



OPEN SOURCE SOA INFRASTRUCTURE



Making Software Work Together™



... at a glance

Customers include world's largest firms

- ❑ 80% of Global Telecom
- ❑ 70% of Financial Services in Global 100
- ❑ Blue Chip System Integrator Partners



Worldwide presence

- ❑ EMEA HQ in Dublin, Ireland
- ❑ US HQ in Massachusetts
- ❑ APAC HQ in Tokyo, Japan



Solid business with a history of profitable growth

- ❑ Founded in 1991
- ❑ Publicly traded since 1997
- ❑ \$50+ million cash on hand
- ❑ No debt

NASDAQ:IONA

Our Approach: Making Software Work Together™

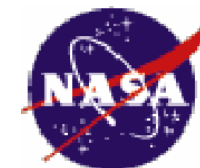
- ❑ Deliver high performance integration software for mission critical applications
- ❑ Make heterogeneity an asset, not a liability
- ❑ Deliver on the value proposition of standards

IONA Government Technologies, Inc.

- ❑ An independently operated subsidiary of IONA Technologies, Inc.
- ❑ Dedicated to serving the specific needs of federal (defense and civilian) and state and local government organizations.
- ❑ Serving US Government since 1995
(1ST US customer)



IONA's Federal Government Customers



Today's Government

- Leaders expect to be able to move **quickly**, using all information appropriate to make **effective** choices that benefit constituents.
- Infrastructure is not well suited to responding to the demands for responsive **interconnectivity**
- Working across levels and branches of government is a complex and difficult undertaking that is further complicated by the governance and **infrastructure** that must exist to support it.
- Need the IT industry to make **open** their solutions for easier **portability** and **non-vendor lock-in**



Why is Open Source Important?

- *Open source products are deeply embedded in the Government*

Apache - Over 60% of the web pages on the world wide web are presented via Apache.*

TCP/IP - The underlying basis of the Internet; Its creation was funded by DoD.

Sendmail - moves mail from one machine to another; carries nearly 90% of e-mail traffic*

Linux - Unix-like operating system with over 18 million users.***
Widely used to support Apache, TCP/IP, and Sendmail services.

MySQL - relational database.

Perl - An open-source-only programming language that is widely used to make web pages “smarter”

- *Open source development is widespread and international*

SourceForge.org - 77,000 projects and 804,000 registered users



Forrester's definition: SOA

A style of design, deployment, and management of applications and software infrastructure in which:

Applications are organized into business services that are (typically) network-accessible.

Service interface definitions are first-class development artifacts.

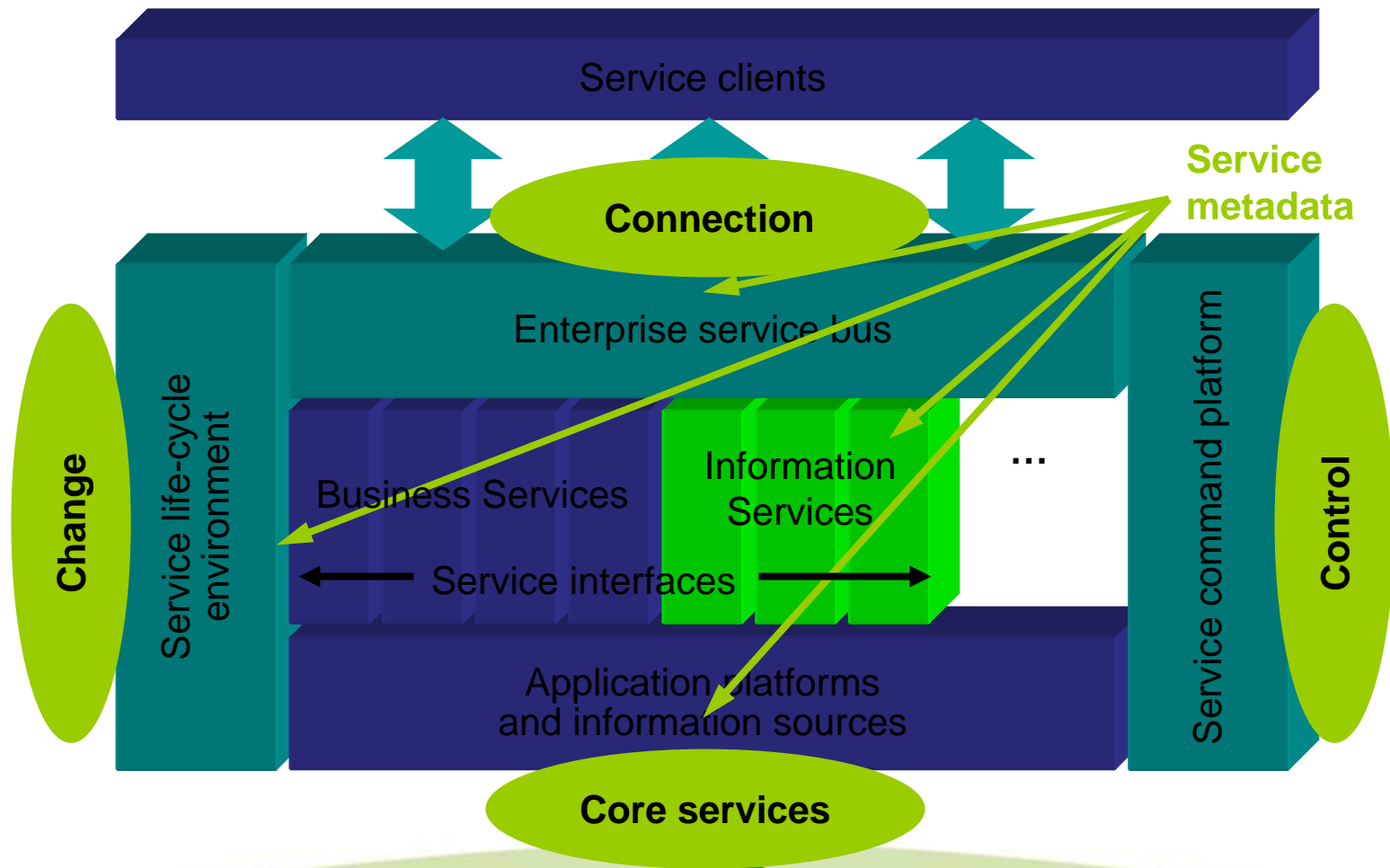
Quality of service characteristics are explicitly specified in the design.

Services are cataloged and discoverable by development tools and management tools.

Protocols are predominantly, but not exclusively, based on Web services.



SOA infrastructure can deliver information...



An ESB is a common SOA foundation

An ESB is an *intermediary* that makes a set of *reusable* business services *widely available*.

- **Service Connection:**

- Multiple protocols and data formats
- Application adapters

- **Service Mediation:**

- Routing, interaction models, version resolution
- Transformation and mapping, message enrichment

- **Service Change and control:**

- Transactions
- Security and quality of service
- Service registry and metadata management
- Service monitoring and management

- **Service Orchestration:** Business process management and monitoring



Why open source for SOA?

