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JavaOne
Sun and Network Associates

Composable Web Services Using Interoperable Technologies from Sun's "Project Tango"

Nicholas Kassem

Technology Director

Harold Carr

Lead Architect



TS-4661

Goal of this Session



Learn about Sun's "Project Tango" & see how it will enable the next generation of Web Services.

Agenda

What is “Project Tango”

What should developers know

What are the key deliverables

Programming model

Roadmap

Call to Action

Resources

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Project Tango ... background

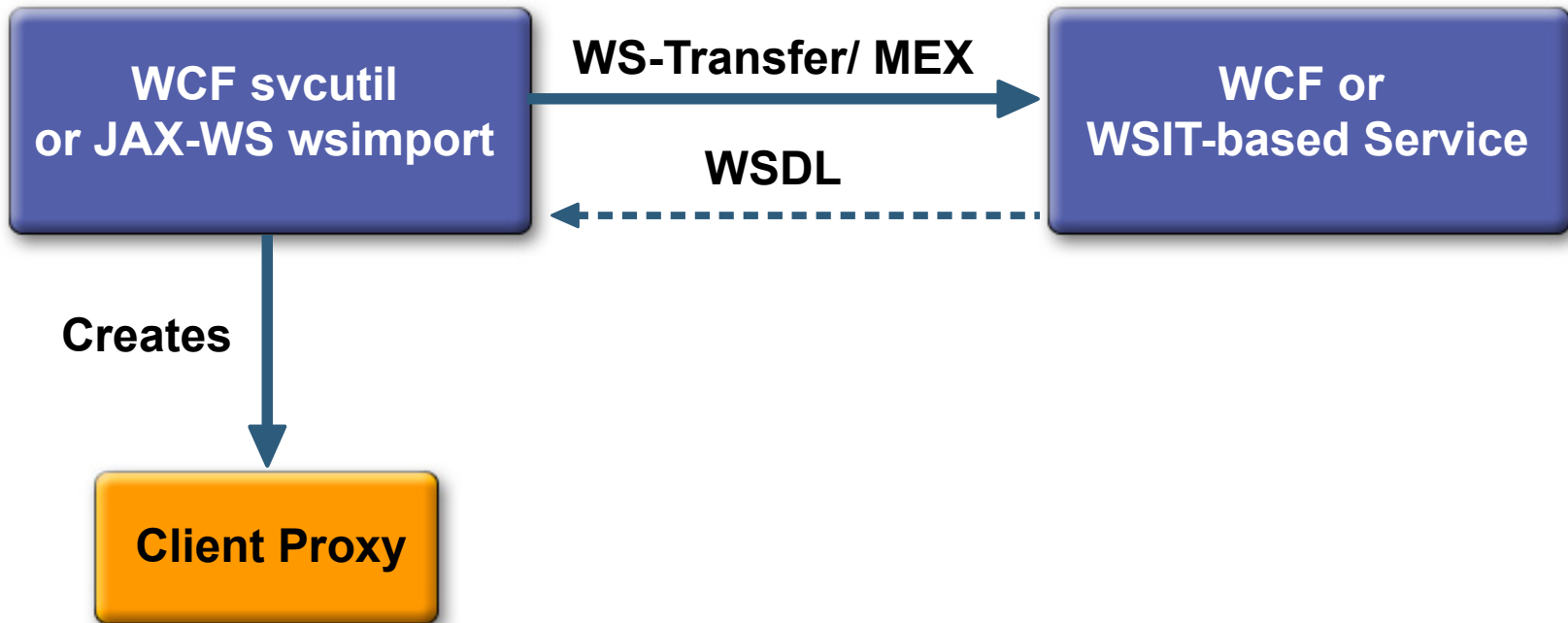
- Goal
 - Deliver next generation Web Services technologies enabling first class interoperability between Sun's Java Products and Windows Operating environments supporting WCF^[1]
- Implementation strategy
 - Build on JAX-WS & JAXB technologies
 - Work closely with Microsoft and perform product level testing
 - Build an active Open Source community centered around the GlassFish community

[1] Windows Communications Foundation aka “Indigo”

Project Tango Features

- Bootstrapping Communication
- Optimizing Communication
- Enabling Reliability
- Enabling Atomic Transactions
- Securing Communication

