



IBM Software Group

# Getting Started with Web Services



IBM Web Services Executive Seminar



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## Motivators for Embracing Web Services

- Efficiency, Flexibility and Exposure
  - Time to market
  - Improving operational efficiency
  - Compression of the Supply Chain
  - Exploiting network effects; first to market, de facto standard
  - Improve rate of change
  
- New Revenue Opportunities
  - Reaching new customers
  - Establishing new business opportunities
  - Expanding existing partnerships
  - Building new partnerships
  - Exposing existing offering w/ new delivery channels



## Agenda

- Web Services Motivators
- Web Services Implementation Examples
- Deep Dive into Cole National Project
- Thoughts on Getting Started



## Why are companies deploying Web services?

- Business requirements dictate the pace of technology adoption
- Automation of business processes to reduce costs
- Expectation on CIOs is to provide immediate return for monies spent; emphasis on incremental enhancements
- Budget constraints have motivated companies to use existing assets
- Companies are looking for new markets, new customers, new businesses, new channels and enhanced partnerships to fuel revenue growth

***Fact 1: IT budget growth in 2003 forecasted at 2-5%***

***Fact 2: Integration costs consume 40-60% of IT budgets***



## What are Early Adopters Pursuing?

- Inside the company firewall
  - Eliminating application silos
  - Data sharing between divisions within a company
  - Intra-application interoperability, i.e. .Net ↔ WebSphere
- Outside the company firewall
  - Manual to automated processes
  - Eliminating those batch runs
- Independent Software Vendors
  - Extending software applications
  - Exposing individual functions
- Actual benefit examples:
  - Development time reduced by 33%
  - 50X productivity increase
  - Enable 5X client growth
  - Annual revenue growth of \$75M
  - 25% reduction in cycle time
  - Integrate partners 50% faster
  - “24 hour government services”
  - Development costs reduced by 66%



# Customer Success Stories



# Bekins

- Vision
  - Develop an architecture that will allow Bekins to easily link any business partner system to Bekins applications, no matter what base technologies the business partner uses
- Challenge
  - Expand Customer Base
  - Service Low End Market
  - Cost Effective Operations
- Solution
  - Automated Brokering System
  - Web Services
  - WebSphere Application Server
  - WebSphere Portal Server
  - DB2 Universal Database
- Value
  - Increase revenue by \$75 million annually
  - Reduced brokering cycle time by 25%



# DaimlerChrysler



- **Challenge:**
  - Integrating business processes with business partners in automating manual tasks that required information lookup and exchange, resulting in delays and inefficient use of resources
- **Solution:**
  - Enable DaimlerChrysler and business partner employees to directly query information between companies' backend systems in real-time, integrating process steps using web services with each participant playing the role of a web service consumer and web service provider.
- **IBM Content:**
  - WebSphere Application Server, DB2, WebSphere Studio Application Developer, WSTK 3.2.2.
- **Value:**
  - Reducing operational costs as well as lowering costs of contracted services of their business partners. Better quality of service for employees (real-time access to information) enabling them to make better informed decisions.
  - Ik Kim, Manager of eTechnology: "DaimlerChrysler's strategy is to enable enterprise application integration through the use of open standards based technologies such as web services. IBM's WebSphere products and tooling that support these standards and IBM's integration experience with web services will enable us to rapidly build our skills and support business process owners who require distributed application solutions in addressing real world business needs."





# E2open



- **Challenge**
  - Companies recognize the value of sharing information but information fragmentation across companies makes this difficult.
  - This is caused by an increasing number of companies, disparate applications and data formats, and a lack of automated processes.
  - Inflexible technologies and significant upfront costs have inhibited previous solutions.
- **Solution**
  - E2open's Global Collaboration Network is a software infrastructure service that allows partners to collaborate in a secure, dynamic network.
  - Based on web services technologies such as SOAP, WSDL, and UDDI, E2open provides a framework for partners to integrate their business processes.
- **IBM Content**
  - WebSphere Application Server, DB2 Universal Data Base, IBM Private UDDI Registry, IBM Web Services Gateway
- **Value**
  - By having an established infrastructure that divides its costs across all participants, E2open's GCN is 4X less expensive than building your own infrastructure, provides a 70% reduction in trading partner enablement costs, and accelerates business partner integration by 50%.
  - Lorenzo Martinelli, VP of Strategy & Marketing Through Web services standards such as UDDI, XML, SOAP and WSDL, and IBM's products such as WebSphere Application Server, we can deliver business partner integration 50% faster while reducing costs by as much as 70%. Of all of the options we considered to support our Web services efforts, IBM was the only one, as a pioneer in the Web services arena, who shared our focus on quality and timeliness and who could provide the robust products and services to satisfy our stringent requirements."



