

# Welcome to the DB2, XML and Web Services E-learning Workshop

## Part 2: DB2 and Web Services

# Overview of education series

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## Workshop 1 : DB2, XML and Web services

- ▷ Part 1 : Intro to XML and DB2 XML Extender
- ▷ **Part 2 : DB2 and Webservices**

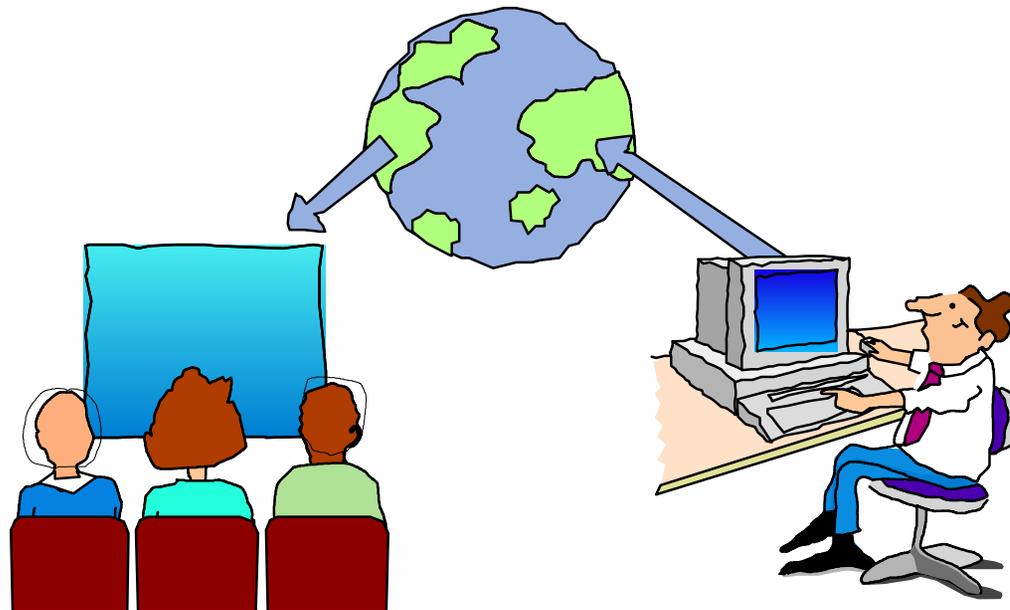
## Workshop 2 : Using the DB2 XML Extender

- ▷ Part 1 : Mapping XML to DB2 databases, Building DADs
- ▷ Part 2: Administration, Storing and Retrieving data

# E-learning

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**Please ask questions via Sametime messaging at the bottom part of the screen**



# Agenda

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## Introduction to Web Services

