

# Ultimus + BizTalk Server 2004:

## A Complete Solution for Enterprise BPM/Workflow

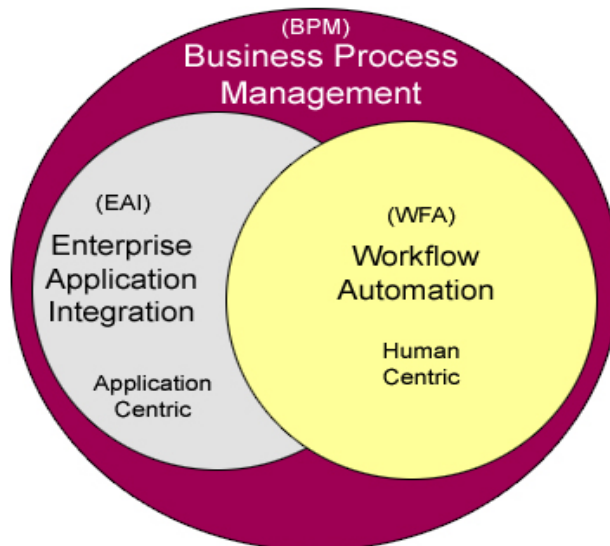
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### Introduction

The Business Process Management (BPM) space is converging from two different and distinct product sub-categories into a single category under the pressure of a number of business and technology drivers. This convergence is giving birth to a new breed of complete enterprise class BPM solutions that are destined to become as prominent in an organization as ERP or CRM deployments, and are delivering much more significant ROI among numerous early adopters. In this white paper we first discuss and distinguish the two product sub-categories within the BPM space. We then discuss the business and technology drivers that are forcing a convergence. This is followed by a discussion of the best-of-breed attributes of the Microsoft BizTalk Server 2004 and the Ultimus BPM Suite. We conclude by describing the business benefits of a tight and seamless integration of the two products, and how the integrated solution serves as a complete, flexible, enterprise BPM platform.

### Understanding BPM

The BPM space (Figure 1) consists of two distinct sub-categories of products for process management that have some overlapping functionality. These are Enterprise Application Integration (EAI) products that are optimized for system-to-system (application centric) business processes, and Workflow Automation (WFA) products that are focused on automating people-to-people (people centric) business processes.



**Figure 1: BPM consists of two distinct product categories.**

On the surface these products look similar because both are geared to the automation and management of business processes. This leads many casual observers to lump these two different products into the single umbrella category of BPM, which results in much confusion and poor buying decisions. However, a careful analysis of the requirements of EAI and WFA reveals significant differences. Figure 2 compares and contrasts the key requirements.

- i. **Speed:** An EAI system has to perform at machine speed since it caters to system-to-system processes. When executing processes that move data between systems or applications, speed and a very high transaction volume is a key requirement. A WFA system deals with people-centric processes, where speed is important but not a paramount consideration. If a task does not travel from one person to another in a fraction of a second, it is not that important because without a WFA application it may take many minutes, or even hours or days for the task to be delivered.
- ii. **Number of Participants:** An enterprise may have five enterprise applications that may need to be involved in a process. It is unlikely to have thirty different enterprise applications unless something is radically dysfunctional within the organization or its IT department. An EAI system only has to deal with a limited number of participants that perform “static” functions. The roles that these applications and people play are fairly well defined and do not change regularly. On the other hand, a WFA system has to deal with a large number of people within and outside the organization who may participate in business processes. Indeed, for certain types of business processes, almost every one in an organization is a potential participant, especially as the number of processes deployed increases. Productivity practitioners recommend that organizations include their customers and partners in their processes, which also increases the number of participants. Typical WFA systems easily include anywhere from 100 to 2000 users, and the size of the deployments keeps on growing. People have different roles and responsibilities, and these are also in a state of constant flux. Thus, handling a large number of participants with changing roles is a major requirement for robust WFA systems.

