

Moving to componentised architectures

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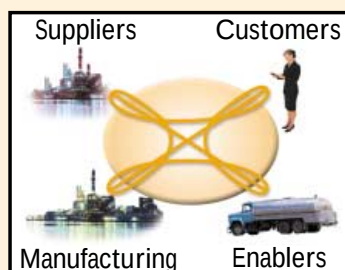


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BUSINESS PROCESS MANAGEMENT SYSTEMS AND THE NETWORKED ENTERPRISE

In our March 2001 Special Edition of the *Foundation Research Journal* we discussed the emergence of the networked enterprise. A networked enterprise connects customers, suppliers, competitors and enabling partners, providing services such as logistics, finance, marketing, customer care and design, as well as basic infrastructure services such as information systems, human resources, and accounting. A key part of a networked enterprise is that business partners share knowledge and work together to create innovative products and services. However, this is not a series of static, deterministic relationships or contracts. Instead it is a fluid situation characterised by organic change and adaptation. A business in a networked enterprise frequently changes roles –

customer, competitor, supplier and enabler, – reflecting changes in the market and its own strategy, and at any point in time firms may play multiple roles in relationship to each other. In this dynamic situation the abilities to monitor, understand, and respond are critical. That's why we believe that Business Process Management Systems will be an important component of the networked enterprise.



Business Process Management: closing the gap between business intent and execution

To understand what Business Process Management Systems and a Business Process Modelling Language could achieve, we reproduce here a future magazine article. It takes the form of an interview with the CEO and CIO of logistics company ACME Express. From very different perspectives they explain how Business Process Management Systems (BPMSs) have enabled them to move beyond the tyranny of legacy systems and re-gain control of their future business direction.

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“Express Logistics company’s Business Process Management programme wins industry award for innovation”

Yesterday, the Logistics industry presented ACME Express the ‘Can’t Believe They Did It’ award for innovation and best practice. Hilary Bloomberg, President and CEO, was quoted as saying a major part of their success was directly attributable to new Business Process Management technologies, and specifically to their corporate-wide Business Process Management (BPM) programme based upon the Business Process Modelling Language (BPML) and Business Process Modelling System (BPMS) technology:

Fortuna Week: Could you summarise the key features of your Business Process Management programme?

Bloomberg: “Our Business Process Management programme gives me a holistic and explicit view of every aspect my business. My CIO has provided me with a dashboard, fed from our distributed network of BPMSs, which gives me up-to-the-minute information against our Key Performance Indicators. Better still, business experts are able to simulate changes in our business processes accurately, and if necessary, to demonstrate their value to the board before implementing the next day.

“But our Business Process Management programme extends way beyond technology – it’s now a way of life.

We have reorganised the entire business around its core processes and the process information held in our process repository has become the most shared and reused in the company. Our sales force uses it to negotiate deals. Our operations folk use it to derive new efficiencies. Our marketing department uses it in simulations and what-if analysis. Our IT department uses it to negotiate contracts with service providers and our legal and administration team use it to protect our intellectual property and for ISO standards qualification.

“You could say we have uncovered a new form of business intelligence which has empowered everyone and stimulates new ways to tackle planning, design and operational challenges.

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“Another feature is that for the first time I feel really in control of the information technology (IT) that runs my business – and I consider myself to be technology literate! The IT in my business had always been a ‘black art’ – I knew it was vital to our future, but it seemed impossible to manage effectively. What really surprises me is that this can be attributed to a genuine breakthrough that grew out of the IT industry.”

Fortuna Week: What is so different about the BPM approach compared to traditional solutions in Business Applications, Knowledge Management, Workflow and so on?