- ▷ By Mark Colan, e-business evangelist

## DB2 and Web Services

- ▷ By Susan Malaika, Silicon Valley Lab

## Demos

## Futures including XQuery and webservices

- ▷ Dirk Wollscheid, XML Development Team, SVL

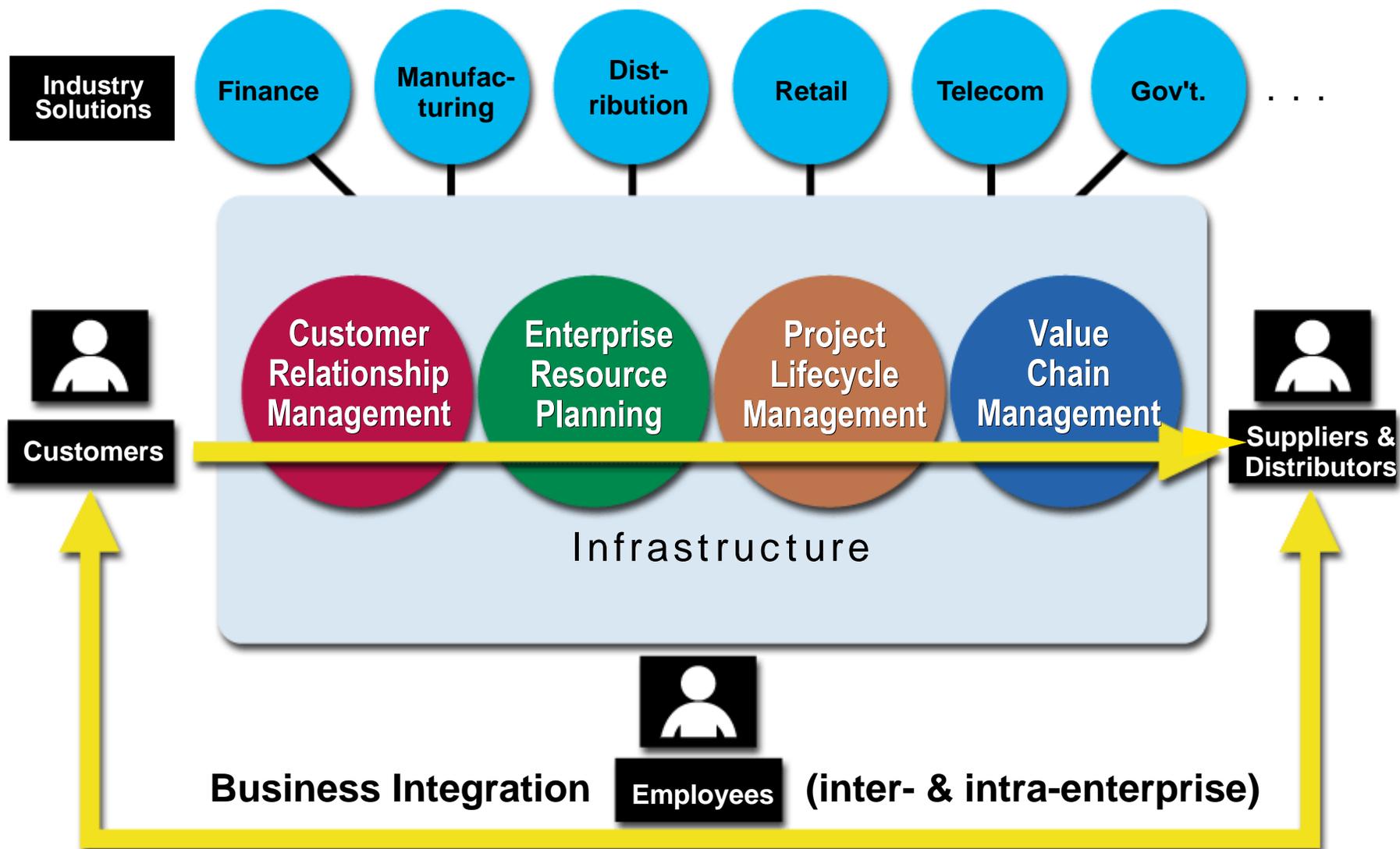
## MQSeries Integration

- ▷ By Susan Malaika, Silicon Valley Lab

# Using Web Services: Today and Tomorrow

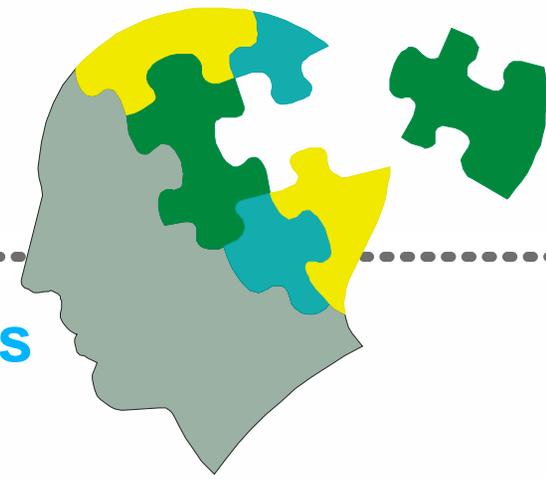
Mark Colan, e-business evangelist, IBM  
[mcolan@us.ibm.com](mailto:mcolan@us.ibm.com)

# Integration from Demand through Delivery



# EAI: Putting together the pieces

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## Legacy: heterogenous application systems

- ▷ Difficult to tie them together

## Traditional integration (compiled-in API's and file formats)

- ▷ Leads to "brittle" systems that crash with the smallest of changes
- ▷ Different systems, different techniques: no standards

## Need fast integration for Mergers and Acquisitions

- ▷ An "integration-ready" company has much greater value

## Need agility and flexibility in business processes

- ▷ Respond to business changes
- ▷ Try out new business process ideas quickly and cheaply

# How do Businesses Connect?

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- ▷ Businesses connect to each other using a wide variety of methods.
- ▷ If you restrict yourself to a proprietary or platform-specific method, you are limiting your interactions to a relatively small community.
- ▷ On a global scale, on a good day we would say the connection methods are ad hoc.
- ▷ On a bad day, we might say that the range of connection methods might induce chaos.

# B2B: better faster cheaper

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## Rapid and deep integration with business partners

- ▷ Harder than EAI: you don't control the software you need to integrate with!

## Reduced cost of doing business through more efficient communication

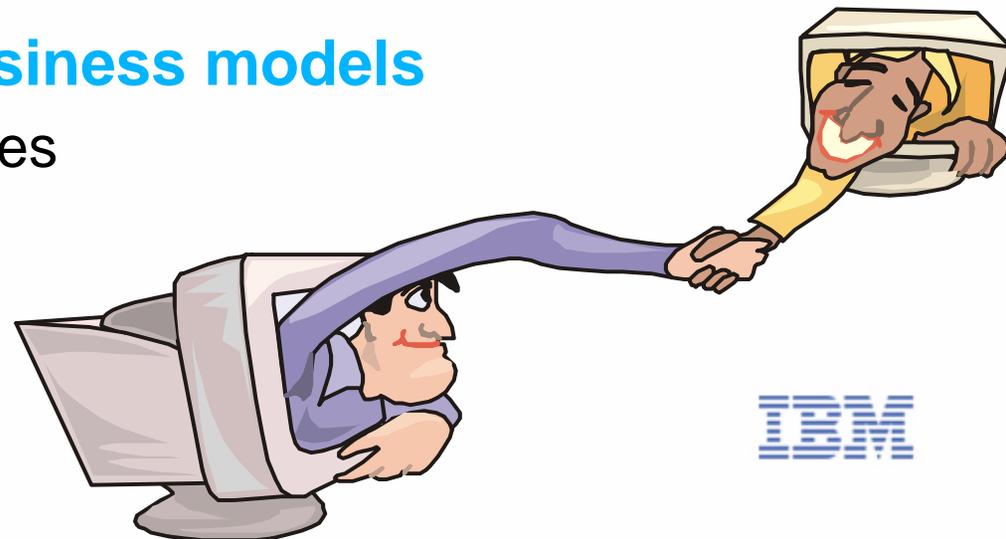
- ▷ eliminate manual processes, paper communication

## Find new business partners, integrate quickly

- ▷ new supplier when the old one can't deliver in time
- ▷ respond to emerging business opportunities while they're hot