- › Low cost of entry
- › SOA is a natural evolution of IT
 - › Extends application servers, databases, messaging systems, ERPs etc.- *already commoditizing*
 - › *Improves* existing applications through reusability
 - › i.e. it is *not* about new applications from the ground up
- › Open source provides transparency
- › Opportunity for community innovation
- › Mixture of open and closed source typical





A Unique Approach to SOA



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Distributed SOA Infrastructure

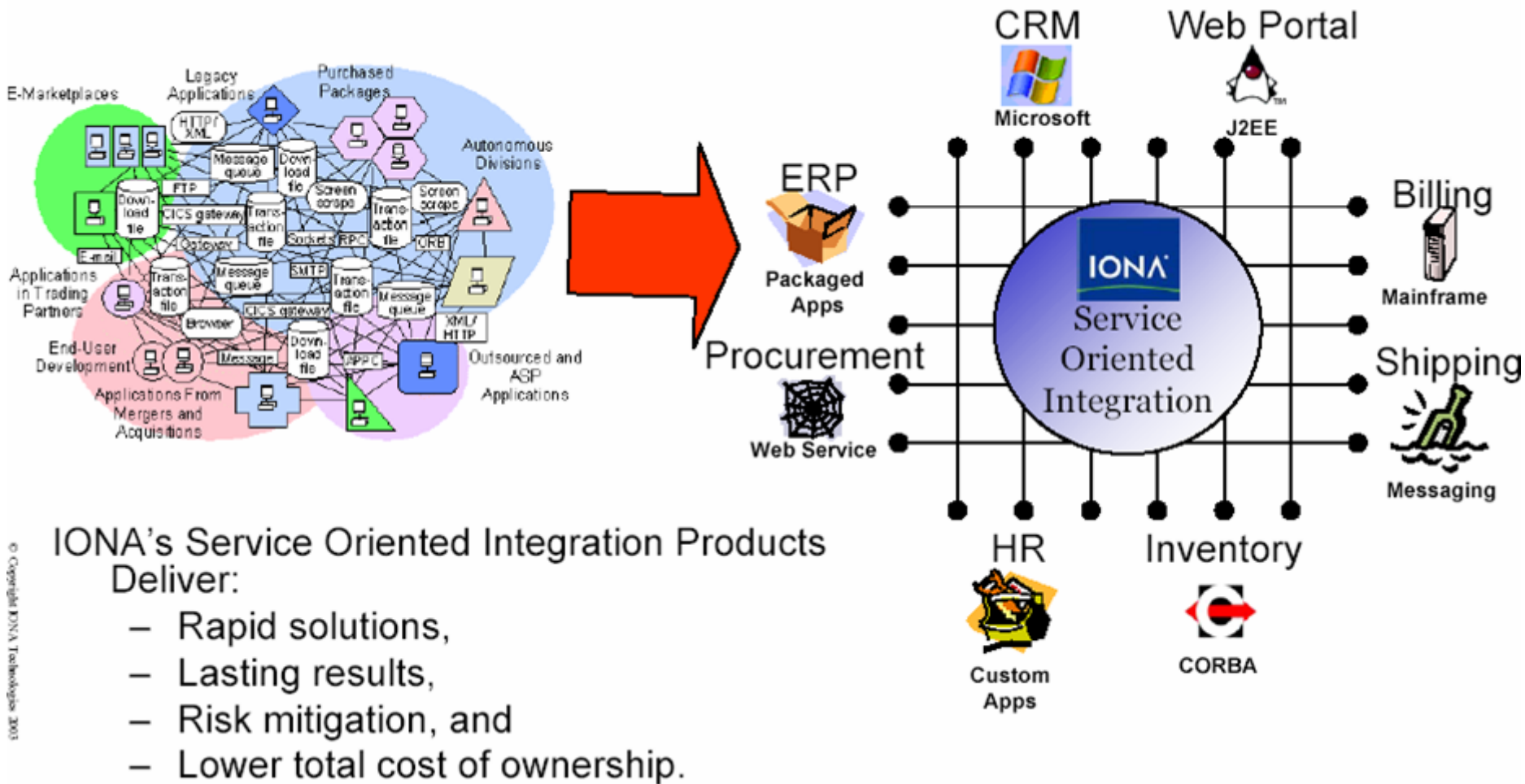
- › Incremental SOA Adoption
 - › Lightweight and easily embeddable **endpoints**
 - › Right-sized: configure what you need, scale as you grow
 - › Pricing allows small initial deployment and linear growth

- › Dynamic & Adaptable Solution
 - › Configurable at runtime
 - › Plug-in architecture

- › Technology-Neutral Deployment
 - › Standards-based
 - › Multiple messaging systems and protocols
 - › Works with existing software & hardware systems