Bloomberg: “The answer lies, in part, in your question. Previous attempts to align IT applications with business behaviour are by their very nature independent, discrete solutions to a particular problem. Each solution has its own strengths but tends to set up a centre of gravity that extends beyond its original purpose and in doing so, subsumes the essential nature of our business processes into its own value system and behavioural model – what I call the *Holy Grail* effect. The great strength of the BPM approach is that it doesn’t attempt to replace applications, it orchestrates them and binds them to the way we want to conduct our business. You could view the Business Process Management approach as a horizontal layer of business level infrastructure, or glue, that enables us to manage the business rules, behaviours and events regardless of the underlying IT application.”

Fortuna Week: A number of CEOs will be sceptical – they’re still recovering from the last ‘Killer App’. Isn’t this just ERP on steroids?

Bloomberg: “No, that’s the point. ERP has its strengths but, because of its closed architecture, failed to address the fundamental requirement of putting the CEO back in control of the business. ERP was a solution to bad architecture; with it we transitioned from a messy tangle of in-house solutions with business rules embedded to a well-ordered closed system with business rules embedded. While it solved some of the issues of standardisation it came at a terrific cost – we lost our ability to differentiate ourselves around our core value propositions.”

Fortuna Week: What’s the difference between Business Process Management and traditional Business Process Reengineering?

Bloomberg: “Business Process Management is the means for reengineering, but it’s much more effective than past techniques. We are able to implement changes to our processes incrementally and in real-time. Our consultants work with us within the business, supplementing our own business leaders and supplying specialised process design skills. We’ve not found it necessary to implement large change programmes. The Business Process Management System propagates change throughout the enterprise, naturally and unobtrusively. Our process portal on the intranet gives everyone an insight into our business from their perspective, that of other functions and in the context of our overall objectives. Reengineering projects during the 1990s were really one-time events. No one paid much attention to changes in the business thereafter. We think it was the architecture of the information systems during those times that prevented change in the enterprise and the implementation of new business models.

“My CIO tells me our processes were technically embedded within the applications so we could not manage or change the processes themselves. To make matters worse, our legacy applications only implemented segments of our overall end-to-end processes. There was no connection between applications at the process level. Even if we could break down these stovepipes in the enterprise we could not extend the approach to our partners. Only when we finally realised that we needed to focus on processes not applications did we make progress. The BPMS is the way we manage and deploy our processes today. It provides a single logical view of the enterprise.”

Fortuna Week: How has your BPM programme helped you tackle the problem of integration with your customers and suppliers?

Bloomberg: “As we see others adopt the BPML standard, we’re finding that we can much more rapidly agree on how we can work together. Both parties are armed with an explicit definition of the processes

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involved and can make informed decisions about those aspects of their processes they wish to share (make public) and those they wish to keep to themselves for reasons of competitive advantage (keep private). In fact, I see a time soon when I'll expect our suppliers to be BPML compliant if they want to do business with us. Initially, though, many of our customers hadn't adopted BPML. Nevertheless we did see an immediate improvement in the integration process through a much better understanding of our own processes and the speed by which we could implement a customised process tailored to a particular customer's needs. We could model our partner's process for them, without any changes to their applications, and as a result, implement e-business."

Fortuna Week: ACME has continued to expand globally. How has BPM helped in this regard?

Bloomberg: "Now that we have a clear understanding of our core processes we have found it easier to strike the balance between global standardisation and local freedom to act. This has resulted in much better understanding by all parties in our federated organisation and has allowed us to implement localised versions of our business processes without sacrificing global interoperability. Our established country-level operations have found this extremely liberating and have been able to become much more agile in their respective markets. In addition, we have recently been expanding through the acquisition of a number of local delivery operators. Again, explicit knowledge of both our global and in-country processes has given us the ability to better assess the applicability of these additions to our network and to more rapidly integrate them regardless of their IT legacy. That's not to say that BPM solves all the problems around the integration of an acquired business, just that it's become a more manageable process."

Fortuna Week: A recent publication described how you were creating BPM programmes for supply chains in your role as Fourth Party Logistics Provider – could you expand on that?

