

Technology Infrastructure

Butler Group Subscription Services

Enterprise Application Integration TECHNOLOGY AUDIT

IBM

WebSphere Business Integration Portfolio

Abstract *WebSphere Business Integration (WBI) Portfolio is a collection of integrated and/or integratable products that help create a global view of an organisation. With a strong emphasis on the integration of processes, both internally and externally, WBI provides the framework for creating extensible and agile systems. The move towards business process as an integration point is becoming well accepted in the market, and IBM has a strong edge given the proven underlying technology that it utilises. With version 4.2 of the product, the HOLOSFX acquisition has created a more integrated product set, and this will be extended in future versions to provide integration management with Tivoli and DB2 products. As the requirement for integration has to be the ability to manage after integration – integration as an iterative model, then WBI has strong foundation in this area. Despite the apparent complexity of a large product set, deployment can be undertaken with a modular approach, which provides proof points.*

KEY FINDINGS	
✓ Technical and process integration as a single entity.	✗ Only uni-directional support for UML modelling.
✓ Masking of complexity by use of business objects.	i Aim for tight integration to other management tools.
✓ Allows for iterative rather than repetitive integration.	

Key: ✓ Product Strength ✗ Product Weakness i Point of Information

LOOK AHEAD
Global standards-based metadata repository will provide the ability for database, systems, and process management tools to work more effectively in an holistic fashion.

► FUNCTIONALITY

Product Analysis

IBM's WebSphere Business Integration (WBI) Portfolio is a collection of integrated and/or integratable products that closely align application connectivity with business process integration. The solutions give an easier method of total integration than previously available and answers the new requirements for a total solution that integrates vertically within the technology stack, and also horizontally across client and partner applications and processes.

It is the culmination of creating an 'On Demand' enterprise, where integration is considered proactively rather than reactively. WBI provides both the framework and the solutions to an iterative integration strategy. Commencing with a business process model, implementing this model running the processes, monitoring and measuring the running processes, and finally creating optimised changes to both the initial business process model and the implementation model.

Older methods of integration did not readily allow for this iterative form, with integration taking place as a 'point-in-time' requirement. As requirements changed, integration had to be revisited: integration was reactive rather than proactive; repetitive rather than iterative.

An amalgam of new and tried-and-tested technologies make up the WBI portfolio, which when fully implemented brings the on-demand enterprise a great deal closer.

Product Operation

The iterative approach to integration as discussed previously works by itemising the key conceptual elements of a total integration model, and then providing the solutions for each of these elements. IBM's conceptual architecture consists of the following elements:

- **Model** – for creating a simulation of the business processes.
- **Integrate** – this involves bringing together the various discrete isolated process parts.
- **Connect** – to bring customers and business partners into a non-restrictive network.
- **Monitor** – to ensure that the end-to-end business processes are performing as expected.
- **Manage** – to improve business effectiveness by modification of process.

This conceptual model is matched by specific implementations, which take the following form:

The Model element is covered by the WBI Modeler. This is a business – oriented GUI tool that allows process design and redesign. Deployment of process requires minimal coding, and IBM has worked extensively in integrating on standard data definitions, and support for collaboration and business objects across different toolsets.

The business objects as defined within WBI are based on a common object model, and they are mapped or transformed messages. Creating this business object, which is an intermediate state for messages, hides the underlying complexity from the map developer. By hiding the complexity, the developer skills can shift towards the business analyst.

The business object can be integrated into any message-based framework by use of the GUI. The open process-node architecture provides access to third-party vendors to add additional functionality into the system.

The WBI product set supports the semantic relationships that exist across applications. This allows visual modelling of the methods that differing applications have of handling common business entities. These relationships and the transformations discussed previously can be stored and managed within relationship tables.

An additional element within WBI Modeler is the ability to carry out process simulation. With this element any number of 'what-if' conditions can be applied to processes to measure behaviour under changing conditions.

Integration from the conceptual model is supported by the WBI Server v4.2. This is designed to maximise the effectiveness of business processes; achieving this through the connecting of applications by way of business processes on a common infrastructure.

The integration element also includes establishing a common programming model for a Service-Oriented Architecture (SOA) based on standards. Naturally, the key standards are based around the Java space, with J2EE as a central point. The integration also includes open-standard support for Web services, and interoperability between other open-standard platforms. Both these elements help extend the user choice beyond the WebSphere platform.

The common infrastructure provides a plug-and-play modular approach to system extension, with the ability to incorporate the WebSphere Application Server; runtime connectivity through WebSphere MQ; personalised access through WebSphere Portal, and extensive tools with WebSphere Studio Workbench.

