A new research journal involves an element of risk. Will it meet a practical need? Will it play a unique role in an often-crowded area? Has it addressed an audience? And, most importantly, will researchers contribute their work to attract the audience and make it a success?

The fields of web portals and Service Oriented Architecture generally today face two new challenges: First is the impact of the international economic situation on enterprise appetite for new technology investment. This comes alongside a second challenge, a debate on whether SOA will meet its promise or has been oversold by its advocates. Contributions in this and our previous two issues have already begun to address these questions.

In this issue, the Editorial Preface discusses the value of portals with regards to current technologies, communication pipelines and web technologies. It post the question measuring business success as tracking ROI (Return On Investment) and how the portals fits into this measure.

The paper by Ed Young and Michael Jessopp explores the issue of average revenue per user (ARPU) in mobile devices as a measure of the revenue generated by Users of a particular business service. It is a term most commonly used by consumer communications and networking businesses. For mobile devices, they try to generate ARPU through network and content services (value-added services) that they make accessible to the User. It seems that the more accessible these services are, the greater the ARPU generated - the harder something is to find, the less likely someone is to use it.

Another research paper by Zafar Sultan and Dr. Kwan deals with the security issues specifically proposed hybrid identity fusion model at decision level for our Simultaneous Threat Detection Systems. The hybrid model is comprised of mathematical and statistical data fusion engines; Dempster Shafer, Extended Dempster and Generalized Evidential Processing (GEP). The Simultaneous Threat Detection Systems improves threat detection rate by 39%. In terms of an efficiency & performance, the comparison of 3 inference engines of the Simultaneous Threat Detection Systems showed that GEP is the better data fusion model as compared to Dempster Shafer and Extended Dempster Shafer. GEP increased precision of threat detection from 56% to 95%.

As in previous issues, we continue introducing additional features:

Looking at Web Services for Remote Portlets and their role in integration using middleware components (ESB). In issue no 5 we have started the discussion about Web Services for Remote Portlets (WSRP) (Using WSRP 2.0 with JSR 168 and 286 Portlets).
In this issue we continue this discussion with the paper by Tony Polgar - WSRP, SOA and UDDI. This paper explores the use of WSRP as means for light-weight SOA integration. Currently, there is a demand for integration using web services in a portal and it is expected that other business partners would connect to these services in the Service Oriented Architecture (SOA) fashion. Such web services have to be published in the repository accessible to all partners such as UDDI. Web Services for Remote Portlets (WSRP) attempt to provide solution for implementation of lightweight SOA. UDDI extension for WSRP enables the discovery and access to user facing web services provided by business partners while eliminating the need to design local user facing portlets. Most importantly, the remote portlets can be updated by the web service providers from their own servers. Remote portlet Consumers are not required to make any changes in their portals to accommodate updated remote portlets. This approach results in easier team development, upgrades, administration, low cost development and usage of shared resources. Furthermore, with the growing interest in SOA, WSRP should cooperate with service bus (ESB).

**BUSINESS CASE STUDIES AND POSITION PAPERS.**

The 3rd issue carried the second of a series of case studies based on the experience of business practitioners in the front line of implementing Service Oriented Architecture and web portals in medium and large enterprises using a range of tools and approaches. In 4th issue we introduced the first of the series of position papers focusing on the issue of creating of successful portals by Joe Lamantia, MediaCatalyst B.V., Netherlands. In this issue with continue with Joe Lamantia contribution discussing portal vision. Portals gather and present content from a wide variety of sources, making the assembled items and streams more valuable for users by reducing the costs of content discovery and acquisition. By placing diverse content into close proximity, specialized forms of portals such as the dashboard support knowledge workers in creative and interpretive activities including synthesis, strategy formulation, decision making, collaboration, knowledge production, and multi-dimensional analysis. The question posed in the paper relates to the aggregation and user experience with the aggregated content. In this issue, Joe Lamantia discusses the strategies for enhancing the long-term business and user value of portals as the third in a series of articles describing a Portal Design Framework. This article identifies essential Enterprise 2.0 functionality for collaboration and dialog – capabilities that support emerging Social Business practices – included in the Building Blocks Design Framework. This article also discusses portal management and governance best practices.

