



## Web Tools Platform Project Overview

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# Abstract

In June 2004, the Eclipse Foundation launched the Web Tools Platform (WTP) Project which aims to extend the Eclipse platform with tools for developing J2EE Web applications. This session gives an overview of the project, describes its goals and plans, and demonstrates how to use and extend these tools.



# Topics

- Eclipse Web Tools Platform (WTP) Project
- Web Standard Tools (WST) Subproject
- J2EE Standard Tools (JST) Subproject
- Demo



# Major WTP Themes

- Extend Eclipse into the domain of J2EE Web Application Development:
  - Add server runtime environments
  - Add Web and J2EE development artifacts
- Provide platform API for tool developers
- Provide core tools for application developers
  - Exemplars for tool developers



# Server Runtime Environments

- Extends “Run as” command
- Configure, deploy, start, stop, debug, profile, ...
- Generic servers:
  - Web servers, e.g. Apache
  - Databases, e.g. Derby
- J2EE servers:
  - Runtimes supporting J2EE standard modules and artifacts
  - Servlet containers, e.g. Tomcat
  - EJB containers, e.g. JBoss, JOnAS, WebSphere, WebLogic

WTP does not provide server runtimes



# Web and J2EE Development Artifacts

- HTML, CSS, JS, XML, XSD, WSDL, SQL, ...
- J2EE Modules, EJBs, JSP, J2EE Deployment Descriptors, ...
- Apply Eclipse “franchise functions” orthogonally to WTP artifact types:
  - Code assist
  - Syntax highlighting
  - Validation
  - Quick fixes
  - Refactoring
  - Semantic search
  - ...

WTP extends the eclipse value proposition and culture to  
Web and J2EE development



# WTP API Goals

- Provide a stable API for plug-in developers to create value-add tools
- Achieve binary compatibility from release to release
  - All API-compliant plug-ins MUST run without recompilation on new versions of the WTP API
  - Allows Eclipse and WTP to be upgraded without breakage of existing tools
- We are collaborating with the Eclipse Platform API team to add the concept of “Component”
  - component.xml descriptor (like plugin.xml)
  - API scanning tools to detect API violation and breakage
  - Future enhancement of JDT to enforce API compliance (e.g. restricting code assist to allowed interfaces)

Component is a reusable Tool/API set such as SSE



# WTP PMC

- PMC Co-Lead, Bjorn Freeman-Benson, University of Washington
- PMC Co-Lead, Christophe Ney, ObjectWeb
- Web Standard Tools Lead, Arthur Ryman, IBM
- J2EE Standard Tools Lead, Naci Dai, eteration
- Requirements Group, Jochen Krauss, Inoopract
- Planning Group, Dominique De Vito, Thales
- Architecture Group, David Williams, IBM
- Marketing Group, Mitch Sonies, Concentre



# Initial Code Contributions

- Eteration, Lomboz
  - Generic server adapters
  - Flexible project structure
- IBM, portions of Rational Application Developer V6.0
  - Servers Tools
  - Structured Source Editor Framework (HTML, XML, JSP, ...)
  - XML Tools
  - Web Service Tools
  - Data Tools
  - J2EE Tools