	EAI	WFA
Speed	Machine Speed	People Speed
Number of Participants	Few	Many
Handling Exceptions	Few	Many
Business Rules	Data Driven	Data and Relationship Driven
User Interface	None	Complex
Data Transformation/Mapping	Many	Few

**Figure 2: EAI and workflow requirements are very different.**

- iii. **Handling Exceptions:** The ability to handle exceptions is another major differentiator of EAI and WFA systems. WFA systems have to manage a large number of exceptions that deal with people. People take time off from work, become sick, are involved in emergencies, are reassigned, want to discuss particular tasks with someone else before doing them, or may want to delegate tasks to someone else. A WFA system must be able to cope with these and many other requirements for handling exceptions. On the other hand, EAI systems do not have to deal with many exceptions because application-centric processes work solely with enterprise applications and do not face challenges created by people-related exceptions. In EAI systems, exceptions are driven by data or system failures that are relatively easy to trap and handle.
- iv. **Business Rules:** An EAI system has to deal with business rules that are “data driven” and relatively easy to handle programmatically. However, a WFA system has to manage business rules that are not only “data driven” but also “relationship

driven,” which is inherently more complex, and the complexity increases with the size of the organization.

- v. **User Interface:** An EAI system has no user interface requirements since it simply exchanges data with enterprise applications as a part of the business process. In contrast, the ability to provide flexible user interfaces in the shape of electronic forms or documents is one of the most challenging requirements of a WFA system. Organizations have been using forms and documents for a long time to capture and distribute information. When they decide to automate business processes, their first preference is to use electronic forms and documents that are identical to their paper counterparts. Thus, providing support for flexible electronic forms and documents is a major challenge for WFA systems, while this is not an issue for EAI systems.
- vi. **Data Transformation/Mapping:** While EAI systems do not have many user interface requirements, they do have a major requirement to provide sophisticated data transformation/mapping capabilities if they are to successfully support the exchange of information between disparate enterprise applications. Each enterprise application saves information in its own format and structure. Thus, it is necessary that EAI systems map and transform data from the native format of one application into a different format used by another application. WFA systems, on the other hand, have only limited data transformation/mapping requirements since they deal primarily with people-centric processes.

By understanding these differentiators, one can appreciate why EAI and WFA systems belong to different product categories optimized for different requirements.

## The BPM Convergence

While the requirements of EAI and WFA are different, the market requirements are forcing a convergence into a single all-encompassing category, Business Process Management (BPM). The catalysts behind this convergence are five business and technical factors:

- i. **Business Processes are Becoming Heterogeneous**

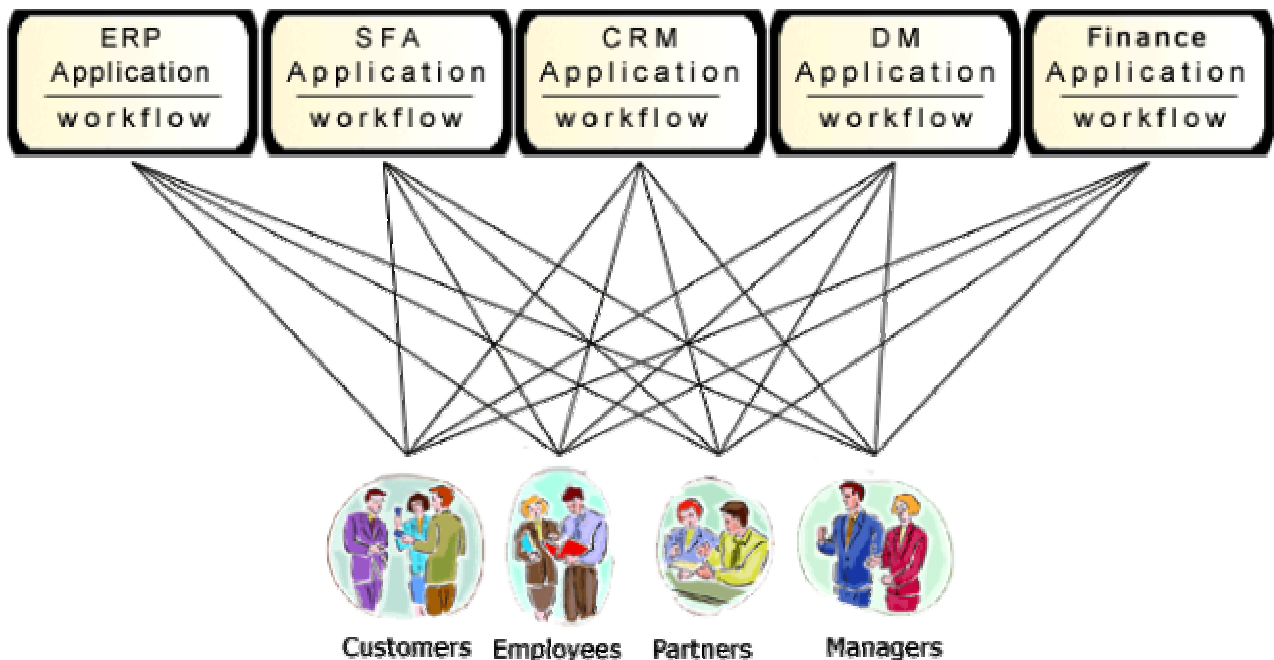
Driven by the “e-Everything” phenomena and the wide proliferation of IT applications, business processes are becoming heterogeneous. More and more EAI processes are extending to include humans to handle exceptions, incorporate human knowledge or judgment, and use people in an optimized fashion. Likewise, an increasing number of people-centric processes are being extended to applications as organizations try to streamline their processes. As business processes become heterogeneous and become people+system centric, organizations are beginning to demand systems that can bridge both types of requirements in a unified environment. This is forcing a convergence of WFA and EAI.
- ii. **Web Services Will Marginalize Integration as a Differentiator**

Integration is one of the major value propositions of EAI systems. Companies invest a lot of money in order to ensure that their enterprise applications are integrated and can communicate with each other. EAI systems, and the adapters/connectors that are marketed with them, require a significant investment of both time and money. They are considered a necessity since business processes cannot be automated without the ability to communicate with enterprise applications. The emergence of Web Services as the standard means of integrating with applications has the potential of dramatically reducing the cost of integration. While Web Services may never eliminate the need for specialized, high-performance adapters/connectors, they will solve 80% of the integration requirements, using a standard technology that is in the public domain. Thus, Web Services will marginalize integration as a differentiator between EAI and WFA systems, further reducing the gap between the two. The focus

of EAI will increasingly shift to other capabilities such as transaction speed, data transformation/mapping, and the ability to offer a wide range of adaptors/connectors.

