

TT7150 Mastering SOA and Web Services Developer's Workshop (5 days)



Geared for experienced developers, **Mastering SOA and J2EE Web Services Developers Workshop** is a five day, lab-intensive SOA and Web Services training course that introduces developers to the fundamentals of Service Oriented Architectures (SOA) and the core standards that enable Web Services. This course focuses on what separates an ad hoc set of web services (NOT SOA) from a managed, vibrant, reusable catalog of enterprise services (definitely SOA). It provides an overview of the entire spectrum from the promise of cloud computing to the grit of XML content.

This lab-intensive course provides students with hands-on experience with implementations of the Java XML and Web Service APIs including JAXP, JAXB, JAX-WS, WSEE, and XWSS. In terms of Java, the focus is on using the JAX-WS and JAXB APIs and implementations as the basic for generating and deploying web services and service clients. SOA and Web Services represent a groundbreaking evolution in distributed computing. The concepts are not altogether new, but the application of them, and the unanimous acceptance of core standards like HTTP, XML, SOAP, WSDL, and the various WS-* policies, has paved the way for XML Web Services and service-oriented architectures. An overreaching concern related to services is security. Various aspects of security are woven into this course, allowing students to see the entire spectrum of issues as well as solutions. These include encryption, digital signatures, authentication and authorization assertions, and recognized application security issues such as Cross-Site Scripting and Injection attacks.

► Course Objectives: What You'll Learn

Today's development environments are increasingly dominated by sophisticated tooling that makes the initial development of web services less arduous. The production-level implementation, deployment, and maintenance of web services are far more complex and demanding.

Mastering SOA and J2EE Web Services focuses on providing an understanding of the fundamental technologies used in web services. This understanding is critical to being able to diagnose, troubleshoot, tune, and perform other lifecycle activities. Students will leave the course armed with the required skills to design, implement, test, and support J2EE web services.

Working in a dynamic, interactive discussion and hands-on programming environment, developers will be able to:

- Understand and apply the basic concepts of SOA to the identification and design of web services
- Understand and intelligently discuss Web Services and the core technologies involved
- Understand and apply the basic concepts of SOA to the identification and design of web services
 - Appreciate the concept of layered services including orchestration
 - Understand and intelligently discuss Web Services and the core technologies involved
 - Design, develop, and deploy real-world J2EE Web Services
 - Expose existing Java components as XML Web Services
 - Write Java components that access remote Web Services hosted by a third party
 - Read and understand a WSDL document

COURSE SNAPSHOT

Duration: 5 days (can be tailored)
Focus: J2EE Web Services
Skill-Level: Intermediate +
Targeted Audience: J2EE Developers (also offered for JEE/JavaEE)
Course Format: Extensive hands-on programming Labs; Expert lecture combined with open discussions and in-depth demonstrations. Machines required.
Language / Tools: Java/ XML, SOAP, REST, WSDL delivered with most IDEs such as IBM® Rational Application Developer™ (RAD); Oracle® JDeveloper, Eclipse™ / Ganymede, Eclipse WTP, MyEclipse and more. Most compliant application servers including Apache Tomcat™, JBoss™, IBM WebSphere™, Oracle WebLogic™ and more.
Delivery Options: Available for onsite private classroom presentation, or live online / virtual presentation

- Parse, process, and respond to a SOAP message
- Understand the concepts behind REST and implement a REST-based web service
- Implement handlers to inject cross-cutting solutions for security, logging, auditing, and other needs
- Work with WS-Security to protect content, resources, and other assets
- Understand and utilize web service-related design patterns

Prior to digging into the technical aspects of web services, students are given an introduction to Service-Oriented Architectures, providing a broad context for the purpose and goals for identifying and implementing web services.

