

Web Tools Platform (WTP) 3.22

for the 2021-06 Simultaneous Release

Review

Full Progress Review Materials

June 15, 2021

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Introduction and Purpose

This document is to fulfill the requirements of the [Eclipse Release Review](#)¹ for WTP 3.18 planned for release June 17, 2020.

Communication Channel: wtp-dev mailing list (See <https://accounts.eclipse.org/mailling-list/wtp-dev>).

History

The Eclipse Web Tools Platform Project was originally proposed in 2004 by ObjectWeb, IBM and others. The Eclipse Foundation creation review was in June 2004, with full time development since October, 2004. The original code contributions were from IBM and Eteration (“ObjectWeb Lomboz”). Since then several other large contributors have joined the effort, such as Oracle, SAP, Red Hat, and others, and several new subprojects formed, such as Dali and the JSF Tools. The VJet incubator introduced in 2012 has since been archived.

¹ http://www.eclipse.org/projects/dev_process/release-review.php

Previous Releases

- WTP 0.7 July, 2005 and subsequent 0.7.1
- WTP 1.0 December 2005 and subsequent 1.0.1, 1.0.2, 1.0.3
- WTP 1.5 June, 2006 and subsequent 1.5.1, 1.5.2, 1.5.3, 1.5.4, 1.5.5
- WTP 2.0 June, 2007 and subsequent 2.0.1, 2.0.2
- WTP 3.0 June, 2008 and subsequent 3.0.1, 3.0.2, 3.0.3, 3.0.4, 3.0.5
- WTP 3.1 June, 2009 and subsequent 3.1.1, 3.1.2
- WTP 3.2 June, 2010 and subsequent 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5
- WTP 3.3 June, 2011 and subsequent 3.3.1, 3.3.2
- WTP 3.4 June, 2012 and subsequent 3.4.1, 3.4.2
- WTP 3.5 June, 2013 and subsequent 3.5.1, 3.5.2
- WTP 3.6 June, 2014 and subsequent 3.6.1, 3.6.2
- WTP 3.7 June, 2015 and subsequent 3.7.1, 3.7.2
- WTP 3.8 June, 2016 and subsequent 3.8.1, 3.8.2
- WTP 3.9 June, 2017 and subsequent 3.9.1, 3.9.1a, 3.9.2, 3.9.3, 3.9.3a, and 3.9.4
- WTP 3.10 June, 2018
- WTP 3.11 September, 2018
- WTP 3.12 December, 2018
- WTP 3.13 March, 2019
- WTP 3.14 June, 2019
- WTP 3.15 September, 2019
- WTP 3.16 December, 2019
- WTP 3.17, March, 2020
- WTP 3.18, June 2020
- WTP 3.19, September 2020
- WTP 3.20, December 2020
- WTP 3.21, March 2021

Project Organization

Below is the list of current sub-projects and project leads as of June 2021, that are part of this release.

Project	Lead
Common: tools and infrastructure not directly related to web tools, but required by or included with the Web Tools Platform	Rob Stryker of Red Hat and Carl Anderson
Dali (Java Persistence Tools): infrastructure and tools for JPA and JAXB applications	Neil Hauge and Shaun Smith, Oracle
Java EE Tools: Common Project Infrastructure, Java EE models, preferences, classpath model, publish api, refactoring, EJB Tools (merged project contents)	Chuck Bridgham, IBM

JSF Tools: infrastructure and tools for Java Server Faces.	Raghu Srinivasan, Oracle
Server Tools: tools and infrastructure to define and interact with servers.	Elson Yuen, IBM
JavaScript Development Tools (JSDT): Tools for editing and debugging JavaScript.	Victor Rubezhny, Red Hat
Source Editing: The SSE framework plus tools for editing xml, dtd, xsd, xsl, html, css, jsp, and debugging xsl and jsp	Nitin Dahyabhai (IBM)
Web Services: Web services wizards and frameworks, Axis1 & Axis2 support, Web Services Explorer, WSDL Editor, JAX-WS support.	Keith Chong, IBM

PMC Organization

Our Project Management Committee, as of June 2020, is made up of nine members, each having a WTP-wide management role, in addition to the project-specific roles they have. In the execution of their tasks within these roles, the nine will form groups, organize meetings, etc., to accomplish their goals. In other words, they don't do *all* the work ... they just manage it!

