

# Technology Infrastructure

## Butler Group Subscription Services

# Enterprise Application Integration TECHNOLOGY AUDIT

## Vitria

### BusinessWare 4

**Summary** *BusinessWare 4, and indeed Vitria the company, has been constructed around the dedicated belief that application integration needs to be controlled and driven by the business processes that characterise an organisation. This founding strategy is elucidated throughout the vendor's technology and go-to-market strategy, and in our opinion, is the most appropriate way to view the application integration challenge.*

*BusinessWare 4 is the latest incarnation of Vitria's process-driven integration solution. It is in Butler Group's opinion that it represents a major leap forward for Vitria and will undoubtedly put pressure on the competition. BusinessWare 4 provides organisations with a number of mechanisms for simplifying the deployment and management of an integration solution. It consists of range of tools and technologies that allow the organisation to model, test, deploy, and refine such a process-driven integration solution.*

*The BusinessWare Modeling Environment is used for the development of BusinessWare Models, and has a some powerful, time-saving features. All the elements of a particular solution are grouped together as a project, allowing them to be moved through design, debug, test, and deployment as a unit. This is also crucial to the Solution-Level Modeling and Solution Lifecycle Management capabilities inherent within BusinessWare 4.*

*Vitria has augmented its direct sales model with vertical market capabilities. These are delivered both within the product, through specific pre-packaged data transformations and application connectors, and via the partnerships Vitria has formed with specialist SI's within these target markets.*

*In Butler Group's view, Vitria is well positioned to exploit the latent demand that exists for process-driven integration solutions. In particular, we are impressed with the way Vitria has set about simplifying many of the integration intricacies, focussing on the key benefits that can be realised through greater process integration and increased process efficiency. Abstracting the integration discussion to this process level is not only of greater appeal to potential customers, it also helps to ensure that the deployed solution meets business requirements.*

## ► GENERAL FUNCTIONALITY

Whether a deliberate strategy or not, Vitria BusinessWare 4 utilises many of the overarching concepts found in the application development area, in order to simplify the process of deploying and managing an application integration solution. For example, BusinessWare 4 is built on a component-based services architecture. This allows process business processes and process components to be combined in a visual manner to form services or solutions. These services can be copied, re-used, and distributed easily, expediting deployment. Vitria has also placed an emphasis on the design, testing, and deployment phases, ensuring that each phase can be managed independently.

Architecturally, BusinessWare 4 is made up of the following layers:

- **Business Process Management (BPM)** – BusinessWare 4 has a process-driven architecture, and provides the organisation with all of the necessary functionality to model and automate long-lived, multi-step processes that typically span disparate applications, people, and even businesses.
- **Business Vocabulary Management** – This is Vitria's technology for managing the necessary transformations between different data formats and protocols as well as industry-defined dialects such as RosettaNet and ebXML.
- **Business Analysis and Monitoring** – This provides users and process owners with the tools and controls to monitor and manage processes. This can be in a real time sense, for immediate action, or historical analysis for viewing how processes are performing over time, identifying performance bottlenecks, and important trends.

Specifically, the following elements are provided as part of a standard offering:

- BusinessWare Modeling Environment (End-to-End Integration Modelling).
- Web Administration (Project Deployment, partitioning and Management).
- BusinessWare Automator (Stateful Process Modelling).
- BusinessWare Communicator (Publish/Subscribe and Queuing).
- BusinessWare Server (Common Services – Transactionality, Security, and Recoverability).
- BusinessWare Analyzer (Real Time Business Process Analysis).
- BusinessWare Cockpit (Dynamic and Static Analysis through Web Browser).
- BusinessWare Transformer (Data transformation).
- Bundled Connectors (File, FTP, Channel, HTTP, e-mail, Queue).

## ► BUSINESS PROCESS MANAGEMENT

Most active vendors in the application integration space now claim to provide solutions that now incorporate BPM capabilities. This is often facilitated by 'bolting on' BPM software, for example, through acquisition or OEM. Vitria has the benefit of being established around BPM, leading to an impressive and well-considered solution.

The BusinessWare Modeling Environment is used for the development of BusinessWare Models, with a number of powerful, time-saving features. All the elements of a particular solution are grouped together as a project, allowing them to be moved through design, debug, test, and deployment as a unit. This is also crucial to the Solution-Level Modeling and Solution Lifecycle Management capabilities inherent within BusinessWare 4.