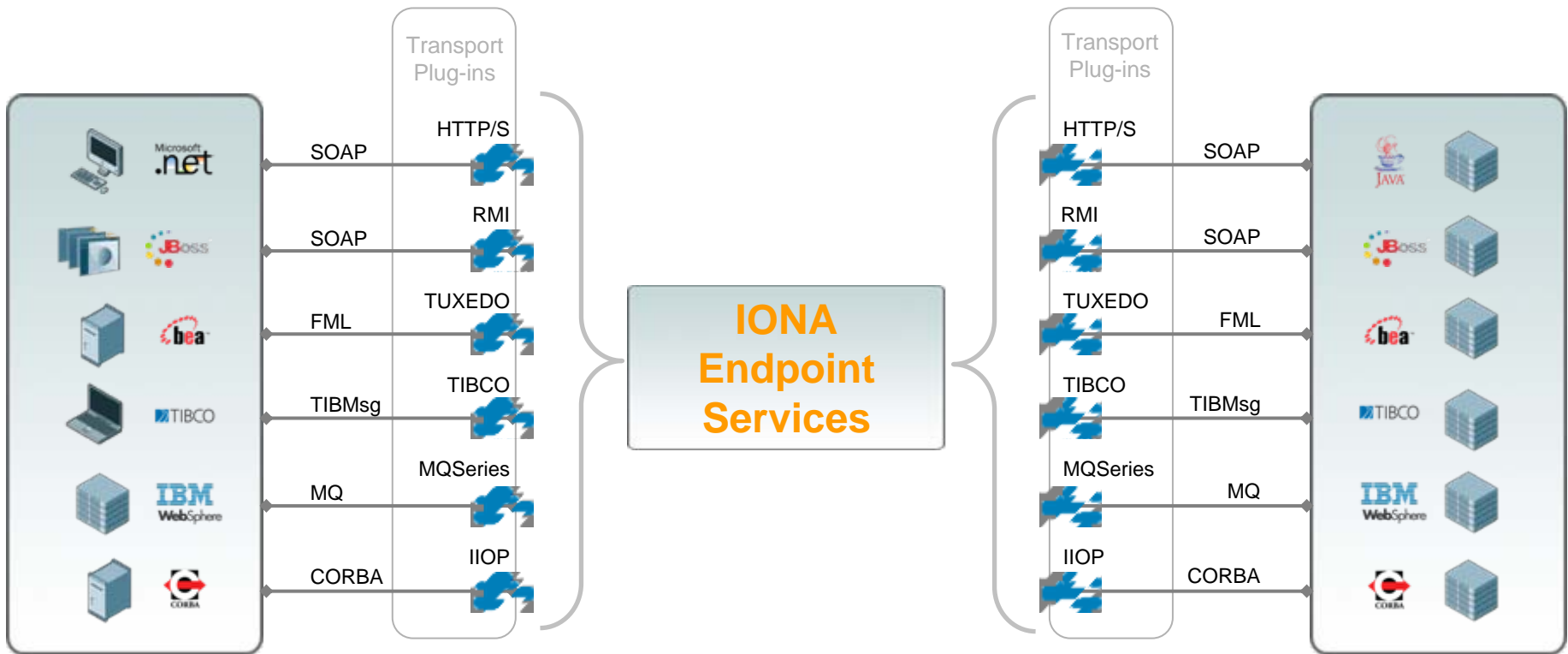


We Want to go Here

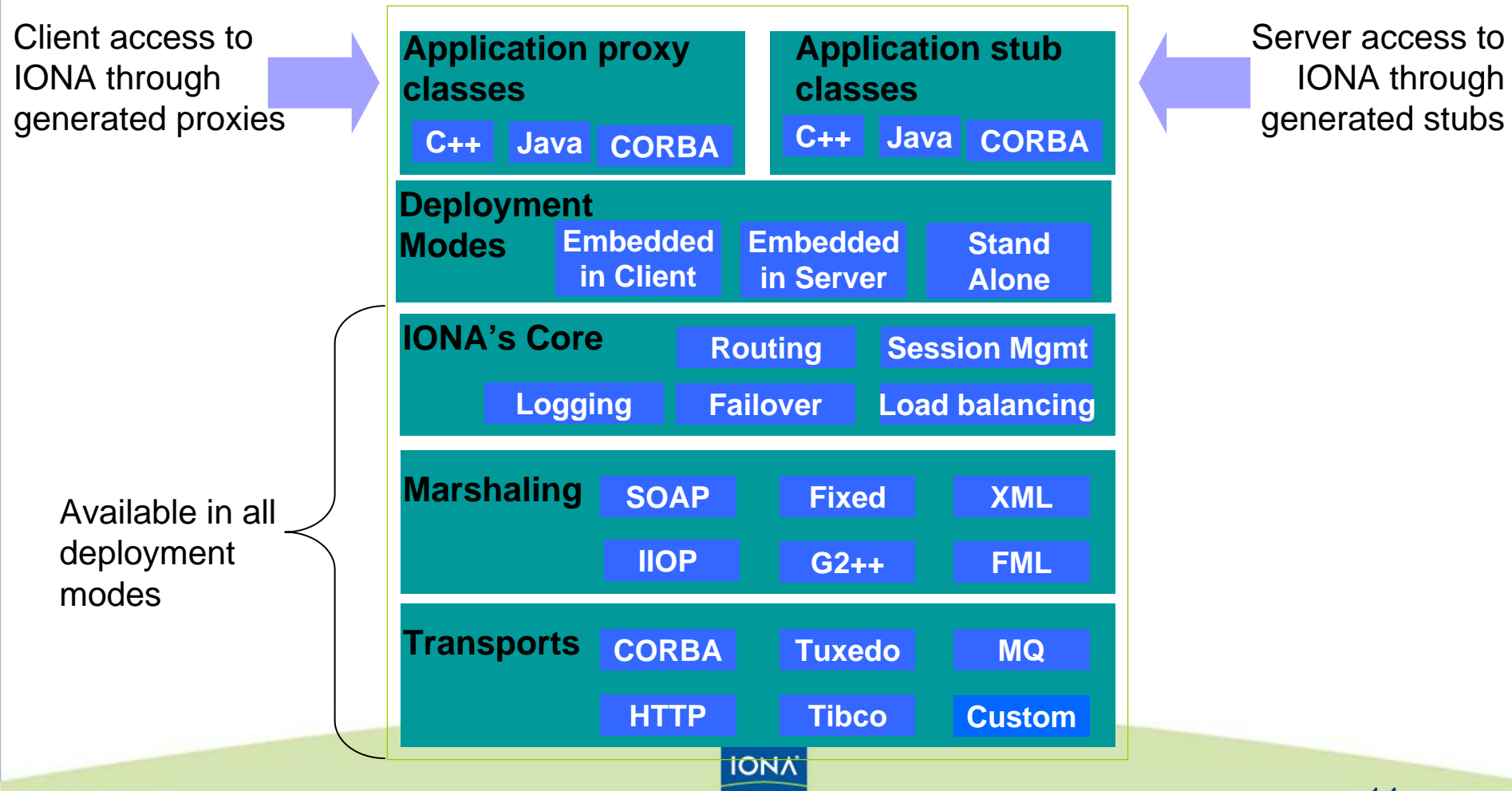


Technology Neutral

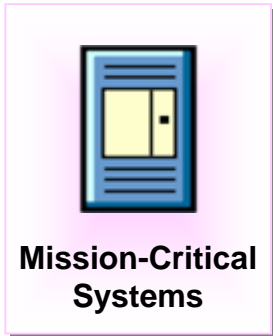
- › Standards-based, multi-platform, multi-protocol
- › Loosely coupled



IONA's Legacy Web Services enablement Architecture



Adopting SOA: The Best Solution



Enterprise
QoS

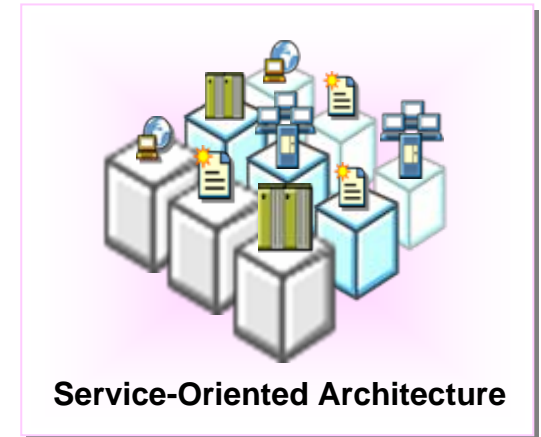
Artix

**I
O
N
A**



Open
Source

Celtix



- › Distributed
- › Incremental
- › Standards-based



IONA's
Open Source:
Celtix
Enterprise



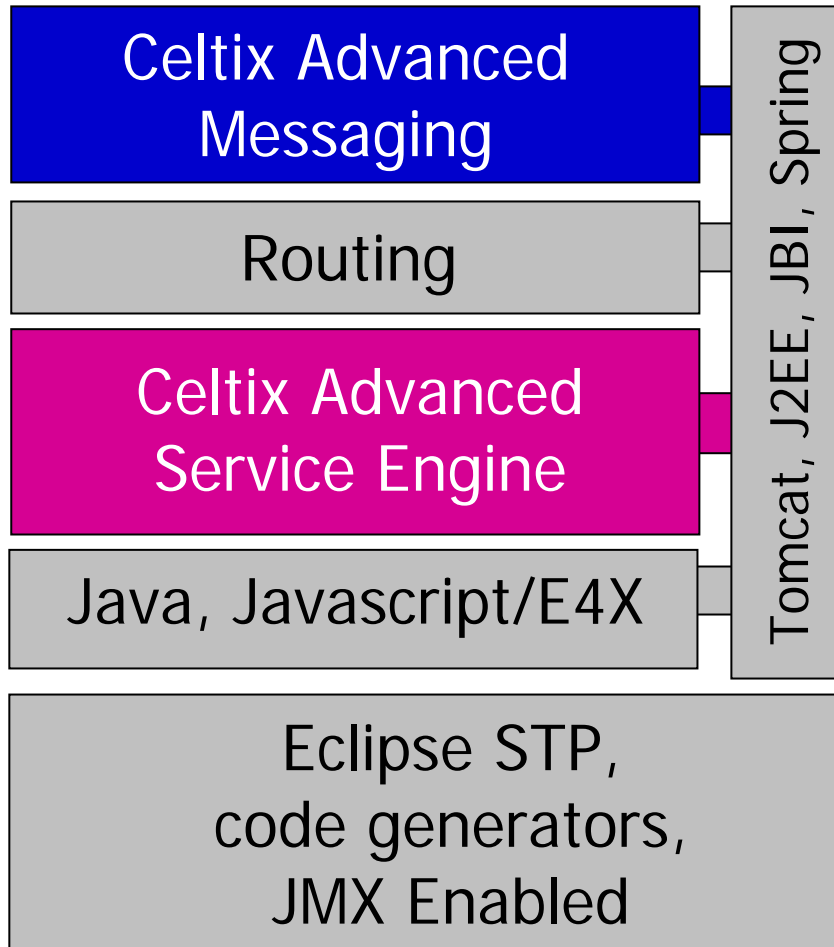
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Celtix Enterprise Making Headlines

- IONA is expanding leadership in Distributed SOA infrastructure with open source
- Celtix Enterprise
 - Open Source ESB
 - Basis for distributed SOA
- Celtix Advanced Messaging
 - AMQP reference implementation
- Celtix Advanced Service Engine
 - Based on Apache CXF
- Enterprise-class Services and Support



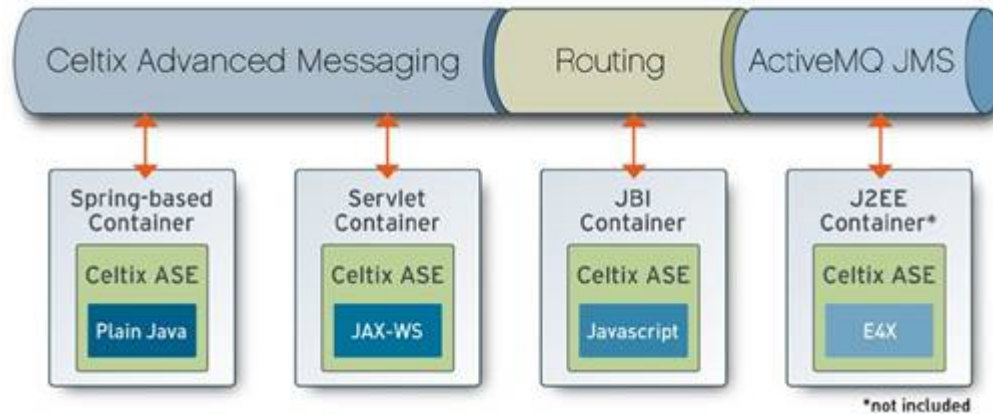
The Celtix Offering Family (Detail)