# Current Work Items

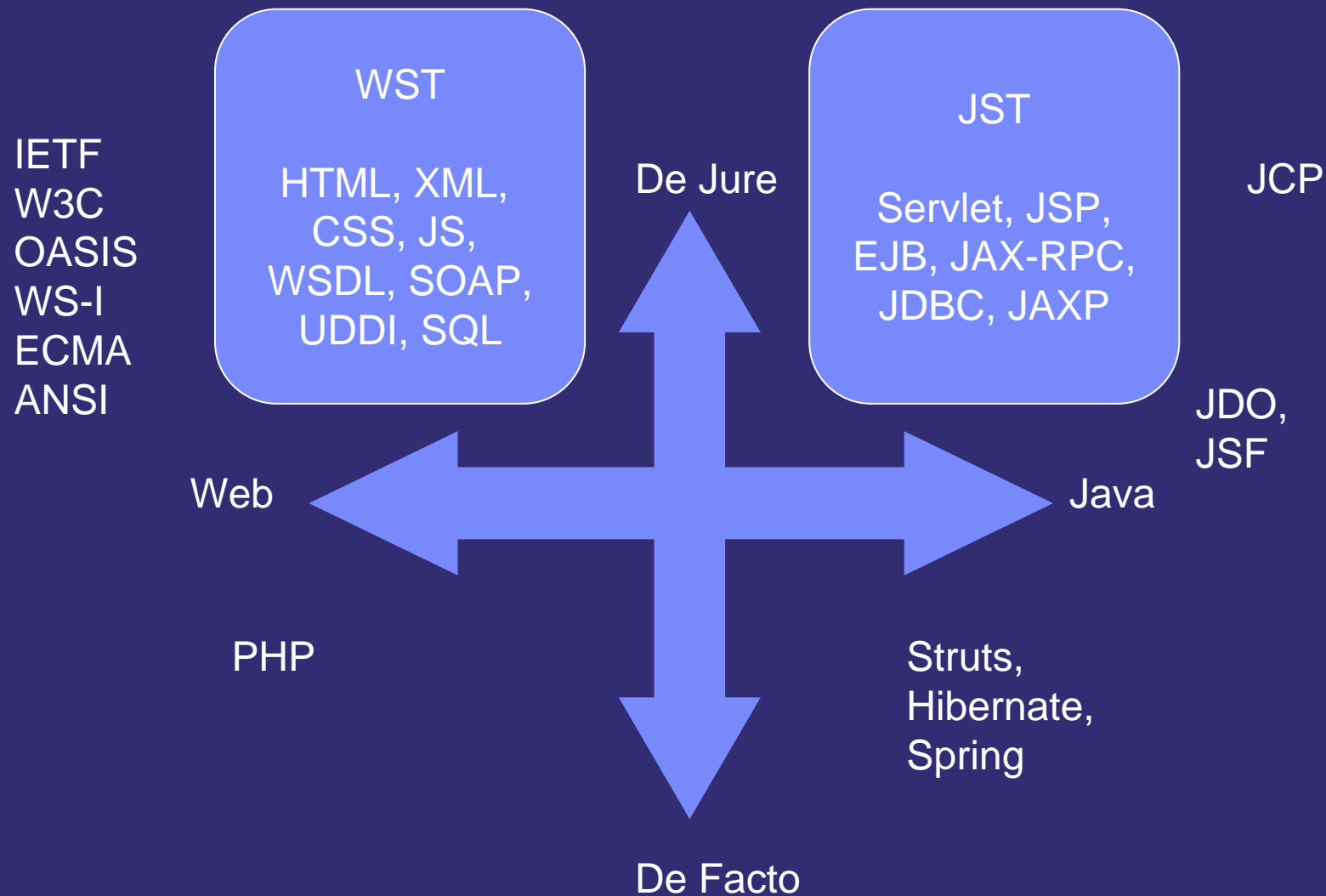
- Flexible Project Layout
  - “exploded archive” structure for J2EE projects – one module per project – is too inflexible
  - Many customers and tool vendors use different layouts
  - Flexible layout eliminates project migration and enables WTP to coexist with existing directory structures
- Multi-vendor J2EE Application Server support, e.g. JBoss
  - Many development shops need to support app servers from several vendors
  - Multi-vendor support enables use of WTP in more shops
  - Ability to test and develop a project on many servers!
- SQL Scrapbook enhancements, Derby integration
- Annotation Support for J2EE Development
  - XDoclet