Vitria has also introduced the concept of a Business Process Object (BPO). The BPO defines the data set that is unique to one Business Process and Model, such as a particular order number. The BPO can then be tracked through the model, with all necessary process state changes persisted to a database to support back ups. This is indicative of the process-driven view characteristic of Vitria solutions.

BusinessWare 4 provides support for both static and dynamic nested process models, the latter of which can help facilitate reuse. A differentiating feature for Vitria is the level of testing and simulation that is supported. A complete integration process can be simulated using animation to indicate the state transitions and events. Vitria's Business Analysis and Monitoring tools provide key metrics and graphical representations of processes, either during test or run-time. These can be delivered in real time, if required, for example, when a defined service level agreement has been breached, or written to a database for detailed time-series analysis. These metrics and views are delivered via the BusinessWare Cockpit.

XMI is also supported, allowing users to import models defined in other tools, for example, Rational Rose.

## ► COMMUNICATIONS MIDDLEWARE

BusinessWare Communicator provides persistent asynchronous messaging supporting both publish/subscribe Channels and Queues. Multicasting is supported, allowing a channel to broadcast an event to multiple subscribers, minimising network load.

Vitria integration models are used at the macro level to see how different processes and process elements are connected. At the micro level BusinessWare4 provides support for synchronous messaging with transaction control.

BusinessWare Communicator itself supports IIOP. In addition, BusinessWare Connectors and Proxies provides support for the following protocols:

- HTTP(S).
- RMI.
- SOAP/HTTP.
- FTP.
- SMTP.
- POP3.

In addition, it supports third party queuing systems including IBM MQSeries, Microsoft MSMQ, and JMS.

Routing rules and definitions are controlled at the Process Model level, again indicating the depth of integration between process and underlying integration techniques.

An LDAP directory acts as the central repository within BusinessWare. Not only does this provide a runtime environment for deployment and execution, but it also provides all of the necessary user and authorisation information needed to administer BusinessWare. These will typically have already been defined by the organisation for existing naming services. Vitria supports JNDI as the API for accessing its directory and naming service, but within version 4 of BusinessWare it has replaced its own repository with standard LDAP implementation. In addition, BusinessWare supports iPlanet Directory Server 5.1, IBM Directory Server 4.1, and Microsoft ActiveDirectory.

BusinessWare supports the relevant J2EE and OMG standards for distributed transactions. BusinessWare also supports XA protocol, which allows for XA-compliant resources to participate in a 2-Phase commit.

## ► TRANSFORMATION AND FORMATTING

Vitria's Business Vocabulary Management simplifies the process of integrating between data formats and applications. The level of pre-integration that can be performed is being extended via so called Common Business Objects. These objects have an implicit understanding of the necessary transformations that are required between a number of popular formats and applications, for example, from SAP to Siebel. Vitria currently provides support for seven Common Business Objects for Siebel, PeopleSoft, SAP, and Oracle applications, via the optional Vitria Collaborative Application for Data Synchronization. Vitria claims that such an approach can provide between 50-90% of the solution required, out-of-the-box.

BusinessWare Transformer has been designed to provide developers with an intuitive client interface for defining the necessary transformation and mapping routines. This includes support for complex data structures from one data source to another, for example, complex XML-to-XML vocabularies, IDL, ODL, legacy, and database systems.

Messages are first transformed into an intermediate state (either IDL, XML, or Java Interfaces) before being formatted. BusinessWare Transformer provides support for a range of date/time conversion functions, EBCDIC/ASCII, binary and character conversion functions, EDI (via EDI module), and a number of functions for splitting/combining data fields. Furthermore BusinessWare Transformer incorporates a native XML parser and the additional BusinessWare B2Bi Server provides support for trading protocols such as RosettaNet, ebXML, cXML, and xCBL.

In order to access, integrate, and coordinate the organisation's applications, Vitria has adopted the strategy of using, wherever possible, the APIs provided by the application vendor. BusinessWare also supports the latest JCA standard. The company has developed pre-built adapters for the following applications:

Ariba Buyer and Ariba Supplier	Mercator
BroadVision	Metasolv
Clarify	Oracle Applications
CommerceOne Marketsite, CommerceOne Buysite	PeopleSoft
Daleen	Portal Infranet
i2	Remedy
JDEdwards OneWorld	SAP
Kenan	Siebel and Siebel Workflow
Lawson	Vantive

Additional custom application connectors can be created using the BusinessWare Connector SDK. This provides wizard-driven capabilities for the development of connectors, and supports C/C++ and Java programming languages.