- › Celtix Advanced Messaging
 - › Based on Apache Qpid, AMQP reference implementation
 - › Supports fire-and-forget, publish-subscribe, reliable message queuing
 - › AMQP is an open on-the-wire protocol
- › Celtix Advanced Service Engine
 - › Based on Apache CXF
 - › Full JAX-WS 2.0 implementation
 - › Supports Java and Javascript/E4X
 - › SOAP or raw XML over HTTP, JMS, AMQP



Celtix Enterprise Components



› Messaging

- › Celtix Advanced Messaging
- › ActiveMQ JMS
- › Routing

› Containers

- › Tomcat
- › ServiceMix JBI container
- › Lightweight Spring-based Container
- › Supports J2EE

› Celtix Advanced Service Engine

› Eclipse tooling from the SOA Tools Platform (STP) project





ESB ←-----→ ESB

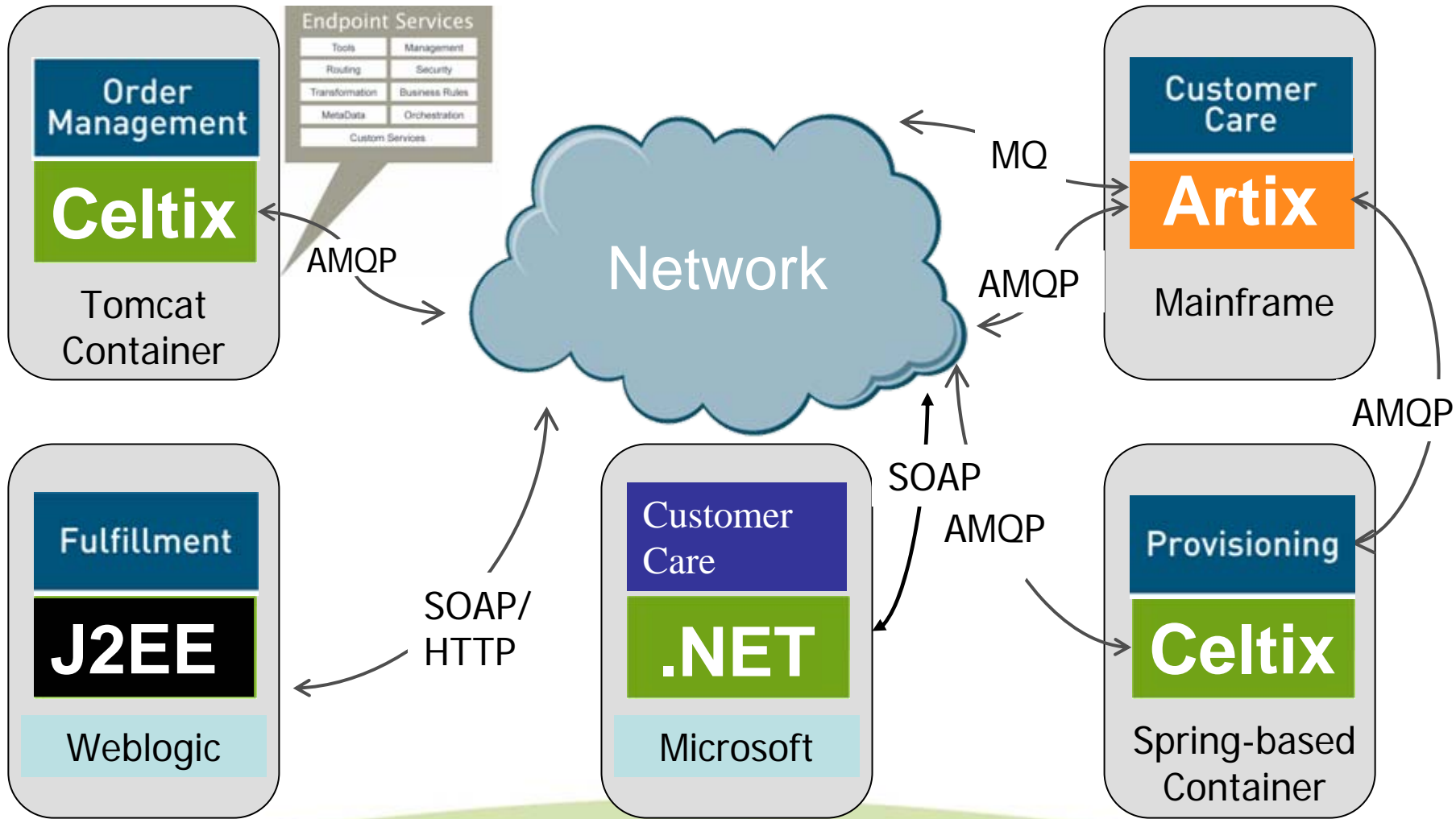
ESB

Interoperability

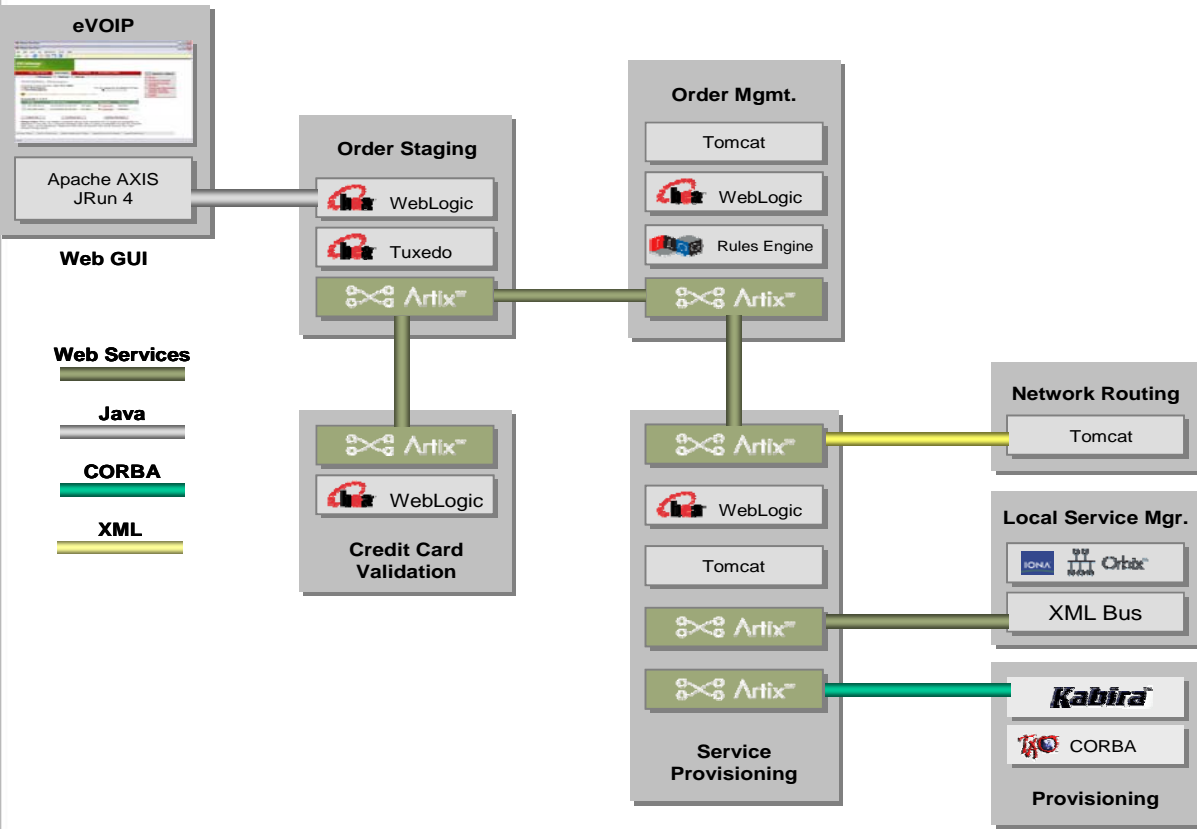


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Artix and Celtix in a Distributed SOA



From the Architects viewpoint:.....