## Participate in emerging business models

- ▷ industry-specific marketplaces
- ▷ auctions



Needed: One architecture to integrate them all

*Grid Computing*

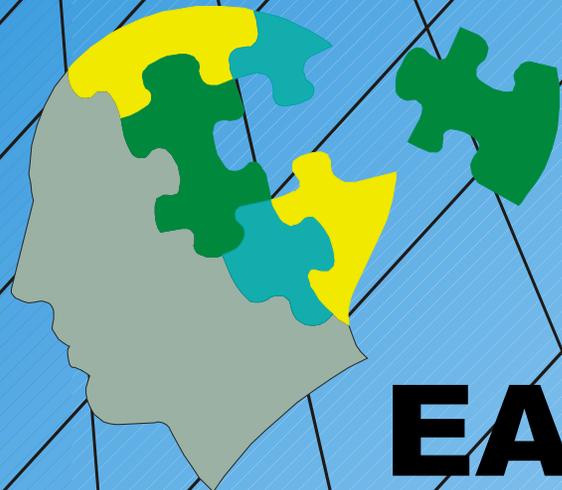


**DYNAMIC  
APPS**

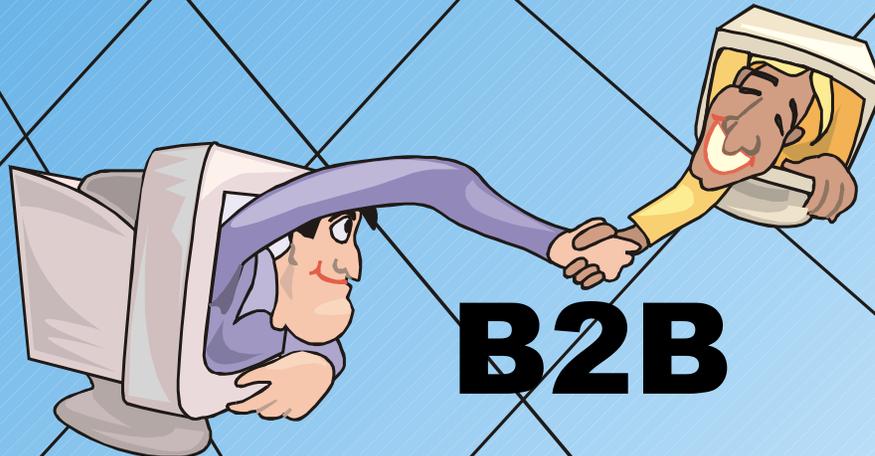


**MOBILE  
DEVICES**

WebSphere.  
Sun ONE  
Microsoft  
**bea** .net  
**Platforms**



**EAI**



**B2B**



**LEGACY  
APPS**

# Barriers to Integration

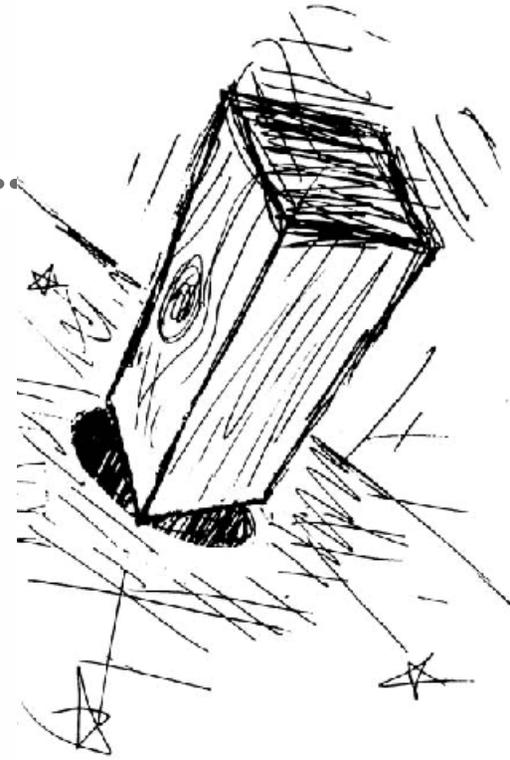
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## Legacy of heterogeneous application systems gives us these challenges:

- ▷ different programming languages
- ▷ APIs that change
- ▷ file formats that change
- ▷ different operating systems or hardware platforms
- ▷ different software vendors, in-house code

## It's difficult to integrate these systems internally

- ▷ It's even harder to integrate with external business partners



# Web Services: Emerging standards

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**Standardized specifications are required to make software from different vendors work together well**

- ▷ **XML** defines a universal way of representing any data, making data integration simple
- ▷ **SOAP** uses XML as messages to define a universal Web service requests, making process integration simple
- ▷ **WSDL** specifies all information needed for integration, making universal application assembly tools possible
- ▷ **UDDI** is a special Web service which allows users and applications to locate required Web services