For database connection, Vitria provides the following pre-built adapters:

- DB2 (AIX, W2K, AS400, OS390).
- Informix.
- Oracle7, 8, 9.
- SQL2000.
- SQL Server 7.
- Sybase 11, 12.
- Attunity and IBI (Adabas, Datacom, Ingres, etc).

JDBC can also be used to connect to other repositories.

## ► OPERATIONS ARCHITECTURE

BusinessWare 4 can run on the following platforms:

- HP/UX 11/11i.
- IBM AIX 4.3, 5.1.
- Microsoft Windows 2000.
- Sun Solaris 8.

BusinessWare runtime configurations need to be deployed as a single executable onto an LDAP server, which therefore needs to be present within the organisation. This gives performance, scalability, and deployment advantages, based on industry standards.

Reliability and availability are addressed through persistence, along with write-ahead logs, and advanced clustering should any particular node or nodes fail. Multi-threading technology is also exploited in order to distribute workload over a number of server CPUs. Furthermore, load balancing can be performed over a number of disparate Integration Models, and hence servers, using Vitria's queuing technology.

In the event of failure, the developed Process Models support event-level rollback, using persisted data (message and process state). Compensating transactions can be executed where necessary, in order to completely return the entire system to a particular state. Alerts and notification events can be published via e-mail, pagers, and voice messaging.

Administration is performed via a centralised Web console. This provides system administrators access to all of the necessary controls to manage and monitor the runtime environment. It gives users a unified view of all of the deployed projects, across all platforms and environments. BusinessWare 4 also supports a command-line tool, giving administrators with suitable privileges access to additional functions such as starting, stopping, and checking the status of BusinessWare servers, Integration Servers, and channels.

## ► WEB SERVICES SUPPORT

Vitria has a thorough Web services strategy, with many excellent native capabilities. For example, Web Services can act as a messaging protocol between BusinessWare Integration components, other projects, or external partners – SOAP 1.1,1.2 is supported at the exchange layer. WSDL interfaces can easily be generated within the BusinessWare environment. BusinessWare 4 users can also call multiple Web Services from a process model state, in order to integrate external applications or processes. Furthermore, the complete integration model can be exposed as a packaged Web service.

Importantly, BusinessWare's flexible architecture allows it to be deployed across any platform. Furthermore, BusinessWare Web Services support can be extended to Microsoft .NET and Apache Axis. J2EE support also allows for integration with application servers via RMI-IIOP. According to the vendor, a BusinessWare Integration Model can be called directly, using either an RMI-IIOP interface (for Application Server interoperability) or through an IIOP interface (for CORBA ORB interoperability), through ports on the Integration Model. Alternatively, users can call a CORBA ORB directly from a BusinessWare Integration Model, and then expose the model as a Web service, if required.

This demonstrates the mechanism for the automatic creation of WSDL interfaces from the Integration Model, which can itself incorporate EJBs and CORBA ORBs, etc. UDDI support is not currently provided within BusinessWare 4; whilst not a critical area of the Web services protocol stack, we would encourage the vendor to address this area in the next product release.

## ► DEPLOYMENT

Vitria has clearly concentrated on addressing the key issues and problems that can beset the deployment of an integration solution. This is particularly relevant in the current economic climate, where ROI and time-to-benefit are of critical importance. Vitria has developed the Collaborative Application for Data Synchronization in order to provide many capabilities out-of-the-box. This is not to suggest that integration is straightforward or can be oversimplified, but that many organisations that run some of the most popular applications will have to perform many of the same transformation and synchronisation routines, based around similar business processes.

Vitria has a very clear and structured view of how its solutions should be deployed in order to maximise value to the business. This structure is based around a number of key roles.

- Project Sponsor.
- Project Manager.
- Architect.
- Designer.
- Tester.
- System Administrator.
- Systems Integrator.
- Vitria Consultant.

Details of the methodology are available directly from Vitria.

