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CONSPECTUS SUMMIT

THE IT REPORT FOR DIRECTORS AND DECISION MAKERS



ON ENTERPRISE INTEGRATION

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CONSPECTUS SUMMIT UPDATE

Comment

Few people could have predicted a few years ago that enterprise integration technology would ever escape from the 'techie' realm to become a mainstream business cost saver.

But with the growing need to improve information sharing across different areas of the business, and react more rapidly to regulatory and business change, integration technology has come into its own.

However, while enterprise application integration (EAI) software is designed to simplify IT management and data sharing, there are still a number of business and technical issues to address in the drive towards 'joined up computing'.

A recent *Conspectus* Summit event, sponsored by Capgemini and Oracle, discussed the latest thinking in this area – and this report highlights some of the key presentations and findings from the event.

Enterprise Integration

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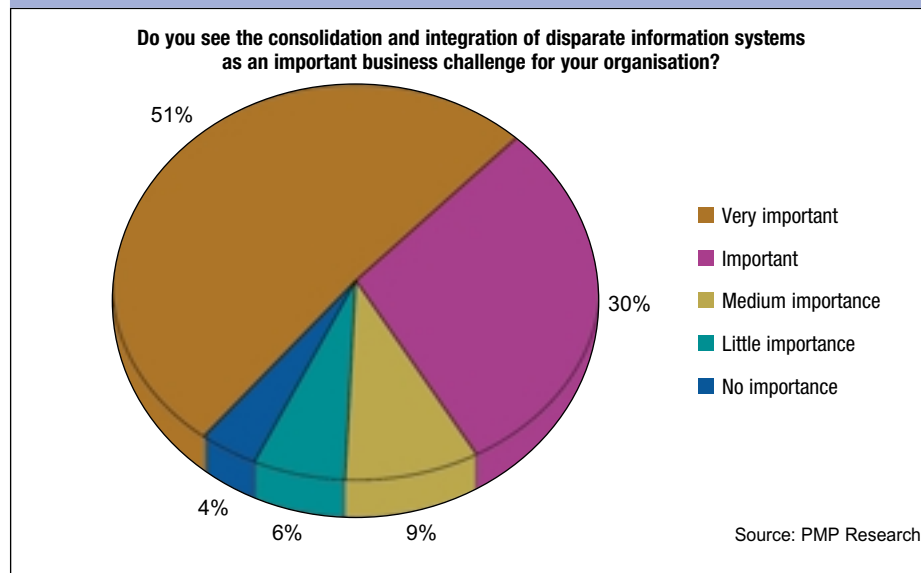
A long journey

Cliff Mills finds that a strategic approach is vital in achieving successful enterprise-wide integration.

Enterprise application and data integration used to be an esoteric topic, hidden away in the back room to be managed by those with a technical eye. But as the software has become more sophisticated it has now metamorphosed into a mainstream activity that can deliver significant business benefits and cost savings to an organisation:

- IT budgets are continually under pressure and more organisations have been looking to optimise their existing software investments rather than install new systems.
- Organisations have to react rapidly to their continually changing

Figure 1: Importance of integration



Cliff Mills: most organisations have a number of software applications that work well from a functional point of view, but do not integrate to deliver additional business benefits such as a full customer view

business requirements. Business processes can be dramatically improved by more effective integration of existing applications.

- Regulation and compliance is an increasing factor affecting companies. New governance requirements will require organisations to track and gather information from a wide range of diverse applications.