# Nationwide Financial Services



- Challenge
  - Enable business partners to integrate financial information from multiple sources into a single user application for use by brokers during their sales cycles.
- Solution
  - Web service enable business functions to enable business partners to control their brokers' user experience while selling Nationwide annuities, life insurance and retirement products. Web services are secured using WS-Security technologies to enable financial data to be directly integrated into business partner's applications.
- IBM Content
  - WebSphere Application Server, WebSphere Studio Application Developer, Web Services Gateway, WSTK 3.2.2.
- Value
  - Goal is to increase sales of Nationwide financial products by improving broker's experience simplifying the application tools they utilized in their sales process. Also reduced operational costs by providing a common interface for use by multiple channels.
  - Srinivas Koushik: "Nationwide is a leading insurance and financial services provider. Web Services plays a key role in defining our future vision of technology. It will deliver services to the market more quickly, respond to changing requirements with flexibility, and lower IT development costs."



# Nextel

- Challenge
  - Launch an effort implementing an Enterprise Application Integration infrastructure to facilitate the creation of interfaces that can strategically link disparate applications using commonly accessible technologies.
- Solution
  - Telephone request from users are received by IVR converted to XML and propagated using SOAP messages. These messages are subsequently received by CrossWorlds which is used to access all the required applications needed to fulfill the request. Information gathered is consolidated by CrossWorlds and returned to the SDC where it is converted to a voice response and the transaction is completed
- IBM Content
  - WebSphere, WebSphere Studio Application Developer, MQSeries
- Value
  - Using this approach will shield the IVR system from changes that occur with other parts of the Nextel infrastructure.



# State of New Mexico



- Vision
  - The plan for New Mexico is to leverage legacy applications and data in a way to provide new and better services to the governmental employees and all the people that live in the State.
- Challenge
  - Providing the best services to their customers (State residents, government employees), enabling cross governmental communication, and making information available to the people who need it in a timely manner.
- Solution
  - New Mexico will offer a Web Portal home page for all state services that can be automated. New applications will have to be written with a web front-end, however those applications will tie in to the existing data systems via Web Services in order to share or exchange data.
- Value
  - "Web Services provides us the group of open standards that will enable us to move forward with our e-Government initiative," said Bob Stafford, CIO of the State of New Mexico. "Only through a focused application of a Portal/Web Services approach can we achieve a One Government, One Infrastructure and One Sign on."



## State of Wisconsin



- Challenge
  - Permit the interoperability of the existing TIME system with the NLETS system and other state DOJ systems.
- Solution
  - Wisconsin's TIME system is based on IBM's WebSphere middleware and an Oracle database. WebSphere translates Wisconsin's legacy criminal justice information into an XML format that can run over the Web. WebSphere also has the Web services protocols enabling Wisconsin's Web server to exchange data with the XML Message Router at NLETS headquarters in Phoenix, Ariz.
- IBM Content
  - WebSphere, WebSphere Studio Application Developer.
- Value
  - Delivered a timely solution
  - Proved interoperability between .Net and J2EE
  - Significantly reduced cost
  - Gerry Coleman: "What this does is move us out of a Teletype world and into an Internet world. Before law enforcement agencies were forced to purchase expensive, custom-programmed software to access simple text-based state crime data. We could never use hypertext links and had no way to use images or graphics, now, all of that is available to us."

## Cole National Corporation - Overview

- Cole National Corp – name behind some of the most recognized brands in the \$16B optical industry
- Cole Managed Vision – the largest company-owned, operated provider of any vision network in the US
- Business Profile
  - Things Remembered owns the specialty retail niche in personalized gifts
  - Competitive advantage: same day personalization nationwide
- 35 year heritage, operating 774 stores in 46 states
- Unique 3x3 segmentation strategy with synchronized channels of distribution



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## This Valentine's Day... Get Personal

It's the season for loving, and Things Remembered makes it easy to create a personalized gift for a husband, wife, boyfriend, girlfriend, or anyone you love!



Stainless Steel All-Occasion Flask

\$25.00



Boxed Heart Bracelet with Crystals

\$35.96 **SALE!!!**



Regal Elegance Frame

\$34.95



It's that time of year to recognize your best employees and clients.



Etiquette, gift ideas and suggestions to make your big day special!

On Your  
**Save 10%**  
First Order

Save 10% on your entire first order with us - details here!