Bloomberg: "Having proved the BPM programme concept within our organisation focused on our core express delivery business, we decided to use the concept as our launch-pad into the Fourth Party Logistics (4PL)

business (also known as a Lead Logistics Partner). Being a 4PL is all about negotiation based on trust and accurate information – the objective is to provide added value to all participants in the supply chain. Needless to say, overseeing and tracking an entire supply chain requires agile business processes that work together seamlessly. We could see that each supply chain we looked at had its own set of values that were slightly different from those of any one participant and therefore could be seen as a BPM programme in their own right. We took the decision to leverage our experience in BPML/BPMS as a platform for this business model. Thus we act as an 'Infomediary', managing, orchestrating and analysing supply chain processes. We outsource the execution to a 3rd party BPMS hosting provider to demonstrate neutrality, and to keep our IT folk focused on managing and maintaining ACME's global BPMS infrastructure."

Fortuna Week: Barry Smith, you are CIO at ACME Express. Could you summarise the key technical features of BPML/BPMS/BPQL?

Smith: "Technically our Business Process Management programme is composed of a number of artefacts:

- BPML – the language used to define and make explicit the behaviour of all activities and systems that comprise ACME. BPML is in fact an XML schema.
- BPMS – the execution environment for the BPML schemas (part model repository, part transaction queue/log).
- BPQL – the language for manipulating and interrogating the BPMS (much like SQL in the DBMS environment)."

Fortuna Week: How would you differentiate BPM from Workflow solutions and, to some extent, Collaboration tools?

Smith: "Both Workflow and Collaboration tools tend to be centred around human activity and to a large extent have been seen as poorly integrated additions to the core mission-critical IT applications. They are therefore unable to provide the necessary continuity of the real-world processes that span the entire business. We use the term programme to describe our BPM environment because it

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is exactly that – a programme that encompasses all aspects of business behaviour regardless of execution: human activity, application processes, infrastructure services, opportunity discovery, business simulation or the implementation of new business concepts.”

Fortuna Week: Models, repositories and executable code – sounds a lot like Integrated CASE, what's the difference?

Smith: “Yes it does sound like I-CASE, but there are significant differences. BMPL and BPMS work together to provide both a language for defining all aspects of the business and a means by which business level transactions can be executed. The execution engine is more akin to a TP monitor than to traditional executable application program. This engine maintains the state of business process transactions as they are executed by a wide variety of underlying applications code and human activities. Remember that its purpose is not to supplant applications but to support the higher-level business purpose by orchestration. The BPML, on the other hand, is the means by which the business can be modelled, simulated and once proven, implemented via the BPMS engine. A tangible difference is the direct way in which we can execute changes to the processes. There is no concept of the traditional lifecycle of requirement definition, application design, implementation, test and deployment. Changes are made ‘live’ on the system. Instead of testing, we simulate the impact of change before deployment.

“BPML is not a CASE language in itself. Rather, it's a meta-language that because of its mathematical roots and its cross-model applicability (due to its foundational semantic construct) can act as a translator between a wide variety of modelling techniques and the execution of business transactions. For example, we have integrated Unified Modelling Language, SCOR (supply chain design), Activity Based Costing and Balanced Scorecard models using BPML as the lingua franca. BPML is the means by which to capture a set of executable rules that are presented to the BPMS server which then co-ordinates

business transactions within and between IT applications. In other words, it's neutral to both the modelling technique employed and the underlying IT execution environment.”

Fortuna Week: How did you manage the transition to Business Process Management?

Smith: “One of the features of Business Process Management Systems is their ability to support migration. Processes can be participants in other processes. It's possible to model application behaviour – a so-called Process Projection. This can be a participant in another process, exchanging messages as required to orchestrate the end-to-end process. We found the BPMS slotted right into the enterprise mix and we were able to deploy processes from day one. We started in one area of the business and implemented processes among existing applications. Over time we started to perceive the new system as the means to extend our processes to all parts of the business.”

Fortuna Week: It seems that tool and package support for BPML is critical – aren't you at the mercy of the software vendors?