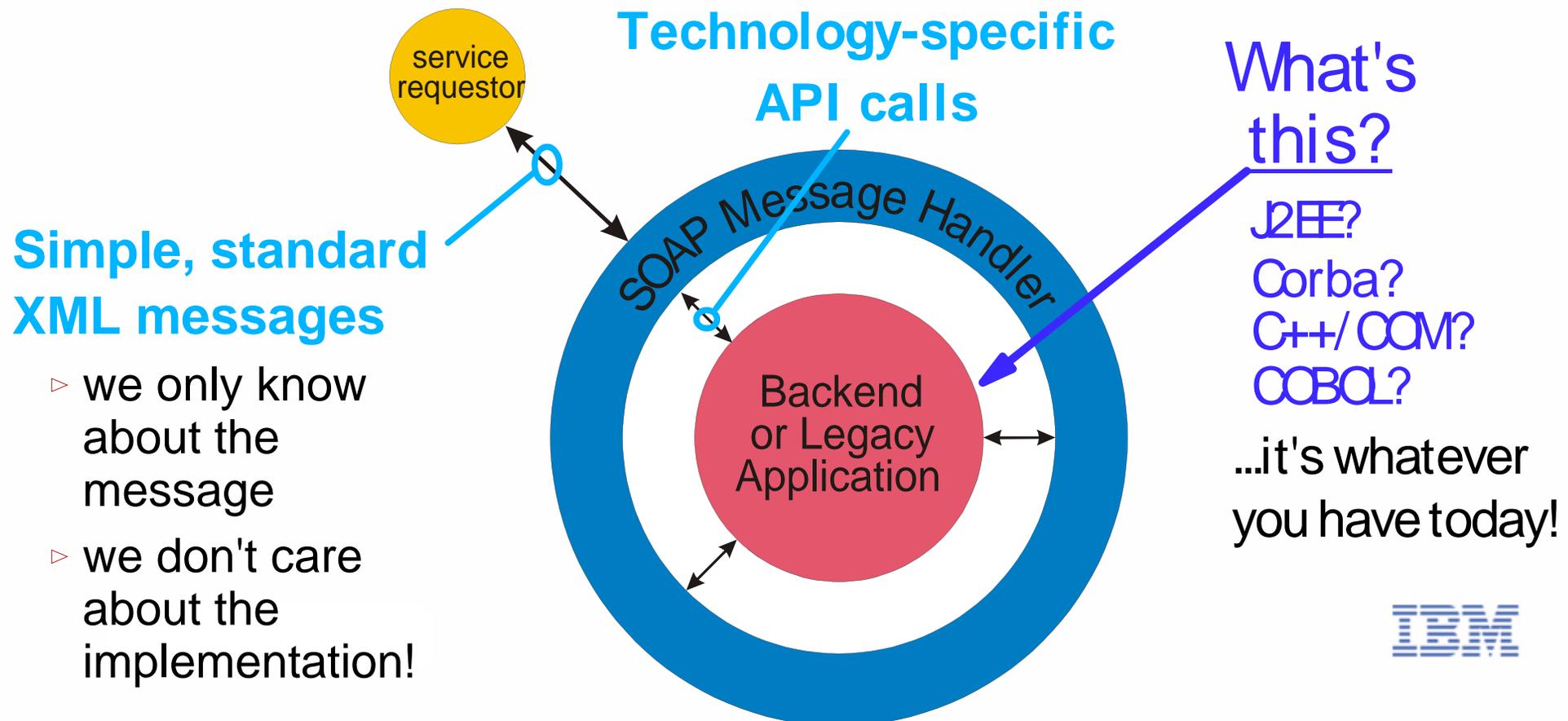
**This year we have had two important advances**

- ▷ **WS-I.org** formed to achieve seamless interoperability
- ▷ **WS-Security** defines message-level security for SOAP

# The Key to Interoperability: XML messages

A thin, universal message-handling interface wraps existing application systems and middleware

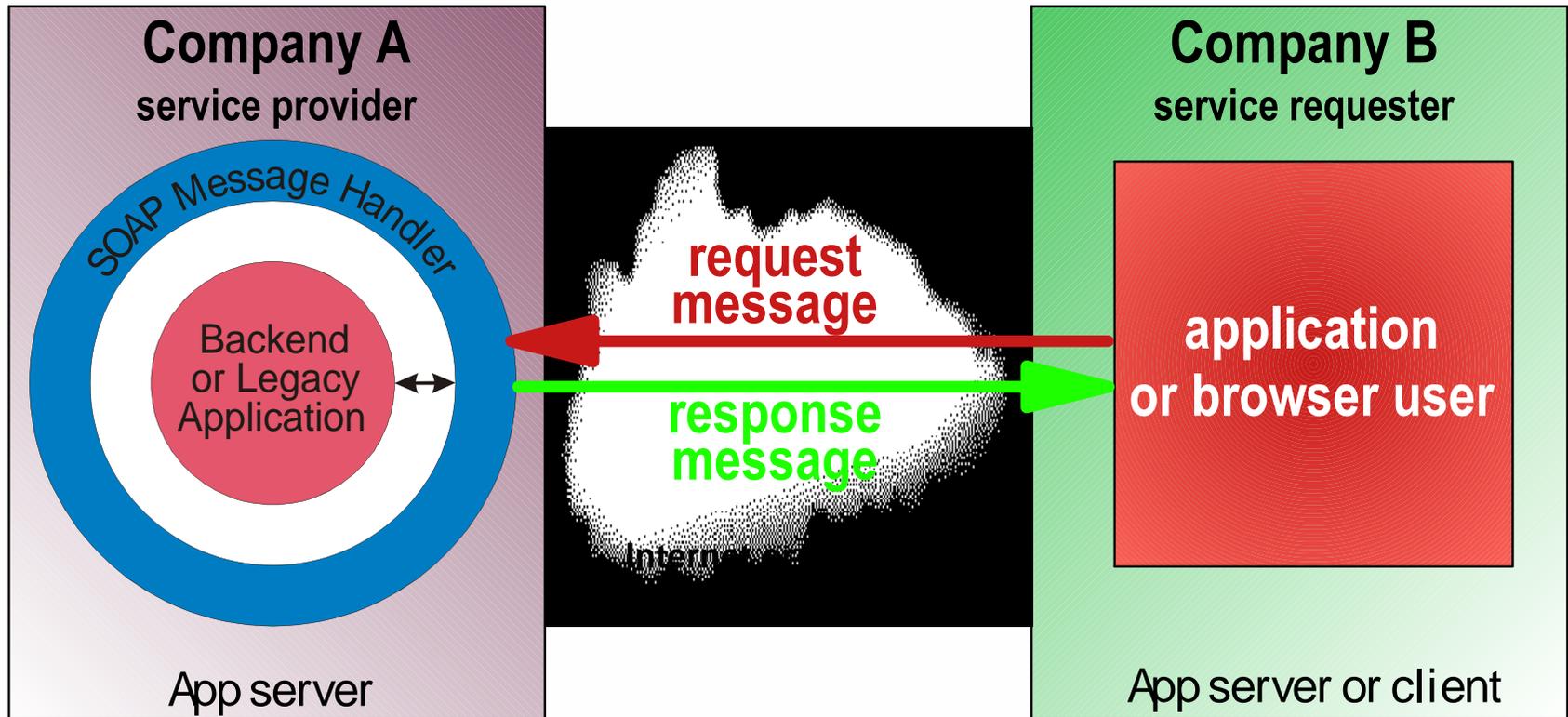
- ▷ access from any system, any programming language
- ▷ does not disrupt existing mission-critical software
- ▷ evolutionary: leverage existing software investments



Simple, standard XML messages

- ▷ we only know about the message
- ▷ we don't care about the implementation!

