is the time that academics may have to spend depositing their materials, which will act as a demotivator.

Indicators of these outcomes are an increase in downloads of papers (which are the figures that the staff will receive) supplemented by the negative results of annual surveys about the repository. It is thought that the IR will encourage trans-disciplinary working within the University, as well as collaboration across institutional boundaries. Access to the IR will allow for both deliberate and serendipitous discovery of opportunities for this collaboration. This is made more likely as metadata from the IR

will be harvested by search engines such as Google. The increase of intellectual capital through new collaborations can be indicated by keeping figures on multi-departmental papers and multi-institution papers (part of the metadata captured at deposit) benchmarked against current collaboration figures.

Within the **Internal Business Process** and **Financial** perspectives there are no outcomes for any of the options. It is important to understand that using the *espida* Methodology is a not a box-filling exercise where every box must have something in it. In the majority of proposals there will be a significant number of empty boxes, because by its very nature, value comes from different facets of the item being valued. An honest appraisal of the benefits will be met with greater respect and focus by management than one that aims to shoehorn benefits into every element and perspective.

Example 2: Alternatives for the delivery of an eTheses service.

The eTheses study emphasises that the methodology can be used to compare the merits and risks of different options; in this case, there are in fact three different options.

1. The first option is to do nothing and accept only bound paper versions of the theses and use inter-library loans to access theses from other institutions.
2. The second option is for the University is to switch to electronic deposit of theses rather than paper deposit.
3. The third option is to sign up to a centralised, online service being developed by the EThOS (Electronic Theses Online Service) Project.[21]

Within the **Internal Business Process** perspective there are no outcomes for any of the options and there is relatively little difference noticeable between the benefit derived from options 2 and 3 in either the Customer and External Stakeholder or Innovation and Development perspectives although there is considerable benefit in both perspectives for both options.

As regards the **Financial** perspective for the option appraisal, the principal difference between the two options is evident. Option 3 (signing up to the full EThOS service) offers the chance for all theses held by the University to be digitised. The potential space savings could therefore be large. In the scenario for the case study we do not envisage the University digitising any theses; rather the repository will be populated with theses submitted after its creation. The space saved by option 2 (the Institution using its own Repository for eTheses deposit) will therefore not be as great. Option 3 also offers the potential of cutting the time that staff spend on creating and processing Inter-Library Loans for theses in other institutions.

Important lessons can be pulled from the studies. As discussed above, filling in all boxes will in most cases be counter-productive as it will fail to emphasise the principal benefits of the proposal. In addition, it is vital to communicate all potential negative benefits. The latter might seem a very ill-judged strategy to many. However, negative outcomes demonstrate to decision-makers that the proposers have taken account of all

[21] This case study was developed in conjunction with the JISC-funded eThOS Project. http://www.ethos.ac.uk/

the possible outcomes the proposed work may have, and so generate dialogue on how it may be possible to mitigate against them. Objective description of possible negative outcomes enables proposers to convey the real likelihood and degree of outcome (which may be far less than the decision-makers imagine), rather than letting fear of the unknown sway decision-makers.[22]

Conclusion

The methodology offers a clear tool for communication between decision-makers and stewards of digital information. It is based on methods that senior managers understand (Balanced Score Card), and is founded upon the very objectives that they are striving to achieve. If the decision-makers are to be persuaded about 'what to do in such times', these categories must be filled out accurately and honestly. Little is to be gained from merely listing the positive and primary outcomes that will, like as not, shortly come to pass. Not only will decision-makers be suspicious of such claims, adopting such a strategy will suggest to them that the project would have little, if any, chance of success, since the proposers will appear not to have understood the likelihood of negative outcomes occurring and therefore the realistic balance of risk the work envisaged actually represents. A well-constructed case would allow senior management to make a decision based on all available information: the basic premise of good practice in management. This is a commonly understood idea and one that the methodology helps fulfil.

The advantages of the *espida* methodology are that:

- It explores benefit through four distinct perspectives, covering all aspects of the work's potential impact.
- It understands that value is not universal and can communicate all levels of impact, be they very small with a high probability, or unlikely to happen but with a great impact.
- It is a tool that the information steward(s) can use to define and refine their proposal before offering it to senior management.
- It breaks down high-level, often intangible, benefits into a framework that senior management understands.
- It can be used as a tool for carrying out option appraisal.
- It allows the proposers, the stewards of the digital information, the opportunity to detail the indicators of success, rather than working to top-down metrics.

Our experience has shown that proposals involving complex technologies and concepts, once deconstructed into constituent benefits, can be more quickly and fully understood by those that are not expert in the specific field. This means that the communication process is not one-sided and can extend beyond the point of proposal to measure the performance of the work and to develop the activity as it progresses: something that can only benefit the success of managing information objects.

[22] A full account of these case studies, including the detailed scorecards, can be found in the *espida* Handbook (Currall & McKinney, 2007).

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