iii. ***BPM is Moving Out of Enterprise Applications***

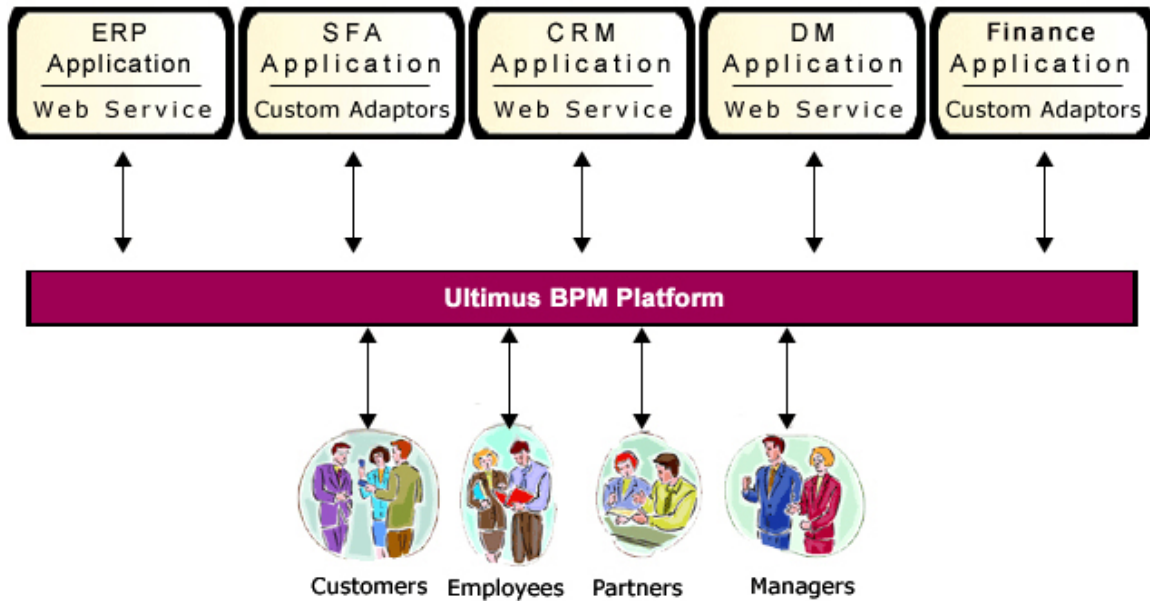
In the late 1990s, based on demand from customers, many enterprise application vendors started including some form of workflow in the core product designed to enhance the functionality and the value proposition of the enterprise application. Many ERP, CRM, SFA, document management systems, and asset management systems began offering some embedded workflow capabilities. This was at a time when stand-alone general-purpose BPM/workflow solutions were not mature and not in vogue. Many industry analysts predicted that standalone BPM/workflow would disappear as a product category, and BPM/workflow capabilities would be included native in enterprise applications. However, it soon became apparent that this model was not practical or viable for some very simple reasons. If a company has five enterprise applications, and each of these enterprise applications has an embedded BPM/workflow engine, the company ends up owning five BPM/workflow engines, as shown in Figure 3. The company has to manage the business rules, user interfaces, role definitions, administration, exception handling, and many other workflow related functions for each of these five BPM/workflow engines.



**Figure 3: The embedded workflow architecture is neither practical nor scalable.**

It became quickly apparent that managing one robust BPM/workflow engine effectively was challenging enough. Having to manage five was next to impossible.

This realization, and the complexities of managing multiple BPM systems, has led to the resurgence of interest in stand-alone, flexible, and general-purpose BPM systems. The inherent appeal of this approach is that the BPM system will become a single, stand-alone platform for managing business processes of all types, and will integrate with enterprise applications through Web Services or specialized adaptors/connectors, as illustrated in Figure 4.



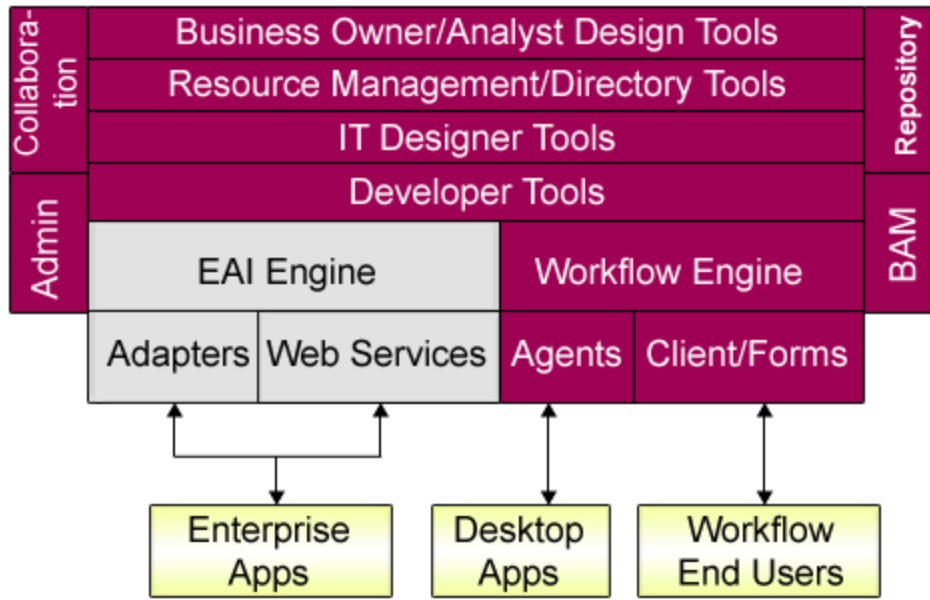
**Figure 4: BPM provides a platform for integration and process automation that is manageable and scalable.**

