The Eclipse Web Tools Platform Project

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Eclipse WebTools Project

Open Standards + Open Source

Deliver vendor-neutral tools and frameworks for Web applications on the Eclipse platform.
Major WTP Themes (0.7 Release)

- Extend Eclipse into the domain of J2EE Web Application Development
- Model servers, runtimes, and modules
- Provide platform API and suitable models for tool developers
- Provide core tools for application developers
  - High quality tools in their own right, plus exemplars for tool developers
  - Collection of high-fidelity editing services for Web and J2EE-related languages
Delivery Model

Ubiquity
Shared Costs
“Plumbing”

Value-add
Proprietary
Customer-centric
Contributing Organizations

- BEA
- Eteration
- Exadel
- IBM
- Inoopract
- JBoss

- ObjectWeb
- SAS
- Thales
- Turkcell
- University of Karlsruhe
- Oracle
Commercial Product Adopters

- IBM – Rational Application Developer
- BEA – WebLogic Workshop
- Eteration – Lomboz
- Genuitec – myEclipse
- Innoopract – Yoxos
- Exadel – Exadel Studio
- JBoss – JBoss IDE
- SAP – NetWeaver Studio
- Oracle
- Borland
WTP Project Scopes

- **WST**: De Jure Standards
  - HTML, XML, XSLT, CSS, JS, WSDL, SOAP, UDDI
- **JST**: De Facto Standards
  - Servlet, JSP, EJB, JAX-RPC, JDBC, JAXP, JSF, J2EE

**Web Technologies**
- PHP
- JSF
- Struts
- Hibernate
- Spring

**Java Technologies**
- JDO

**Other Technologies**
- JCP
- JCP
- Apache
- ObjectWeb
- SourceForge

**Stands**
- IETF
- W3C
- OASIS
- WS-I
- ECMA
- ANSI
- SQL
WTP Architecture

- JDT
  - XML
  - Web Projects
  - Server Runtime
  - Internet
  - Navigator
  - Views
  - Validation
  - Command
  - Common

- JST
  - EJB
  - Annotations
  - Java WS
  - Advanced

- WTP
  - J2EE Core
  - Projects Modules
  - Servlets
  - JSP
  - Server Runtime
  - Common

- WST
  - Web resources
  - Web Services
  - RDB SQL
  - Advanced

- Frameworks
  - EMF
  - GEF
  - JEM

- Platform
  - Projects/Resources
  - Debugging

- Apache
  - Xerces
  - Axis
New Perspective and View

- Navigator provides “virtual” directory of projects, modules
<?xml version="1.0" encoding="UTF-8"?>
<catalog>
  <book>
    <title>Professional XML Schema</title>
    <date>2001</date>
    <isbn>1-861005-47-4</isbn>
    <publisher>Wrox Press</publisher>
  </book>
  <book>
    <title>WebSphere Developer's Journal</title>
    <date>2001</date>
  </book>
  <book>
    <title>Java and XSLT</title>
    <date>2001</date>
    <isbn>0-596-00143-6</isbn>
    <publisher>O'Reilly</publisher>
  </book>
</catalog>
Server Functionality

- Actions: start, stop, deploy, debug, add/remove modules
- View: current server status, module deployment
Supported Servers

- Generic server definitions
  - JBoss 3.2.3
  - JONaS
  - WebLogic 8.1 and 9.0

- Custom server definitions
  - Tomcat
  - Geronimo
WTP 0.7.1 Release (Early October)

- Documentation follow-on to 0.7 release
- NLS bug fixes
- High priority bug fixes
WTP 1.0 Release (December)

- Roadmap for flexible project model and enhancements to server functionality modeling
- Capture platform point release (3.1.1)
- Extend documentation coverage
- Hardening: bug fixes, performance
- Initial API declaration
  - Based on feedback from 0.7 release
  - Only in areas where APIs are sufficiently hardened
  - Not in areas where known changes will occur in 1.5
WTP 1.5 Release (June Release Train)

