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BPM and SOA

The role of composite functionality in facilitating flexible business processes

Executive Summary

As business move away from buying applications to buying the means of facilitating business processes, a different approach to existing technology assets is required.

Main Findings

- **Businesses depend on processes, not technology**
The process of moving a prospect to becoming a customer, of going from gaining and order to having cash in the bank is the driving force behind how business run. Technology has to be there to facilitate these processes – in the most effective and efficient manner.
- **There are multiple types of business process that need to be considered**
Business process can be centred around people, around information or around process. An overall process may bring together a mix of these needs, and the solution chosen must be able to “mix and match” the different types in a manageable and efficient manner
- **The Application paradigm is dying**
Monolithic, vertically focussed applications do not provide the capability to respond to supporting rapidly changing processes across an organisation.
- **Value Chains drive the need for additional flexibility**
The need to interact with suppliers and customers in an effective manner is also driving the need for openness. Processes between organisation and people need to be highly flexible and inclusive – and highly programmatic approaches are increasingly too cumbersome to meet the task.
- **Service Oriented Architectures (SOAs) are the way forwards**
By creating functional components at a suitable level of granularity, “composite applications” can be rapidly constructed that meet the needs of specific processes at any time.
- **Although the Application paradigm is dying, the Application survives**
“Ripping and replacing” existing applications is not financially viable for many companies. Therefore, the means of exposing specific functionality from within applications as services is required to make the application appear as a peer in an SOA environment.
- **Modelling business processes is key**
Businesses need to be able to easily visualise existing business processes, and define and try out new ones.

Conclusion

SOA will be the enabling technology for those organisations that choose to run their business from a process point of view. Tooling must be chosen that enables existing investments to be used within the SOA environment, and that enables business processes to be easily and effectively modelled.

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The logo for Quocirca, featuring the word "quocirca" in a lowercase, sans-serif font. The letters "quoc" are in blue, "irca" is in red, and "circa" is in black.

1 Business Process Management and the Organisation

A business process is an end-to-end composition of business tasks, such as taking a prospect through to being a customer, getting from an order to cash in the bank, or from order to delivery. Each business task is a subset of this process, such as capturing the prospect's details, taking a customer's payment details or checking against inventory for stock levels. Business tasks can involve people as well as technology, and solutions looking to automate and facilitate business processes must be able to cater for this.

Whereas the tasks can be carried out by a single application, it is increasingly the case that business processes cross the boundaries not only between applications, but between departments and even between companies when we look at the complexities of today's value chains.

Therefore, any application-centric approach to business process will lead to problems as you move away from the core competency of the application itself – control of the total process becomes difficult as extra links are added in the chain. We need to put in place a means of managing the end-to-end business processes, a set of tooling that enables us to model, deploy, monitor, maintain, optimise and audit these extended processes – an approach known as Business Process Management (BPM).

As we look to maintaining a competitive position in the markets, we have to aim for the most flexible of technology infrastructures, where we can react to market conditions as rapidly as possible. Being driven by business processes, rather than constrained by technology capabilities, is the way forwards, and the means to this is through the use of a Service Oriented Architecture, or SOA.

2 SOA and the evolution of the infrastructure

SOA is seen as the biggest change to computing since the advent of the internet. SOA takes the existing approach to computing – that of purchasing disparate applications to solve defined business issues – and turns it on its head. The new paradigm becomes one of building flexible composite applications from discrete items of functionality. Through this approach, functional redundancy, where the same capability is available from within multiple applications (e.g. customer records, billing) is minimised, and such functions can be “tuned” to serve the business more effectively in a highly efficient manner.

SOA does require a change to our approach in building an infrastructure – we need to look at how these services can be deployed so that they are callable by other services that require the functionality, no matter where the calling service resides. This requires a high degree of virtuality within the infrastructure – something that Quocirca already sees happening within the majority of organisations. We need to look at how we manage and govern this new environment as well – much of our existing tooling will need to evolve to meet the requirements of an SOA.

However, SOA will not replace existing applications in the short, or even the medium term. Existing applications are still valid – they still fulfil tasks that they were purchased for, and it is incumbent of organisations to ensure that these technical assets are sweated to gain the best financial returns on them. What we will see, however, is the need to absorb these existing applications into an SOA environment, and to enable the applications to be a peer member – calling to and being called by other SOA services as required.