Valentine's Day



February 14<sup>th</sup>

This Valentine's Day,  
Get Personal.

Personalize Your Account

**Sign In**

or create  
a new account

Earn discounts, gift reminders, shopping tips and more.



# Things Remembered Partnerships

- 1-800-flowers.com
- Integrated shopping flow, single checkout
- WebSphere has enabled us to extend our core personalization process to Strategic Partners

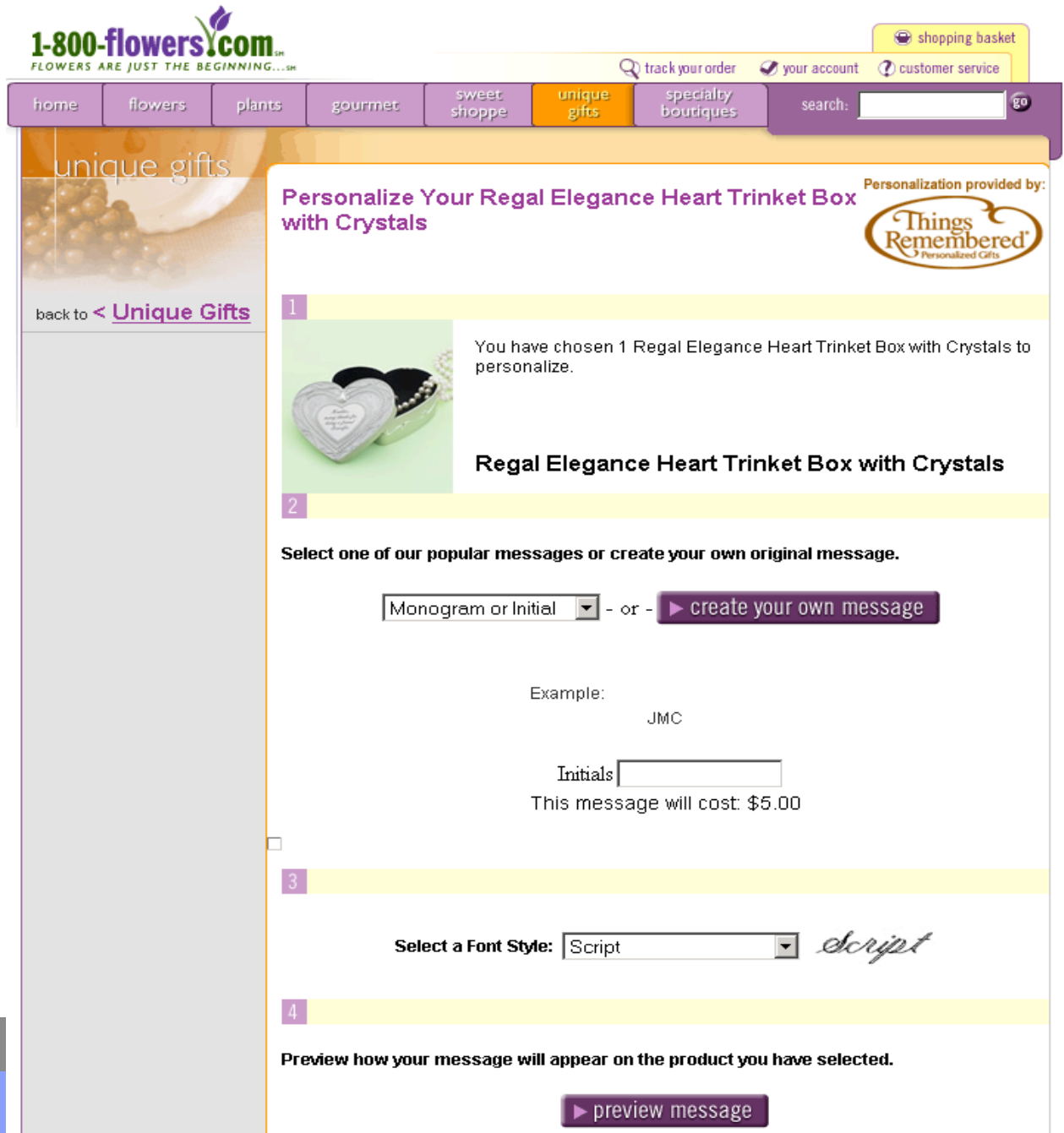
The screenshot displays the website's navigation and product grid. The top navigation bar includes links for 'home', 'flowers', 'plants', 'gourmet', 'sweet shoppe', 'unique gifts' (highlighted), and 'specialty boutiques'. A search bar and a category dropdown are also present. The main content area features a 'unique gifts' banner and a grid of products:

Product Name	Price	Action
Things Remembered® Leather Flask	\$30.00	buy now
Things Remembered® Golf Pen Set	\$35.00	buy now
Things Remembered® Regal Heart Trinket Box	\$29.95	buy now
Things Remembered® Sparkle Flutes	\$49.95	buy now
Things Remembered® Regal Elegance Frame	\$34.95	buy now
Things Remembered® Regal Elegance Clock	\$39.95	buy now
Things Remembered® Mahogany Double Pen Stand	\$60.00	buy now
Waterman™ Hemisphere Pen	\$47.50	buy now



# Things Remembered Partnerships

- Product catalog and shopping experience conducted on partner site
- Personalization process conducted on our WS Commerce site, integrated back into the partner's shopping cart via WebSphere MQ



The screenshot shows the 1-800-flowers.com website interface. At the top, there is a navigation bar with links for home, flowers, plants, gourmet, sweet shoppe, unique gifts, and specialty boutiques. A search bar is also present. Below the navigation bar, the main content area is titled "unique gifts" and features a product page for a "Regal Elegance Heart Trinket Box with Crystals". The page is divided into four numbered steps:

- Step 1:** "Personalize Your Regal Elegance Heart Trinket Box with Crystals". It shows a heart-shaped trinket box and states: "You have chosen 1 Regal Elegance Heart Trinket Box with Crystals to personalize." Below this, there is a section for selecting a message: "Select one of our popular messages or create your own original message." This section includes a dropdown menu for "Monogram or Initial" (set to "JMC"), a "create your own message" button, and an "Example:" field showing "JMC". There is also an "Initials" input field and a note: "This message will cost: \$5.00".
- Step 2:** A section for selecting a font style. It includes a "Select a Font Style:" label, a dropdown menu set to "Script", and a preview of the word "script" in a cursive font.
- Step 3:** A section for previewing the message on the product. It includes a "preview message" button.
- Step 4:** A final section for previewing the message on the product.



# The Journey to Web Services

- October 2001 – Moved to Websphere Commerce Suite 5.1.
- November 2001 – Added first online partner 1800Flowers
  - Exchanged information with servlets using HTTP Post.
  - Transparent customer experience using ThingsRemembered.com personalization
- But...
  - Personalization received real-time.
  - Orders not real-time. Used proprietary system to retrieve orders later. Exposes inventory problems. No real-time integration to central fulfillment module.