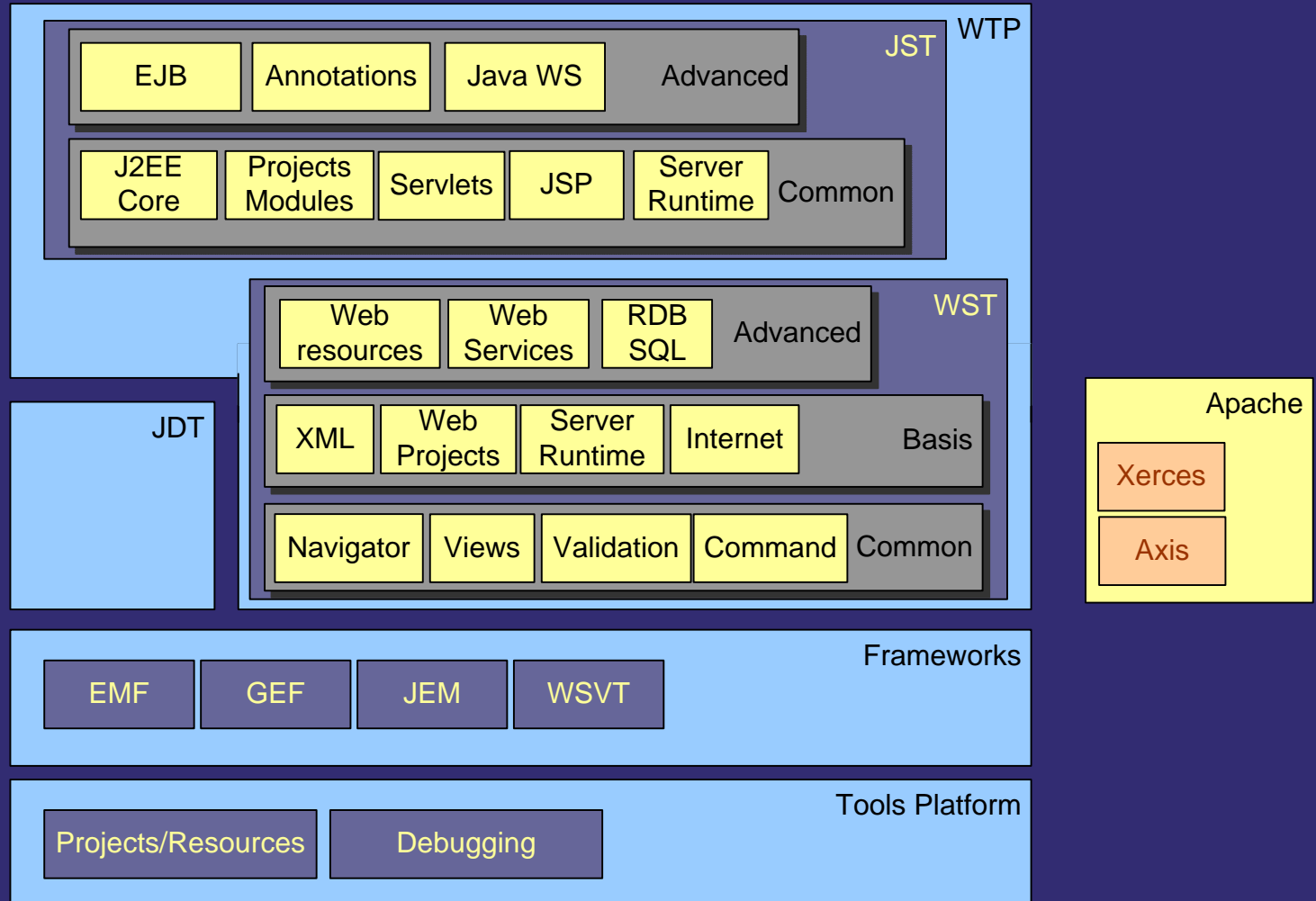
# WTP 1.0 Release Plan

- October 2004 - M1 (Server Tools)
- December 2005 - M2 (Web, XML, SSE)
- February 2005 - M3 (EJB, Web Services, Data, Flexible Layouts)
- April 2005 - M4 (API Freeze)
- June 2005 - M5 (Shutdown)
- July 2005 – Final (Eclipse 3.1)

# WTP Subproject Scopes



# WTP Architecture





# WST Components

- Generic Server Tools
- Internet Tools
- Structured Source Editor Framework
- Web Tools
- XML Tools
- Web Service Tools
- Data Tools



# WST Server Tools

- Neutral server framework
- Add server runtime environments
- Configure, publish, start, stop, debug, profile, etc.
- Web servers
  - e.g. Apache, develop HTML, SSI, PHP
- Database servers
  - e.g. Derby, develop Java stored procedures



# WST Internet Tools

- Proxy settings
- Web browser
- TCP/IP Monitor
  - e.g., used by SOAP WS-I validator



# WST Source Editor Framework

- Framework to simplify development of editors for XML-like formats
- DOM based
- Code assist
- Syntax highlighting
- Red squiggles
- Quick fixes
- Etc.



# WST Web Tools

- HTML source editor
- CSS source editor
- Javascript source editor



# WST XML Tools

- XML source editor
- XSD editor
  - Graphical and source modes
- DTD source editor
- Code generators



# WST Web Service Tools

- WSDL Editor
  - Graphical and source modes
  - Integrated XSD editor
- Web Service Explorer
  - Query and publish to UDDI
  - Dynamically execute WSDL
- Web Service Wizard
  - Extension points for code gen, deploy, test, etc.
- WS-I Test Tools
  - Validate WSDL and SOAP for WS-I compliance



# WST Data Tools

- Database server explorer
- SQL scrapbook
- Output view
- RDB and SQL models



# JST Components

- Common
  - J2EE Core
  - J2EE Projects & Modules
  - Servlet Tools
  - JSP Tools
  - J2EE Server Tools
- Advanced
  - Annotation
  - EJB
  - Java Web Services