- Support J2EE 1.5
  - JSR 181, e.g.
- Rev other standards/supported versions
- Additional server types in distribution
- Architectural harmonization with other projects
- New features: JSR 88, WS-*, …
For More Information

- [www.eclipse.org/webtools](http://www.eclipse.org/webtools)
  - Download v0.7 now
  - Tutorials and presentations available online
  - Planning and requirements gathering (1.0, 1.5)
  - Community information: newsgroups, mailing lists, developer support
  - Report bugs, write docs, help develop
- Attend EclipseCon 2006 in March!
The Eclipse Web Tools Platform Project

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WTP Feature Tour
<?xml version="1.0" encoding="UTF-8"?>

<c:Catalogue xmlns:c="http://www.eclipse.org/webtools/Catalogue"
            xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:schemaLocation="http://www.eclipse.org/webtools/Catalogue Catalogue.xsd">
    <c:Book>
        <title>Professional XML Schema</title>
        <date>2001</date>
        <isbn>1-861005-47-4</isbn>
        <publisher>Wrox Press</publisher>
    </c:Book>
    <c:Magazine>
        <title>WebSphere Developer's Journal</title>
        <date>2001</date>
    </c:Magazine>
    <c:Book>
        <title>Java and XSLT</title>
        <date>2001</date>
        <isbn>0-596-00143-6</isbn>
        <publisher>O'Reilly</publisher>
    </c:Book>
</c:Catalogue>
XML Error Checking

- As-you-type checking and problem reports
- Well-formedness checks and schema validation (when available)
XML Content Assist

- Schema-based
- DTD-based
- Inferred
Schema Editing

```
<schema xmlns="http://www.w3.org/2001/XMLSchema"
        targetNamespace="http://www.eclipse.org/webtools/Catalogue.xml">
  <complexType name="PublicationType">
    <sequence>
      <element name="title" type="string"/>
      <element name="author" type="string" minOccurs="0"/>
      <element name="date" type="gYear"/>
    </sequence>
  </complexType>

  <complexType name="BookType">
    <complexContent>
      <extension base="c:PublicationType">
        <sequence>
          <element name="isbn" type="string"/>
          <element name="publisher" type="string"/>
        </sequence>
      </extension>
    </complexContent>
  </complexType>

  <complexType name="MagazineType">
    <complexContent>
      <restriction base="c:PublicationType">
      </restriction>
    </complexContent>
  </complexType>
</schema>
```
Schema Graphical View

Schema: http://www.eclipse.org/webtools/Catalogue

<table>
<thead>
<tr>
<th>Elements</th>
<th>Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book</td>
<td>BookType</td>
</tr>
<tr>
<td>Catalogue</td>
<td></td>
</tr>
<tr>
<td>Magazine</td>
<td>MagazineType</td>
</tr>
<tr>
<td>Publication</td>
<td>PublicationType</td>
</tr>
</tbody>
</table>

Attributes

Groups

BookType

- title
  - type = string

- author
  - type = string
  - 0..*

- date
  - type = gYear

- isbn
  - type = string

- publisher
  - type = string

Properties: complexType

- Name: BookType
- Base type: c:PublicationType
- Derived by: extension
Schema Content Assist

- Schema-informed content assist is available while editing
- F3 can also be used to locate the target of a type reference
Schema Storage

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JSP Editing

- Content assist
- As-you-type checking
- Custom tag support
- Refactoring participation
- JSP 2.0 EL support
HTML Editing

- Wizards for file creation
- Delimiter completion
- As-you-type checking
- Property editing
CSS Editing

- Content assist
- Outline view
- Bracket matching
- Property view
- Structured selection
ECMAScript Editing

- Syntax highlighting
- Content assist
- Delimiter highlighting
- Outline view

```javascript
function toggleRows(element) {
    var rows = document.getElementsByTagName("TR");
    element.style.backgroundColor = "url(images/folder-closed.gif)"
    var newDisplay = "none"
    var thisID = element.parentNode.parentNode.parentNode.id + "-";
    // Are we expanding or contracting? If the first child is hidden, we expand
    for (var i = 0; i < rows.length; i++) {
        var r = rows[i];
        if (matchStart(r.id, thisID, true)) {
            if (r.style.display == "none") {
                if (document.all) newDisplay = "block";
                else newDisplay = "table-row";
                element.style.backgroundColor = "url(images/folder-open.gif)"
            }
            break;
        }
    }
    collapseAllRows();
}

// When expanding, only expand one level. Collapse all descendants.
var matchDirectChildrenOnly = (newDisplay == "none")
```
WSDL Editor