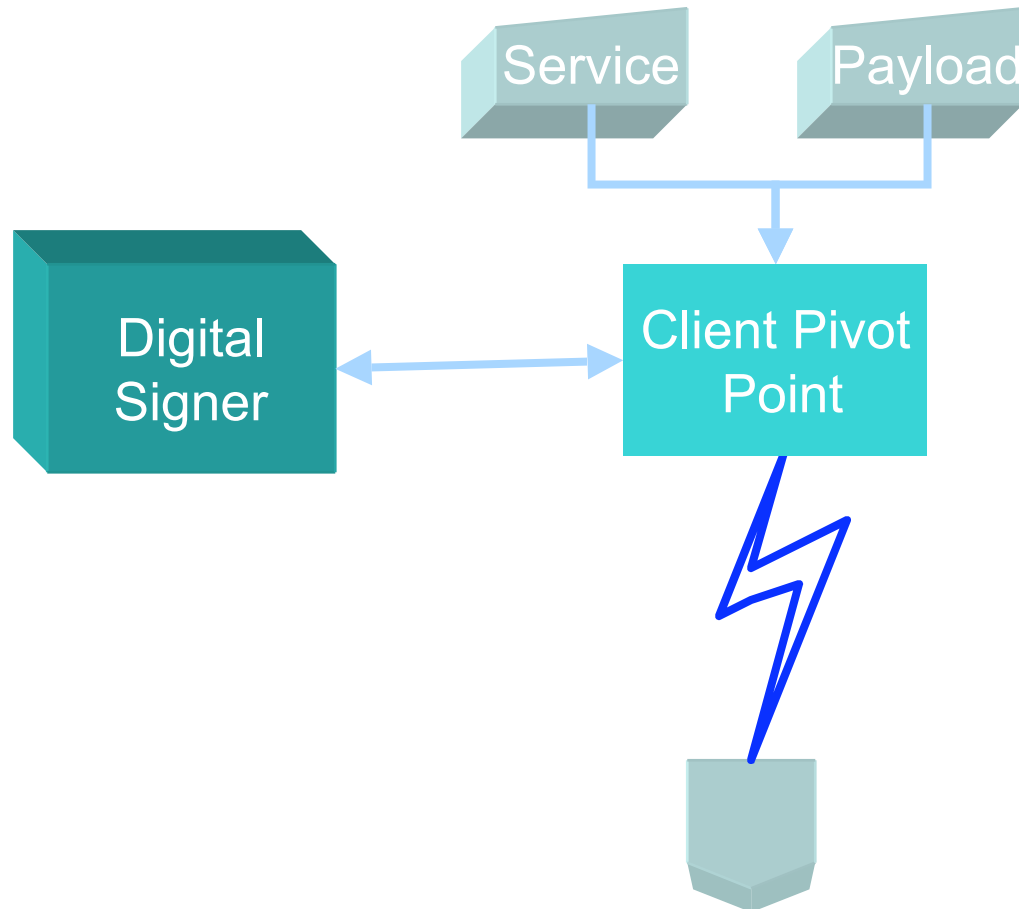


# The Journey to Web Services

- Spring 2002 – Began exploring new partnerships. Had to guarantee inventory, so we needed to accept orders real-time to monitor inventory levels.
- Spring 2002 – First contact with jStart at DeveloperWorksLive in San Francisco.
- July 2002 – Began the project with jStart.
- jStart recommended:
  - Implement the latest Web Services security proposal using digital signatures.
  - Use the highly configurable and better performing version of SOAP → AXIS.



## The Client Side

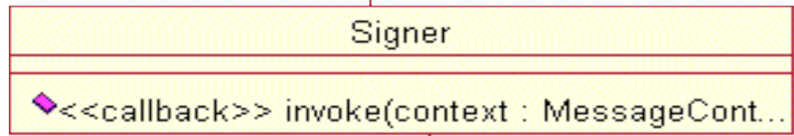


- The client receives service name and message.
- The message is digitally signed. Handling is determined by the client-config.wsdd.
- The message is sent to the web service via HTTP or HTTPS.

DSIG mechanism

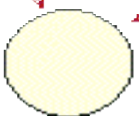
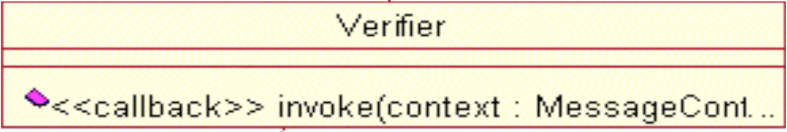


1  
2  
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7



Will be deployed on the server side

Will be deployed on the client side



JKS

Java Key Store  
This is a local file that contains a set of certificates. In future releases, DSIG could be implemented through using XKMS (XML Key Management - distributed system of key management) instead of JKS.

Client must have key from authority trusted by server.

## Digital Certificates

- In conjunction with SSL, digital certificates are used for authentication of the message sender
- Identifies the sender of the message like a userid/password identifies the user.
- Who will be the issuer/trusted authority?
  - Third party, industry accepted authority like Verisign
  - Service Provider plays this role for the scope of their application using an a tool like the Apache Open SSL tool