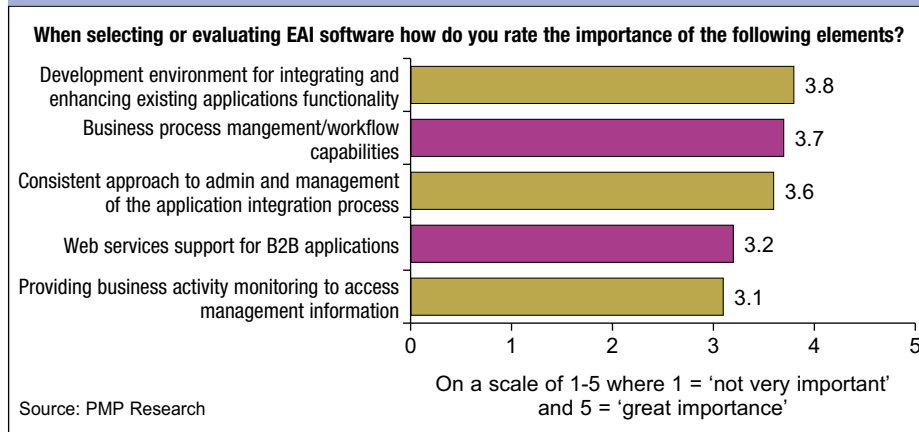
The emphasis should not only be on the technology, however, but on methodology – defining an integration strategy and identifying the processes that must be handled.

According to the latest independent research by PMP, most organisations have a number of software applications that work well from a functional point of view, but do not integrate to deliver additional business benefits such as a full customer view.

Indeed, only 3% of the companies surveyed claim they are “very well integrated”, 25% think they are “well integrated” but many say there is little integration across the organisation and that any integration that has been implemented is restricted to specific areas.

With such a lack of joined-up computing, over half the respondents believe integration is a key challenge as they plan to spend more on software solutions in different areas (see Figure 1). And this spending

Figure 2: Key elements in EAI software



may not be restricted to internal investment, with a number of companies looking to integrate their applications with partners, suppliers and customers in an effort to improve relationships and, ultimately, business processes.

Organisations also want to improve their strategic and operational agility to become more flexible and reactive, using real-time information to make quick decisions. Again, integration software is the enabler.

Among enterprise application integration (EAI) software vendors, IBM and Oracle usually come out top in PMP surveys, but they are followed by a number of companies offering an increasingly wide range of products.

From the customer point of view, product standards have become important, with XML a key component in integration – particularly for web services – as well as acting as a facilitator of re-usable application elements.

Some 36% of the respondents are using web services, while 24% will head in this direction in the future, making standards an important part of creating a viable architecture.

The need for a service oriented architecture (SOA) – essentially made up of re-usable distributed components that can act as services – is less

well recognised, with 31% of respondents unfamiliar with the term. Just 4% have implemented such an architecture and 27% are planning to implement.

While SOA is emerging, the basic demand among companies is for EAI software that will integrate and enhance their applications, as well as support business process management and the collection and distribution of pertinent information (see Figure 2).

The need to integrate legacy systems with new applications is also to the fore – with users suggesting integration software is far from a commodity and needs further improvement to achieve the levels of interoperability they desire.

In terms of actually using EAI software, most survey respondents say the benefits have outweighed the costs, but note that without defined business benefits and actual cost savings or delivered value, successful integration is difficult to achieve.

Conclusion

In summary, the survey shows integration is important to organisations and that it must be part of a long-term strategy of adopting different products as they emerge. In general, EAI software is seen as a benefit, particularly when used in conjunction with standards such as XML and web services.

On the downside, the overall perception is that current EAI product sets are too limited and that improvements must be made particularly in the area of managing business processes. That said, EAI should not be technology-driven but strategy-based, demanding methodologies to make the technology successful.

Finally, as in so many of today's IT projects, any investment in EAI must be linked to business objectives such as improving the organisation, creating greater efficiency and effectiveness, and delivering cost savings and other quantifiable benefits.