Smith: “You make a valid point. We first discovered the BPM approach back in 2000 when it had just started to gather momentum through the Business Process Management Initiative (bpmi.org). We were among the first end-user organisations to join the BPML. Our objective was to satisfy ourselves that the concept would work and that there was a critical mass of IT tool and package vendors working on the BPML standard before embarking on a pilot of our own. It's true that in the early days we had problems finding software with native support for BPML but, because BPML is in fact an application of XML, we were able to work with our BPMS vendor to easily develop a range of BPML adapters. We are now, however, seeing a wide variety of vendors, both ISVs and Service Providers offering native BPML support within their products and services.”

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Fortuna Week: What's been the impact of BPM on the IT function with ACME?

Smith: "The impact on the IT organisation has been significant. We are now more focused on providing a broad and deep set of infrastructure services to the business. We find that, because the business is now more horizontally focused and that business requirements are expressed within the context of overall business processes, we're better at identifying opportunities for common, application level, components that span functional and geographic boundaries. The Business Analysis activities that used to take place within the IT department are now the primary responsibility of our CKO. This has resulted in a much more holistic approach to the management and development of corporate knowledge. Previously, our Corporate Knowledge Programme was limited to human communication and as a result was perceived as a mechanism for implementing technologies to improve collaboration independently of core processes. Now, it's seen by the entire enterprise as the vehicle for analysing all behavioural aspects of our processes and is of direct relevance to all aspects of the business. In the role of CIO, I find I have re-focused on technology innovation and service level management.

"From a 3rd party service perspective, the clarity around core and contextual processes has allowed us to cherry-pick services that we wish to outsource and BPM has given us a far greater control over the negotiation and management of those services. But it's not a one-sided win. We've found the service providers have benefited

from more explicit understanding of our needs.

"From a technology innovation perspective, I found that, despite the transition of the business analysis activities to the KM function, my staff are highly motivated because they can see where they can add the most value and aren't constantly being blamed for failure to deliver business solutions. On the contrary, we've been able to deliver a number of innovations that have been widely appreciated for their relevance to core business processes. My sense is that we've finally found our place in the business."

Fortuna Week: What do you see going forward?

Smith: "We are starting to experiment with adapting processes in real time. There are a number of situations where the ability to implement 'smart' processes that adapt to the needs of our partners and customers would make sense. Because our processes are now explicit and held as data in our repository they can be read and written by other software, or integrated with other data sources. We're working with new early stage vendors that focus in this area. In addition, we've found that because BPML is based on XML we can easily extend it to add features that support adaptive processes. For example, we can use time and cost metrics associated with process activities to calculate on the fly in real time. Then we can associate the results of these calculations with switch points within the process based on thresholds or probabilities. We can't tell you what we are doing for competitive reasons, but we can confirm we intend to protect these innovative processes in law as far as we can, based on the BPML schemas and our demonstrable ability to execute them."

Fortuna Week: Fascinating. Thank you.

ACME Express was first established in 1970. Its parcel delivery business grew rapidly for a decade, expanding to all parts of the globe.

Although business slowed towards the 90s, things still looked rosy despite an ongoing debate over how to best manage its considerable investment in IT. The CEO understood that the future of the business was irrevocably tied to IT and might even be centred around it. Yet every promising IT innovation cost more than was planned and delivered less than was promised. The IT function suffered cycles of decentralisation and re-centralisation, outsourcing and in-sourcing. With every restructure came a new CIO with a different approach to the provision of business applications – in-house development, consulting led development, purchased packages, purchased on-line services. Moreover, towards the end of the nineties, the complexities of managing and maintaining a global service, with ever more demanding customers, in an increasingly competitive market, were putting unsustainable pressures on the business.