# JST Core

- Core models
  - Natures and builders
  - J2ee Views and Navigators
  - J2EE models

# JST Flexible Project Layouts

- Flexible directory layout
  - Not just exploded archives
- Support for WAR, EJB-JAR, EAR, etc
- Models and source editors for deployment descriptors
- J2EE Navigator view
- Ability to target on different servers





# JST Server Tools

- Extends WST server tools with J2EE deployment semantics
  - Add J2EE projects to configuration
  - Supports deploy, debug, project restart on J2EE runtimes
- Generic Server Adapter
  - XML based configuration files for quick setup
- Java server adapter for total control
- Adapters included for:
  - Tomcat
  - JBoss
  - Generic Servers: JOnAS, WebLogic and JBoss



# JST JSP Tools

- JSP Editor Extends HTML editor
  - Content Coloring and Code assist
    - Java
    - JSP
    - Taglibs
    - JavaScript
- JSR-45 compliant debugging
  - Set breakpoints in JSP Editor
  - Step through code



# JST Servlet Tools

- Creation wizard
- Run as command
  - Deploys WAR into server
  - Launches Web browser with URL of servlet



# JST Web Service Tools

- Extends Web service wizard
  - JAX-RPC code gen
  - JSR 109 deployment
  - Servlet or EJB based
- Includes Axis support
- Models and source editors for deployment descriptors
- Integrated into J2EE Navigator



# JST EJB Tools

- Creation wizard
- Pop-up actions for EJB editing
- Support for XDoclet annotation based development
  - Code assist in Java Editor



# JST Annotation Support

- Extensible facility to defines tagsets
  - EJBs
  - Web Services
  - Web
- Code assist in Java Editors
- Use builders for code generation



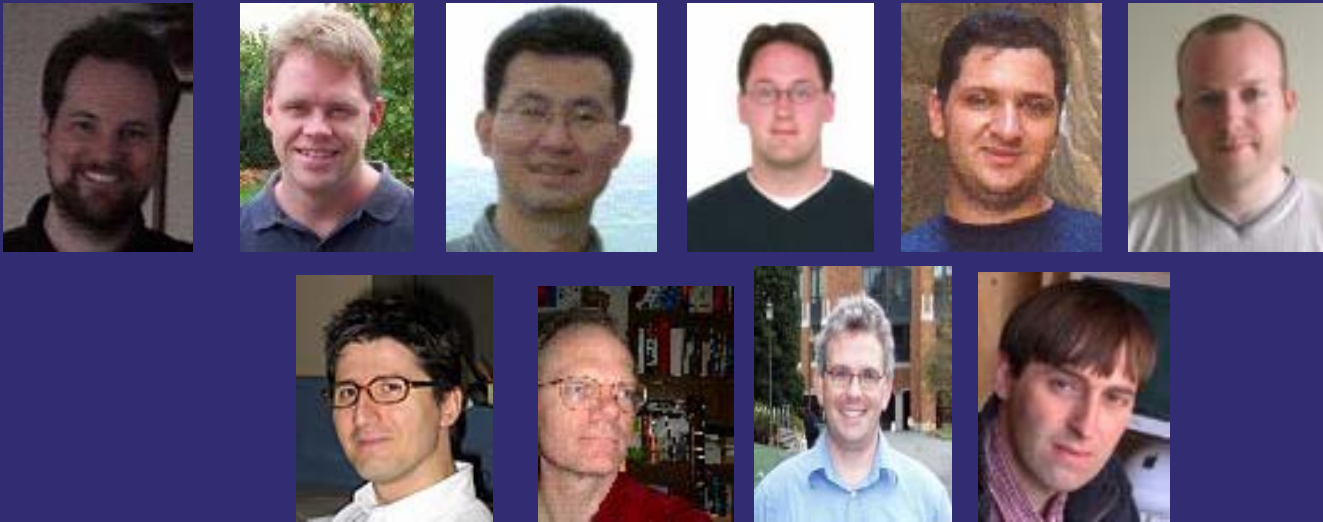
# Demo



# WTP On the Program

- WTP Project Sprint
- Technical Sessions
  - Extend web tools server tooling for your application server
    - G. Ercan & T. De Boer
  - Web Services Dev. with Eclipse Web Tools Platform Project
    - J Liu & L Mandel
- BOF
- Panel
  - Empowering Software R&D with Open Communities – Christophe Ney
- Tutorial
  - Introduction to the Web Tools Platform
    - C Bridgham & L Mandel

# WTP People...



**and many more...**

<http://www.eclipse.org/webtools/development/contributors.html>