Eclipse Project Kepler Release Review

Eclipse Project PMC

Highlights

- 4.3 is the only development stream this year; 3.x stream has stopped development
- 4.3 release focuses on performance, bug fixing, and minor tooling enhancements
- Several major work areas ongoing this year that will target the 4.4 (Luna) release:
  - Compiler and tooling support for Java 8
  - Tooling for Eclipse Platform 4 applications: model and style editors
  - Major restructuring of OSGi framework
  - Full support for GTK+ 3.0
- New features in 4.3:
  - Initial GTK+ 3 support, improved install workflows, detached windows with multiple parts
  - Java tooling features: Several new quick assists, improved resource leak and null reference analysis
- API quality:
  - Binary compatible for compliant plug-ins
  - Some documented breaking changes
  - Declared initial API for Eclipse Platform 4, more to come in next release
- End-of-life issues:
  - Some third party bundles changed or removed – see End of Life Issues slide for details
- IP Clearance and Licenses:
  - All licenses and about files are in place as per the Eclipse Development Process, the Due Diligence Process was followed for all contributions
- Community and Committer Diversity:
  - 42 active committers in past 9 months
  - Active organizations: BestSolution, Eclipse Source, IBM, Intel, Red Hat, Tasktop
  - 112 total contributors committed changes in this release (this includes committers)

Themes and Plan Items

- Platforms
  - Start work on Java SE 8 features
  - Support Windows 8
  - Migrate to GTK+ 3
  - SWT browser currency
  - Add support for Microsoft UI automation
- Robustness
  - Performance and stability of Platform user interface
  - Finalize initial Eclipse Platform 4 APIs
  - Common build infrastructure
  - Recruit and train new contributors

http://www.eclipse.org/projects/project-plan.php?projectid=eclipse

Themes and Plan Items

- Deferred plan items:
  - SWT browser currency
    - Progress on supporting XULRunner 17 but not complete
    - Aborted work on CEF3 after the project announced it was moving from WebKit to Blink
  - Add support for Microsoft UI automation
    - Still support IAccessible 2 for Windows

http://www.eclipse.org/projects/project-plan.php?projectid=eclipse

New and Noteworthy - Platform

- Detached windows with sash
- Trim dragging
- Import nested projects
- SWT for GTK3
- Backing auto-save of UI layout
- Performance enhancements
- Detection of shared install changes
- Option to omit -XstartOnFirstThread
- Global preference to include exported entries during launching
- Launch configuration dialog can show warnings
- Support for the Ant augment task
- Whole word option on File Search page
- Open Search dialog on last used page
- Open Resource dialog enhancements
- Installation remediation
- Initial Eclipse 4 API released
- Migrated to Lucene 3.5
- Platform updated to Ant 1.8.4
- XULRunner on 64-bit Windows
- New SWT color constant for hyperlinks
- BIDI Text widget direction

New and Noteworthy - JDT

- New 'Convert if-else to switch' Quick Assist
- 'Convert to if-!-return' Quick Assist
- Quick Fix to create 'for' loop variable
- Quick Assist to combine Strings
- Quick Assist for unused type parameters
- Template and keyword proposals without prefix
- Remove type arguments after content assist
- Content assist appends ';' to void methods
- Use ';' key to insert method invocation
- New API to indicate content assist requested on the start of a constructor
- Force Eclipse to compile (illegal) ambiguous varargs code
- New batch compiler options
- Option to omit @Override for interface methods
- Detection of unused type parameters
- Option to inherit null annotations
- Null annotations for fields
- Leak analysis respects well-known utilities
- Pre-filling package name in creation wizards
- Content assist shows Javadoc in Display, Expressions and Variables view
- Javadoc view resolves enclosing method call and keeps last target
- Support for package Javadoc in Javadoc hover and view
- Package names are linked in Javadoc hover and view
- Javadoc and Declaration view indicate when out of sync
- Improved evaluation of generics while debugging
- API to contribute location information for non-standard JRE / JDK libraries
- XML DOM logical structures
- Only one JUnit (4.11)
- JUnit test templates
- JUnit view shows assumption failures