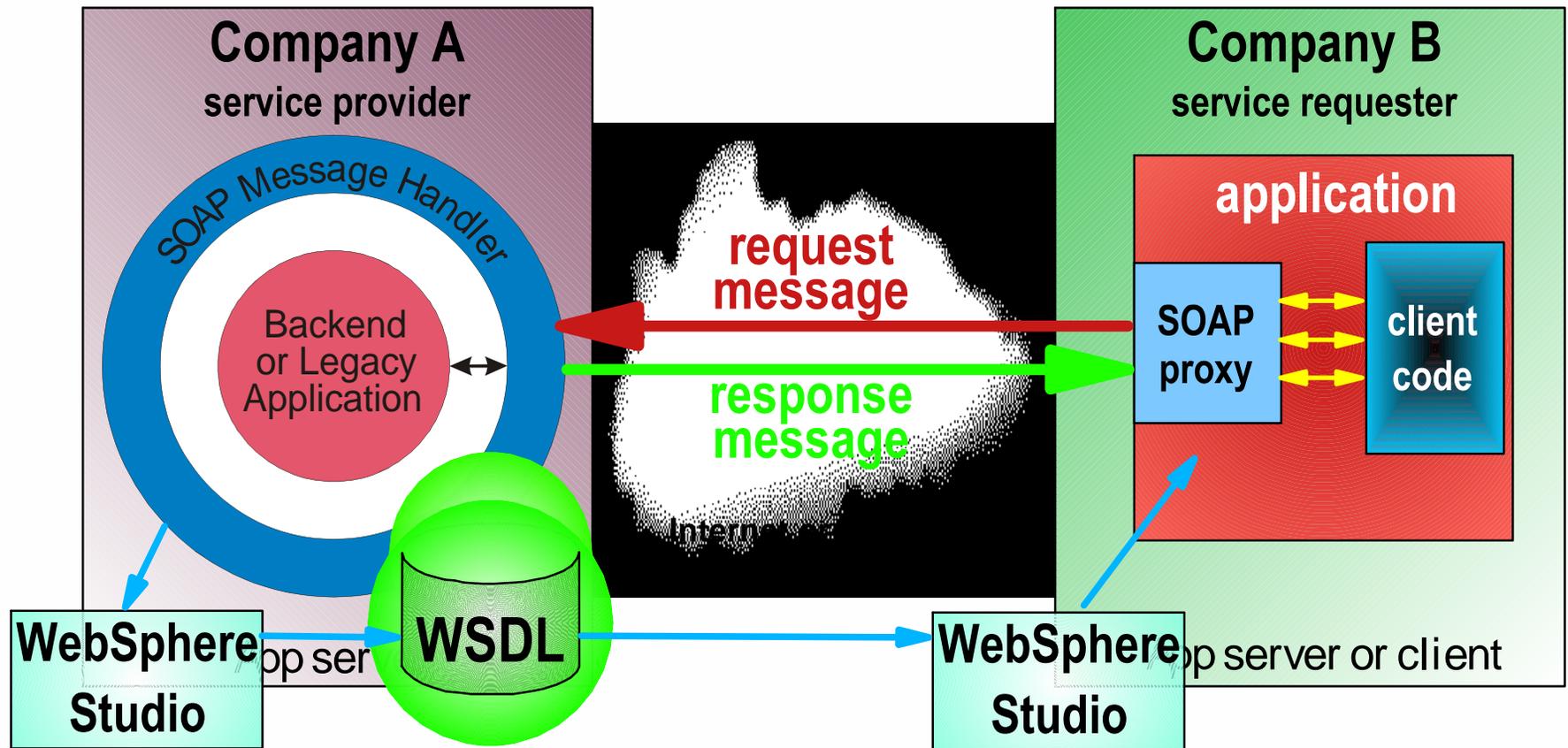
# SOAP: Universal service request and response



## SOAP defines

- ▷ the request/response model of XML message exchange
- ▷ an "envelope" vocabulary that wraps app-specific messages

# WSDL: Simplifying and Speeding Integration



WSDL Description is generated automatically by inspecting SOAP interface layer

Code for creating messages is generated automatically from WSDL description

# Universal Description, Discovery and Integration

## UDDI.org: Partnership among industry & business leaders

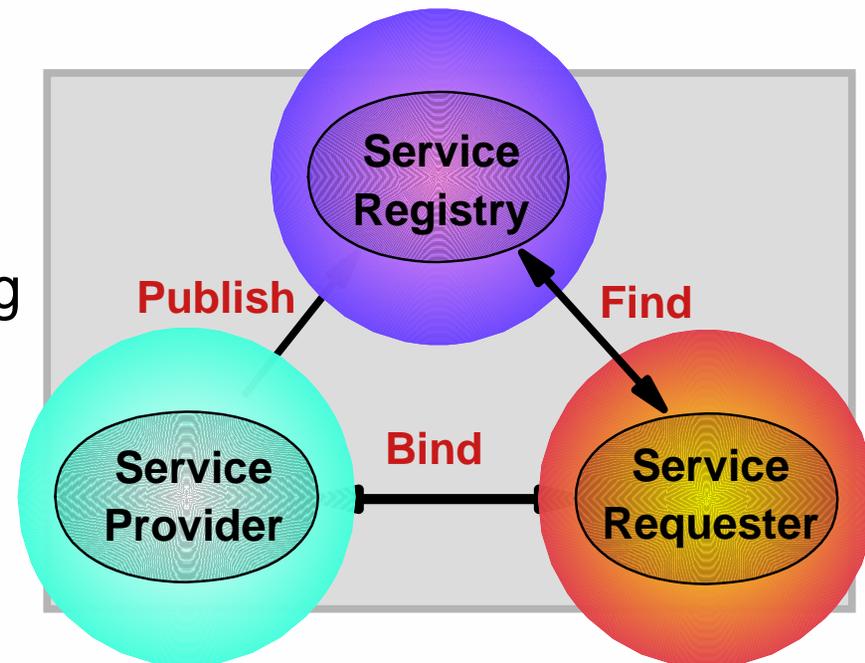
- ▷ Founded by Ariba, IBM, and Microsoft
- ▷ Now over 370 UDDI community members