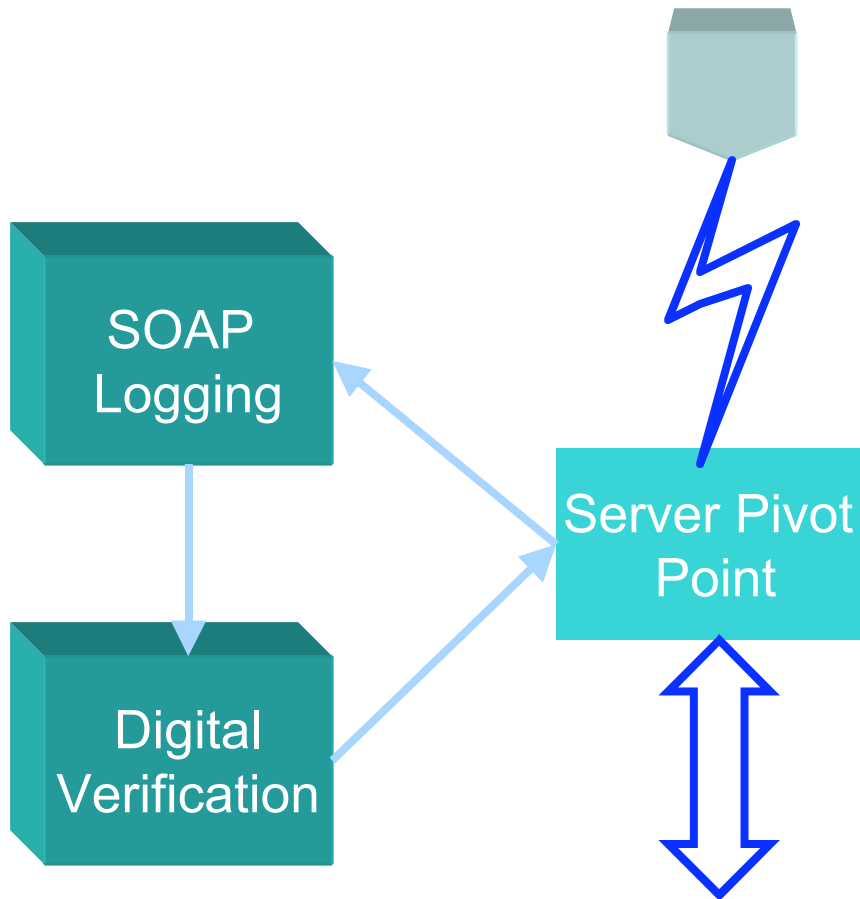


## Digital Certificate Processing

- Partner Is issued a certificate signed by the “Certificate Authority”
- Proxy provided by Things Remembered inserts digital certificate in the WS-Security element of the SOAP message
- Proxy retrieves the Certificate from the keystore (i.e.client.jks) file on the partner site
- As part of WS-Security element processing at Things Remembered, the digital certificate is extracted and validated using the CA’s key.
- The combination of SSL and a valid digital certificate assures us that the message was sent by our partner



## The Server Side



- The web service receives the message via HTTP or HTTPS
- Upon receipt, flow is determined by the server-config.wsdd.
- All messages are logged
- Digital signature is verified.
- Message is forwarded to legacy app via MQSeries.