Bootstrapping Communication



Optimizing Communication

- Wire format optimization (MTOM/XOP)
 - Transmit binary data as MIME attachments
 - Transparent to the application
- Security optimization (WS-SecureConversation)
 - Establish shared context on multi-message exchange
 - Use context to generate derived keys on subsequent msgs
 - Increases security and performance

Enabling Reliable Messaging

- WS-ReliableMessaging
- Recovery from messages lost or misordered in transit
- Transparent to application

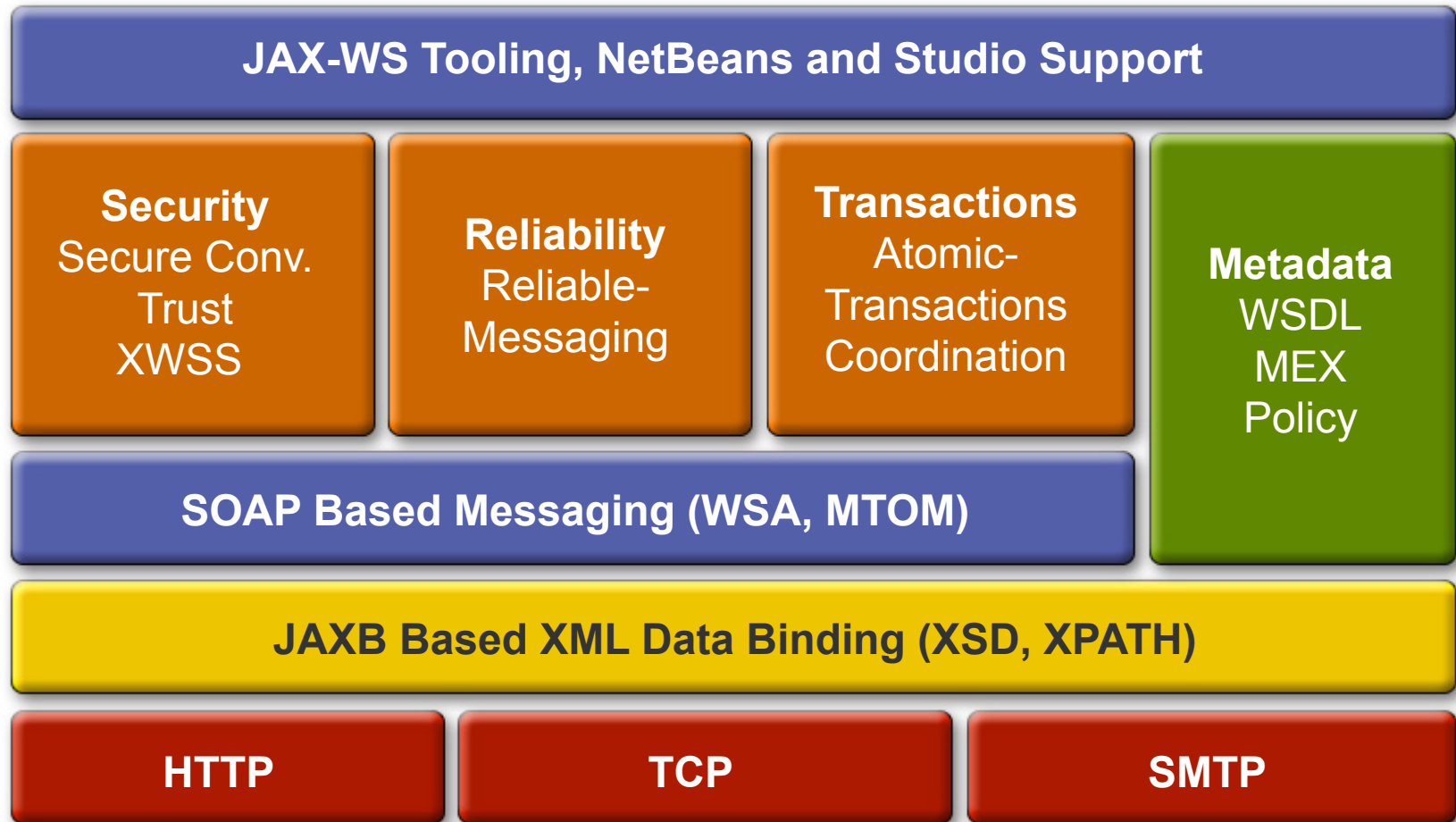
Enabling Atomic Transactions

- WS-Coordination & WS-AtomicTransactions
- All operations in TX boundary succeed or rollback
- New to Web Services