Students will explore at the current state of the art of Web services, what works and what doesn't work, and also at newer standards, and how they fit into the Web services picture. Web services are still evolving rapidly, and this course will give you a thorough understanding of the current Web services architecture, and the technologies that support Web services including:

- **SOAP** – Simple Object Access Protocol - A remote invocation (RPC) and messaging mechanism.
- **WSDL** – Web Services Description Language – An XML language that describes the interface and semantics of a Web service.
- **REST**- Representational State Transfer - A style of implementing web services that is gaining increasing acceptance and use
- **WS-I** –Web Services Interoperability Profiles
- **WS-Security/XWSS** – Web Services Security
- **JAX-WS** – Accessing Web services using Java
- **JAXB** – Used for binding XML to Java, increasing interoperability between the two

The course provides a solid foundation in basic terminology and concepts, extended and built upon throughout the engagement. Processes and best practices are discussed and illustrated through both discussions and group activities.

Attending students will be led through a series of advanced topics comprised of integrated lectures, extensive hands-on lab exercises, group discussions and comprehensive demonstrations. Please see below for additional information about the hands-on lab work.

► Audience & Pre-requisites: Who Should Attend

This is an **intermediate and beyond** level web services training course, designed for J2EE developers and architects who need to identify, design, and implement web services. We will explore and apply the terminology, the specification, the processes and technologies specific to web services.

Students should have 1-2 years of working knowledge with Servlets and JSPs, and should be familiar with XML, Namespaces, and XML Schema.

► Related Courses – Suggested Learning Path

Take Before: Students should have basic understanding and working knowledge in the following topics, or attend these courses as a pre-requisite:

- **TT2100 Core Java Programming Fundamentals**
- **TT5100 Mastering J2EE (or JEE) Web Applications (Servlets, JSPs, JDBC, Security, etc.)**
- **TT4300 Core XML Fundamentals (XML, Schema, XPath, and XSLT)**

Take Instead: We offer other courses that provide different levels of knowledge or focus:

- Choose from our unique SOA Seminar Series topics: **TT7001**

SOA Overview for Non-Technical Stakeholders; TT7010 SOA Management; TT7015 SOA Leadership; TT7020 SOA Processes

- If your team needs high level SOA training, the **TT7000 Understanding SOA** or **TT7001 Understanding SOA for Non-Technical Stakeholders** course(s) may be more appropriate.
- For business and systems analysts and are less design-oriented, please consider **TT7110 Service-Oriented Architectures Analysis**
- For basic developer training in web services, consider: **TT7300 Core Web Services for J2EE (or JEE) Developers**, or the more in-depth **TT7301 SOA and Web Services for J2EE (or JEE) Developers**. We also offer other web services courses that integrate J2EE-JEE, XML, SOA and other topics. See our course list for details.

Take After: We offer a variety of introductory through advanced security, development, project management, engineering, architecture and design courses. Students may want to consider the following topics as a follow-on to this course.

- **TT7030 SOA Governance and Infrastructure**
- **TT7040 Secure SOA**
- **TT8150 Mastering SOA Security (comprehensive)**
- Application development topics for J2EE/JEE, XML, Ajax and more – intro though advanced
- Additional advanced SOA and web services topics
- Secure coding, development and design topics
- Software engineering or design topics
- Architecture & Analysis courses

Please note all development courses may also be offered in other programming languages or tailored to suit your unique requirements.

We will work with you to structure with the best solution to ensure your needs are met, whether we customize the material, or devise a different educational path to help your team best prepare for this training. Please contact us for recommended next steps tailored to your longer term education, project or development objectives.

► Experiential Learning: Hands-On Labs

This class is “technology-centric”, designed to train attendees in essential analysis and design skills, coupling the most current, effective techniques with the soundest industry practices.

This workshop is about **50% dynamic lab exercises** and **50% lecture**. Throughout the course students will be led through a series of progressively advanced topics, where each topic consists of lecture, group discussion, comprehensive hands-on lab exercises, and lab review. Multiple detailed lab exercises are laced throughout the course, designed to reinforce fundamental skills and concepts learned in the lessons. At the end of each lesson, developers will be tested with a set of review questions to ensure that he/she has fully understands that topic.