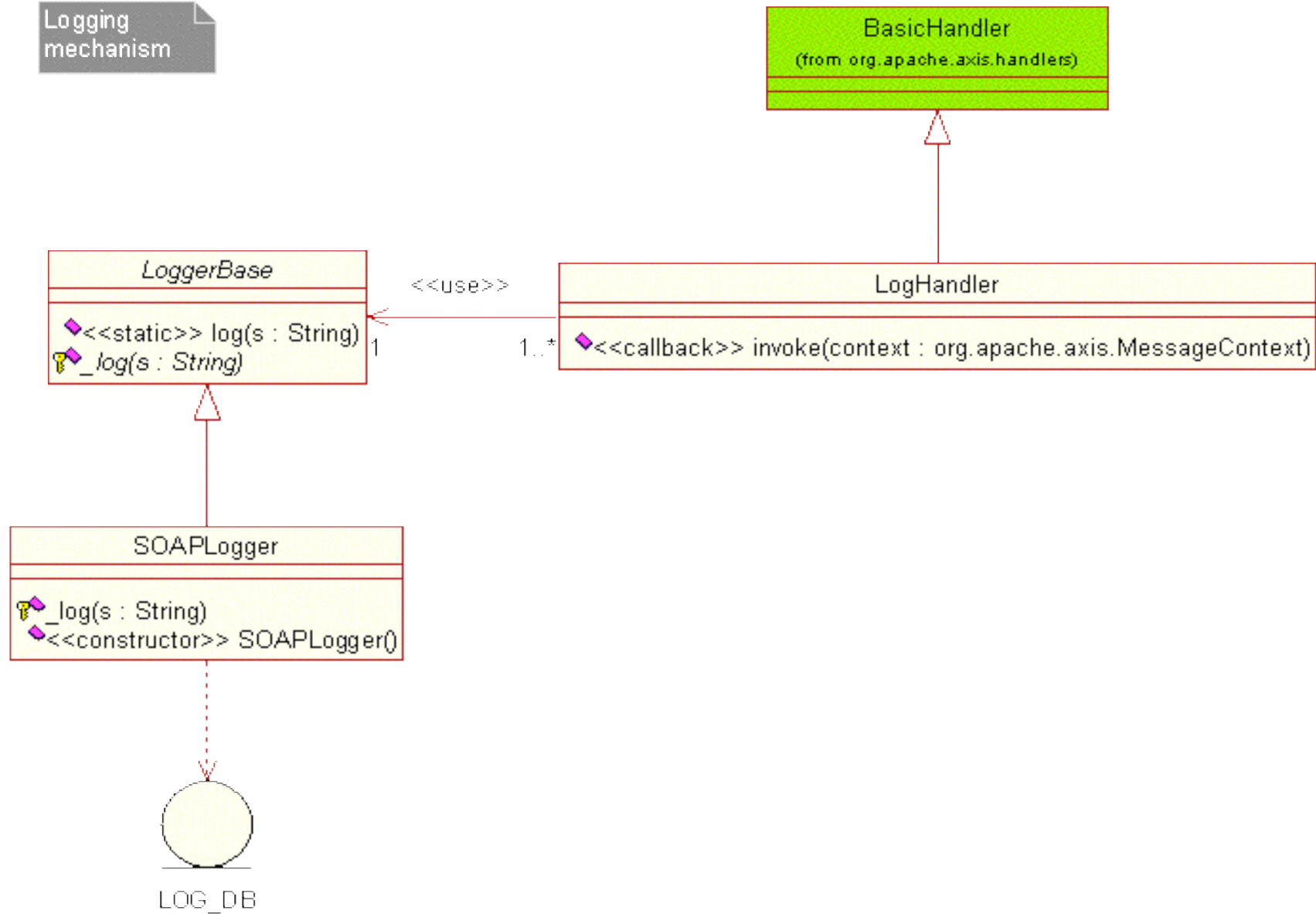


## The Logger

- Logs every message received by named service.
- Provides record of every request to service.
- “Proof” of request. Requester cannot repudiate request – it’s logged.
- Only 1 half of non-repudiation.



Logging mechanism

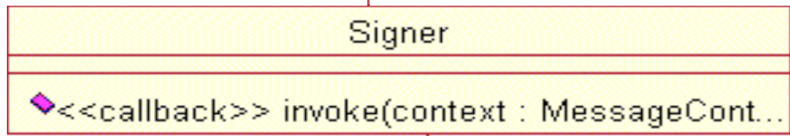


## The Verifier

- The second half of non-repudiation.
- Validates signature.
- Signature is based on the SOAP Body.
- Proves message was not tampered with in transit.
- Only trusted partners have “key” to sign document.
- Service unlocks/verifies signature with same “key” using RSA asymmetric key scheme.
- Provides basic authentication or authorization.
- Does imply that message came from trusted source.

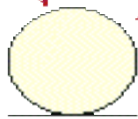
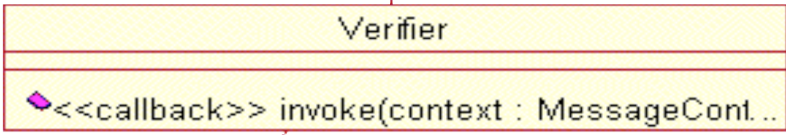


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## Things Remembered Summary

- Scalable – we must be able to extend the solution to many partners without modifications to the application on our end. The solution for one partner should work for all partners.
- Non-proprietary – a partner should not be required to purchase a specific software package to send orders.
- Flexible – the framework for the solution should allow for specific vendor needs and any TR enhancements without requiring action by unaffected partners.
- Maintainable – the solution should leverage existing TR skill sets and have support available to aid in improvements and growth.
- Standardized – the solution should use a recognized set of standards that will apply to all partners, and are acceptable for e-commerce.