Indeed, many of today's enterprise applications already have means of displaying parts of their functionality as services, and so can be an effective part of an SOA. Even those applications which are not directly SOA-enabled – either due to the vendor not having taken an SOA development or enabling route, or that the utilising organisation is on a version of the software that does not support SOA, can be SOA-enabled through the use of service

“wrapping”, where those parts of the application that are deemed to be of use as a service are made available to the overall SOA environment.

3 The Interplay of SOA and BPM

As we can see, there are touchpoints in the approaches to BPM and SOA. BPM is dependent on the aggregation of business tasks to create an end-to-end service for the organisation. SOA is dependent on the aggregation of technical assets to create functionality that will support the organisation’s process needs. By mapping the needs of the business tasks on to the capabilities of the technical functionality, we create a platform that is supportive of the business, is capable of responding rapidly to changes in the markets, and can be managed through tooling at the infrastructural level across applications, departments and members of the overall value chain.

This approach also enables the business and IT to work more closely together. Quocirca’s research has shown that those organisations with little business/IT understanding spend the most on IT maintenance and fire-fighting, whereas those where the business and IT communicate and collaborate spend the most on new functional investment – and that these companies are the ones with the greatest levels of success in the markets. Business analysts can utilise BPM tooling to model and simulate new processes, and the IT department can create SOA-based functionality which is aimed at facilitating the needs of the business processes – solution development is far faster, market responsiveness improves and overall effectiveness increases.

When we look at the decomposition of business processes through to business tasks, we need to look at the requirements that we have as an organisation. Firstly, we need to understand the actual business processes that we already have, and we need to analyse these across their whole length to identify where we have issues, and where optimisation can be applied. If we are to attempt to identify and analyse business processes from an application centric viewpoint, we find that while we are able to identify the events and the actions taken by the application itself, any parts of the process that take place outside of the application are harder to monitor. Indeed, although it may be possible for the application to monitor events in other applications that are tightly integrated to itself, we will find it harder to be even aware of events happening in loosely-integrated applications, or in applications that are one stage further removed, where part of the process is being fulfilled by an application that does not directly interoperate with the original application. As has always been the case with IT, the vendor tries to place its application as the centre of the business, with everything else being dependent on it. In reality, we find that there are multiple centres of gravity, and that it is the interplay between these centres of gravity where the problems really lie.

We also need to look at the different types of business process – those that are people centric, those that are information centric and those that are process centric. Each will have its own requirements (for example, people centric processes may be dependent on capturing information, whereas information centric processes may be dependent on reporting on existing information). We may find that we have hybrid processes, where a front-ended people centric process moves into a more information centric process and utilises parts of process centrality as well. Each part needs to be able to be decomposed in itself down to a re-usable component level – whether this be as business tasks or as functional components. These parts need to be flexible – and need to meet the changing needs of the users of the system, and to make the most of new technologies as they emerge.

An inherent part of BPM is business modelling – not only do we need to create models of existing processes, but we also need to build test models of new processes, and “what if?” models where we see how changes to a process will impact the business. Again, an infrastructural approach enables this to be done across the whole business process, whereas an application centric approach only enables us to model the process to any level of granularity within the application itself, with lower levels of granularity with tightly-integrated applications, and lower (or no) capabilities once we move to poorly integrated or once-removed applications.

A key element behind BPM is the need for enterprise strength workflow, again with the capabilities to move information between applications, between services and across corporate boundaries. These workflows must be inherently flexible, as the processes that are dependent on the workflows will need to change to meet the needs of the organisation.

With the continuing evolution to SOAs, we see other problems coming to the fore. Although SOA does not immediately replace existing monolithic applications, certain functionality currently held within the application may well need to be made available to multiple composite applications, or may be created as an external service serving many different applications and composite applications. Re-use comes to the fore – redundant functionality will be seen as dangerous to the business, as keeping all of this similar capability in sync and ensuring that the different associated data stores are identical where there are shared fields will be seen as a maintenance cost that cannot be continued.

We see the emergence of loosely coupled services – services that are inherently unaware of each other, but are dependent on a service registry to broker interactions. We see dynamic allocation of functionality on to a highly virtualised base infrastructure, meaning that we become less aware of where any item of functionality is physically located at any one time.