The connection element takes an existing enterprise and provides a means of connection relevant to the size of the business partner, and the depth of the connection required. The external partner can implement one of three connection solutions:

- WBI-C Express.
- WBI-C.
- WBI-C Enterprise.

The lowest level provides a low-cost option for small business partners, where there is little or no need for deep process integration. WBI-C Express provides the framework for Web services and for simple process integration. The middle level extends the process integration to its deepest requirement, and also works with vertical-industry standards. WBI-C Enterprise adds full EDI over the Internet as additional functionality.

Creating a flexible business process infrastructure is only one part of the picture. The requirement is to monitor all the running processes to ensure maximisation of resource and the fastest possible execution.

WBI Monitor tracks processes and displays the details on Web-based process dashboards. Performance-based alerts can be set up and near-time process management is made possible. Auditing and logging of events can take place with produced reports that can be created against Key Performance Indicators (KPIs), to prove service levels or to measure expected ROI actuals.

The higher level of standardisation for the open framework that IBM is achieving allows other more technology-based measuring tools, such as those available from Tivoli, to be integrated into a complete process, application, systems, network, and database monitoring set up. This complete structure, based around Tivoli, WebSphere, and DB2 develops into a total Business Activity Monitoring (BAM) solution.

This leads naturally to the final element in the conceptual integration model; the ability to manage process synergistically to the other parts of the technology stack. From a WBI viewpoint this element is handled by WBI Monitor, but a larger view should be taken. Whilst the managing of business process is important, the value is extended when all parts of the infrastructure can be managed with full understanding of the inherent inter-relationships.

Product Emphasis

Although many improvements have been made in WBI since Butler Group last reviewed it in September 2002, one of the most impressive parts of this improvement appears to be dichotomous. IBM has managed to create a solution of disparate elements that form a tightly integrated whole, without creating exclusivity. A specific area of criticism that appeared in the last review of this product concerned the support for Web services. The technical support for Web services was applauded, but its integration as a key business model was questioned.

This latest version of WBI has addressed many of the concerns raised at the time and we can now see Web services as an integrated element rather than as an add-on to WBI.

► DEPLOYMENT

Deployment of WBI can be undertaken on the following platforms:

- HP-UX 11.11 (11i).
- IBM AIX 5.1.
- Microsoft Windows 2000 (SP3).
- Microsoft Windows NT4 (SP6a).
- Sun Solaris 8 (2.8).

At one level, integration is the combining of existing systems. In order to facilitate this, adapters have to be built for disparate applications, various system services, specific implementations of e-business models, and for access to mainframe systems. IBM has created a whole range of these and the four key areas and some key adapters are detailed below:

Application Adapters

- Ariba.
- Clarify CRM.
- SAP.
- BroadVision Commerce.
- Oracle Applications.
- Siebel eBusiness Applications.

Technology Adapters

- FIX Protocol.
- JText.
- SWIFT.
- JMS.
- MQ.
- XML.

Mainframe Adapters

- ADABAS.
- IMS Transaction Manager and Database Manager.
- CICS.
- VSAM.

e-Business Adapters

- Data Handler for XML.
- iSoft Peer to Peer Agent.
- Trading Partner Interchange Solo.
- Data Handler for EDI.
- Trading Partner Interchange Trading Network.
- Web Services.

The provided Application Adapters will not answer the needs of every organisation, but WBI has a map engine which speeds the transformation process. This map engine is Java based and includes full testing and debugging capabilities. Protocol adapters can be developed using either Java or C++, and pre-built format introspection agents are also provided by IBM to further speed the development process.

Special note should be made of the JMS Technology Adapter. The standard communications middleware is WebSphere MQ, which provides proven scalable asynchronous messaging. The WebSphere MQ product uses a range of plug-ins for encryption and repudiation, and also supports message logging and auditing. The JMS Technology Adapter provides support for use of JMS as the underlying transport mechanism.

Deployment of the WBI Monitor solution is eased by the inclusion of a number of pre-defined process dashboards. Additional monitors can be designed by use of the Eclipse-based plug-in.

Central to IBM's vision for flexible and extensible integration is a set of common standards for metadata that will allow a single repository to store all relevant data. This will help create the BAM architecture. It is this use of common standards that is already creating the ability to bring together Tivoli system management tools, DB2 database management tools, and WBI process management tools.

► PRODUCT STRATEGY

As with all things IBM, the target market is broad, with both a horizontal and vertical focus. In this latter space, IBM has undertaken an immense amount of work in the past year extending specific vertical markets from five to eleven. Within these eleven industry sectors, IBM has created 48 solutions based on industry-specific adapters.