Member	Role
Nitin Dahyabhai, IBM	PMC Lead
Elson Yuen, IBM	(not-active)
Chuck Bridgham, IBM	(not-active)
Carl Anderson, IBM	(not-active)
Neil Hauge, Oracle	(not-active)
Raghu Srinivasan, Oracle	(not-active)
Victor Rubezhny, Red Hat	(not-active)
David Williams	(not-active)
Naci Dai, Eteration	(not-active)

WTP 3.22 Goals and Plans

Our Requirements Planning, Process, and Documentation is managed as a lightweight process by each project lead. Themes in this release include expanding support for JPA 2.2, introducing support for Jakarta Servlet 5.0 projects and JSPs, improving usability of the Generic Editor with the Snippets View, and adopting Jetty 10.x to align properly with the coincidental Platform release, sharing that last bit of work with other projects to help reduce their overhead.

We used to provide a standard-format [WTP Project Plan](#), updated every milestone as items are delivered or deferred, as part of our iterative development cycle. The PMC member who oversaw that has since

become inactive. Detailed requirements, plans, and progress are tracked (mostly) via Bugzilla, with 'plan' added as a keyword and the release targeted for visibility within the PMI pages.

Themes and high-level requirements are coordinated through Eclipse Requirements Council and Planning Council representation. Nitin Dahyabhai is the official WTP PMC representative to the Eclipse EMO and Planning Council. We are fortunate that other Committers are also on the council by virtue of them representing other Eclipse Strategic Members (that do not otherwise lead a Top Level Project PMC): Nick Boldt (Red Hat), and Neil Hauge (Oracle).

Features

For releases containing them, we document our [new and noteworthy items](#)². The following summarizes the functionality provided by each sub-project with emphasis on what's new this release.

Common Tools

Continuing to support and improve:

■ *Deployment Assembly Framework*

A framework for Component Deployment that defines resource and archive dependency mappings. It also includes an extensible property sheet for specifying domain-specific deployment mappings.

■ *Faceted Project Framework*

Provides a technique and UI for modeling server and runtime capabilities to associate with projects.

■ *Validation Framework*

Provides preferences and APIs to provide domain specific validation for resources and projects.

■ *Snippets View*

○ A more visual mechanism for patterned text reuse through drag-and-drop and contributable contents. Additions have been made to aid users when using other HTML editors.

■ *Internet Cache*

Dali

Continuing to support and improve:

■ Basic support for JPA 2.2 and 2.1

■ Basic support for EclipseLink MOXy XML Mapping File

■ EclipseLink Validation Preferences

■ JPA 2.0 Support for the JPA Diagram Editor

■ JPA Diagram Editor

² <http://www.eclipse.org/webtools/development/news/main.php>

- JAXB 2.1/2.2 tooling support
- Content assist and validation for JPQL Named Queries
- Comprehensive, rich UI and validation for JPA 1.0/2.0 metadata
- Provisional API for JPA model
- Extensible persistence.xml Editor
- Project Explorer Content for JPA projects
- New XML Mapping File wizard
- New Entity wizard
- Entity Generation from Tables wizard
- WTP (Facet) integration
- DTP Integration for DB metadata
- XML Mapping Descriptor editing support (JPA 1.0/2.0 orm.xml)
- Code completion for JPA annotation values
- Annotated Java and ORM XML context based defaulting
- Comprehensive EclipseLink JPA support

JavaScript Development Tools (JSDT)

Continuing to support and improve:

- JavaScript editing within web pages

Java EE Tools (Now including EJB Tools)

Continuing to support and improve:

- Java EE 5, 6, 7, 8, and Jakarta EE 9 Support, including
 - Servlet 2.5, 3.0, 3.1, 4.0, and now 5.0 support including web fragments
 - EJB 3.0, 3.1, 3.2
 - Connector 1.5, 1.6, 1.7
- Wizards for creating Web artifacts: Servlet, Filters, and Application Lifecycle Listeners*
- Usability enhancements in the toolbar of the Java EE perspective
- EAR Bundled Libraries support
- Java EE Deployment Descriptor nodes in the Project Navigator view
- Improved Java EE classpath management/UI
- Ability to read Java EE models from binary archives
- Java EE Core Models and Model Provider Framework
- Natures and Builders
- Java EE Views and Navigators
- Java EE Projects and Modules
- Support for WAR, EJB-JAR, EAR, etc
- Java EE Navigator view
- Ability to target on different servers
- New wizard page in Java EE project wizards for configuring Java facets

- Better compliance with the UI guidelines for the Dynamic Web and EAR project wizards
- Improved default layout of the Java EE perspective
- Java EE preferences page introduced
- Avoid having the .JETEmitter system project in workspace by default
- Easier creation of new Servlets from existing Servlets and JSP pages
- Easier creation of new Filters from existing Servlets and JSP pages
- EJB 3.0, 3.1 and 3.2 support.
- Wizards for creating EJB artifacts: Session Beans and Message-Driven Beans
- Projects, Module, Deployment support
- EJB Validation
- Improved project layout for an easier transition to headless CI systems

*Jakarta EE 9 version support expected in the next release

JSF Tools

Continuing to support and improve:

- Support for JSF 2.2
- Web Page Editor
- Multi-page Editor
- Design View
- Visual rendering of JSF, JSP and HTML tags
- Support for JSF RI components
- Support for Apache MyFaces Trinidad components
- Extensibility framework to simplify adding support for other component libraries
- Source View
- Enhanced Source Editor gives content assists, both syntax and semantic validations, Hyperlink, Hover help
- Preview Page
- JSF Validation
- Faces Configuration Model, Editor and Wizards
- Multi-page Editor
- Graphical diagram editor for navigational rules
- EMF model of the application configuration resource file
- Support for JSF 1.1, 1.2 and JSF 2.0 versions

Server Tools

Continuing to support and improve:

- Apache Tomcat 8.5 and 9 support on Java 9 and above, including Java 17
 - Advanced Source Lookup
 - Default Javadoc association for Java EE APIs and Tomcat classes for improved developer experience
- Apache Tomcat download and support for the latest 10.x release

- Extension point to allow customization on the delete server dialog
- Mechanism on server type definition to disable manual server creation to support deprecated servers
- Improvements on server editor overview page extension
- Support for Application Servers of several types (Java EE, httpd)
- Configure, publish, start/stop, debug
- Supports deploy, debug, project restart on Java EE runtimes
- Generic server adapter
- XML based configuration files for quick setup
 - Includes JOnAS, WebLogic, WebSphere Application Server Liberty Profile, Oracle Application Server, JBoss
- Custom (Java) server adapter for total control
 - Includes Apache Tomcat (optional) and Geronimo adapters (downloadable)

Source Editing

Continuing to support and improve:

- Web Language Tools
- HTML source editor, now featuring content assist with linking to other resources
- Content model upkeep with the living HTML5 specification
- CSS source editor
- JSP editor including syntax coloring, integrated content assist for HTML, CSS, Java (both Java EE and Jakarta EE), JSF, EL, custom tags, and JSR-45 compliant debugging
- JSP Java search and validation
- Content assist within custom tags properly proposes html tags appropriate for the context
- XML Language Tools with an XML Catalog containing oft-used schemas and DTDs
- XML design and source editor with powerful schema-aware content assist, formatting, Outline, Quick Outline, and Properties View
- XSD editor - Graphical and source editor
- DTD source editor
- XSL source editor, XPath selection view, and XSLT debugging
- Shortcuts are provided for launching XSL Transformations
- Structured Source Editing (SSE) framework fixes and improvements
- Smart Insert Functionality can be used in text viewers that are not embedded in a text editor
- Adopters can now leverage a zero-code editor appearance preference page for customizing folding and other generic settings

Web Service Tools

Continuing to support and improve:

- JAX-RS support, with support for JAX-RS 2.1 new in Photon
- JAX-WS support

- Extensible Web Service Wizards
- JAX-WS Annotation Properties View
- Creation of servlet based Web service using Axis1 and Axis2 runtimes
- Extension points for finding, creating and testing Web service
- Integrated into Project Navigator
- JAX-RPC codegen
- JSR 109 deployment ready
- Web services Ant tasks
- Web Services Explorer - UDDI, WSDL and WSIL pages
- WSDL Editor - graphical and source modes, integrated with XSD Editor
- WS-I Test Tools - Validate WSDL and SOAP for WS-I compliance
- Models for Web services deployment descriptors
- Service policies

Non-Code Aspects

Developer and API Documentation

Project-wide architectural overview (on website)

Describes nature and relationship of components

Presentations and tutorials provide drill down on selected topics (such as server definition)

Component overview (on website)

Describes operation of an individual component and relationships among its parts, lifecycle issues, and other emergent properties of component

JavaDoc Package documentation

Describes contents and inter-relationship of package contents

Per-file JavaDoc

Conventional JavaDoc guidelines apply; scope is the class/interface being documented and its immediate surface area

Extension point documentation

Provided with and as part of the API and JavaDoc documentation.

End-User Documentation and Examples

Tutorials and presentation materials available on our [WTP Project Community website](#)³. Some major additions were added this release and provided as re-usable education materials to teach web development.

Contributed to conference presentations (e.g. EclipseCon), articles, etc.

Two known books: Pro Eclipse JST, Eclipse Web Tools Platform.

WTP downloads and installations includes end-user documentation. Additionally, this same documentation will be available on the internet, via an Eclipse info-center provided by the Eclipse Foundation.

APIs

In general we provide APIs according to [Eclipse Quality API standards](#)⁴. But, we are aware that we (WTP) still do not provide enough APIs and still have too large a “provisional debt”.

We have published an [API Policy](#)⁵ document that describes how we protect some non-API so that adopters can invest with some assurance of continuity, but also detail the limits to that policy, so that eventually we can provide complete API.

In addition we have started tracking our extensive collection of [Provisional API](#)⁶ in an effort to reduce, and graduate to public API, and opened more direct dialog with adopters requesting APIs. This effort is ongoing.

Architectural Issues

Nitin Dahyabhai represents WTP PMC on the Eclipse Architecture Council.

Tool Usability

WTP provides a lot of functionality to web developers as indicated by the number of downloads and the traffic on the webtools newsgroup. It does emphasize Java based web development, but also provides tools for pure HTML, CSS, DTD, and XML development.

All WTP subprojects usually have “Ease of Use” in their plan for a release to address usability issues.

One way we contribute to the overall usefulness experience to Eclipse end-users is to participate in the EPP packaging project, by “owning” the *Eclipse IDE for Enterprise Java and Web Developers* package and several related Eclipse Marketplace entries.

End-of-Life

No changes in this release. While JSST’s visibility is substantially reduced, it remains in full and is relied upon for all Client-side JavaScript development support.

³ <http://www.eclipse.org/webtools>

⁴ http://www.eclipse.org/projects/dev_process/eclipse-quality.php

⁵ http://wiki.eclipse.org/WTP_API_Policy

⁶ http://wiki.eclipse.org/WTP_Provisional_API_Reduction

Quality (Bugzilla)

Neil Hauge managed the general, overall measurement and monitoring of our quality and bug Handling. He has since become inactive.

Bugzilla statistics

Snapshots

The statistics in the table below reflect overall Bugzilla entries (since project inception) with snapshots obtained on June 9, 2014, June 2, 2015, June 8, 2016, June 13, 2017, June 13, 2018, September 19, 2018, December 12, 2018, March 8, 2019, June 2, 2019, May 30, 2020, and June 16 respectively.

	Mars	Neon	Oxygen	Photon	2019-06	2020-06	2021-06
Total bugs	29941	30,626	30,782	31,085	31,201	31,341	31,465
Total Resolved/Closed bugs	25714	26,100	26,255	26488	26,571	26,671	26,763
Total Open bugs	4227	4,526	4,527	4597	4,630	4,670	4,729*
Blocker/Critical	3	12	9	4	6	9	15
Major	163	194	201	227	229	238	245

*Count includes 18 bug reports with the 'needinfo' keyword but no changes since the previous review.