## UDDI defines a service for finding other services

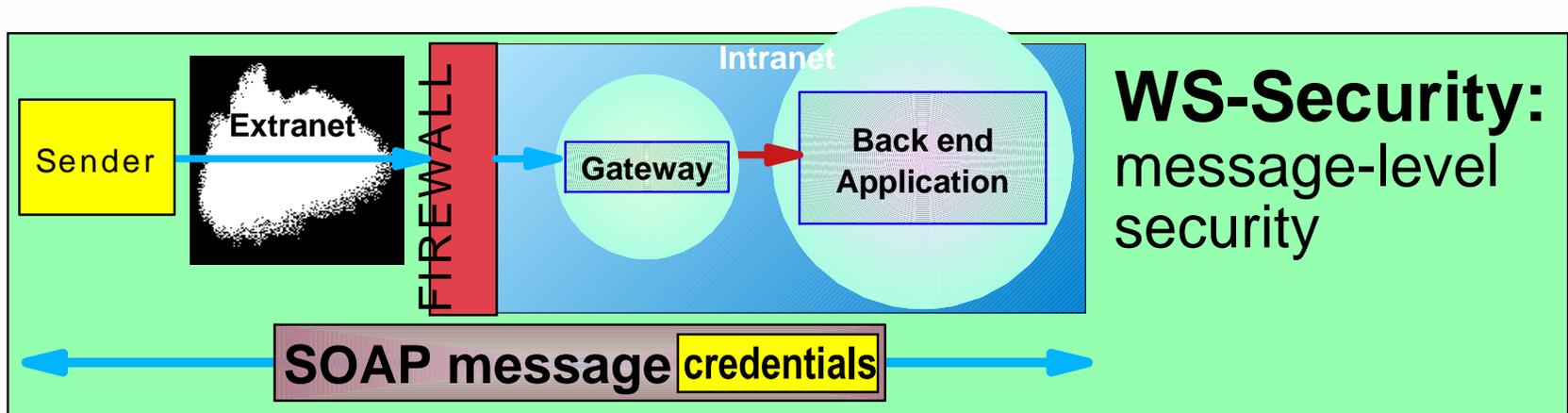
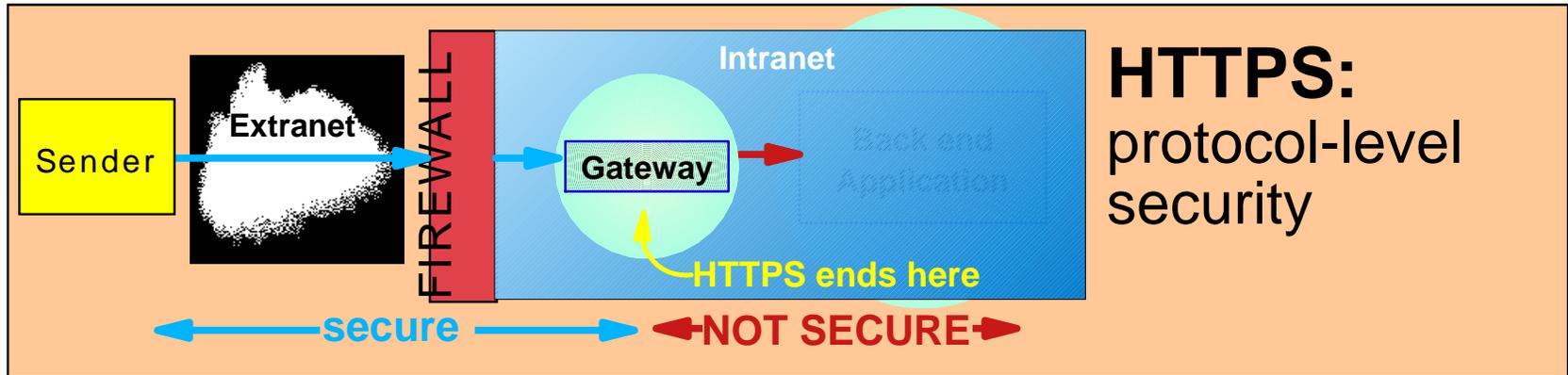
## UDDI Business Registry serves as an open global electronic yellow pages

## Private UDDI has uses, too:

- ▷ EAI internal service catalog
- ▷ invitation-only marketplace
- ▷ searchable company portal
- ▷ internal approved supplier catalog



# WS-Security: message-level security



## Message-level security

- ▷ credentials persist end-to-end
- ▷ allows non-repudiation
- ▷ element-wise encryption

## Now interoperable for Web services:

- ▷ Kerberos, PKI, X.509, HTTPS/SSL
- ▷ W3C XML Signature, Encryption, XKMS
- ▷ OASIS SAML, XACML

# Web Services Interoperability

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## WS-I.org announced Feb 6, 2002

### Industry initiative for Web services

- ▷ Open to any organization committed to Web services
- ▷ Promote and accelerate adoption, deployment

### Focused on promoting Web service interoperability

- ▷ Across platforms, applications, and programming languages
- ▷ Promote a common, clear definition for Web services

### Promote customer adoption & deployment

- ▷ Integrate specifications from standards bodies
- ▷ Implementation guidance & tools for customers building and deploying Web services

# Advantages of Web Services Architecture

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## Flexibility

- ▷ universal interfaces can cope with inevitable changes in software caused by changing business needs

## Agility

- ▷ rapid application assembly tools allow integration for new business opportunities or trying new business ideas

## Cost Savings

- ▷ allow automatic transactions
- ▷ replace manual methods
- ▷ reduce staffing requirements
- ▷ replace paper processing
- ▷ reduce errors