4 The problems of Application Centricity in an SOA and BPM environment

Taking an application centric view of an organisation is becoming more of a problem as we move forwards. The old view of buying an Enterprise Resource Planning (ERP) or a Customer Relationship Management (CRM) application is increasingly invalid as we look to run our organisations on business process lines. Even by trying to aggregate the applications into a single entity from a single vendor raises issues of flexibility, scalability, resilience and vendor lock-in.

The overreaching needs for a business process to be flexible, to be able to change as the business dictates, to be capable of automatically scaling to meet peaks in requirements mitigates against making any single application the centre of an organisation's technical strategy.

That a single application can manage its own workflows, that it can model its internal processes, that it can react against internal events is all to the good – these capabilities can also be utilised through an infrastructural approach, where the tooling for managing an SOA and providing a flexible business process support environment are available on a more widespread basis.

Tooling provided by the application vendors is of necessity aimed at its own application. Modelling, optimising, auditing and maintaining end-to-end business processes is impossible if the tooling provided cannot reach far beyond the remit of the owning application.

An approach where the tooling and management of the services is built in to the infrastructure can provide greater capabilities through direct integrations into disparate existing applications, data stores, and multiple existing workflow systems. Modelling tools can model end-to-end processes, managing data flows from one environment to another. Events can be monitored and audited throughout the complete process. Services can be identified and utilised through the use of standard registries, such as a Universal Description, Discovery and Integration (UDDI) protocol.

5 What to look for in Infrastructural SOA/BPM solutions

When looking for solutions that will enable full BPM in an SOA architecture, there are several things that should be considered.

- Standards – It is important that the tooling adhere to open, generally adopted standards. As we are increasingly looking at a more virtualised environment, the need to be able to interoperate with other services is of paramount importance
- Connectivity – Few companies are completely homogenous in existing tooling, or even in adoption of consolidated standards. Therefore, the capability to connect to existing applications, to data sources and so forth must be considered.
- Interoperability – Wherever possible, the chosen solution must be able to understand the applications that it connects to. With this capability, process flows are maintained in context.
- Process Modelling – With the markets moving at a fast pace, business processes need to change more frequently. Therefore, we need to have tools that enable us to model new processes rapidly, to simulate these processes and then to pilot and implement them.
- Monitoring and audit – The chosen solution must be capable of monitoring process events on an end to end basis, and to be able to report on these events for audit needs.
- Resilience – Although SOAs are resilient by nature, it is important to ensure that the chosen SOA/BPM solution has inbuilt capabilities for failover, and for roll-back and resume should anything happen in any part of the process (e.g. within a non-resilient application) that adversely impacts the process.
- Scalability – As we are looking at functional re-use here, it is difficult to carry out effective scaling modelling for the future. Therefore, we need to ensure that any solution has the headroom to deal with possible future growth.

6 Customer Example

Faced with escalating costs and inefficiencies from complex manual business process interactions, a parts-replenishment service provider needed to improve communications and order tracking. By simplifying access to parts information, the company could maximise employee productivity.

6.1 Customer's business issue

The company had experienced several factors that affected its ability to deliver prompt parts-replenishment services to its clients: an increase in customer demand and new products pushed resources to their limits, and a reorganisation spread formerly centralised activities across three separate buildings. Reliance on paper-intensive tracking processes, e-mail and phone calls left gaps that increased the potential for error and limited the number of orders that could be processed. And, inadequate communication affected the facility's ability to optimise materials usage and to apply parts-supply rules consistently.

The facility replenishes parts from seven locations. When a client placed an order, staff had to assess parts availability and respond in less than half a day. To accomplish this goal, the facility needed a system that could track location and shipment of parts in real time.

6.2 Customer's approach to solving business issue

The customer wanted to update the parts-replenishment process to integrate critical information on parts availability across supplier systems. Modelling and then optimising the complex parts-replenishment processes would provide a well-documented and agreed upon starting point, as well as the ability to test and simulate options to change and improve the processes. The company also wanted to set particular tracking mechanisms in place. They wanted to monitor specific events and items to ensure that the processes that they modelled actually delivered the planned efficiencies. A strong business process integration solution would provide the end-to-end continuity the facility needed to closely monitor and manage the parts-replenishment process and to simplify communication among the facility's suppliers.