Securing Communication

- WS-Security
 - Web Services previously only point-to-point via SSL
 - Now end-to-end by encrypting/signing message before transport
- WS-Trust
 - Establish and broker trust relationships
 - Issuing, renewing, validating security tokens used by WS-Security

Layered view



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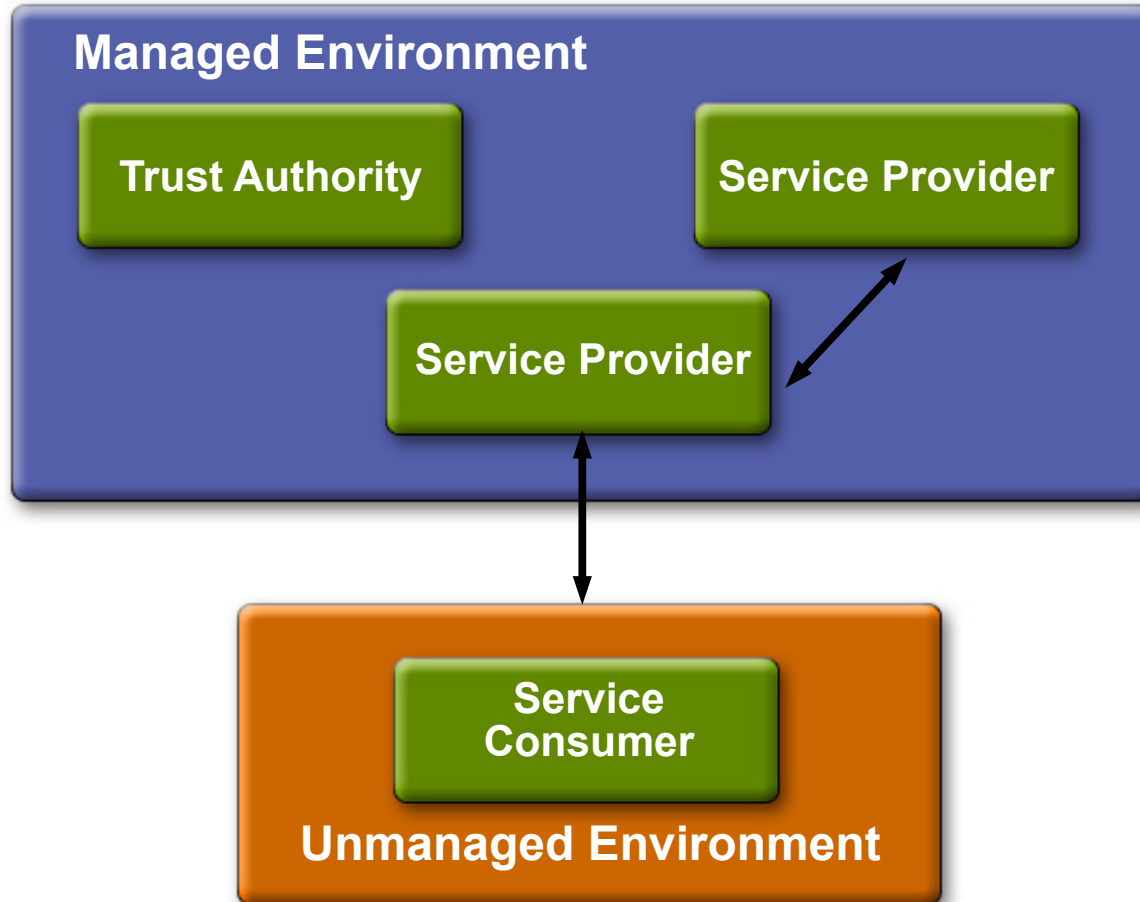
Core WS* concepts

- Service opacity
 - Information hiding
- Configurable stack
- Wire-protocol centric
 - Minimal assumptions about end nodes
- Service isolation
 - Independent Service design, development, deployment, & versioning
- Message oriented
 - Long lived messages
 - Transient MEPs