■ **Cliff Mills is research manager with PMP Research. Tel: 0870 908 8767. Email: cliffm@pmpresearch.co.uk.**

Making it happen

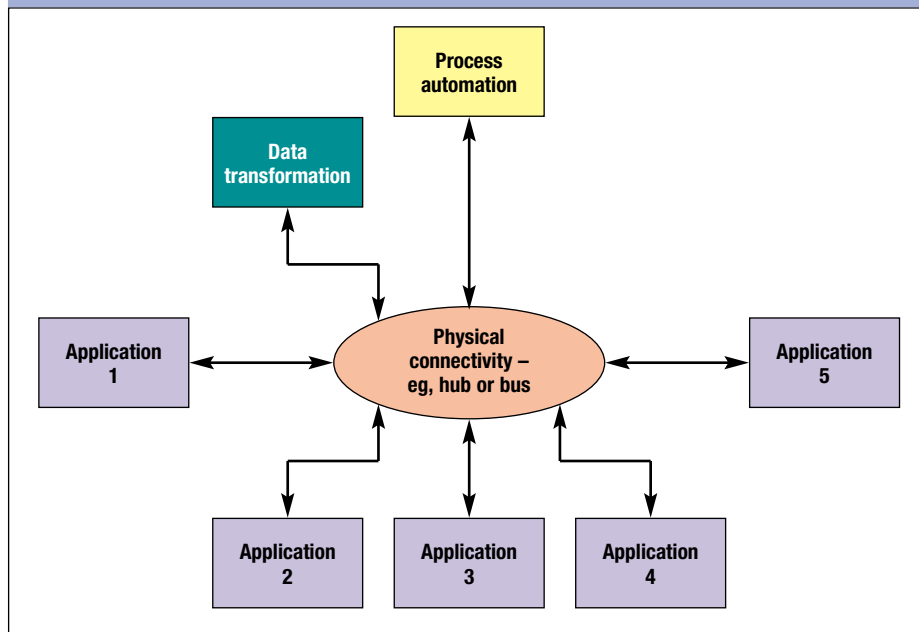
David Pepperell of Capgemini outlines the do's and don'ts of application integration.

Background

A typical large enterprise has hundreds of operating units, thousands of systems and data sources and – most importantly – a constant need to change in response to market pressure and other business demands. So how can IT support change?

The fundamental problem is that the current IT structure in many organisations inhibits change, with little investment being made to support real business change.

Figure 1: Core capabilities of EAI tools



In Capgemini's view, the overhead due to legacy systems means that roughly 75% of IT development spend goes on upgrades and supporting necessary technical change – change that does not move the business forward. Only 25% of IT budget is actually spent on change programmes designed to transform the business.

The key legacy issue is what we call 'spaghetti integration', where a series of point-to-point interconnections have been built up because that was cheapest the first time around.

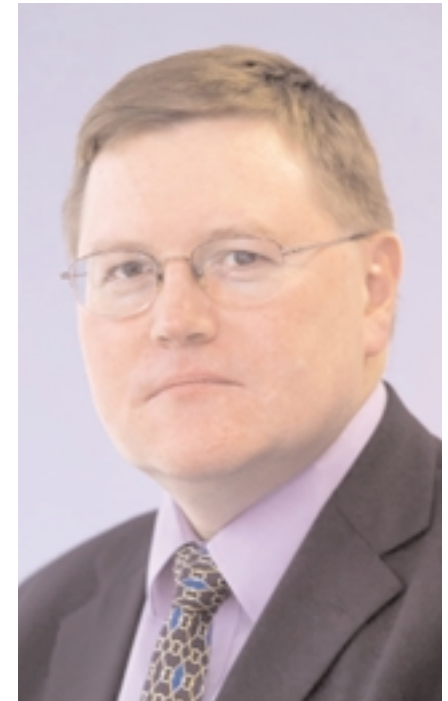
The result is an IT environment that cannot be changed without great disruption and expense. It's a complex problem, but one that can be tackled using enterprise application integration (EAI) on an ongoing basis as the business evolves.

EAI – a definition

I describe EAI as “the structured application of technologies to give people and processes – both inside and outside an organisation – appropriate access to the organisation's business systems as they evolve and change in a seamless manner”.