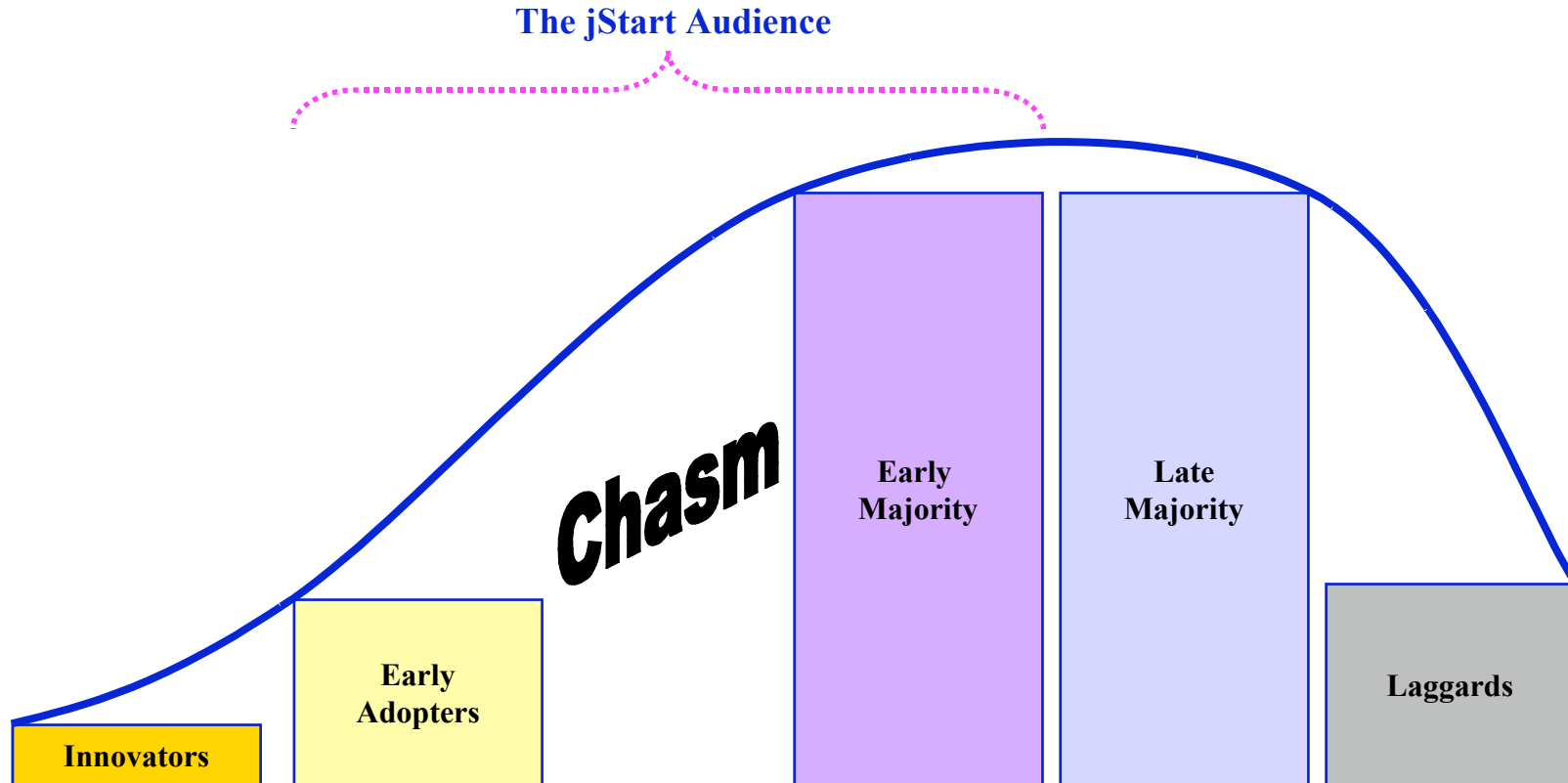


## What do These Stories Have in Common

- Focused on business problems and successfully met objectives
- Innovated with proven, industry standard, leadership products
- Built a foundation that serves as a roadmap for the future
- Were all part of IBM jStart program



# Technology Adoption Life Cycle





# IBM's jStart Program



- **What is *jStart*?**
  - An IBM Software Group offering to help **jump-Start** the adoption of emerging technologies
  - A proven approach for developing business solutions
  - A partnership between you and IBM to design, develop, and deploy a referencable application
  
- **What are the benefits of *jStart*?**
  - Accelerates client skill development through mentoring
  - 5-step engagement methodology lowers risk of adoption
  - Utilizes IBM's worldwide development, research and product resources that are experienced with emerging technologies
  - Inherent benefits associated with early adoption
  - Provides industry visibility to deployed application



## Getting started, how to choose a project?

- Well understood, established process with business semantics in place
  - Not mission critical
  - Low frequency ( e.g. x per day, verses y per second )
  - High degree of manual effort
- Inside or outside the firewall?
  - Inside is usually easier to control and manage
  - Outside the firewall is OK if one has a strong relationship with the other party.
- Start small, grow fast
  - Initial project should be small and containable
  - Scenario/use cases should be business driven
  - Don't just prove the technology, prove the technology can be used to solve a business problem



## Summary

- Web services standards and technologies allow us to describe and deploy applications or services on a network in a consistent way so that they can be discovered and invoked in a secure and reliable manner.
- The base standards we need are stable and viable for use today
- Technology areas like the grid and wireless computing will benefit from the platform-agnostic benefits of the Web services architecture
- Early adopters have been successful at using this technology – not a single jStart web services project has failed
- Web services is coming, do you want to be a LEADER or a follower?
- Contact 'jstart@us.ibm.com' for more information on how you can get started