Technical Highlights:

End-Points:

IONA embedded at end-point, executing on same hardware, managed and secured using the native mechanisms of the application, without changing applications

Deployment Flexibility:

Different end-points required different deployment models; client / server / switch

Language Independence:

IONA components are deployed using C++ and Java

Multiple Protocols and Bindings:

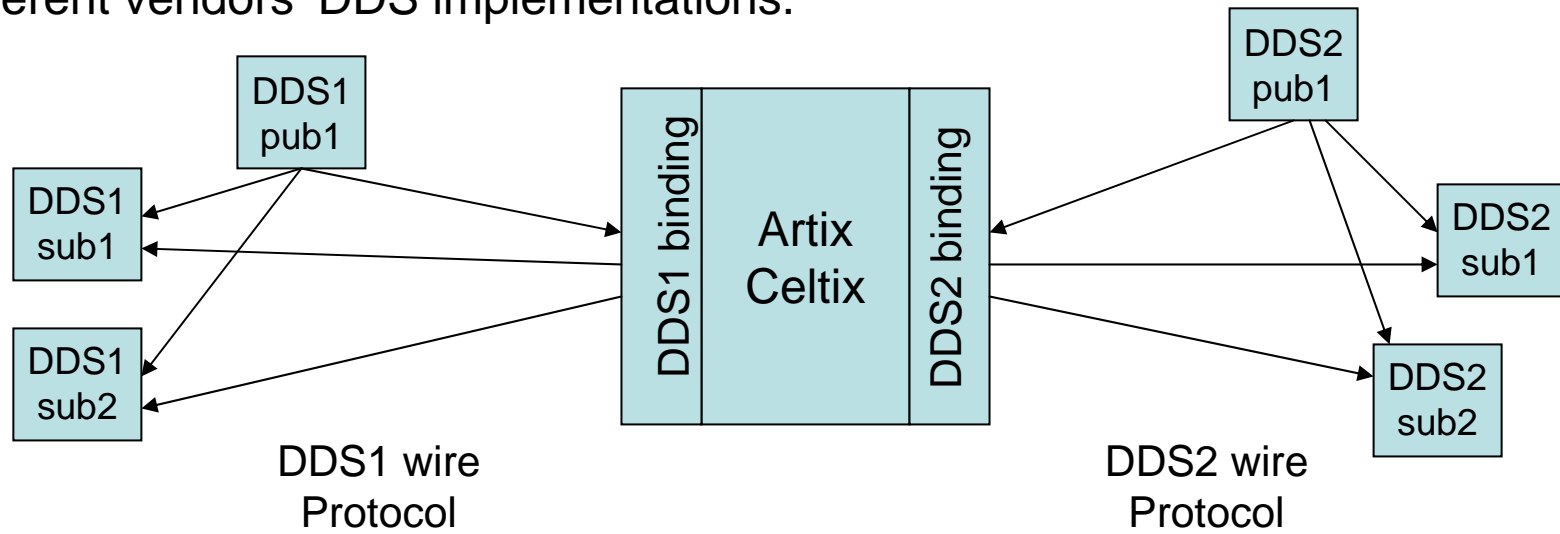
IONA supports multiple transport protocols and message format bindings



Data centric Interoperability

DDS - DDS integration

In the absence of consensus on a standard DDS wire protocol an Artix/Celtix DDS could act as a mediator propagating messages between DDS networks based on different vendors' DDS implementations.



Between different DDS implementations:

NDDS, OpenSplice, OpenDDS, TAO DDS,

Between DDS and other asynchronous messaging standards

CORBA Event/Notification, JMS, AMQP...etc.

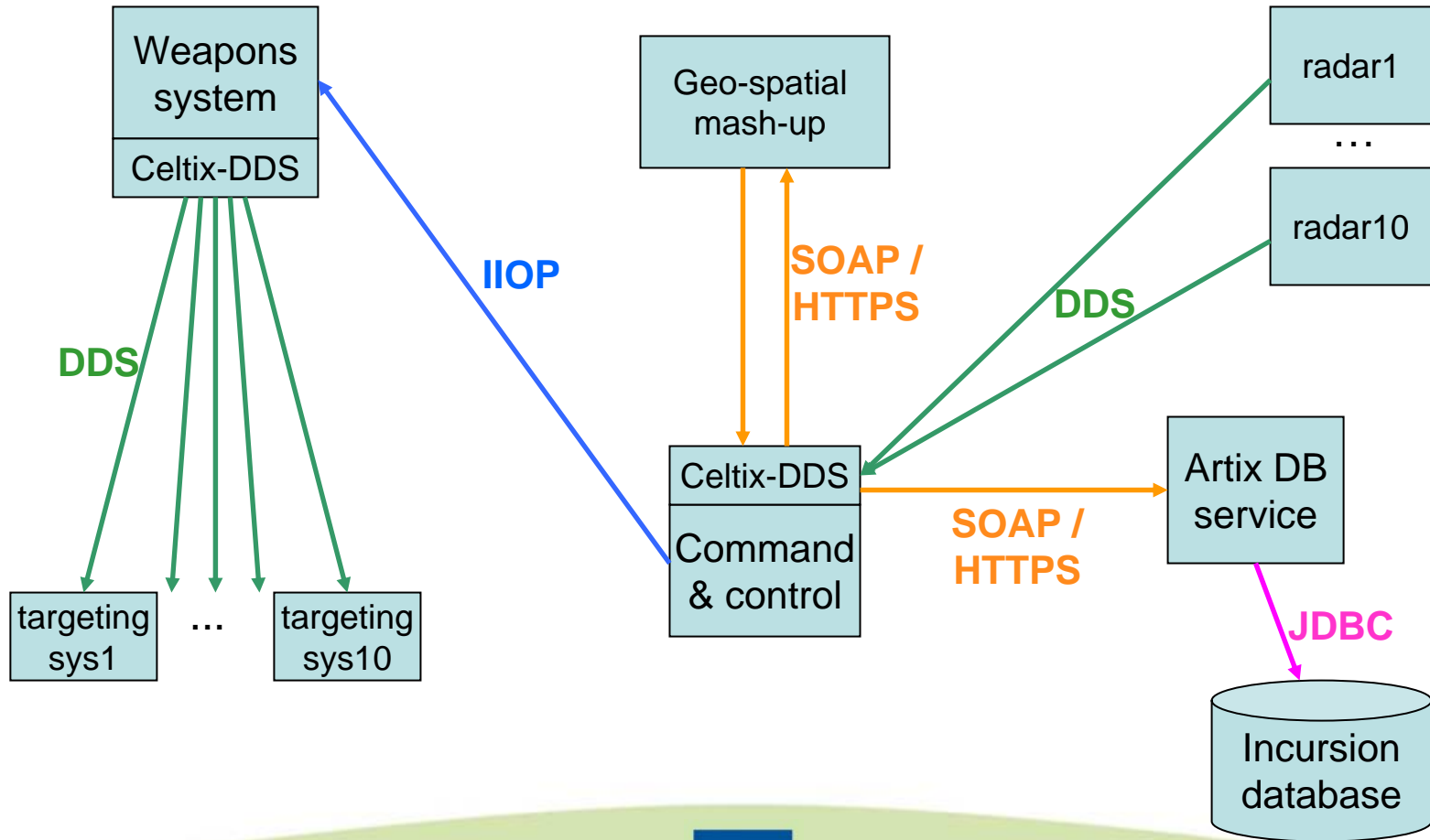
Between **DDS** and **synchronous client-server** communication technologies


SOAP/HTTP Web Service, IIOP CORBA, Tibco, MQSeries...etc.



Mixed DDS - (Other) integration

Perhaps the ultimate holy grail is full mixed-mode integration with each node using either DDS or Client-Service communications mechanisms as appropriate.