Although this training is skills-centric, this course can be delivered

using a variety of software combinations, including but not limited to: Eclipse / Ganymede, MyEclipse, IBM® WebSphere Rational Application Developer (RAD7.x), Oracle JDeveloper or other IDEs. Application server options include IBM WebSphere, Oracle WebLogic, Apache TomCat, JBoss and others.

Our detailed lab workbooks are complete with software-specific instructions, screen shots and step-by-step tutorials for using the software you select. In most cases we can easily port our classes to run in the environment of your choosing.

► **Easy & Secure Set Up! LoadNGo™ Instant Classroom Kit**

For course deliveries or virtual presentation using open-source tools, we'll provide our unique **LoadNGo Instant Classroom Kit**, which enables students to run the entire course off of a DVD that hosts the entire course set up software, labs, and other pertinent useful educational resources, whitepapers and more. You only need to provide the hardware and appropriate O/S, and we'll do the rest. No installation needed. **Great for secure environments.** Minimum set up burden for your team or firm, with maximum results for your students.

No matter which set up option or software your firm requires, we're pleased to provide a detailed set up guide for all private or on-site courses, and as much assistance as you require to prepare your students or classroom for the course. Our support personnel and instructors can be contacted for any advice you may require to prepare your classroom and/or students for attendance.

► **Student Materials: What You'll Receive**

Our robust course materials include much more than a simple slideshow presentation handout. Student materials include a comprehensive hard-copy course manual, complete with detailed course notes, code samples, diagrams and current reference materials, all directly related to the course at hand, indexed for ease of use. Step-by-step lab instructions and project descriptions are clearly illustrated and commented for maximum learning. In addition to everything students need for the course, the

LoadNGo Instant Classroom Kit described above also includes of workshop labs and solutions; non-restricted workshop software, APIs, documentation, technical education papers, and specifications and tutorials pertinent to the training course. Our course kits are designed to serve as an excellent and useful reference set, long after we leave your classroom.

► **Optional Pre / Post-Testing & Skills Assessment**

We work with you to ensure that your resources are well spent. Through our basic course pre-testing and/or post-course assessments, we ensure your team is up to the challenges that this course offers. Our goal is to structure the best solution to ensure your needs are met, whether we customize the material, or devise a different educational path to prepare for this course.

Please contact us for details about our online pre and post test assessment services, custom managed training plans for one student or your entire organization, or our custom online training program management system for monitoring the courses or progress while skilling your students of all experience levels.

► **Bridging the Gap: Collaborative Mentoring Services**

Our team of technical experts is also available for various project assistance services to help your team apply their newly-learned classroom skills to their real-world project in a meaningful, practical way, right after the training ends.

Our custom **collaborative mentoring programs** integrate with or extend your team's classroom training experience, to help bring these skills into existing (or inherited) legacy projects, into new projects, or to simply keep your students sharp them in between projects. Our programs can be highly involved and closely integrated with your project timelines or group development efforts, or can be less involved, serving simply as an overarching educational framework or 'spot check' to keep your group skills moving forward in between projects or waiting for projects to begin. Please contact us for details about this unique custom service.

Workshop Topics Covered

Need more info? Please note that a more detailed outline of the course table of contents, lists of lab exercises and project descriptions is available. Please contact us at Training@triveratech.com for info.

Need courseware? This course is fully customizable, and also available for license with complete support for qualified organizations. Please contact Courseware@triveratech.com for details.

