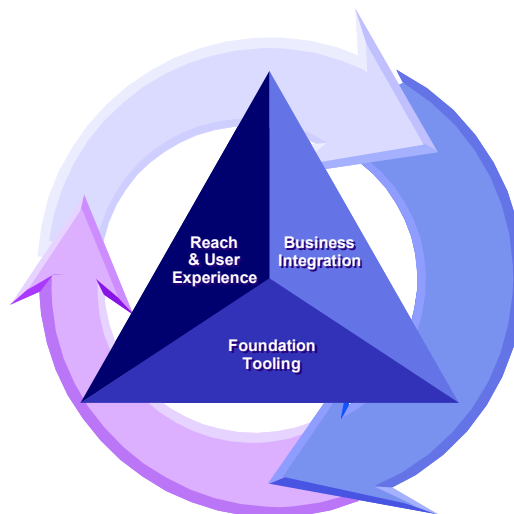




# Principles of Integration for Dynamic e-business: Development Productivity

*WebSphere Application Server Version 5*

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## Executive Overview

With *WebSphere Application Server V5*, IBM is making significant investments in a next generation application server environment that delivers compelling innovations built on an industry-standard foundation. This premier application server environment is further enhanced by associated value-added tools based on the Eclipse open source project. Together, this combination of runtime and tools makes it possible for an enterprise to address our four primary value propositions for the WebSphere foundation portfolio of products:

1. **Comprehensive build-to-integrate platform**
2. **Productive and adaptable development**
3. **Agile deployment options and administration**
4. **Intelligent end-to-end application optimization**

Achieving these objectives contributes towards complementary business goals such as increased profitability and market share, improved competitive position, and faster time to market. WebSphere Application Server V5 allows for development and deployment of adaptable applications, offering higher levels of flexibility and productivity.

Productive and adaptable development is a key value proposition described in this document, which encompasses:

- ❖ Build and expand applications quickly and easily
- ❖ Maximize the value of assets and investments
- ❖ Utilize a tightly-integrated development environment
- ❖ Develop dynamic applications

# Productive and Adaptable Development

A second key area integral to dynamic e-business infrastructures and integration is productive and adaptable development and deployment. This encompasses some of the challenges that businesses are seeing today to be able to bring Web applications to market quickly and to enable enterprise systems and information rapidly and easily.

These challenges include being able to generate needed applications quickly through wizards and business rules, that can be customized and expanded upon later. A single code base and common programming model allows your development team and application managers to port applications quickly and without pain to other servers and OS platforms. It also helps provide a clean application migration scenario when trade-ups are called for to a more sophisticated and sometimes more complex operating environment.

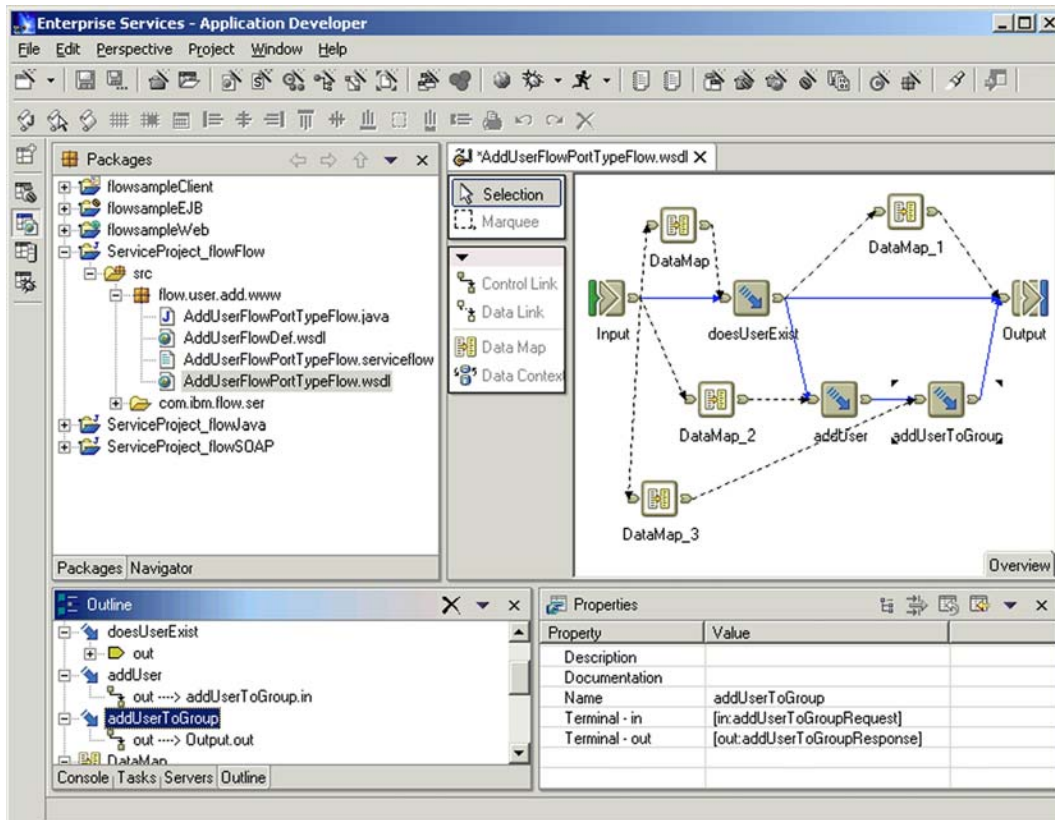
A related need here is the ability to maximize the value of development and generated applications and functions. By utilizing an open software platform for developing new applications and for modeling updated infrastructures, V5 offers an open approach to transforming any application asset into a set of modular services within an integrated environment.