Dr Adamson’s paper titled “Challenges in researching Portals and the Internet” looks at the portals as a point of convergence for many uses and users. Along with the Internet itself, the portal crosses or combines many traditionally separate areas of research, each with its own perspective or perspectives. Such a combination creates a challenge for researchers: how to combine these various perspectives in examining portal and Internet use. This paper looks at the methodological challenge by combining five perspectives: historical, technical, media, regulatory and business theory.

Alongside this we continue to benefit from research contributions from industry product leaders.

Through these and other innovative approaches we hope to meet our goal of providing a research journal addressing the interests of both academic researchers and industry practitioners. Are we succeeding? We welcome your feedback.

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Measuring business success for a technology may appear simple. Just plan and track ROI, Return on Investment. But a portal is a gateway to information, not a product or application in a traditional sense. Its value comes from the uses that are made of the gateway, rather than the gateway itself. An analogy is the benefit of building a bridge linking two previously separated communities. Before the bridge is built, the builders need some understanding of the traffic they will be supporting: cars, trains, trucks, bicycles, foot traffic, or some combination of these. But the bridge builder doesn’t need to anticipate which truck or person will cross the bridge, just that the net effect will be beneficial. In this editorial I want to examine several steps in the history of portal technology that have each contributed to the challenge of calculating specific business benefit from portals.

The technology of the portal and underlying Internet and their suitability for particular commercial applications are intimately related. From its origins in the 1960s to widespread use in the early 1990s, the Internet achieved several breakthroughs as a communication technology. At no time during this development, however, were commercial considerations primary in determining its design. Commercial investors developed an interest in the Internet around 1995. By then, the absence of commercial requirements had made itself felt in the Internet’s central architecture.

Commercial use of the portal and Internet typically include companies providing products and services to enterprises, companies engaged in business using the Internet as a marketing, sales, delivery or payment channel, and companies using Internet functionality such as e-mail, portals and Web 2.0. These commercial uses require varying functionality, often including support for transactional processes for the ordering and payment of goods. These and other functions may require features such as security, the ability to charge and pay for services, and to identify a user. The absence of these features in the core architecture of the Internet is an outcome of the requirements of the Internet during its development from the 1960s to the early 1990s. The following characteristics of the Internet including a detailed bibliography are provided in Adamson (2004).

Digitisation: At the heart of the portal is ‘digitisation’. A portal facilitates the presentation of user-relevant information from multiple sources. Before looking at any of the specific technical characteristics of a portal, think for a moment about the ability to present text, photos, graphics, sound, video, music, speech and, experimentally, touch and smell through a
single channel. This is possible through digital representation of our analog world. In the digital world, the digits ‘0’ and ‘1’ provide an approximation of the actual continuous shades of green in a leaf or tones in a sound. Ten ‘bits’ of data (0000000000 to 1111111111) will provide approximately one thousand choices. Every additional bit doubles the number of choices. With enough discrete shades of green to choose from, a digital image can present an approximation of reality that is indistinguishable from the original to the human eye. Digitisation is based on mathematical work published by Nyquist in 1928. Commercial application of digital technology was undertaken in the telecommunications field to improve voice traffic over networks from the 1960s. In contrast to previous systems it allows the distribution of perfect (non-degraded) copies of original information over large areas. Digitisation is inherently unfriendly to commerce in one sense, that the moment one customer has any copy of a song or movie, they can share it perfectly. The basis of ‘piracy’ is therefore rooted in the core technology of all data communication.