Deltas

The statistics in the table below show the delta for bugs between columns.

	Mars	Neon	Oxygen	Photon	2019-06	2020-06	2021-06
Bugs opened	508	678	156	302	180	140	215
Bugs resolved	375	398	253	182	68	100	108

Fixed	253	304	182	152	59	84	72
Invalid	22	19	9	8	5	14	15
Wontfix	19	11	9	6	2	10	6
Duplicate	38	41	29	1	0	20	6
Worksforme	22	13	18	12	0	6	2
Not Eclipse	10	13	6	3	0	4	4

Our open bug backlog increased again over the past year, and the relative rate of resolution has dropped to 50% from continuing reductions in available resources.

Standards

W3C and OASIS standards

HTML 4.01, XHTML 1.0 / 1.1, XML Catalog 1.0, CSS 2.0, ECMAScript 262

HTML5 (partial and evolving support, such as HTML Source Editor)

CSS3 (partial support, such as HTML and CSS Source Editor)

XML 1.0, XSD 1.0, WSDL 1.1, WS-I Basic Profile 1.1

SOAP 1.1, WS-I Attachment Profile 1.0.

SOAP 1.2

XML Catalog 1.1

JCP standards

J2EE 1.2 / 1.3 / 1.4: Servlet, JSP, EJB, JAX-RPC, JSR045, JSR109, JSR921

Java EE 5

Java EE 6

JSR 342: Java EE 7
JSR 366: Java EE 8
Jakarta EE 9 (Servlet and JSP, partial)
JDBC 2.1
JSR 220: EJB 3.0 JSR
JSR 220: JPA 1.0
JSR 317: JPA 2.0
JSR 338: JPA 2.1 and JPA 2.2
JSR 127: JSF 1.1
JSR 252: JSF 1.2
JSR 127: JSF 1.1
JSR 252: JSF 1.2
JSR 314: JSF 2.0
JSR 344: JSF 2.2
JSR 318: EJB 3.1
JSR 345: EJB 3.2
JSR 315: Servlet 3.0
JSR 340: Servlet 3.1
JSR 369: Servlet 4.0
JSR 311: JAX-RS 1.1
JSR 339: JAX-RS 2.0
JSR 370: JAX-RS 2.1
JSR 322: Connector 1.6
JSR-224 JAX-WS 2.0
JSR-181 Web Services Metadata for the Java Platform
JSR-222 JAXB 2.0

UI Usability

We are familiar with, and follow, the [Eclipse User Interface Guidelines](http://wiki.eclipse.org/index.php/User_Interface_Guidelines)⁷, as well as reuse familiar UI patterns from across the IDE to minimize end-user training.

We do have some contributors that often open bugs for Accessibility and National Language issues so we can fix those bugs before end-users encounter them.

We participate in UI walk throughs from time to time.

Schedule

WTP follows the simultaneous release schedule, and delivered all milestones on time. WTP may elect to deliver additional maintenance, tech preview milestones, or off-cycle releases as an adopter or user requests warrant, although since the introduction of the quarterly release cycle, none have been created. In addition to providing predictable milestones and releases, we also frequently “step up” to building and testing with our prerequisite software (continuously where possible) so that we can find bugs early and get fixes in the Platform and other prerequisites on behalf of the whole release train.

⁷ http://wiki.eclipse.org/index.php/User_Interface_Guidelines

Communities

Committers and Contributors

Many active committers from several companies (including individuals)

Committer elections and removals have followed charter principles

Continuing to recruit additional contributors (organizations and individuals)

Many, diverse, Contributing Organizations (current and previous): Eteration, Exadel, IBM, Innoopract, JBoss, ObjectWeb, Oracle, SAS, Thales, University of Karlsruhe, SAP, Sybase