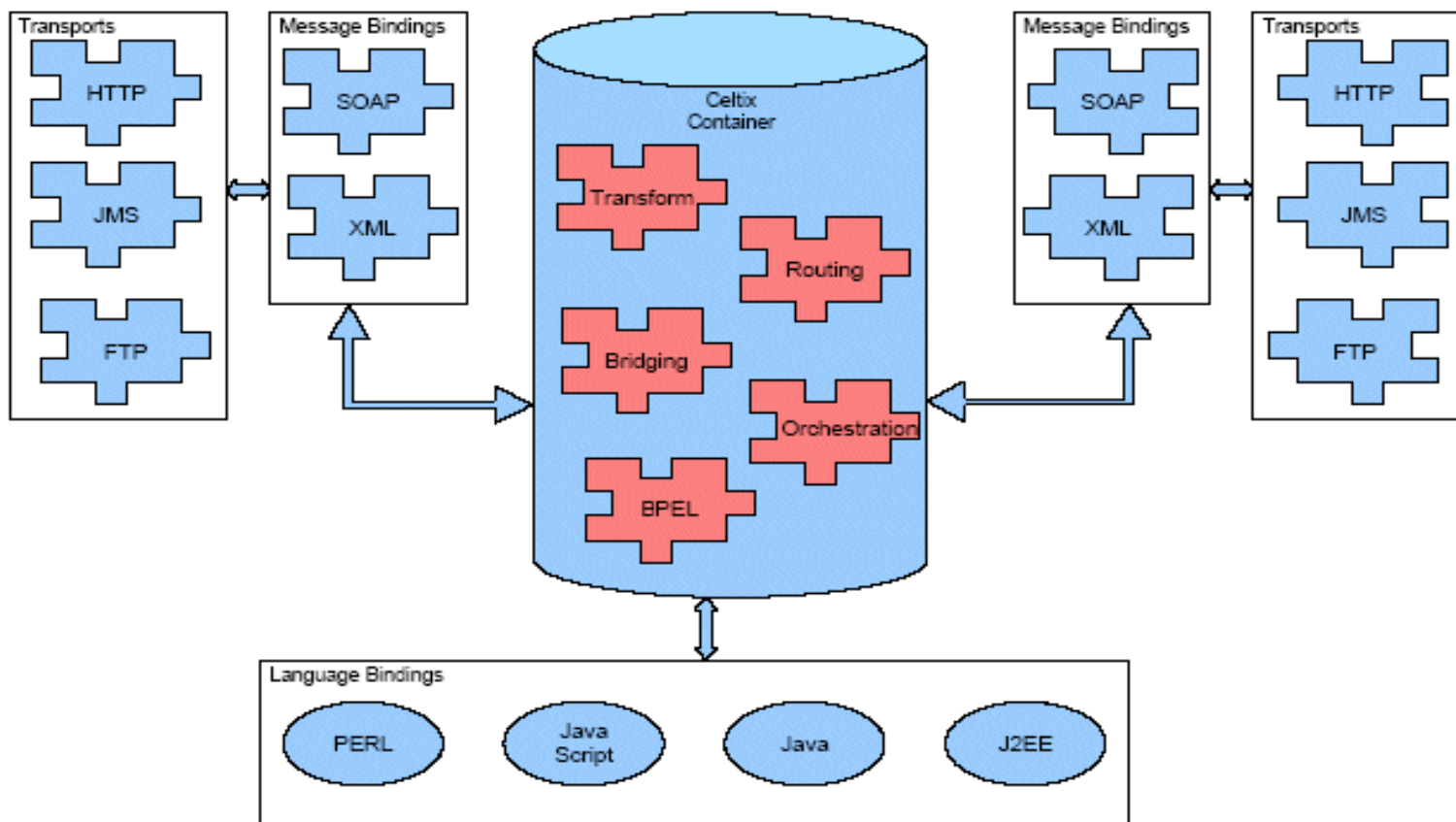


Open Source SOA Architecture

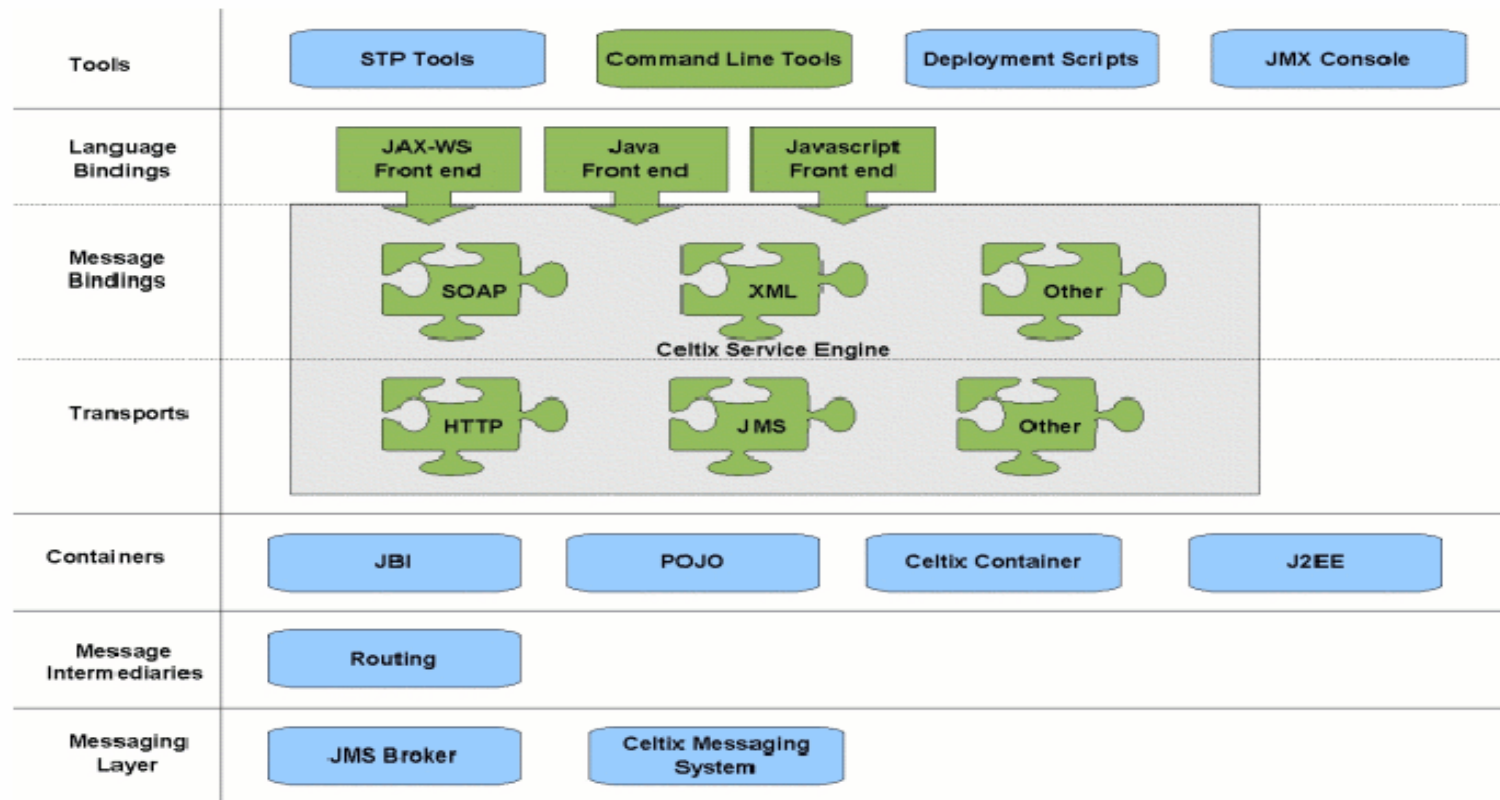


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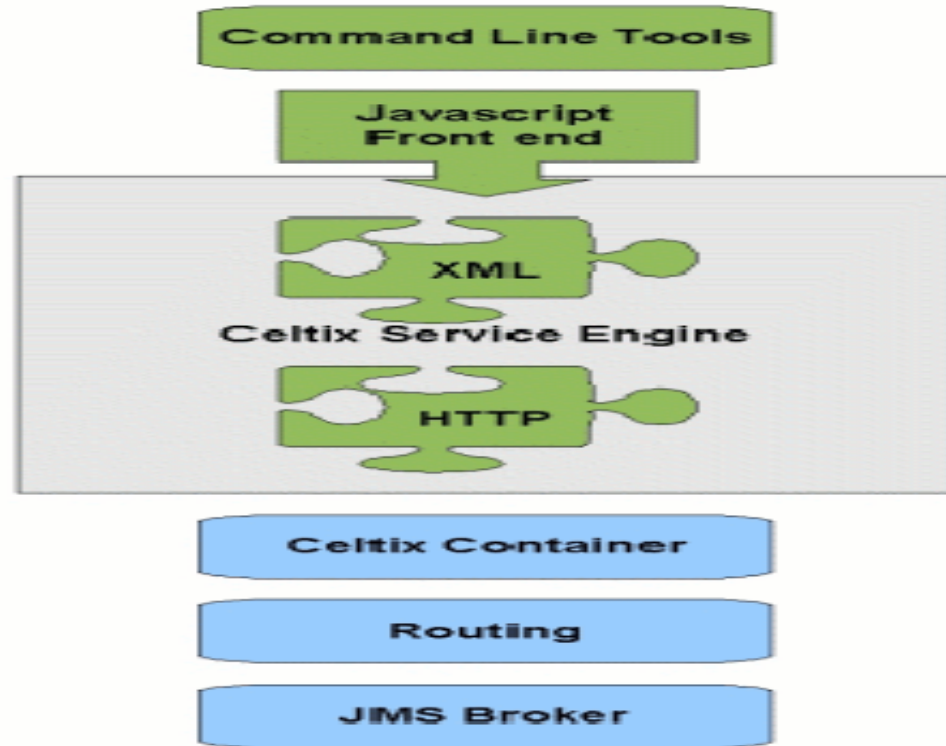
Celtix High-level Architecture



Celtix Enterprise - Another View



Think Big, Start Small, Scale Fast



WSDL Centric Architecture

- › Leverage WSDL concepts heavily
 - Applications w/o WSDL also supported*
- › Support all WSDL semantics
 - *Extensible message exchange patterns*
 - *Separation of logical and physical contracts*
 - *Define service and tie it to a binding*
 - *Apply QoS*
- › Initially support WSDL 1.1
 - *WSDL 2.0 (next release)*



Features for 1.0

- › JAX-WS 2.0
- › Bindings: SOAP 1.1, XML
- › Transports: HTTP, JMS
- › WS-Addressing, WS-Reliable Messaging
- › Instrumentation & JMX Management
- › JBI Support
- › SCA Integration with Tuscany
- › J2EE Integration with Geronimo and JOnAS
- › Routing



Are you Ready for OpenSource SOA?

Applicability



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Use Cases

› Basic JAX-WS Service Creation

- › The GUI tools provide JAX-WS compliant code from WSDL contracts and help you develop applications using it. The GUI tools also provide a mechanism for generating a JAX-WS service from a Java object.

› Reliable Messaging Delivery

- › AMQP
- › Reliable Messaging (WS-RM)
- › ActiveMQ JMS

› Deploying Smart Endpoints

- › Has all of the functionality to send and receive messages as specified by the service's contract.
- › It does not rely on a central server and is more flexible in terms of resources and deployment options.
- › Service's built with Celtix Enterprise can be deployed as standalone processes that are completely autonomous.

Use Cases (Cont)

➤ **Web Service Enabling of Legacy Systems**

- Celtix can assist you in adding the needed JAX-WS annotations to your objects
- It will then generate the WSDL which defines the newly created service. Once your Java code is annotated and the WSDL is generated, you can deploy the code as a service using any of the containers supported by Celtix Enterprise.

➤ **JAX-WS SOAP Stack in alternative containers**

Deploying Inferno service as a web application inside Tomcat container, deploying services with Spring, deploying services on Geronimo.

➤ **JB1 Integration**

[ServiceMix](#) amongst others (OpenESB)



Use Cases (Cont)

➤ **Web 2.0 and JavaScript Support**

- Integration with AJAX, php, and other scripting languages.
- Celtix Enterprise has a JavaScript front-end that allows you to write services and consumers using either JavaScript or E4X.



Celtix Enterprise is here!

The screenshot shows the IONA website for Celtix Enterprise. The header includes the IONA logo with the tagline "Making Software Work Together™", a search bar, and navigation links for "Register New User" and "Sign In". A secondary navigation bar contains links for "Solutions", "Products", "Services", "Support", "Partners", "Customers", and "About IONA". The main content area is titled "Celtix Enterprise" and features a "Certified Open Source Enterprise Service Bus (ESB)" section. This section includes a diagram of the "Celtix Enterprise Deployment" showing a central "Network" cloud connected to various