Vitria has started working with specialist niche SI's as well as the larger players in order to offer highly focussed and relevant vertical market solutions. This allows the vendor to offer more targeted solutions pertaining to detailed integration requirements and market specifics demanded by key vertical industries.

Vitria claims that typical BusinessWare implementations take in the region of 12-16 weeks and integrate in the region of five business-critical applications. The architecture of the product lends itself to a modular deployment, facilitated by the level of reuse that is possible.

As already mentioned, BusinessWare 4 has a Web-based administration console for starting, stopping, configuring, and monitoring solution components. In addition, Vitria has also developed an SNMP interface for systems management tools like HP OpenView to monitor BusinessWare components.

Standard annual maintenance/support is charged at 18% of license fees. Premium support (24x7) is charged at 24% and provides more dedicated service, including around-the-clock (24x7) support, pager service for priority 1 issues, technical support bulletins, onsite support introduction, private Web Site access, quarterly support reviews, and technical support usage reports.

## ► PRODUCT STRATEGY

Vitria is targeting the higher-level integration market in the areas of BPM, Business Vocabulary Management (BVM), and Business Process Intelligence. Vitria's target market for its BusinessWare solution encompasses primarily Telco, Healthcare, Insurance, Manufacturing, and Financial Services marketplaces. Within these sectors Vitria targets Global 2000 companies.

Vitria has more than 100 key partnerships. Business partners include a wide range of reputable companies. These include SIs such as Accenture, KPMG, PWC, CSC, and T-Systems. Vitria's principal technology partnership is that with IDS Scheer. Other technology partners include Siebel, ABB, SAP, Sun Microsystems, IBM, PeopleSoft, Onyx, Vantive, and BroadVision.

Vitria believes there is evidence of an increased demand for out-of-the-box, industry-specific, configurable collaborative applications that include pre-built Process Models, transformations, and process metrics/reports. With this in mind, Vitria has strong plans to develop its international presence, assisted partly by its new partnerships with leading SI specialists that operate in its target markets. The vendor also claims to be extending its reach to smaller countries through a number of reseller agreements.

## ► STRENGTHS AND WEAKNESSES

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> <li>• Component based architecture.</li> <li>• Process-driven deployment and management.</li> <li>• Detailed testing and simulation options.</li> <li>• Vertical focus and execution.</li> </ul>	<ul style="list-style-type: none"> <li>• Role-based client interfaces could benefit from integration.</li> <li>• Recent cutbacks and difficulties could be a cause for concern.</li> <li>• Requires LDAP directory to be installed.</li> </ul>

## ► VENDOR PROFILE

Vitria was incorporated in October 1994. The company was founded by JoMei Chang, who invented the Trader Workstation at Tibco, and Dale Skeen, who conceptualised the Tibco product and the 'publish-subscribe' architecture paradigm. They were both amongst the first five employees at Tibco. Vitria was a consulting company until BusinessWare was released in 1997.

Vitria has its headquarters in California in the USA and has 26 regional offices in North America, eight in Europe, four in Asia, one in Australia, and one in South America. The company now employs 555 people, having undergone substantial restructuring. The primary reason for this was the impact of the economic slow-down of the telco market. The current geographical employment profile is as follows, with 450 employees in North America, 75 in Europe, and 30 in Asia-Pacific and South America.

Vitria is a public company that is quoted on the NASDAQ exchange under the symbol VITR. Revenue and net income for the last three fiscal years are:

	2001 (US\$ million)	2000 (US\$ million)	1999 (US\$ million)
Revenue	135.0	134.7	31.5
Total Net Income	(53.6)	(1.3)	(14.1)

The company has 450+ customers across multiple industries, including manufacturing, financial services, communications, energy, and healthcare. Customers include American Airlines, AT&T, BP, British Telecom, Deutsche Bank, Deutsche Telecom, Federal Express, Accenture, Goodyear Tyre and Rubber, Lucent Technologies, Apple Computers, and Cable Vision.

Vitria is involved with a number of standards bodies including RosettaNet, WfMC, UDDI, and OASIS/ebXML. It was a co-submitter of WSDL to the W3C, and an active member of the W3C XML Protocol Working Group. Vitria is also a member of the Business Process Management Initiative (BPMI.org), a standards body that is working towards BPM standards for the future.

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