## Leverage Existing Investments

- ▷ old software can be used in new ways by building a Web services layer for universal access

## Leverage Developer Skillsets

- ▷ the plumbing code (the harder part) is generated automatically
- ▷ can be integrated and tested with traditional methods

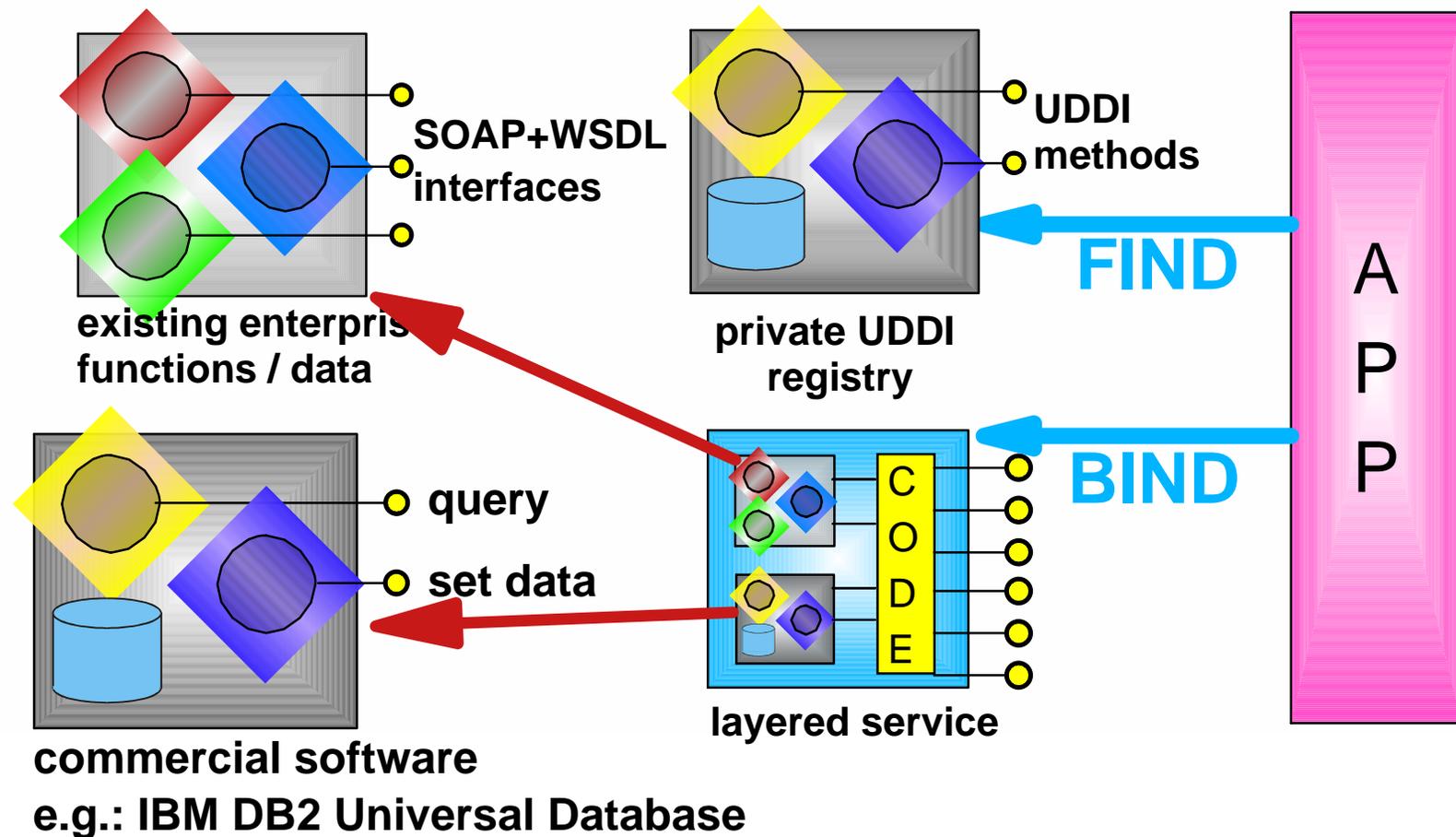
"By 2005, the aggressive use of Web services will drive a 30% increase in the efficiency of IT development projects"

Gartner Inc, "The Hype Is Right: Web Services Will Deliver Immediate Benefits", October 2001

# Web Services: A Better EAI architecture

SOAP+WSDL is a useful strategy for application or data integration with loose coupling

- ▷ Especially helpful for companies that form from mergers and acquisitions



# Using Web Services for B2B Integration

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## How Web Services makes B2B better/faster/cheaper:

- ▷ Standardized interfaces simplifies and speeds the task of integrating your application system with that of a business partner
- ▷ The same application assembly tools can be used regardless of whether you are integrating a service build with IBM WebSphere in Java, or a .Net service in C#
- ▷ The integrated system is better protected from the inevitable change of software on either partner's system

"Web services will offer some business-to-business benefits early on as well...by transforming the process through which enterprises make connections with one another.

"Established trading partners will seek to drive down the costs of interconnection by reducing the energy devoted to maintaining contacts."