service components. Below the diagram is a link to "click to view larger version". To the right of the main text, there are two promotional boxes: "Download Celtix" with a download icon and text "Get our FREE open source ESB today!", and "30 days Free Celtix Support" with a list of support services: "8 x 5 availability", "Service request analysis and definition", "Service request management, resolution and response", and "Identification of available product releases". Below the support list is a "Sign up today!" button with a person icon. The left sidebar contains a "Celtix Enterprise" menu, "Related Links" (Download Celtix, Celtix Support, Celtix Datasheets, Celtix Documentation, Developer Center, IONA Blogs), and "Professional Services" (Order support, training or consulting for your open source project today, + 1.877.CELTIX1 (US only), + 353.1.637.2000). The bottom of the page shows a Windows taskbar with the Internet Explorer browser, a search bar, and a zoom level of 100%. The IONA logo is also visible in the bottom right corner.

IONA Making Software Work Together™

Register New User | Sign In

Solutions Products Services Support Partners Customers About IONA

Home > Products > Celtix

Celtix Enterprise

Certified Open Source Enterprise Service Bus (ESB)

IONA has assembled a best-of-breed suite of open source services enablement components for building a [service-oriented architecture](#) (SOA) leveraging existing IT investments. Companies seeking an open source option for system integration and SOA implementation will find a collection of the best design-time tools, messaging systems, runtime containers, routing engines, monitoring, and management capabilities open source has to offer in one convenient package, fully integrated and tested by a SOA and integration market leader.

IONA backs Celtix Enterprise with [support, training and consulting packages](#) to combine the confidence of working with an experienced and professional organization with the innovation and cost savings of open source software. IONA brings the best of both worlds together in a safe and secure environment.

Celtix Enterprise provides a distributed and standards-based ESB solution that is

- **Technology-Neutral** - Incorporating the best open source software projects for integration and SOA, Celtix Enterprise is compatible with the widest range of technologies from a diverse group of vendors and communities
- **Easy to Incrementally Adopt** - Free downloads, coupled with service and support options including pay-per-incident,

Celtix Enterprise Deployment

click to view larger version

Download Celtix

Get our **FREE** open source ESB today!

30 days Free Celtix Support

- 8 x 5 availability
- Service request analysis and definition
- Service request management, resolution and response
- Identification of available product releases

Sign up today!

Celtix Enterprise Components

HTTP, JMS, AMQP
Routing
Celtix Advanced Service Engine
Java, Jython/Python
Eclipse BTP code generators

Order support, training or consulting for your open source project today.
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Internet 100%

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Integration Throughout the Software Lifecycle