The company chose WebSphere Business Modeler and WebSphere Business Monitor to create a structure that facilitates continuous improvement. Modeler enabled the facility's

business analysts to model, simulate and analyse business processes, and cross-functional teams to optimise them. It also facilitated return-on-investment calculation for process changes and generated code to speed process deployment. Modeler works with Monitor to help set specific measures in the process for monitoring as the processes execute. Monitor then allowed managers to see the process in execution, address any issues (for example, by reallocating tasks) and keep track of the key business indicators—delivering real-time visibility into the processes via a dashboard. This reduced workload by eliminating the need to manually generate status reports and by enabling faster decision making, which helped ensure customer satisfaction.

6.3 Customer's perceived benefits from implemented solution

The company is pleased with the success of the solution, and the facility plans to extend the solution to other processes. The new system can more efficiently scan the seven ordering systems to locate potential suppliers to satisfy parts requests. From parts-request submissions to accounting and invoicing activities, employees' jobs are simplified by handling the appropriate level of information to perform a particular task, as well as to maintain a strong focus on process execution. Users can easily track parts shipments, view updates, and catch potential errors on the fly. As a result, overall productivity has improved and business efficiencies have increased all along the end-to-end process.

7 Conclusion

Companies are dependent on business processes, not on technology. The technology must facilitate the business processes, not prescribe or proscribe them. Further, the technology must be flexible enough to facilitate rapidly changing processes, and should be able to create re-usable functional components for other areas of the business to utilise.

Much of the existing IT infrastructures of today's businesses have grown around specific vertical needs for specific departments within the organisation. Significant investments have been made in these systems, and it is, on the whole, not viable for a company to look at wholesale replacements of systems. Therefore, a means of identifying and utilising existing functionality within existing applications is necessary to carry on gaining investment returns from these assets.

A service oriented architecture enables functions to be rapidly aggregated to create a composite application. These composite applications should be capable of being put together rapidly by line of business employees to meet the needs of their business processes – and many of these business processes will be relatively ad-hoc and short-lived, so the resulting composite application has to be viewed as being disposable.

For the majority of companies, IT buying behaviour is moving away from the need for Enterprise Applications in the Enterprise Resource Planning (ERP), Customer Relationship Management (CRM) and Supply Chain Management (SCM) to looking for the means to facilitate new and changing business processes. An SOA provides the underpinning for this approach – but suitable functionality and tooling is required to manage the various components and interactions within the SOA. Middleware and adaptors provide the means of doing this in the most cost and time effective manner.

About Quocirca

Quocirca is a company that carries out world-wide perceptual research and analysis covering the business impact of information technology and communications (ITC). Its analyst team is made up of real-world practitioners with first hand experience of ITC delivery who continuously research and track the industry in the following key areas:

- Business Process Evolution and Enablement
- Enterprise Applications and Integration
- Communications, Collaboration and Mobility
- Infrastructure and IT Systems Management
- Utility Computing and Delivery of IT as a Service
- IT Delivery Channels and Practices
- IT Investment Activity, Behaviour and Planning
- Public sector technology adoption and issues

Through researching perceptions, Quocirca uncovers the real hurdles to technology adoption – the personal and political aspects of a company's environment and the pressures of the need for demonstrable business value in any implementation. This capability to uncover and report back on the end-user perceptions in the market enables Quocirca to advise on the realities of technology adoption, not the promises.

Quocirca research is always pragmatic, business orientated and conducted in the context of the bigger picture. ITC has the ability to transform businesses and the processes that drive them, but often fails to do so. Quocirca's mission is to help organisations improve their success rate in process enablement through the adoption of the correct technologies at the correct time.

Quocirca has a pro-active primary research programme, regularly polling users, purchasers and resellers of ITC products and services on the issues of the day. Over time, Quocirca has built a picture of long term investment trends, providing invaluable information for the whole of the ITC community.

Quocirca works with global and local providers of ITC products and services to help them deliver on the promise that ITC holds for business. Quocirca's clients include Oracle, Microsoft, IBM, Dell, T-Mobile, Vodafone, EMC, Symantec and Cisco, along with other large and medium sized vendors, service providers and more specialist firms.

Sponsorship of specific studies by such organisations allows much of Quocirca's research to be placed into the public domain.

Quocirca's independent culture and the real-world experience of Quocirca's analysts, however, ensure that our research and analysis is always objective, accurate, actionable and challenging.

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