Pack switching: The Internet’s flexible delivery is based on packet switching. The traditional telephone networks use circuit switching, while the Internet uses packet switching. In the 1960s, the inventor of packet switching, Paul Baran, was attempting to create a voice network with no single point of failure. Baron was led to packet switching by two requirements. First, a network made up of many redundant steps in succession would result in unacceptable decline in quality if undertaken over analog networks, and a digital service was therefore necessary. Second, technical limitations at the time created a synchronisation problem for digital signals which hadn’t existed for analog signals, how to keep everything in time. Baran suggested the approach of temporarily storing small amounts of information, which would later be called ‘packets’. The result of his work was a conceptual breakthrough. Baran showed that a fault tolerant information service can be build by combining unreliable paths. The packet switched, no-single-point-of-failure characteristic of the Internet achieved this. This has proven effective in actual disasters. Following the 11 September 2001 attack in New York, the telephone network was overloaded, while the Internet was able to continue to slowly send messages (CSTB, 2003). This fault tolerance provides effective communication, one that copes with very difficult conditions. However, there is a commercial price to pay: packets following multiple paths to deliver information under difficult conditions don’t lend themselves to a simple billing model. From a commercial point of view packet switching is difficult to price and charge for. So at the heart of the Internet’s technology is a basic commercial problem.

Military-experimental: From 1969, when the first network link in what would become the Internet was established, to 1982, it was a military-experimental research network. Funding was provided from the US defense budget. Its customers were either in the military or working for the military. During this period there was no commercial aspect to its operation. At the time there was no theoretical barrier to creating a commerce-friendly data protocol. From 1974, for example, IBM created the efficient and commercially successful System Network Architecture (SNA) based on a strict hierarchy of host processors, communication controllers and peripheral nodes. But in the absence of commercial motives, the Internet’s researchers followed a simpler and eventually more successful path. One example is the Internet’s standards process. Proprietary standards such as SNA and shared standards such as those of the International Telecommunications Union were restricted in both their creation and availability. The Internet, in contrast, used ‘Requests For Comment’ or RFCs, a novel mixture of standards, comments, history and humor, that were available for anyone to use. So the key 1970s breakthrough that separated the Internet Protocol from its Transmission Control Protocol, vastly simplifying wide area network design, was then and is today
available for anyone to implement. While this assisted in the rapid dissemination of the Internet, it subsequently hindered investment interest. Control of intellectual property such as protocols is a typical commercial precondition for technology investment in order to protect competitive advantage if the investment is successful.

Academic: As the Internet moved out of the military-research environment in the early 1980s, it took on the architecture that defines it today. It was now meeting new requirements, and subject to wider usage and development influences. This was a key development period for the Internet, when it grew from thousands of users to millions. It is at this point in a normal technology implementation cycle that commercial requirements would become locked in through a system of licenses, regulation, bandwidth allocation and myriad other levers of commercial control. Instead the key change was to functionality, adding the Domain Name System so that less-technical users could work with URLs such as ‘www.igi-global.com’ rather than with strings of IP address numbers. None of these new influences placed commercial transactional demands on the network. Much academic and research funding was based on the identification of business benefits but this was not reflected in requirements of the Internet. The benefits identified for Internet connectivity within funding proposals tended to be vaguely defined opportunity loss, the cost of opportunities lost by not being connected. Users then began using the service over existing infrastructure (telephone lines, PCs), with applications that used the ‘end-to-end’ effect. The telephone network doesn’t know or care whether data it carried was a conversation or an e-mail. New services could be introduced without requiring approval of the telecommunications infrastructure provider. The implications of this continue to reverberate through the telecommunications industry, with the debate about ‘net neutrality’. Telecommunications companies continue to fight for their commercial interests, an apparently losing battle for something that isn’t even an issue in a tightly controlled commercial environment such as mobile telephony.

World Wide Web: Creation of the World Wide Web was one such application, and a crucial element in establishing the modern Internet architecture. Tim Berners-Lee led this development at the European physics research centre CERN. While an official project, the web did much more than CERN needed, and was never a central part of the organisation’s theoretical physics research mandate. CERN was later quite happy to pass on responsibility for the World Wide Web. In the original specification for the World Wide Web, the requirements of commerce for ‘copyright enforcement and data security’ were specifically excluded. Berners-Lee describes the Web’s relationship with an early alternative, ‘gopher’. Researchers at the University of Minnesota were working on gopher, a menu-based but functionally comparable programme for finding information on the Internet. Berners-Lee attributes the success of the World Wide Web over gopher to announced plans by that university in 1993 to charge for commercial use. He describes being ‘accosted in the corridors’ at an Internet Engineering Task Force conference by people asking if CERN planned to do the same. In contrast, a CERN director provided a declaration announcing that CERN would allow anybody to use the Web protocol and code free of charge, to create a server or a browser, to give it away or sell it, without any royalty or other constraint. The World Wide Web’s development continued a tradition of military and academic research: the absence of commercial requirements in its architecture.