The sectors covered are:

- Automotive.
- Chemical & Petroleum.
- Energy & Utilities.
- Healthcare.
- Pharmaceutical.
- Telecom.
- Banking.
- Electronics.
- Financial Markets.
- Insurance.
- Retail.

Within these sectors common business areas are addressed, and these consist of:

- Customer Relationship Management.
- Enterprise Resource Planning.
- Supply Chain Management.
- Straight-Through Processing.
- Mergers & Acquisitions.
- Web Exploitation.

It should be noted that both the vertical market focus and the common business areas addressed is more than a marketing plan; it is backed by implementable solutions specific to the needs of an industry or specific to an area, which can create real benefit.

The purpose of these solutions is to accelerate time to market (IBM call the solutions Industry Accelerators), improve all aspects of the supply chain, decrease costs, and improve service processes.

IBM can provide many proof points for added value and some of the more interesting ones as measured against traditional EAI solutions are detailed below.

- Integrating a global ERP solution to legacy systems across 125 integration points, showed a 42% saving over a leading P2P integrator.
- A 240 point integration between ERP, Clarify, and legacy systems, demonstrated a 60% saving over a leading integration tools provider.
- Integrating JDE, JBA, ERP, and Siebel across 113 integration points, showed a saving of 40% measured against P2P integration.

Cost savings only tell one part of the story. As taken against P2P integration, the benefits extend into the reusability and flexibility of the system after integration has taken place.

Much of this flexibility is built around the Business Process Management (BPM) element of WBI. IBM acquired the HOLOSFX BPM Suite, and has incorporated this technology more deeply into WBI than was previously the case in earlier versions, when HOLOSFX was an enabling third-party technology.

The HOLOSFX BPM technology that is now an integral part of WBI provides the simulation element as discussed previously, and also cost-based process optimisation. IBM will be able to increase market penetration based on the respected technology that existed within the HOLOSFX BPM Suite.

Another strength that IBM can demonstrate is the integration between the HOLOSFX element and Rational for UML modelling. The acquisition of Rational now gives a fully integrated offering within the WebSphere brand, rather than parts of the solution with third-party support.

Currently, the Rational UML models are uni-directional, with the ability to create runtime process models from UML, but with no ability to import process flows into the Rational UML product.

► COMPANY PROFILE

International Business Machines (IBM) is one of the world's leading, and best known, technology companies, with operations in 164 countries. IBM makes a broad range of computers, software, peripherals, and has a global consultancy services arm.

IBM is a public company trading on the NYSE (IBM) and is headquartered in Armonk, New York, employing over 300,000 people across the globe. Financial results for the last three years are shown in the table below:

	2002	2001	2000
Revenues (US\$ million)	81,186	83,067	85,089
Increase/Decrease on previous year	(2.3%)	(2.4%)	(3.0%)
Net Income (US\$ million)	5,334	8,146	7,874
Increase/Decrease on previous year	(34.5%)	3.5%	2.1%

In 2002, Global Services accounted for 45% of revenue, Hardware contributed 34%, and Software represented 16%, with the balance coming from other activities.

In pure revenue terms, with no adjustments for constant currency, Global Services and Software are showing small growth, with hardware in decline.

In 2002 IBM incurred a chargeable cost of US\$292 million in relation to the acquisition of PwCC. Historical financial information was also adjusted to take account of discontinued operations, and the figures shown above reflect those changes with the exception of the percentage increase/decrease between 1999 and 2000.

IBM has numerous business and technology partnerships that help support its operations, and has invested heavily in the Linux area, and is now seen as a key player in this expanding market.

► SUMMARY

With release 4.2 of WBI, IBM has created an integration platform of some note. The elements that made up previous versions were heavily reliant on third-party technologies, most notably HOLOSFX BPM Suite. These technologies are now under the ownership of IBM, which presents a much clearer roadmap for future extensions. This is further reinforced with the acquisition of the Rational modelling tools.

The tighter integration between the elements that go to make up WBI allows IBM to work towards a common set of metadata standards. This work has already started and the benefits are beginning to become obvious when one considers the tighter tie-in that WBI will have with other relevant tools, such as those provided by Tivoli, and the DB2 management toolset.

The key aim of integration has to be the creation of an holistic view. Technology elements have to work together and communicate both internally and externally. More importantly, processes have to extend across organisational boundaries in a flexible manner.

WBI can be viewed from the technical viewpoint of such proven technologies as WebSphere MQ and WebSphere Application Server, both required elements for integration, but more relevantly it can be viewed as a total integration solution, that will effectively open up businesses to customer and partner access. Drawing on the strengths of managing business processes in a global environment.

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