Session: SOA Overview

Lesson: Overview

- Service Defined
- SOA Defined
- Organizational Framework
- Technical Framework
- Orchestration
- Reusability
- Services vs SOA

- SOA in the past
- What is new in SOA
- Business impact/ROI
- Myths/Reality
- Adoption issues

Lesson: SOA: the Business Proposition

- Drivers for business-orientation
- Accessible Services and Data
- Leveraging business processes
- Leveraging legacy applications
- Challenges to adoption

- Role of governance
- Role of an ESB
- SOA Maturity Model
- SOA Adoption

Lesson: Service-oriented Architecture

- Principles
- Business Process-driven development
- SOA team
- Messaging
- Orchestration
- Business modeling
- Integrating legacy applications
 - Extending the lifetime of legacy apps
- Governance
 - What needs to be governed and what is already governed?
 - Governing IT vs. SOA
 - Continuous improvement
 - Strategies

Lesson: Modeling Business Processes

- Top-down Process Design
- Bottom-up Process Design
- WSDL as Service Description
- Identifying services
- Identifying messages
- Identifying collaborations
- BPEL Overview

Lesson: Service-oriented Analysis and Design

- The SOAD Process
- Analysis
- Design
- Implementation
- Process

Lesson: Common Framework: Governance

- Governance Overview
- Importance
- Responsibilities
- Implementation

Lesson: Common Framework: Infrastructure

- Overview
- Role in SOA
- Security Issues
- Scenarios and Analysis
- ESB Issues

Lesson: Mapping Frameworks to SOA

- SOA Concepts and .Net
- SOA Concepts and JEE

Case Study Workshop

- Discovery and Identification
- Recognizing Potential for Reusability
- Motivation for Service-Based Approach
- Problems With Ad Hoc Approach
- Advantages of Managed Approach
- Harvesting Reusable Services
- Refactoring and Agility in Face of Change
- Issues Yet to Be Adequately Resolved

Session: Path to Useful Web Services

Lesson: Web Services Overview

- Crossing Boundaries
- What are Web Services?
- Six Key Components
- Web Services Characteristics
- Web Services Architecturally
- Technology Comparison
- Architectural Perspective
- Web Services Enable Decoupling
- Many Web Services Challenges
- Secure Services
- Spec and Standard Evolution
- Web Services Interoperability Organization
- WS-I Has Many Deliverables
- Basic Profile 1.0 Consists of:
- Has > 100 Requirements and Suggestions
- .NET Platform & .NET Web Services
- Java and Web Services
- *Exercise: Web Services in Action*

Lesson: Web Services, Java, and J2EE

- XML and Java APIs at a Glance
- XML Signature
- XML Digital Signatures
- XML Encryption
- JAXP
- JAXB
- JAX-WS
- SAAJ
- JAX-WSA and XWSS
- Web Services APIs
- Web Services for J2EE (JSR109)
- J2EE and Web Services

- Web Services Metadata
- Web Services Stacks at a Glance
- WSIT
- Apache Axis2
- JBossWS
- JWSDP
- WebSphere WS
- Spring-WS
- Key Features

Lesson: Web Services Quickstart

- What is WSIT?
- WSIT Tool Support
- How is WSIT Used?
- Web Service Development with WSIT
- Debugging Web Services
- TCP/IP Monitors Provide View of Wire
- *Exercise: Implementing a Web Service*
- *Exercise: Debugging Web Services*

Session: Foundation - XML and Java

Lesson : XML, Namespaces, & Schema

- What is XML?
- XML Can Provide Application-Specific Information
- Content: XML Document Syntax Rules
- Structure: A Document Type Definition
- XML Transformation to HTML
- XML Separates Structure, Content and Format
- TriveraTunes Purchase Order
- Content as Markup
- Tell Parser That Text is Data
- Use Predefined Entities
- Well-Formed and Valid XML Documents
- Why Are These Definitions Important?
- XML Namespaces
- Name Collision – Example
- Inter-Organization Name Collisions
- W3C’s Solution: Namespaces
- Uniform Resource Indicator
- Declaring a Namespace
- Namespace Scope
- Parsers Use URI, Not the Alias
- Default Namespace
- Attributes and Namespaces
- Example of Namespaces