In summary, a business investment in portals will benefit from their ubiquity, ease of use, standardisation and huge opportunity for diversity. But it will need to recognise that any commercially helpful features such as security, payment for service, protection against copying, and authentication of other parties, are additions to the internet’s core technology,
and may be breached in unexpected ways (such as the simplicity of phishing attacks on banking customers).

This brings us back to the question, how do we measure the value of portals? Traditionally the value of a technology to an enterprise can be measured in many ways. One of these is to establish a Benefits Realisation Management (BRM) framework to track benefits derived, and compare these to the initial project business case expectations. For example, during the business case phase of a project, the owner of the business benefits, who will in all likelihood be providing the project funding, will specify the benefits they expect to receive. At each subsequent project phase the basis of these benefits will be reviewed and their validity confirmed. At the conclusion of the project the benefits owner will take responsibility for tracking benefits through the life of the service or product. This is relatively simple for a discrete product or service. Portal use, however, is anything but simple.

Benefits could come from reduced support costs, increased sales, reduced customer churn, simplified support structures, or many other areas. These can start flowing from the moment users begin accessing the portal, which may be in the first year of a multi-year project. In many cases a portal is the first step towards a Service Oriented Architecture (SOA). SOA investment may depend on reaching critical mass, the point at which the cost of future enhancements becomes low because most of the service building blocks are already in place. I argue that enterprises should apply an opportunistic approach to BRM for portals, to keep a watchful eye out for which of the many possible benefits are achieved early on, and to count those benefits in understanding the success or otherwise of a portal project. The alternative is to remain locked in a rigid approach of attempting to predict how users will benefit beforehand, and then ignore the unanticipated benefits as they occur. Or not to track benefits at all.

This is more than a matter of accounting. As you find your users benefiting in unexpected ways, this will point you to key opportunities for enhancing your portal, which may be missed by a more rigid approach. So practically that means starting your BRM when you start the project. Be nimble and opportunistic in listing the benefits. Because a Portal would achieve many things, customer uptake will determine what the benefit is. Be ready to track it, however it occurs. This isn’t about intangible benefits, additional side effects that help add value to the core commercial or usage benefits. These benefits are tangible, just not predictable.

For readers uncomfortable with this level of uncertainty, the phenomenon I have described also describes the benefits that were achieved by electrification in the early 20th century: while it was difficult to say in advance how enterprises would benefit, it was an essential field to enter. The same phenomenon has been seen over the past half-decade. Past issues of this journal have included three case studies regarding portal and Service Oriented Architecture use. The benefits described in these were diverse. In one case the simplicity of portal configuration allowed users within a government department to rapidly implement a range of internal services. Technology provided the infrastructure, and then the users just got on with it (Brewer & Adamson, 2009). In a second case, industry restructuring had led to the need to commercially separate production and distribution within an energy sector. Service Oriented Architecture significantly simplified this restructure challenge (Worley & Adamson, 2009). In the third case, the emergence of SOA tools and standards simplified what was previously difficult to deliver, including services to the Internet generation (Wong & Adamson, 2010). In other cases the benefits have emerged around the delivery of common tools such as content management. One cross-business unit portal project identified the common need for these tools where previous business unit based projects had struggled to identify sufficient return on investment.

Understanding the benefits of a portal is easy. For the many reasons described above, quantifying them at the outset of a project is
difficult, leading to a gulf between investment need and investment appetite. Identifying and tracking benefits in an iterative, opportunistic manner can provide a means to bridge this gulf between investment need and appetite.

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REFERENCES


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