Open communications via mailing lists, newsgroups, and mattermost channels

- Mailing lists: PMC, wtp-dev, wtp-releng, JSF, Dali, Libra
- Meetings – open with posted agenda and project updates directly sent to the main mailing list at each milestone
- Public live chat via <https://mattermost.eclipse.org/eclipse/channels/webtools>
- Regular dev status
- Periodic status telecon minutes available on wiki with public instructions for attending: http://wiki.eclipse.org/WTP_Development_Status_Meetings
- Open and inclusive release planning and tracking processes
- Bugzilla used to request and track all defects, enhancements, and milestone plans
- Additional reports (defect summaries, test stats, etc) used to enhance planning / tracking
- All contributions made through Eclipse Git or Eclipse Gerrit
- Continuous integration builds, and release builds available to the community
- Coordination/cooperation with other Eclipse projects
 - Including but not limited to: Eclipse Platform, Equinox, Eclipse Jetty, JDT, DTP, EMF, GEF, PDT, RAP
- Leverage other Open Source technologies in the project
- Participate in and leverage Orbit

End-User Community

Substantial WTP download activity for milestones and releases

- WTP is one of the most popular downloads, and is regularly among the top MPC downloads
- Substantial website content
- Download links, New & Noteworthy, mailing lists, presentation DB
- Tutorials, documentation, presentation summary,
- Evangelism and outreach in the market & broader community
- Website lists WTP events (conferences, etc.)
- Multiple commercial implementations

Adopter Community

Many, known commercial, Eclipse, and other open source project adopters:

- HCL – Rational Application Developer
- IBM – WebSphere Developer Tools
- Oracle Corporation - Oracle Enterprise Pack For Eclipse (OEPE)
- SAP – NetWeaver Studio
- Eteration – Lomboz
- Genuitec – MyEclipse
- Innoopract – Yoxos
- Exadel – Exadel Studio
- JBoss – JBoss Developer Studio
- Pivotal Software – Spring Tool Suite 3
- Eclipse PHP Development Tools
- Zend Technologies – Zend Studio
- Xerces (Xerces-J uses our [PsychoPath XPath Processor](#) for XML Schemas 1.1 assertion support)

Numerous Server Adapters available from a variety of providers:

Open Source

- Apache Tomcat
- Apache Geronimo
- Eclipse GlassFish Server
- Eclipse Jetty (not to be confused with our own Jetty-based Preview adapter)
- JBoss
- ObjectWeb JONAS
- GlassFish Server

Commercial

- IBM WebSphere
- Pramati Server
- Oracle WebLogic Application Server
- SAP NetWeaver Application Server Java

IP Issues

IP Checks

Project Leads have all proof-read, double checked and confirmed the following:

About files and use licenses are in place as per the Guidelines to Legal Documentation.

All contributions (code, documentation, images, etc) has been committed by individuals who are either Members of the Foundation, or have signed the appropriate Committer Agreement. In either case, these are individuals who have signed, and are abiding by, the Eclipse IP Policy. All significant contributions have been reviewed by the Foundation's legal staff. Include references to the IPZilla numbers of all clearances.

All non-Committer code contributions, including third-party libraries, have been documented in the release and reviewed by the Foundation's legal staff. Include references to the IPZilla numbers of all clearances.

All Contribution Questionnaires have been completed

The "provider" field of most feature is set to "Eclipse Web Tools Platform" (Note: many were left as the previous "Eclipse.org" so as not to change too much unnecessarily, but will be corrected over time.

The "copyright" field of each feature is set to the copyright owner.

Any third-party logos or trademarks included in the distribution (icons, help file logos, etc) have been licensed under the EPL.

Any fonts or similar third-party images included in the distribution (e.g. in PDF or EPS files) have been licensed under the EPL.

IP Log and Documentation

Submitted separately

A list of third party software distributed with WTP, including information on the license and a link to the WTP CQ.

The name of every committer for this release

The name of every non-committer who contributed code via Bugzilla entries, with bug numbers.

Our IP Log contains a detailed description of our dependencies on third party software that is not re-distributed with WTP. In summary:

Users can install their own Application Servers, where server adapters have been provided.

EJB 2.1 developers can install Xdoclet for "old style" annotations

Axis2 developers will need to install their own Axis2 runtime, if it is not part of their application server.

JSF developers need to provide a JSF runtime and component libraries, if it is not part of their application server.

JPA developers need to provide their own JPA runtime, if it is not part of their application server.

JAX-RS developers need to provide their own JAX-RS framework, if it is not part of their application server.