A number of key facts became clear. Risk assessment of the Y2K problem showed how IT permeated every aspect of the business. IT innovations rarely delivered

breakthrough business results and typically just added more complexity. Growth through acquisition fuelled business process and IT diversity, and globalisation demanded a flexible balance between standardisation and local autonomy. Meanwhile, customers were no longer satisfied with a generic service but wanted customised solutions. It seemed the company was losing the cornerstones of its early success: agility, operational excellence and service quality. Integrating customers and suppliers electronically was much more difficult than imagined and solutions developed were rarely reusable. Contracts and Service Level Agreements with Service Providers were often badly conceived and/or ill managed, causing rancour and confusion between parties. Supply chain integration initiatives failed due to lack of trust between partners and concern over the visibility of their business processes. Core intellectual assets of the business were often hard to identify and impossible to untangle from the contextual activities and systems.

Even worse, ACME Express found it passed all the diagnostic tests for organisational inefficiency.

Organisational inefficiency diagnostic

- Is there a disconnection between strategic vision and delivered services?
- Have ineffective and inefficient processes become ingrained in IT systems?
- Are IT systems dictating business processes?
- Has IT become an easy target to blame for any or all mishaps?
- Do regular re-organisations of the IT department no longer solve the problem? Does the turnover of IT staff deepen the confusion?
- Is an increasing amount of mission-critical data embedded in desktop applications and 'shadow' business processes?
- Is the process of communicating global business requirements from the stakeholder to the software engineer error prone and time consuming? Are applications often out-of-date before they are implemented?

Afterword

How realistic is this scenario? Accomplishing what is described above requires:

1. A standard way of describing business processes
2. Software that makes use of this standard way of describing business processes to orchestrate processes both within and between firms
3. Experience implementing business processes and systems integration.

For the last year, CSC has been working with the Business Process Management Initiative (www.bpml.org) and contributing to the development of the specifications for Business Process Management Language (BPML). That specification was first made public on 8 March 2001. Like the relational database model and query languages built upon it, such as SQL, BPML has its roots not just in committee decisions, but in mathematical formalisms.

The BPML is now more than 120 companies strong and has attracted both large companies such as IBM, SAP and BEA, as well as smaller firms such as Proactivity, Lombardi and KTI. Vendors are joining for a variety of reasons including:

1. A belief that there is a general need in the technology market for a business process specification language and that interoperability will drive adoption if customers do not have to make once-and-for-all choices.
2. Business process automation vendors from a variety of disciplines, such as workflow, EAI and B2BI are evolving their platforms towards process management.
3. Some vendors are focusing on the management aspects for business processes that will rival those used today for network and IT management.
4. Others are developing business process management platforms, from which vertical 'process-enabled' applications will be constructed.

Recently a number of end-user companies such as Avis-Europe, British American Tobacco, and Lucent have

joined. They believe that this effort may be too important to be left to the vendors alone to decide.

On 27 March 2001, Intalio announced n3, the first business process management system to use BPML.

On 3 April 2001, FuegoTech became the first company to announce that its product, FuegoBPM, now conforms with BPML.

Much work remains to be done. By concentrating on the orchestration problem we have not bypassed the ontology problem. We expect to see variants of BPML developed for specific industries, such as telcos and financial services. There will be opportunities to do pilots this year.

Effective pilots will build on the business process capabilities that firms already have. Business process management systems represent the next step as we move from the whiteboards of reengineering to the explicit language of BPML.

So what are the next steps that firms should take?

1. Educate yourself about what is becoming possible. Download the BPML specification from www.bpml.org. Take a look at the vendors who have joined and start asking them about their plans.
2. Consider joining BPML.org and helping to create a special interest group for your industry.
3. Review your current enterprise integration efforts to see if they will actually get you where you need to go. Several firms have recently concluded that ERP will not.
4. Begin process discovery with existing tools in the expectation that they will support BPML. Look for modelling tools that will support BPML.
5. Consider a pilot BPMS to support a specific domain.

We do not yet know if BPML will be the right language or that BPMSs will be the right systems. What we do know is that something very much like this is needed if firms are to meet the imperatives of the current economic climate. Now that the need is understood we expect products and services to follow. As we learn more we will post our findings at www.cscresearchservices/process.