Some keywords need to be further clarified:

- Technologies – EAI requires the application of often complex and leading-edge solutions.
- Processes – the ultimate aim of EAI is to enable the implementation and use of business processes.



David Pepperell: 'spaghetti integration' can be tackled using EAI

Expert Opinion

- Appropriate access – unless processes are usable they are of no value and access must be at the appropriate levels of security, performance, usability and so on.
- Evolution and change – EAI must support change to processes and systems, ideally with minimal impact in cost and time.
- Seamless – EAI breaks down barriers to process implementation and change.

EAI tools should provide three core capabilities: connectivity; transformation; and workflow and process automation (see Figure 1 on page 8).

1. Connectivity enables reliable and robust information routing and exchange, and is provided using a hub or bus-based message transmission system to which applications are linked using adaptors.

2. Transformation enables data in formats suitable for one system to be converted into formats suitable for other systems.

3. Workflow and process automation engines should enable the automation of business processes independently of the applications. From the point of view of system design, it is important here to note the distinction between process automation, where transaction lifecycles are measured in seconds or minutes, and workflow, which includes manual intervention and which can last for weeks.

Using EAI

If current systems inhibit change and are far from agile, how can EAI help? It can do so at a number of levels – and to avoid confusion it is necessary to prepare a clear roadmap for the application of EAI, as shown in Figure 2.

A sound first step is structured integration, essentially making use of the connectivity element of EAI tools. The next step is about managing data using a single method of transformation so that data is managed as an enterprise-wide activity, rather than as a series of separate point-to-point activities.

The third step is the service view, where applications use common services to improve consistency and reduce cost. An example is

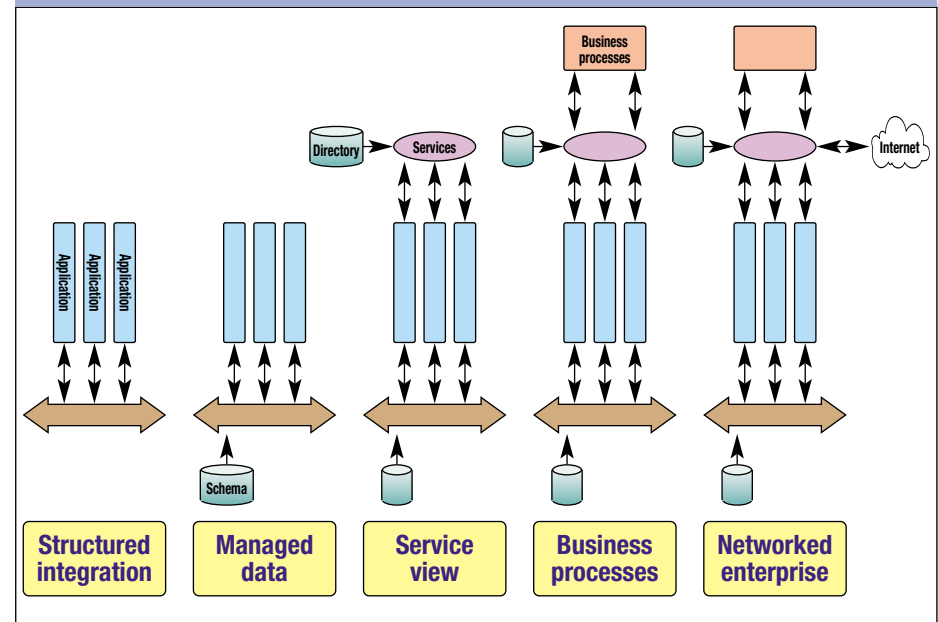
exception handling. The business will want exception handling carried out and presented similarly across systems, and this is best enabled by a common service. Similarly, monitoring and management must be consistently covered, and so too must auditing.