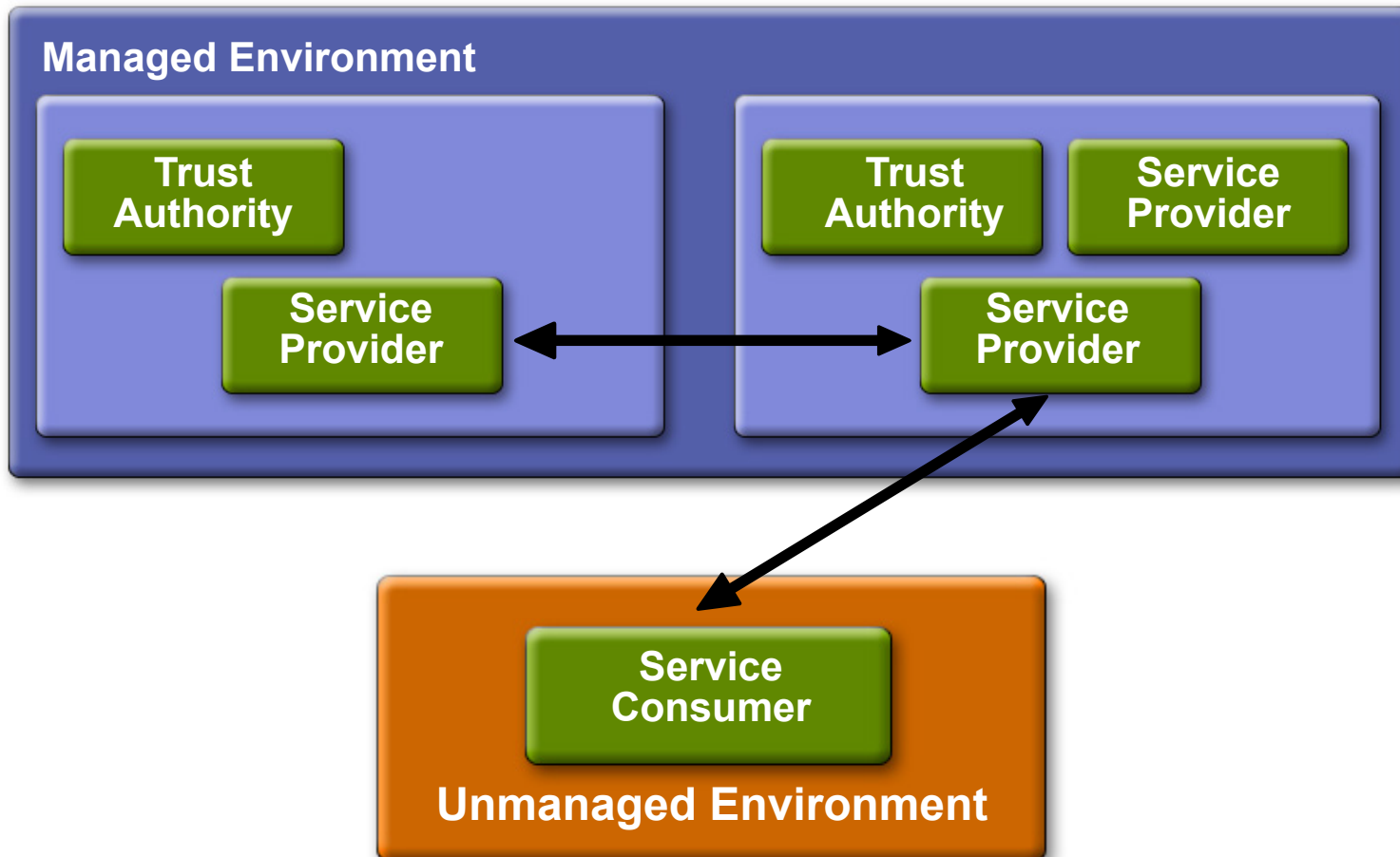
Levels of Interoperability

- Transport Bindings
 - HTTP, SMTP, TCP & others
- Data bindings
 - XSD based Type mappings (early and late binding)
 - Common encoding schemes
- Common Infosets
- Language agnostic wire protocols
- Common policy vocabularies
- Security & Trust models
- Common application semantics