- Namespaces Best Practices
- Benefits From Valid XML
- W3C XML Schemas
- Impacts of Schemas
- General Form of an XML Schema
- Elements, Attributes, and Types
- Simple Schema and XML Document
- Element Definitions
- Corresponding XML Schema
- Simple Types - Primitive Datatypes
- Restricting Simple Types: Facets
- Complex Types Bring More to Validation
- Repetition Control
- Restricting Simple Types
- Complex Types Can be Derived
- Derivation by Extension
- Extension of Phone Number
- Associating Schemas with XML Instances
- Using XML Schema with Namespaces
- Namespaces Provide Thread of Connection
- Schema Defines a Target Namespace
- XML Doc Uses Schema-Defined Namespace
- schemaLocation Links Namespace to Location
- Relating Schemas to XML
- *Exercise: Namespaces and Schemas*

Lesson: XML in Java - JAXP and JAXB

- XML Parsers Are Complex and Powerful
- Parsers Are Integral to XML Processing
- Parsers and API's
- Parser Generates DOM, Then Hands to App
- Parsing With a DTD or Schema
- Many Options to Consider
- XML and Java
- Security Concerns Relative to Parsing
- Bridging Application Data and XML
- JAXP: Java API for XML Processing
- JAXP and Transformations
- Challenges to Mapping XML
- Generating XML is Nondeterministic
- JAXB: Binding XML to Java
- JAXB 2.0 Incorporated Changes
- JAXB 2.0 and Java Versions
- Defining the Rules in JAXB
- Turning Rules into Java Classes

- Using the Generated Classes
- Creating Content
- Some JAXB Type Bindings
- XML Schema for List of Items
- Corresponding Class Interface
- A Word About Validation...
- *Exercise: Working With JAXB*

Session: Binding – SOAP/REST

Lesson : SOAP Overview

- SOAP in a Nutshell
- Anatomy of a SOAP Message
- SOAP and HTTP
- A Typical Scenario
- What is SOAP?
- SOAP Specification Provides:
- Why do I need SOAP?
- Simple Scenario
- Less Simple Scenario
- Uses of SOAP
- A Simple Example...
- Remote Procedure Calls
- Example of SOAP RPC Call
- Example of Response
- *Exercise: SOAP in Action*

Lesson: SOAP in Detail

- Protocols Used With Web Services
- Request and Response Example
- The SOAP Envelope
- SOAP Header
- SOAP Body
- SOAP Request/Response Example
- SOAP Defines a Fault Element
- SOAP Data Model
- Example Using XSD Data Type
- SOAP Styles and Modes
- SOAP With Attachments
- SOAP Messaging
- Endpoint Behavior
- SOAP Encoding Styles
- SOAP 1.1 vs. SOAP 1.2
- What is SAAJ?
- Understanding SAAJ
- SOAPElement
- SOAPElement Methods
- SOAPMessage
- SOAPPart
- SOAPEnvelope
- SOAPBody
- SOAPBodyElement
- SOAPHeaderElement

- SOAPHeaderElement Methods
- SOAPFault
- Connections
- Security Concerns Relative to SOAP
- *Exercise: Creating a SOAP Message*
- Exercise: Accessing a Service with a Servlet

Lesson : REST

- Representational State Transfer
- REST Characteristics
- REST Elements
- REST in Web Service Terms
- REST: Another Option for Binding
- Characterizing REST
- REST Example
- REST Design Principles
- REST/SOAP Comparison
- SOAP vs. REST
- RESTing in Java
- Security Concerns Relative to REST
- *Exercise: Working With REST (Optional)*

Session: Description - WSDL

Lesson: WSDL

- Describing Web Services
- WSDL in Practice
- WSDL Extensibility
- WSDL/SOAP Namespaces
- WSDL Elements
- WSDL Anatomy
- <definitions> element
- <documentation> element
- <types> element
- <portType> and <operation>
- <binding> element
- <port> and <service> elements
- Looking Ahead – WSDL 2.0
- *Exercise: WSDL in Action*