The next step is to implement business processes that extend across organisational silos and make them permeable. Finally, we reach the networked enterprise where organisations are extending processes externally to customers, suppliers, partners – indeed to the whole ‘ecosystem’.

Integration frameworks

If integration is a journey without end – and it will be for most organisations – it is worth considering an integration framework approach. This will support the concept of ‘build once, deploy many times’.

Figure 2: EAI roadmap



THE DO'S AND DON'TS OF EAI

Do:

- Ensure high-level sponsorship ideally from the CEO and CFO.
- Build a robust business case.
- Base an EAI implementation on business processes – ensure process design reflects the inevitability of change.
- Ensure that the EAI implementation is based on a solid but agile technical architecture capable of supporting change.
- Get the right people on the team and ensure you have support from the vendor.
- Start with a proof of concept, ideally one that can demonstrate immediate business benefits.
- Remember the implications of a heterogeneous environment.
- Where resources from different suppliers are used, be sure there is solid documentation and a rigorous handover to support staff before the system goes live.

Don't:

- Proceed without the necessary business sponsorship.
- Believe unverified claims – always ask to see a working reference.
- Be at the leading edge without knowing it – if you are a pioneer, ensure that stakeholders are aware of the implications.
- Forget to include suitable budget estimates for rigorous engineering – specification, design, verification, validation etc.

Integration frameworks raise governance issues such as who owns the framework, and who will support it and develop the various elements required. But once these issues are resolved, a framework can deliver the benefits of reduced cost and risk, plus increased speed and consistency across the enterprise and not just to a single integration activity.

Business buy-in

Another critical factor in the success of any EAI project is how to handle the business. As noted in the 'do's and don'ts' of EAI above,

management buy-in is key and can be supported by tracking and demonstrating benefits, delivering quick wins and communicating appropriately.

Equally important is the need to consider business process and organisational change. Barriers do not get broken just because the technology has the capability to do so – it is essential to ensure that the new processes reflect the new technology, rather than simply being old processes that are technology-enabled to run faster.

In terms of the business case, I would suggest that two models are developed, one to cover business and system integration, the other to cover the use of EAI.

The integration model should show benefits versus costs over time, and must be maintained so that as costs and benefits change, the impact can be assessed and direction altered. The EAI business case needs to show the benefit of EAI over point-to-point because EAI will require more upfront investment with benefits typically emerging after 18 months.

EAI and SOA

Once EAI is understood, it is possible to look towards using EAI to support the service oriented architecture (SOA), which enables adaption to support continual business improvement and agility.

This is achieved by specifying common application platforms that deliver technology services to the business; standard interfaces for the integration of existing and new systems; software, component and service re-use as appropriate; and standards for integration, collaboration and mass deployment.

The potential of SOA has yet to be fully appreciated, but the underlying importance of loosely coupled, standards-based systems has been proven. It is EAI that provides the basic infrastructure that will underpin their development.

- **David Pepperell is head of architecture and technology management at Capgemini. Email: david.pepperell@capgemini.com.**

Oracle

www.oracle.com

Oracle is the world's largest enterprise software company and the world's leading supplier of software for information management. For nearly three decades, it has provided software and services to help organisations get up-to-date and accurate information from their business systems.

Oracle technology can be found in nearly every industry worldwide and in the offices of 98 of the Fortune 100 companies. Oracle is currently helping more government and business customers become information-driven than any other company.

Product positioning and information

The cornerstone of Oracle's approach is integration and adopting a service oriented architecture, focusing on the development, automation and refinement of organisations' core business processes.

Oracle has a number of solutions to enable this, including Oracle Application Server and Oracle BPEL (Business Process Execution Language) Process Manager. Oracle BPEL Process Manager is the first commercially available BPEL engine for the Windows platform.

Together, Oracle Application Server and Oracle BPEL Process Manager provide a modular way to help IT departments save time and reduce costs in the deployment of new solutions, decrease maintenance costs, and quickly adapt to changing business requirements.