- Graphical and source editing modes
- GEF/EMF-based
- Integrated XSD editor
Validation

- WTP includes WS-I basic profile validation
- To validate, select “Validate the WSDL file” from the Project Navigator’s context menu
Internet Tools

- Built-in browser and caching support
  - Moved to platform in 3.1
- TCP/IP monitor
- Proxy settings reflected in Eclipse preferences
Basic Server Framework

- Models types of servers, installed server runtimes, deployable units (modules)
- Language- and deployment-neutral
- Provides extensible, vendor-neutral framework for implementing new server types
Server View

- Actions: start, stop, deploy, debug, add/remove modules
- View: current server status, module deployment
Server Integration

- **Generic (XML based)**
  - Runtime definition (start, stop, publisher, classpath)
  - Properties (per-server values)
  - ANT build file-based publisher
  - Generic server definitions for JBoss 3.2.3, JONaS, WebLogic 8.1 and 9.0

- **Custom (API-based)**
  - Extension points for build, assembly, publish/[re]deploy, run/debug, monitor
  - Tomcat, Geronimo support included
Servlets – Wizards and “Run As...”
Web Services Explorer

- Integrated Web application
- UDDI publish and query
- Dynamically execute WSDL
Web Service Wizards

- Top-down (start from WSDL)
- Bottom-up
  - JAX-RPC codegen, support for Apache Axis
  - JSR 109 deployment
  - Servlet- or EJB-based
J2EE Tooling

- Ability to create J2EE module structures and artifacts within projects
- Import/export J2EE deployable archives
- Validate J2EE artifacts to ensure compliance with the specification
Creating an EAR project

New Project

Select a wizard
Create a J2EE EAR project

Wizards:
- Java Project
- Java Project from Existing Ant Buildfile
- Plug-in Project
- CVS
- Eclipse Modeling Framework
- J2EE
  - J2EE Modeler
  - Application Client Project
  - Connector Project
  - Enterprise Application Project
- Enterprise Application Project
- Java
- Plug-in Development
- Simple
- Web
- Examples

New EAR Application Project

EAR Application Project
Create a EAR application.

Name: AreaApplication
Project location: D:\eclipseworld\workspaces\dryrun

J2EE Modules to Add to the EAR
Select the J2EE modules to add to the new EAR. Select New Module button to create a new EAR module.

- Area EJB
- Sample Web Service Project

Target server: Generic BEA WebLogic Server 9.0(Generic)
Module Version: 1.4
EJB Support (Session, MBeans)
Bean Package and Class Name

Create Enterprise JavaBean

**EnterpriseJavaBean**
Specify class file destination.

- **Project:** Area EJB
- **Module Name:** Area EJB
- **Folder:** \Area EJB\ejbModule
- **Java package:** area
- **Class name:** AreaCalculatorBean
- **Superclass:** java.lang.Object

- Generate an annotated bean class

EJB Projects
- Area EJB
  - Session Beans
    - AreaCalculator
      - AreaCalculatorHome
      - AreaCalculator
      - AreaCalculatorLocalHome
      - AreaCalculatorLocal
    - AreaCalculatorSession
  - Entity Beans
  - Message Driven Beans
  - Assembly Descriptor
  - JRE System Library [JDK 1.5]
- BEA WebLogic Server v9.0
ejbModule
  - area
    - AreaCalculator.java
    - AreaCalculatorHome.java
    - AreaCalculatorBean.java
    - AreaCalculatorLocalHome.java
    - AreaCalculatorLocal.java
    - AreaCalculatorSession.java
  - META-INF
    - ejb-jar.xml
    - MANIFEST.MF

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