The elegance of this architecture is that an organization invests in a single BPM platform that can execute processes across applications, employees, partners, and customers. As more and more enterprise applications deliver Web Services, this model becomes the ideal vehicle for implementing a Service Oriented Architecture (SOA).

When organizations are considering deploying such a platform, their natural inclination is to seek BPM solutions that are equally adept at EAI and WFA processes. The purpose is to deploy a single, unified platform for all types of business processes.

**iv. Organizations are Making Platform Decisions**

As discussed above, organizations are making platform decisions with respect to BPM systems that include EAI and WFA capabilities. The platform not only includes the server components, but also all the necessary design tools and applications that may be used to manage business processes throughout their life cycles. Organizations are no longer willing to purchase a number of different components for BPM and then patch them together to develop a platform. Instead, they are seeking a platform that is seamlessly integrated and provides all the components necessary for managing their processes. Figure 5 illustrates the “BPM stack” and highlights the components that are necessary for a comprehensive BPM platform. These components are summarized below:



**Figure 5: A complete BPM platform requires many components.**

- a. **Business Process Owners/Analyst Tools:** Non-IT people own and define business processes. They need tools to help them design, document, model, and optimize business processes.
- b. **Resource Management Tools** manage the human resources of the organization so the BPM system is aware of the people, job functions, reporting relationships, and group memberships of all the participants.
- c. **IT Developer Tools** enable IT developers to convert design documents and processes into deployable solutions by integrating them with electronic forms, databases, rules, and other applications and other processes.
- d. **Collaboration Tools** allow teams of process owners, analysts, IT designers, and developers to work together to design, test, and deploy processes.
- e. **Repository** provides a shared storage for business process as corporate assets.
- f. **Administration Tools** allow BPM administrators to manage the system and handle special conditions and exceptions.
- g. **Business Activity Monitoring** requires tools that allow managers to obtain reports about workflow and performance metrics so that they can manage and optimize business processes.
- h. **Workflow Engine** is what manages the intricacies of routing information across multiple process steps
- i. **EAI Engine:** It is optimized for high speed integration with a variety of heterogeneous applications.  
(**Note:** Over time, organizations will look for systems that combine the EAI facilities with workflow in a single package)
- j. **Agents** allow business processes to incorporate third-party enterprise or desktop applications as actors in business processes.
- k. **Clients/Forms** enable humans to participate in business processes.

- I. **Web Services** allow the BPM Platform to integrate with Web Service-enabled backend or enterprise applications.

## Microsoft BizTalk Server 2004

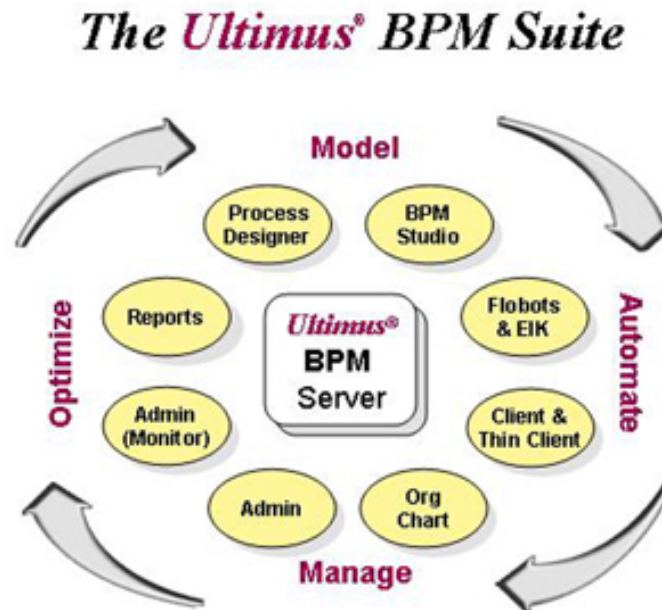
The Microsoft BizTalk Server 2004 is an enterprise platform for EAI that provides advanced features and design tools that are needed for deployment for all types of system-to-system processes. BizTalk Server 2004 is a successor to BizTalk Server 2002 that was widely recognized by customers and analysts alike as an excellent EAI offering. BizTalk Server 2004 takes this capability to the next level. Its salient features and capabilities include the following:

- i. **Web Services:** BizTalk Server 2004 provides native support for XML Web Services and also leverages Web Services for many of its core integration capabilities. Strong Web Services capabilities make it an excellent platform for integration with the increasing number of enterprise applications that support native Web Services. This eliminates the need for an often-expensive layer of adaptors/connectors in order to accomplish integrations.
- ii. **BPEL4WS:** The BizTalk Server 2004 uses the Business Process Execution Language for Web Services (BPEL4WS, often simply called BPEL) as the internal language for defining and orchestrating business processes as they relate to Web Services. BPEL was jointly sponsored by IBM, BEA, and Microsoft and has now been submitted to OASIS for consideration as an industry standard. A large number of independent software vendors have declared their support for BPEL, ensuring that it will become a standard. By using BPEL as its internal language, BizTalk Server 2004 has ensured that it will be at the forefront of supporting industry standards.
- iii. **BizTalk Actions and Activity Models:** Microsoft provides design tools in Visual Studio .NET that enable developers to create Actions. An Action is a sequence of granular actions or steps that make up a fragment of a business process. By stringing a number of Actions together, the user can define an Activity Model, which is a representation of a business process. BizTalk Server 2004 makes it easy for developers to develop a library of Actions using their preferred development environment, Visual Studio .NET.
- iv. **Connectors:** In addition to native support of Web Services, BizTalk Server 2004 also provides a large number of adaptors and connectors for other applications. These connectors make it easy to integrate BizTalk Server 2004 into the IT infrastructure of target organization without undertaking costly EAI middleware deployments.
- v. **Transformation/Mapping:** Like its predecessor, BizTalk Server 2004 supports robust data transformation and mapping functionality. It provides a graphical tool for mapping schemas and embedding transformation functions inside the mapping. This provides excellent tools for handling and routing data to disparate systems with schemas that are very different.
- vi. **Business Activity Monitoring:** BizTalk Server 2004 provides a set of functions and capabilities that allow external applications to monitor the status of Actions and Activity Models that are in progress. This enables business managers and process owners to be aware of the status of business processes and raise alerts and notifications when events are not in sync with performance expectations.
- vii. **Human Workflow Services Interface:** This programmatic interface provides a way for developers to involve people in system processes at a basic level, and allow ISVs to integrate BizTalk with their solutions.
- viii. **Visual Studio .NET Development Environment:** All of the features of BizTalk Server 2004 can be accessed and leveraged using Visual Studio .NET, the most

widely used development platform for .NET applications. As a result, knowledgeable developers can easily access the power of BizTalk from within their applications.

## Ultimus BPM Suite

The Ultimus BPM Suite is a 6<sup>th</sup> generation complete BPM platform that provides the tools necessary to manage a business process at every stage in its life cycle. With 9 years of history and over 1000 customers, the Ultimus BPM Studio brings together the tools, functions, and capabilities necessary to automate any business process in any industry. The Ultimus BPM Suite allows organizations to model, automate, manage, and optimize their business processes using the tightly integrated tools shown in Figure 6.