For details on Application Server go to

www.oracle.com/appserver/index.html.

For details on Oracle's integration strategy and solutions go to www.oracle.com/appserver/integration/home.html.

For more information on Oracle BPEL Process Manager go to www.oracle.com/appserver/bpel/home.html.

COMPANY

Turnover (UK)	N/P
Turnover (W)	\$10.2bn
Profit Before Tax (UK)	N/P
Profit Before Tax (W)	\$3.9bn
Number of Employees (UK)	N/P
Number of Employees (W)	On request

PRODUCT

Name	Oracle Application Server 10g
First installed (year)	2000
No. of UK sites/new sites last 12 months	N/A
No. of World sites/new sites last 12 months	20,000 plus – 2,000
Key markets	Financial services, comms & media, utilities, public sector, transport & distribution
Current version – date of release	10g – Dec 03
Operating systems supported	All current
Databases supported	Oracle, DB2, SQL Server, all other ODBC-compliant
<i>Enterprise application integration functionality:</i>	
Application independent?	Yes
Configurable across application?	Yes
Connectors/adaptors/brokers available for proprietary software	Approx 130 third-party applications supported + toolkit for developing own adaptors
<i>Software development functionality:</i>	
Development standards supported	N/A
Languages supported	Java
Application framework	J2EE
Shared code repository platforms supported	All current operating systems
Testing tools provided?	Yes

Press releases

Oracle recently announced the imminent availability of Oracle Application Server 10g Release 2 which builds on its market-leading application platform suite (APS).

Release 2 includes new service oriented architecture (SOA) and enterprise grid computing features along with major enhancements to the suite's business integration, business intelligence, identity management, enterprise portal, mobile, RFID and J2EE components.

Oracle also recently announced Oracle Business Integration, a new offering that includes an enterprise service bus, business process management, enhanced enterprise application integration, B2B technologies and new business activity monitoring capabilities.

Capgemini

www.capgemini.com

Capgemini is one of the world's leading providers of consulting, technology and outsourcing services. It offers organisations a network of technology partners and collaboration-focused methods and tools.

Enterprise application integration (EAI) should never be an isolated technology issue, it should always be driven by real business requirements. Capgemini believes that a successful EAI initiative begins with a strategic corporate vision that provides for change in the future. Applying advanced systems integration methodologies, Capgemini helps organisations assess and define the business processes that are critical to success, including automated event processing, B2B collaboration and the required human interactions.

Capgemini can help integrate legacy information systems with n-tiered applications and has a framework for enabling this across a range of technologies. Its integration toolkit, Integration Express, supports the selection of the right way to integrate – EAI, extract transform and load (ETL), point-to-point, web services, etc. It also provides advanced methods, templates and utilities to design and implement the integration mechanisms, at both the technical and business process levels.

Collaborative working

If organisations underestimate the business issues surrounding integration, the technology – however sophisticated – is not going to work. Capgemini therefore works collaboratively with its clients to build a robust business case and gain sponsorship for EAI delivery.

Reducing time and costs of implementations is a key theme for organisations – and Capgemini employs a number of accelerators, including tailored

COMPANY

Turnover (UK)	N/P
Turnover (W)	€6.29bn
Profit Before Tax (UK)	N/P
Profit Before Tax (W)	N/P
Number of Employees (UK)	N/P
Number of Employees (W)	60,000

SERVICES

Services offering	Capgemini offers resources, skillsets and knowledge objects to build the components to integrate two or more applications. It can take a project from any point in its lifecycle and complete the work, based on its experience and alliances with major EAI tool, application and hardware vendors. Capgemini is consistently ranked as a top 10 systems integrator by leading analysts.
Number of consultants	200+ UK EAI consultants
Hardware platforms supported	Works with all major hardware vendors including HP, Sun, IBM
Software platforms supported	Oracle InterConnect, SAP NetWeaver, MS BizTalk MSMQ, IBM WebSphere MQ, Java JMS + TIBCO, AMtrix, webMethods
Main differentiator in EAI market	Rapid Solutions Workshops and Accelerated Delivery Centres; component-based development; partner relationships; full lifecycle capabilities; project management experience; collaborative teaming approach
Value/type of benefits typically offered to clients	Capgemini aims to implement innovative solutions with leading technologies quickly, cost-effectively and with greater predictability

rapid solutions workshops, accelerated delivery centres and pre-defined patterns to address this demand.