Addressing the SW LifeCycle

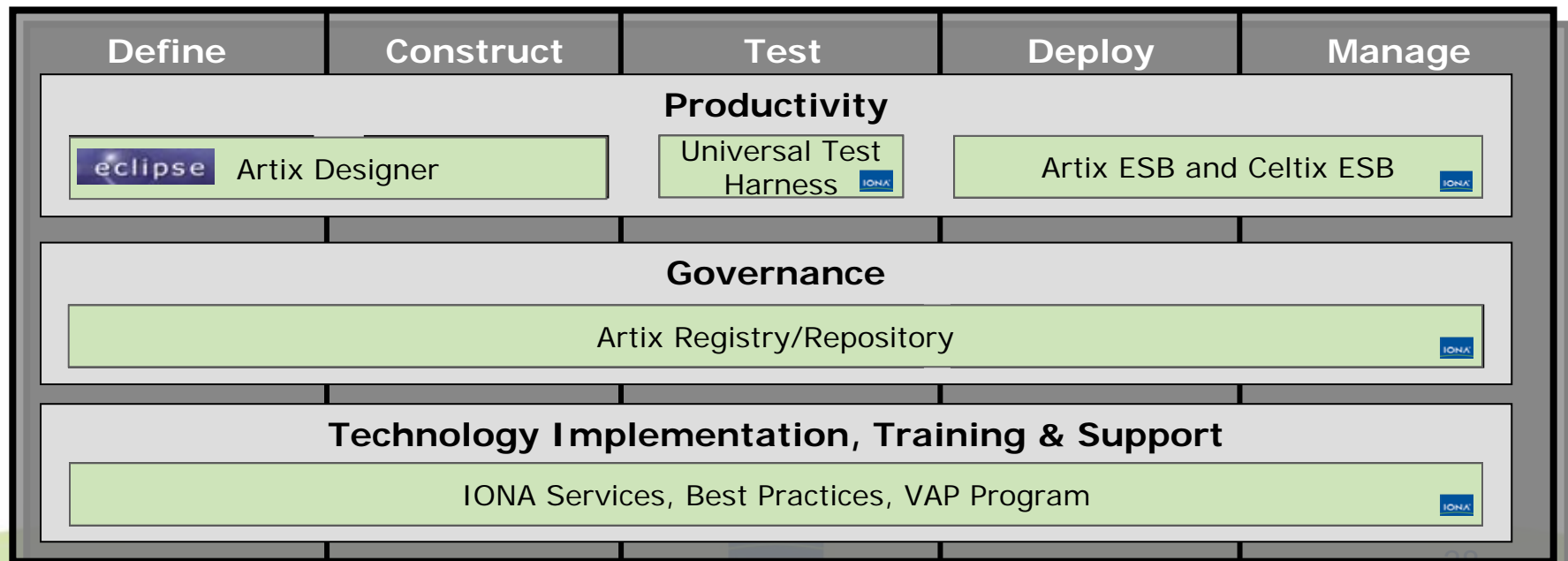


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Integration/Interoperability Issues Delay SOA Deployment Projects

- › Lots of tools and practices focus on application development and testing, few focus on Integration
- › We find three major issues:
 - Incomplete integration specs
 - Poor team communication
 - Late integration testing

Need to address integration across the software development lifecycle



Challenges of Distributed SOA Development

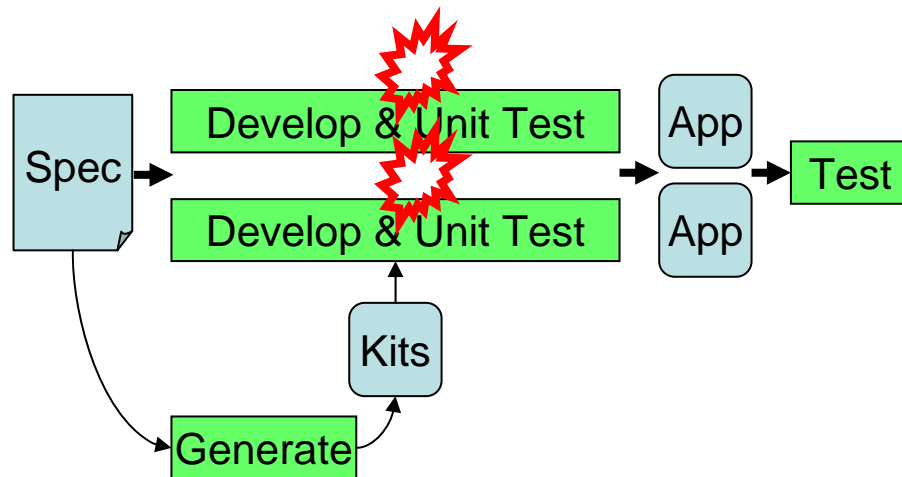
- › Isolated teams operating on discrete requirements
- › Inter-dependencies drive serialized development
- › Consensus on service specifications more difficult to accomplish
- › Conformance to service specifications difficult to monitor
- › SOA Integration Defects Discovered later



Solution - Accelerating Testing

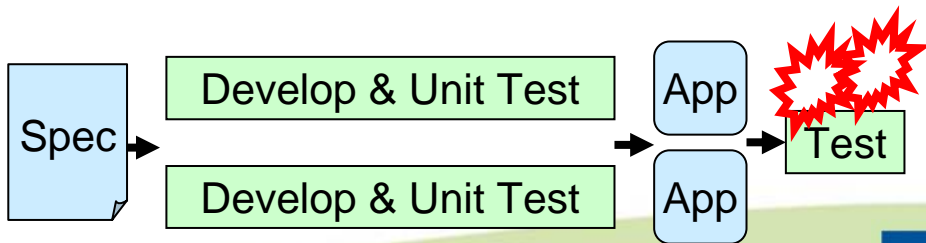
Traditional Integration Testing

- **Parallel development in isolation**
- **Integration defects discovered in Test**
Must “assemble” app to discover flaws
Occurs late in project cycle
- **Time Consuming Discovery Process**
Tends to discover defects serially
Defective Elements must be returned to Development



Artix Certification Kits

- **Interface Simulators**
Generated from Interface Spec
Consumers and Providers
- **Parallel Test during Development**
Centrally Defined Tests Cases
Distributed to Developers



Solution Value - Universal Test Harness

- **Concentrated Investment of ...**
Software Dollars
People
- **Greater People Portability**
Less retraining between systems
- **Increased Productivity**
Eliminate Hand-coded simulators
Greater Access to best in class tools
- **Improved Process Visibility**
Normalizes Testing Activities
Consolidated Reporting and
Management Capabilities

Customer Case Study

- Enterprise Services Organization
 - Approx 70 Testing FTEs
 - Annual Budget: ~US\$9M
- Assessment – Mid '05
 - Testing FTEs reduced 70-80%
 - 3 year Cost-savings: US\$10M

 - Developer FTEs 15%
 - Improved Coordination
 - 3 year Cost-savings: ~US\$5M

 - Reduce Time to Market
 - Removed 2-3 Weeks per release
 - 3yr Revenue Impact: ~US\$50M



Automated Certification Kits

➤ Fully Generated Solution

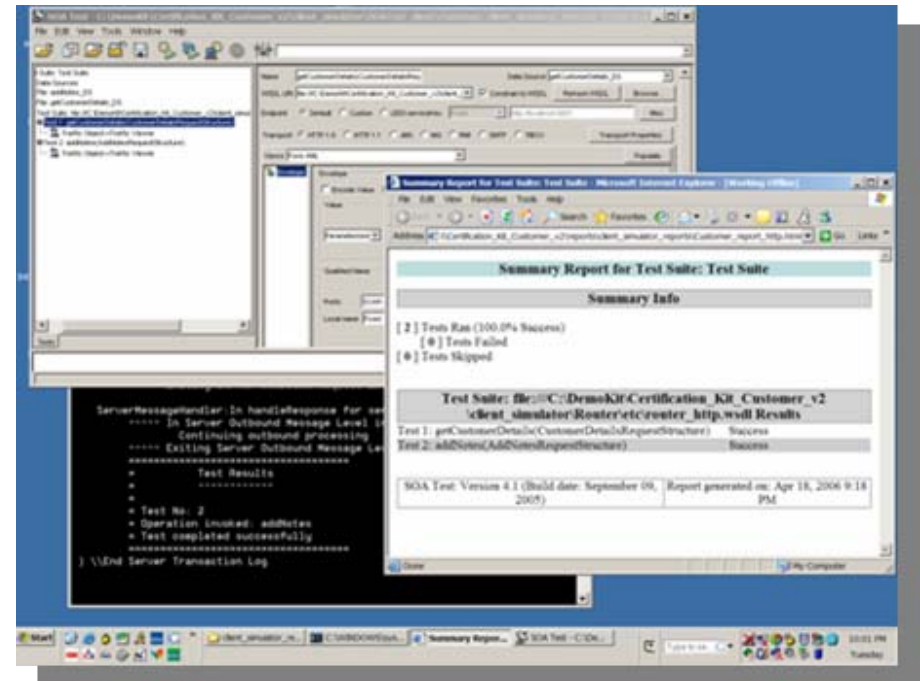
No Coding involved

Build, Package and Distribute
within an hour

➤ Flexible distribution models:

Distributed model: Kits
distributed to Developers

Hosted model: Test team hosts
simulators



Deliver Projects Faster!