Gartner Inc, "The Hype Is Right: Web Services Will Deliver Immediate Benefits", October 2001



# Who is Using Web services today?

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## We have many customers who are using Web services now

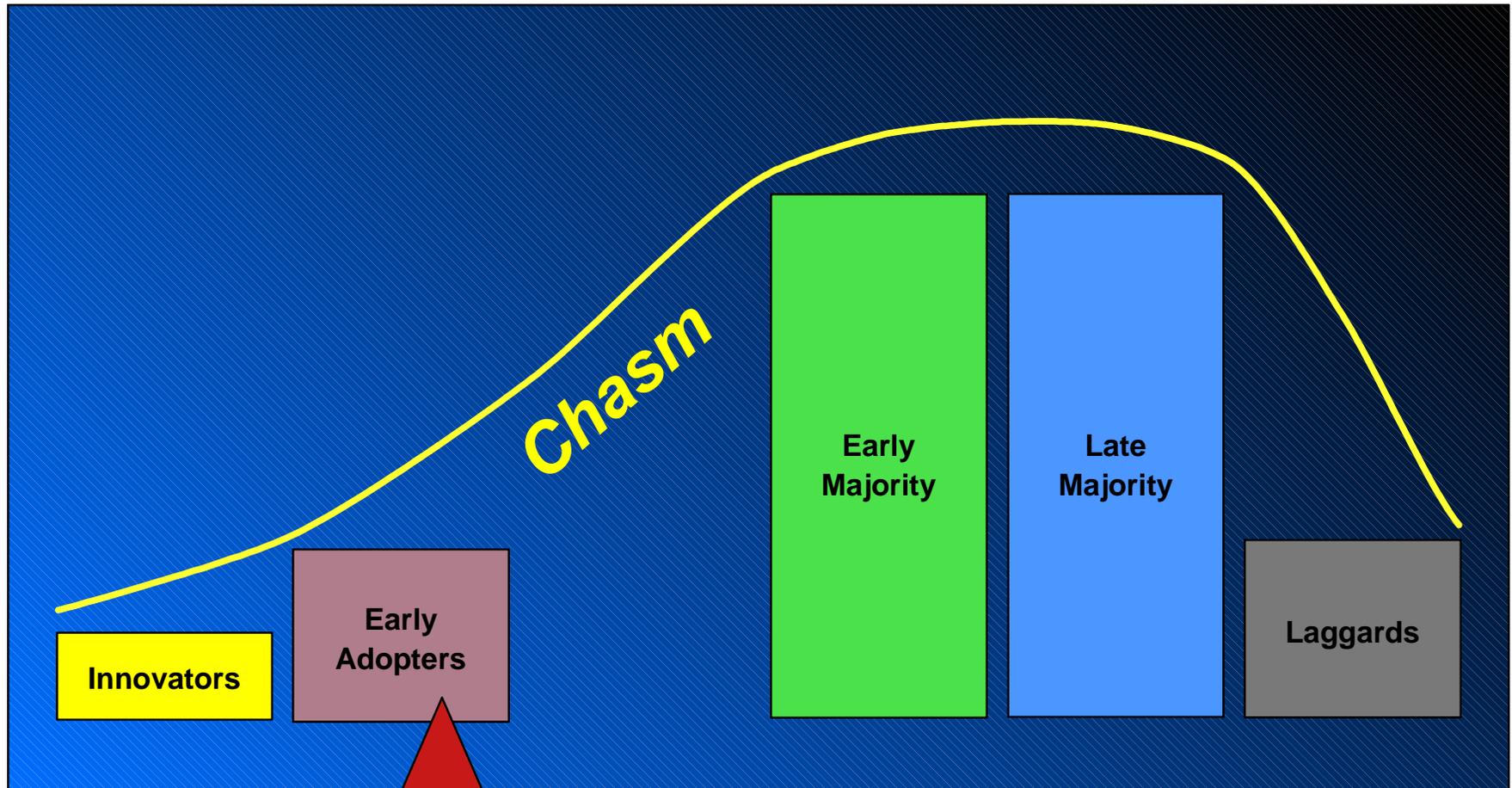
- ▷ to build a flexible enterprise infrastructure to solve today's problems while simplifying future development
- ▷ to reduce the cost of doing business with existing partners
- ▷ to prepare for more flexible e-business of the future

## We can help you get started too...

- ▷ we have the middleware products
- ▷ we have the developer tools
- ▷ we have a services team to work with you

visit <http://ibm.com/software/jstart> for case studies

# Technology Adoption Life Cycle



Many pilots, prototypes, studies, and first-time solutions are in progress now

Web Services today



# Get Started NOW with Web Services

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**Visit** <http://ibm.com/developerworks/webservices>

- ▷ tutorials, in-depth articles, industry news
- ▷ learn about emerging technologies for Web services

**Read about what others are doing**

- ▷ <http://ibm.com/software/jstart>

**Check out the product tryout versions, alphaworks tools**

- ▷ <http://ibm.com/software>, click "Downloads"
- ▷ <http://ibm.com/alphaworks>

**Choose a small pilot study**

- ▷ one which can be implemented in a short time
- ▷ prove the value of the technologies to your organization
- ▷ get help from IBM's jstart team if you need it

**Start small, grow fast!**



# Why Now?

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*"Businesses that ignore its potential, or decide to sit out its early stages, will find themselves outpaced by rivals that take advantage of Web services to improve their agility, and even to transform themselves into new kinds of enterprises."*

-David Smith, vice president and research director for Gartner



# Summary

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## Web services:

- ▷ can speed development with a more flexible infrastructure
- ▷ can give you the agility to cope with changes in business requirements, or experiment with better business processes
- ▷ can make you more profitable by reducing the cost of doing business with existing customers today and new customers later
- ▷ helps you find and quickly integrate with new business partners
- ▷ leverages your existing software investments

## IBM can help you get started with Web services

- ▷ we have the middleware and developer tools NOW as released, supported products
- ▷ we have teams of experts to work with your developers and architects to build solutions
- ▷ we're ready to work with you NOW!



# Resources

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Register for the **Web services newsletter** at:

- ▷ [www.ibm.com/developerworks/newsletter/](http://www.ibm.com/developerworks/newsletter/)

Check out the **Web services Zone** at:

- ▷ [www.ibm.com/developerworks/webservices/](http://www.ibm.com/developerworks/webservices/)

Attend a **local seminar or workshop**:

- ▷ [www.developer.ibm.com/spc/events](http://www.developer.ibm.com/spc/events)

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- ▷ [www.ibm.com/websphere/wow/](http://www.ibm.com/websphere/wow/)

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