The firm says its experience in project management combined with partner relationships and a collaborative teaming approach means it can work with clients across the lifecycle of an EAI installation, from strategy through to operation.

One of Capgemini's key partnerships is with Oracle. Capgemini is an Oracle Certified Advantage Partner and, apart from Oracle itself, has the most Oracle practitioners of any system integrator in the UK.

To develop advanced integration solutions, Capgemini employs Oracle Application Server InterConnect, a framework for enterprise application and data integration. Because it is coupled with Oracle E-Business Suite, InterConnect enables Oracle applications to work with third-party applications, B2B standards and web services.

The big picture

We round up the views from our recent Conspectus Summit on application integration.

The latest *Conspectus* Summit on application integration reviewed two case studies and listened to a consultant's view.

Capgemini application architect John Reardon described his company's work with Westminster City Council and its use of the Oracle InterConnect product.

Westminster had been trying to implement 'joined-up government' with a view to delivering electronic services to citizens in 2005. At a minimum these consist of email, while at the other end of the scale they could cover all the services that councils provide to citizens and businesses.

Westminster has about 200,000 residents, and a large number of businesses, commuters and tourists. It wanted to aim for the top of the services scale, giving citizens access to information not only through call centres but also via the internet.

Having previously undertaken a customer relationship management (CRM) project with Capgemini, the council decided to integrate its services. The ultimate aim was to make sure, despite multiple systems, that it had one version of the truth, not multiple addresses for the same person.

Capgemini was called in to build a proof of concept for an integration infrastructure that would eventually support 33 potential applications. "We started off with waste management, but ultimately that same infrastructure would be used for all the applications within Westminster City Council," explained Reardon.

Acknowledging the need for ongoing change, the council wanted something that was quick and cost-effective to implement. It had been using an old-fashioned batch system to respond to citizens, but this was difficult to manage.

Capgemini proposed an integration hub, so all the messages between the CRM system and the content management system would go through the hub; likewise for other applications.

The hub approach is a lot easier to manage and control. For Westminster, the proof of concept in waste management has provided savings and improved efficiency. It also offers better service to citizens, allowing them to see what is happening in the council and to obtain services.

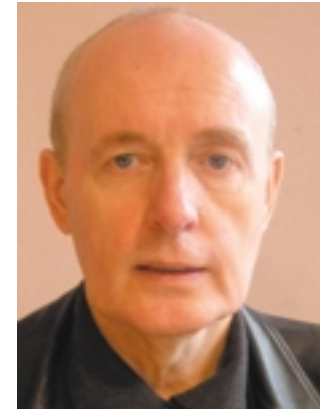
By supplying the infrastructure, Capgemini gave the council a base on which to site the other 33 applications. It chose the Oracle integration product and adaptors to complement the council's Oracle CRM system and skills – holding master data in the repository hub to provide a common view to all applications.

While the project at Westminster delivered benefits, Reardon noted that when the project started in 2003, the integration technology had to be closely managed as at the time there was limited documentation and a shortage of InterConnect skills in the UK.

Customer X

Reardon described a commercial case study that lowered total cost of ownership through effective enterprise integration. The Capgemini customer, dubbed 'Customer X' by Reardon, is an international player in the services sector. It planned an initial UK programme before rollout across operations in 30 countries. The project was not *per se* an integration programme but the implementation of a number of new packages that required both internal and external integration.