Session: Web Services in Java – JAX-WS

Lesson: JAX-WS Overview

- JAX-WS
- JAX-WS Introduction
- JAX-WS Architecture
- JAX-WS vs RMI
- What about JAX-RPC?
- JAX-WS Under the Hood
- JAX-WS Basics
- JAX-WS Features

- Web Service Annotation Examples
- JAX-WS Programming Model
- JAX-WS Handlers

Lesson: Working with JAX-WS

- JAX-WS Service
- JAX-WS Development Process
- Bottom-up Building of a Web Service
- Top-Down Building of a Web Service
- Exercise: WSDL-Generated Service
- JAX-WS Client
- Types of JAX-WS Clients
- JAX-WS Basic Client Operations
- Static Web Service Client
- Dynamic JAX-WS Client
- DII JAX-WS Client
- SOAP Handlers
- Handlers Applied Via Declaration
- Exercise: WSDL-Generated Client

Session: Web Services in J2EE – WSEE

Lesson: Web Services for J2EE (WSEE)

- WSEE & WSEE Server Programming Model
- Server Programming Model
- Servlets as Web Services
- EJBs as Web Services
- Routing SOAP requests to an EJB
- WSDD
- WSDD Example
- WSEE Client Programming Model
- Client Programming Model
- Types of WSEE Clients
- WSEE Basic Client Operations
- Static WSEE Client
- Dynamic WSEE Client
- DII WSEE Client
- WSEE Client Packaging

Lesson: Handlers

- Handlers: The Basics
- WSEE and Handlers
- Handler Life Cycle

- Applying Handlers
- Handler Interface and Implementation
- SOAPMessageContext
- Example of Handler Class
- Configuring Handlers
- Web Service Handler Configuration
- Using Handlers for Security
- *Exercise: Handlers in Action*

Session: Discovery

Lesson: Discovery Overview

- Discovery Options
- What is UDDI?
- UDDI Background
- Interacting With UDDI
- What is WSIL?
- What is WS-Discovery?
- Exercise: Discovery in Action

Session: Security - WS-Security and Defenses

Lesson: XML Signature and Encryption

- Cryptography Addresses Many Aspects of Security
- Common Solutions to Big Three
- XML Challenges
- XML Signature
- XML Digital Signatures
- XML Signature Usage
- Standard For Digital Signature
- XML Encryption
- XML Encryption Usage
- XML Encryption Protects Data

Lesson: WS-Security

- Securing a Web service
- Web Service Security Exposures
- Transport-Level Security
- Secure Sockets Layer (SSL)
- SSL In Action
- When to Use Transport-Level Security

- Message-Level Security
- Web Services Security Roadmap
- WS-Security Enables Interoperability
- Security Tokens; Example of Security Token
- Message Authentication
- XML Signature and Encryption
- Picture is Evolving
- What is XWSS?
- XWSS Provides Many Functions
- *Exercise: XWSS in Action*

Lesson: Securing Untrusted Input

- Input Data Attacks
- Protecting a Web Service
- Tenacious D
- Defending a Web Service
- Responding to Error State
- Best Practices for Untrusted Data
- Defenses to Consider
- Additional Types of Attacks
- Exercise: Insecure Web Services

Session: Best Practices

Lesson: SOA Best Practices

- Planning
- Standardizing
- Designing
- Managing
- Implementing

Lesson: SOA Patterns

- Direct Connections
- Broker Interactions
- Serial Process Flows
- Serial and Parallel Processes

Lesson: SOA Anti-Patterns

- SOA Adoption antipatterns
- Service identification & design antipatterns
- Service realization antipatterns

► **Why Work With Trivera Technologies?**

Whether you are a project leader choosing a training provider or course to bring to your team, or an organization or an instructor looking to potentially license or use course materials to train your own team, or a student looking for an exciting, targeted training class to attend or to recommend to your colleagues - ***Our single focus is to make YOUR training event or experience a success.*** Here's why choosing Trivera Technologies as your education resource takes the risk right out of your decision making process...