**Figure 6: The Ultimus BPM Suite provides the tools necessary to manage business processes at every step in their lifecycle.**

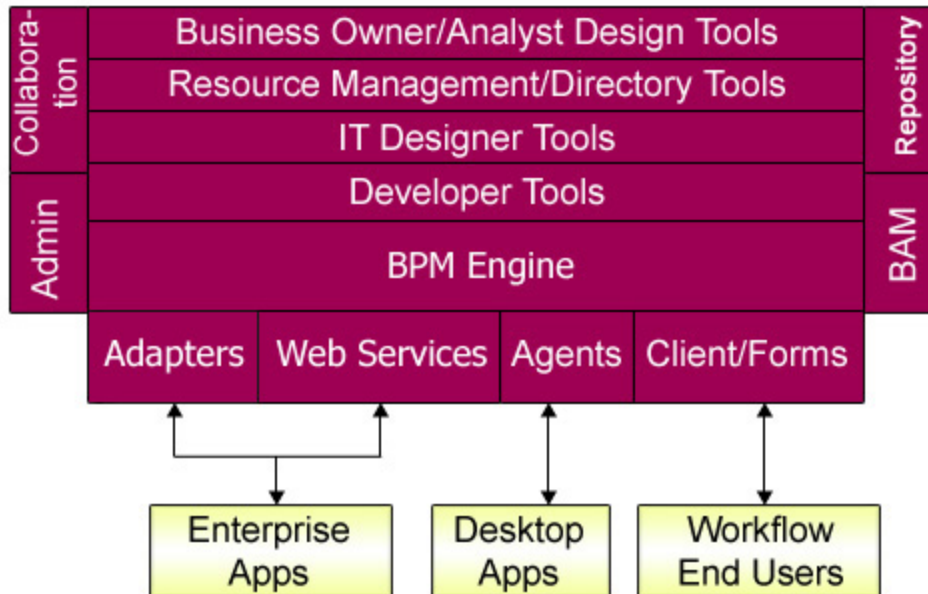
- i. **Ultimus Process Designer** enables business processes owners and analysts to design, model, document, and optimize business processes without any IT knowledge.
- ii. **Ultimus BPM Studio** provides a collaborative design environment for teams of IT designers to convert business processes into deployable solutions integrated with databases, electronic forms, business rules, and other processes and other systems.
- iii. **Ultimus Flobots** are “workflow robots” that enable third-part desktop and enterprise applications to perform specific tasks in a business process without human intervention.
- iv. **Ultimus Enterprise Integration Kit (EIK)** provides developer tools and documentation to create advanced integration with back office and enterprise applications, using modern technologies such as Web Services and .NET objects.
- v. **Ultimus BPM Server** is a scaleable, enterprise BPM engine that proactively controls and monitors the execution of business processes.
- vi. **Ultimus Client/Thin Client** provides flexible and configurable UI to enable end users with different skill levels to participate in business processes and manage their workload and the workloads of their subordinates.

- vii. **Ultimus Forms** provides the means to use a variety of forms to capture and display business information and decisions with fidelity. Form choices include Thin Forms, ASP .NET forms, Adobe PDF Forms, and Microsoft InfoPath forms.
- viii. **Ultimus Organization Chart** provides a graphical representation of the company's human resources so that the business process is aware of all of the people, their job functions, reporting relationships, and group memberships. This knowledge is used for intelligent routing of tasks during the course of a business process.
- ix. **Ultimus Administrator** provides the tools for the administration of business process and handling exceptions and special situations.
- x. **Ultimus Reports:** captures a variety of metrics from live processes, using customized reports that enable process owners to manage resources and optimize business process.

### Ultimus+Biztalk: A Powerful Combination for Enterprise BPM

By developing and offering seamless integration between the Ultimus BPM Suite and BizTalk Server 2004, Ultimus has delivered a powerful BPM solution that provides all the features and functions necessary for an enterprise class BPM platform. The integration features three major capabilities.