One of the technical goals was a common infrastructure platform for the new applications that would keep overall costs down. Reardon explained that the company also wanted to be able to upgrade the



John Reardon: common infrastructure platform



Tom Welsh: web services are going to succeed

applications independently of each other and, halfway through the 18-month project, it upgraded to the next major release of one product. Availability was also to the fore, along with single sign-on.

As in every integration project, complexity arose from different types of interfaces, payloads and communication protocols, as well as a raft of different requirements. To avoid the problems caused by any systems failure, the organisation needed to loose-couple its applications and introduce message queuing ready for system restart.

Reardon noted that putting in an enterprise application integration solution is one thing, but managing its performance and meeting the needs of users is another. These aspects need to be architected, he said, and the infrastructure underpinning the integration – like the applications themselves – needs to be available, with plans made to cover issues such as maintenance, upgrades and patching.

There must be a plan for new versions of products, but there must also be a plan to support changing business requirements.

The team built an integration hub with interfaces to each of the systems providing a common view, and bought adaptors rather than hiring developers to integrate applications. When a package was changed, it was the interfaces between the integration hub and the package that had to be changed, not a set of interfaces between packages.

Reardon explained that by using Oracle integration products, the customer could reduce licensing costs as it was already buying Oracle software for its e-business suite and the integration offering was bundled as part of the application server.

This was Capgemini's first use of Oracle integration products on a large scale, but it went in knowing the risks and knowing the customer was seeking pioneering solutions. It took six consultants eight weeks to

construct all the integration points, but the result is a highly available infrastructure that has been tested by 1,200 users and can cope with messages that need to travel within a few seconds.

The integration has also demonstrated its own longevity through the major software change halfway through, a task that was achieved quickly and cheaply.

Consultant view

Tom Welsh, a senior consultant with Cutter Consortium and Datamonitor, tackled the unclear meaning and use of emerging integration technologies such as EAI.

Suggesting EAI is “the ability to link corporate applications flexibly”, he pointed out that the ‘hard’ language of integration- such as N into N-1 over 2 – actually refers to software interfaces, but often comes across as if the talk is of network connections – in that sense making it meaningless because everything is connected on the internet.

Debating web services, Welsh commented: “One way of looking at web services is as the software industry’s Project Apollo. There is so much invested in it that it has got to happen. The technical problems are difficult, but we can handle them, given time. Web services are going to succeed.”

Going on to describe the development of web services, Welsh noted the long-term possibility of the Symantec web – Tim Berners-Lee’s next big idea. Berners-Lee invented the web back in 1990 and has now devised the Symantec web concept – where programs that communicate with each other will actually be able to share ontology to an extent, being able to dynamically learn what languages the others accept and pick that information up.

Turning his terminology investigation to service oriented architecture, Welsh was scathing, reporting entirely distinct definitions from distinguished sources. While people agree on the ‘soft’ language version of service oriented architecture, Welsh believes that nobody has yet agreed a ‘hard’ language meaning and warns against today’s proponents of the technology.

CONSPECTUS SUMMIT UPDATE

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CONTACT DETAILS

Oracle, Oracle Parkway, Thames Valley Park,
Reading, Berkshire RG6 1RA

Tel: 0870 876 8711

Fax: 0118 924 3183

Contact name: **Richard Legge**

Email address: richard.legge@oracle.com

Website address: www.oracle.com/start

key word 'Better Business Insight'

http://www.oracle.com/appserver/integration_home.html

Company details: 

Capgemini UK plc, Forge End, Woking,
Surrey GU21 6DB

Tel: 01483 764764

Fax: 01483 786161

Contact names: **EAI: Dave Pepperell; Oracle InterConnect and
Integration: John Reardon**

Email addresses: david.pepperell@capgemini.com

john.reardon@capgemini.com

Website addresses: www.uk.capgemini.com/

<http://www.capgemini.com/technology/adi/solutions/eai.shtml>

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