Homogenous Service Integration



Heterogeneous Service Composition



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Relevant Specifications

- Messaging
 - WS-Addressing, MTOM
- Metadata
 - WS-MetadataExchange, WS-Policy, WSDL
- Security
 - WS-SecurityPolicy, WS-SecureConversation, WS-Trust, WS-Security
- Reliability
 - WS-ReliableMessaging
- Transactions
 - WS-Coordination, WS-AtomicTransaction

Web Services Interop. Tech. (WSIT)

- Phase I:
 - Priority is early delivery of implementations of a select set of WS* specification
 - WSA, MEX, Trust, Secure Conversation, RM, Policy
 - Community development and technical evangelism
 - Visible Development in GlassFish Community
- Phase II:
 - Deliver additional enterprise class WS* technologies
 - Transaction, Coordination
 - Produce & Analyze performance benchmarks
 - Align with Java Platforms & Sun Tools

Project Tango Deliverables on Java.net

WSIT* 1.0 EA (JavaOne-06)

- Basic Messaging
 - JAX-WS 2.0.1 EA
 - JAXB 2.0.1 EA
 - WS-ReliableMessaging
 - WS-Addressing
- Tooling
 - NetBeans plugin
- Meta Data
 - WS-MetaData Exchange
 - WS-SecurityPolicy
 - WS-Policy

- Security

- WS-SecureConversation
- WS-Trust
- WS-Security

WSIT 1.x EA (post JavaOne-06)

- WS-AtomicTransaction
- WS-Coordination

* Web Services Interoperability Technology

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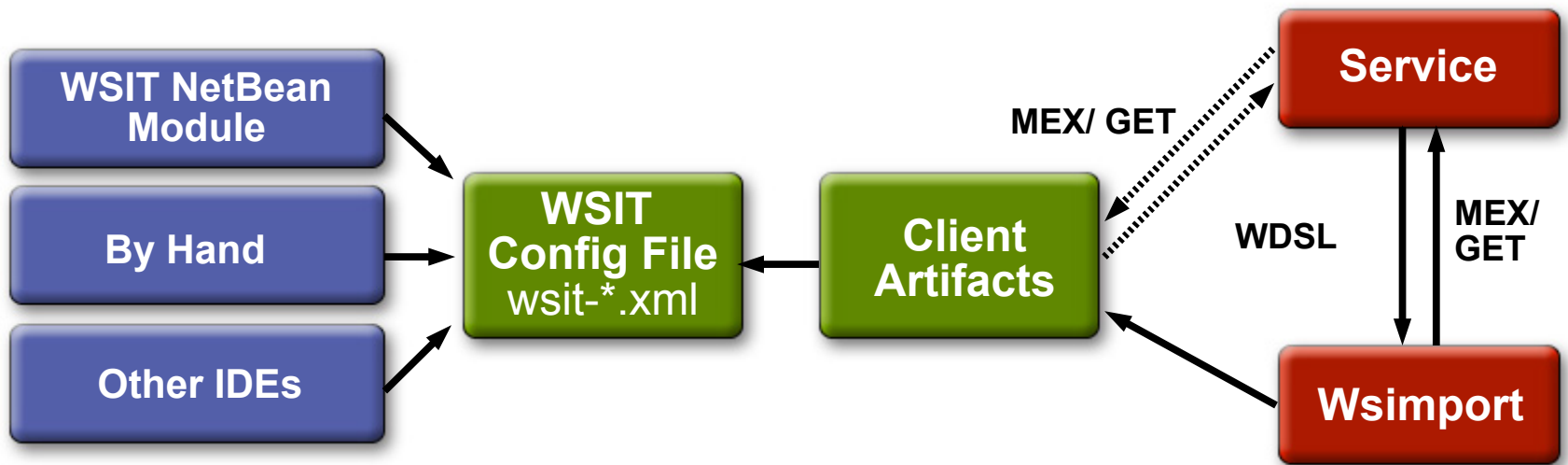
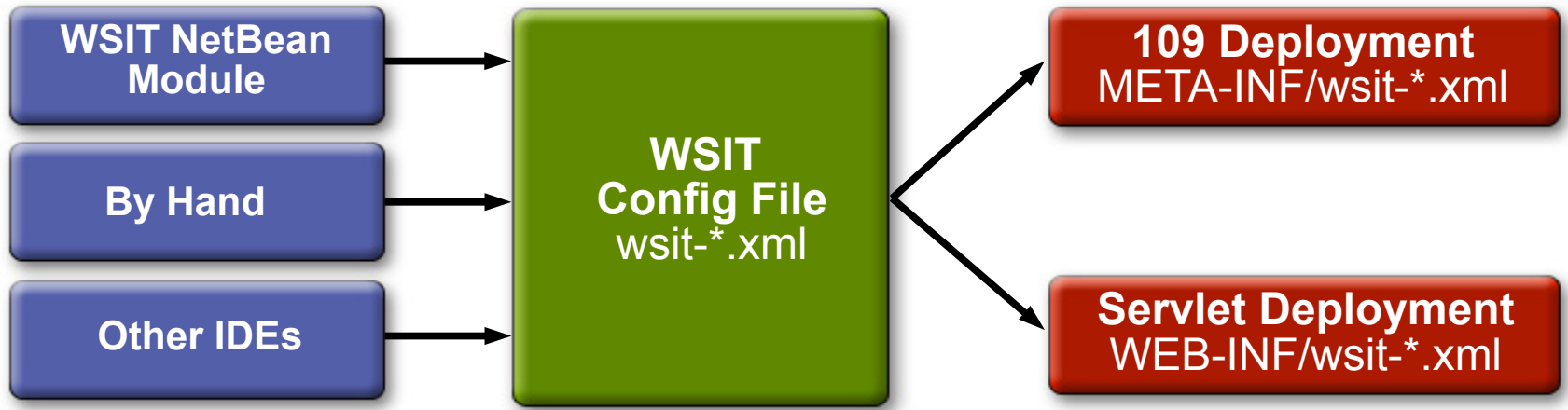
Call to Action