- i. **Process Integration** - The primary means of performing integration in the Ultimus BPM Suite is through the concept of a "Flobot™," or workflow robot. Flobots are specific, high performance integration facilities that enable work to be done quickly, easily, and automatically. Flobots eliminate much of the custom development and scripting that is commonly required when integrating multiple systems. By leveraging the HWS interface of BizTalk Server 2004, Ultimus has developed a BizTalk Flobot. This Flobot enables business processes in Ultimus to easily invoke Actions and Activity Models running on BizTalk Server 2004. Process information from an Ultimus process can be passed to the BizTalk Action or Activity Model for use within their context. When the latter have finished execution, data can be returned back to the Ultimus process where it can be used in the Ultimus context. A BizTalk Flobot can be configured easily and graphically in an Ultimus business process.
- ii. **Integrated Development** - The Ultimus BPM Studio provides a collaborative design environment for enabling teams of users to work together to design all aspects of a business processes. These include process owners, IT designers, and developers who use editors for specialized functions that are tailored to their skill levels. One such editor supported in the BPM Studio is the BizTalk Actions Designer of Visual Studio .NET. This means that developers can design BizTalk Actions from within the Ultimus BPM Studio's collaborative design environment. Everything that they need in order to develop processes that span systems, applications, and people are provided within the BPM Studio. Furthermore, the BPM Studio provides the right tools for the right user so that business processes can be automated without programming. These processes can be linked with BizTalk Actions and Activity Models that are developed in the same collaborative environment using Visual Studio .NET which is the preferred tool for developers.
- iii. **End to End-Process Monitoring** - The Ultimus Administrator uses the Business Activity Monitoring Services of BizTalk Server 2004 to provide status information about activities inside a process being executed by BizTalk Server 2004. This means that a user or administrator has complete visibility about the exact status of any business process running in the combined environment.



**Figure 7: Ultimus and BizTalk complete the BPM Stack**

Through the tight integration of Ultimus and BizTalk Server 2004, Ultimus is able to deliver the complete BPM stack, as shown in Figure 7. In addition, the combined solution leverages the strength of both products to effectively address all the requirements of an integrated BPM platform.

#### Example

A common process that Ultimus automates is handling requests for quotation. In these processes, the flow, in general, is straightforward. A customer or sales representative requests a pricing quotation for a particular item, or items. Then a quotation specialist does some research, uses some back-office systems and provides a “best price.” The customer or sales rep then accepts or rejects the quote and potentially places an order (another process). Of course, there are often a series of review steps that happen around this flow that Ultimus also manages.

With BizTalk Server, all of the work done by the quotation specialist can be automated. When the quote is received, an instance of the BizTalk Flobot would launch one or more BizTalk Actions or Activity Models to request quotes from one or more vendors; evaluate these based on price, delivery, and terms; and provide a recommendation of primary and alternative suppliers back to the customer.

While this is going on, the user or a process administrator can monitor the request, see where it is in the process, and drill down to get more detail. For example, the administrator might see that the request is currently at the BizTalk Flobot step. Clicking on the step would drill down into the Activity Model to show that two quotes have been received, and the model is waiting for a third one before completing.

In the past, that level of visibility into processes that span systems has been either impossible or so costly to develop that few people implemented it. With Ultimus and BizTalk Server, it is now as easy as point and click.

## Conclusion

By combing the best-of-breed EAI capabilities of BizTalk Server 2004 and with complete workflow automation capabilities of the Ultimus BPM Suite, Ultimus is able to deliver a unified platform for all types of enterprise BPM applications. This unified platform enables companies to deploy business processes that span enterprise applications, desktop applications, employees, managers, customers, and partners, as shown in Figure 4. The platform has all the attributes of an EAI as well as a WFA system, and use of this functionality is transparent to the user. Business processes “shift gears” automatically, depending on when they are dealing with enterprise applications, desktop applications, or people. Each is presented with an interface and functionality that is appropriate within its own context. Furthermore, by leveraging the functionality of the Ultimus BPM Suite and the developer tools offered by Visual Studio .NET, Ultimus is able to deliver tools for everyone who touches business processes through their life cycle. These include processes owners, analyst, IT designers, developers, administrators, end users, and managers.

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This White Paper was prepared by **Rashid Khan**, the co-founder and CEO of **Ultimus, Inc.** in August of 2003.

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