The open and expandable development environment provides an easier way to test and deploy new Web applications across OS platforms. Add tools for generating Web Services applications to the mix, along with better ways to build advanced application adapters, and the simplified and integrated development environment pays off in productivity and flexibility.

Market analysis suggests that the time required to roll out new applications is a key concern across industries, and improved developer productivity is clearly a way to address this.

One of the ways that you could vastly improve productivity would be to reduce the need for handcrafted programming. This could be accomplished through powerful frameworks that absorb much of the work involved in development. This could also be accomplished through tools that generate code used by the runtime. Imagine a combination of frameworks and tools that work together to provide best practice implementations, a realization of the industry's best architectures. In this kind of world, developing and maintaining applications could be largely facilitated through something called *visual programming*. For example, you could create basic service definitions through "adapter tooling" that visually connects your Java applications to Enterprise Information Systems. You could then choreograph these basic services into "composed services" that perform higher-level business activities. Wiring these interactions together in a visual fashion makes it easier for developers to create applications, and to preserve the flow structure of the application when underlying service implementations change over time. Still other productivity gains would come from the close integration of components and messaging systems. This includes the automated transformation and mappings required between message flows and components in order to satisfy diverse application needs.

The productivity benefits just described are realized in large part through world-class tools. This is shown by the following figure in which visually constructed flows clearly define the sequence of logic within a business process step.



*Visual Programming and Services Choreography*

## Build Quickly and Expand Easily

A key part of integration is being able to build new applications which initiate and respond to asynchronous invocations, conversations, and broadcasts. These challenges and market needs listed on this chart and reflected on the previous chart are addressed in Version 5 by a combination of flexible configuration options, a single code base and programming model helping to guide new application structures, and an advanced, integrated, open, expandable development environment. While the products are fully J2EE 1.3 certified and compliant, Version 5 also includes support for and implementations of many of the APIs and protocols that will make up the future J2EE 1.4 base. In many ways, this makes WebSphere V5 ready for J2EE 1.4., with the latest J2EE, XML, and Web Services open standards.

## Maximize the Value of Development Assets and Investments

Integral to information and data connectivity is building new applications which integrate multiple back-end systems requiring data transformation and transactional integrity. Again, these challenges include being able to generate needed applications quickly through wizards and business rules, that can be customized and expanded upon later. A single code base and common programming model allows your development team and application managers to port applications quickly and without pain to other servers and OS platforms. It also helps provide a clean application migration scenario when trade-ups are called for to a more sophisticated and sometimes more complex operating environment.

## Utilize a Tightly-integrated Development Environment

Create new business opportunities by exposing business and application services for integration by other businesses, organizations, or platforms. To aid in developing truly dynamic and expandable Web applications and components, V5 offers sample applications for quick startup and easy migration of applications from the Tomcat development environment to the WebSphere production environments. At the more advanced Enterprise level, a dynamic EJB query service is offered to expand the J2EE application server's role with more robust CORBA-like services. For worldwide transactions, the internationalization service offers dynamic translations to specific country code pages and formats. With the integrated development environment provided from the low-end to the high-end, productivity is enhanced and improved no matter what your skill level might be.

## Develop Dynamic Applications

Build new applications requiring flexible and real-time adaptable intra-application flows and behaviors. Optimize development resources by facilitating the reuse of development assets and automating the process of build, deploy, and manage.