- **We provide a solid SOA and JEE architecture, design and implementation development foundation.** Students will learn how to develop (and reuse!) essential SOA and JEE development and design skills and concepts properly, using best design practices, grounding them for advanced curriculum. Students will be prepared for designing and implementing real solutions, right after the class ends. Students will learn the importance of developing and maintaining well-designed, reusable and secure applications and services.
- **Our courses are focused - no "fluff" included.** We offer more than a "laundry list" approach to teaching. All lessons have clear objectives, are fundamental to core SOA development and design practices, and are reinforced by hands-on labs and solid practical examples. Each lesson has performance driven objectives that ensure students will learn technologies and skills core to fundamental server-side application design – nothing more, nothing less.
- **Our materials are comprehensive, and current.** Our comprehensive manuals include not only a hard copy of the course presentation, but also detailed reference notes, pertinent diagrams and charts, current lists of suggested online resources and articles, and often technical tutorials or white papers geared to the topics at hand. Our dedicated course development team keeps everything as current as possible with both industry trends and software editions to ensure your team is getting the most current information available.
- **We set you up!** Hands-on courses also include our unique materials for each student, complete with our **LoadNGo Instant Classroom** course set up DVD, software, and a multitude of learning resources that complement the course. Run the course right off the DVD – minimal set up for your company – maximum results for your students.
- **We foster "Learning by Doing".** Progressive labs are designed in such a way that students get a firm grasp on fundamental skills while they work toward designing a complete application. All labs are take-home, and all solution code is presented in an easy to use self-study format for future use and review.
- **We have to adhere to higher standards.** As a courseware provider to other organizations, training firms or independent instructors, our content and hands-on lab materials are licensed internationally by dozens of firms, and are therefore subject to very stringent quality requirements. Not only will your organization benefit from our own technical team's technical expertise, but also the feedback of hundreds of students and trainers using these materials, worldwide, on a regular basis. This unique fact guarantees that our materials are not only robust and interesting, but also technically correct, current and of the highest quality and usability.
- **We bring years of practical, current experience into the classroom and content.** Our instructors and course authors are also skilled mentors, Java, JEE/JavaEE, J2EE, .Net, Agile, SOA, and web services developers, architects and security-oriented professionals. We believe that learning, using and maintaining solid software execution and delivery methods are as important as gaining sharp coding skills. Best Practices for software development and execution, beyond technical coding skills, are enforced throughout all of our courses and discussions. Our team brings this extensive experience into every classroom and engagement. Our team has trained thousands of students.
- **We're skills-centric.** Although our team has extensive experience using a variety of tools and solutions, our core content is "technology-centric". Our aim is to teach you the best skills and solutions out there – not to sell you software from any particular vendor.
- **We're Java & JEE / J2EE authors and industry speakers.** Our team was selected to write the online *J2EE, EJB, EJB CMP-CMR and Web Services Tutorial Series for IBM developerWorks®* (www.ibm.com) These are the same instructors who train our classes and author the courseware. Most of our trainers/consultants have also authored additional articles on web services, EJB, Struts, J2EE / JEE and advanced Java topics, and are recognized speakers and presenters on the industry technical seminar circuit. Our team is comprised on several successful published authors. Members of our team have written or contributed to: *Eclipse Kick Start, Mastering Eclipse; Professional Jakarta Struts; Using Java Tools for Extreme Programming; Mastering Resin; Mastering TomCat and others.*
- **Our services are guaranteed.** Whether you're a stakeholder organizing your firm's educational services, a student in our live or virtual classroom or a trainer using our materials to educate your own client or team – **Our core mission is to make YOU a success in the classroom.**

► For Additional Information

Need dedicated training? All courses can be brought onsite or run virtually for a **private presentation**, customized to suit your unique requirements or goals. Please contact Training@triveratech.com for course details, Public Schedule dates and locations, and Special Discount Offers.



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