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WSIT Programming Model

- No runtime APIs for Tango
- Developer writes consumers/providers via JAX-WS and EJB APIs
- Developer/deployer supplies config file to enable/control Tango components
- Config file written by hand or produced by Tango NetBeans module

Summary of WSIT programming model



[-] Security Binding Configuration

[+] Token configuration

[+] Other binding attributes

[+] Targets to sign and encrypt

[-] Client/Service WSS Requirements

WSS Version: 1.1

- Key Identifier References
- Issuer Serial References
- External URI References
- Embedded Token References
- Thumbprint References
- EncryptedKey References
- Signature Confirmation

[-] Client/Service Trust Requirements

- MustSupportClientChallenge
- MustSupportServerChallenge
- MustSupportIssuedToken
- RequireClientEntropy
- RequireServerEntropy

[-] Advanced Configuration

Timestamp Freshness Limit:

Maximum Clock Skew:

Maximum nonce age:

Implications for Java Developers

- Sun has worked hard to minimize impact (if any) on existing API's e.g. JAX-WS & JAX-B
- Enterprise developers (JavaEE) will see no changes in their programming model
- Interoperability with WCF should be achievable with minimal pain
- Performance issues are being looked at very closely and the relationship between Fast Infoset, TCP-bindings & Project Tango is getting particular attention

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Technology & Product Delivery plans

Visible development

- WSIT Early Access
- NetBeans 5.5 Plugin Early Access
- GlassFish

FCS Quality

- Sun Java System App. Server 9.1
- NetBeans Plugin



Now



2007

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- **Test Drive Web Services Interoperability**
 - java.sun.com/webservices/interop
- **WSIT (whiz-it): Download! Contribute!**
 - wsit.dev.java.net
- **Get the FREE GlassFish Open Source App Server**
 - java.sun.com/javaee/glassfish
- **Download NetBeans Module**
 - websvc.netbeans.org/wsit
- **Visit 'The Aquarium' – Virtual watercooler for WSIT and GlassFish**
 - [Blogs.sun.com/theaquarium](http://blogs.sun.com/theaquarium)

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For More Information

Don't miss

- TS-3473
- TS-1603
- BOF-2477
- BOF-2953
- Hands-on Lab
- Q&A @ Argent Hotel

Project GlassFish



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server**

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Summary

- WSIT is the work product of Project Tango
- Initial focus is WCF interop
 - As specs mature focus will broaden
- Java.net and visible development Key to Project Tango's strategy to engage developers

Q&A

Nicholas Kasseem
Harold Carr