New and Noteworthy - PDE

- New API Tools EE descriptions feature
- Improved feature selection dialog
- Javadoc hover available in plug-in manifest editor
- Plug-in image browser view
- Launch configurations choose default execution environment
- PDE UI requires a 1.5 EE
- New import package quick fixes
- Bundles in the category editor
- New API to contribute to the classpath of plug-in projects
- Updating the classpath requires a workspace lock
- Problem filters apply to API Tools use scans
- API Tools tasks warn about missing include or exclude files
- API Tools Analysis and Freeze tasks can run with unresolved bundles
- Default start level settings apply to all plug-ins
- Running from PDE editors remembers previous launch
- JUnit plug-in tests can run on Eclipse platform 4 workbench
- API Tools has limited support for pre-OSGi Eclipse plug-ins
- API Tools allows @noreference Javadoc tag on types
- API Tools Javadoc tags check visibility

New bundles in 4.3

- org.apache.httpcomponents.httpclient
- org.apache.httpcomponents.httpcore
- org.eclipse.ecf.provider.filetransfer.httpclient4
- org.eclipse.ecf.provider.filetransfer.httpclient4.ssl

Removed bundles in 4.3

- org.apache.commons.httpclient
- org.apache.lucene
- org.eclipse.ecf.provider.filetransfer.httpclient
- org.eclipse.ecf.provider.filetransfer.httpclient.ssl
- org.junit4

Non-Code Aspects

- Major restructuring of build system
  - Migrated to use Tycho
  - Anyone can now build the platform in a few steps
- Running Juno maintenance builds after 4.2.2 in Long Term Support (LTS) forge
- Conscious effort to engage contributors and accept contributions:
  - Attended code camps and hack days
  - Held dedicated patch days where contributions were reviewed

Non-Code Aspects

- Internationalization
  - Latin1 and Latin2 locales are supported in all operating environments
  - DBCS locales are supported on all platforms
  - BIDI locales supported on all platforms
  - GB18030-1 Chinese codepage standard is supported on Windows, Linux GTK and Mac.
  - Significant BIDI work in 4.3: control text direction independent of widget direction
- Localization
  - Tested for Localization and participating in Babel Project
- Accessibility
  - Significant focus on US Gov. Section 508 accessibility compliance this year
  - Open accessibility bugs: 10 major, 0 critical, 0 blocker

Non-Code Aspects

- The 4.3 release contains updated User and ISV documentation
- Articles, examples, and tutorials
  - New and updated tutorials for Eclipse 4: http://wiki.eclipse.org/Eclipse4/Tutorials
  - Numerous Webinars and Podcasts
  - Some of the new/updated articles and tutorials were provided by the Eclipse community

Platform Quality API

- API quality is a collaborative effort that involves the experience of the developers working on the Eclipse project, and feedback from consumers.
- API changes and proposed API additions are often broadcast to mailing lists to raise awareness of the changes and encourage discussion and feedback.
- API changes between 4.2 and 4.3 are checked automatically by API tooling integrated into integration build process.
- The 4.3 migration guide identifies 2 minor incompatible changes:
  - http://www.eclipse.org/eclipse/development/porting/eclipse_4_3_porting_guide.html
  - For each, a description of the change, what code is affected, and the action that needs to be taken is described.
  - Advance warning of removals and changes coming in future releases
- The PMC is comfortable supporting the API that is in the Eclipse project 4.3
- Some 4.x stream API is still x-internal and subject to change

Tool Usability

- Eclipse SDK is a superior IDE for Java tooling and plug-in development
- Many usability enhancements made in 4.3 to continue this tradition
  - Improved performance
  - Whole word search matching in search dialog
  - Annotation-based null reference analysis on fields
  - New quick fixes and assists and content assist enhancements

Architectural Issues

- Initial set of formal API released for Eclipse Platform 4: injection, contexts, user interface model, core services
- Reference JREs for development and testing updated to most recent releases but no major changes
- Windows (83%) still dominant download, above Linux (9%), Mac (8%)
- 64-bit builds more popular than 32-bit for the first time on both Linux and Windows (64-bit already dominant on Mac OS X)
- Initial early access builds on GTK+ 3
- 4 new bundles, 5 removed bundles
  - 3 removed bundles and 4 added for move to Apache HTTP client 4.0
  - 1 removed bundle for move to major new Lucene version
  - 1 removed bundle due to JUnit bundles combining into one

End of Life Issues

- The 3.x development stream reached end of life this year; no further releases or builds planned beyond 3.8.2 (February 2013)
- Planning to end support for non-OSGi bundles from Eclipse 2.0 in the 4.4 release as part of Equinox framework refactoring
- When evolving API the Eclipse Platform will, whenever possible, deprecate API methods and continue to keep them operational
- Exceptions to this rule are in the 4.3 migration guide.
- A process in place for removing invalid/outdated API
  - http://wiki.eclipse.org/Eclipse/API_Central/API_Removal_Process

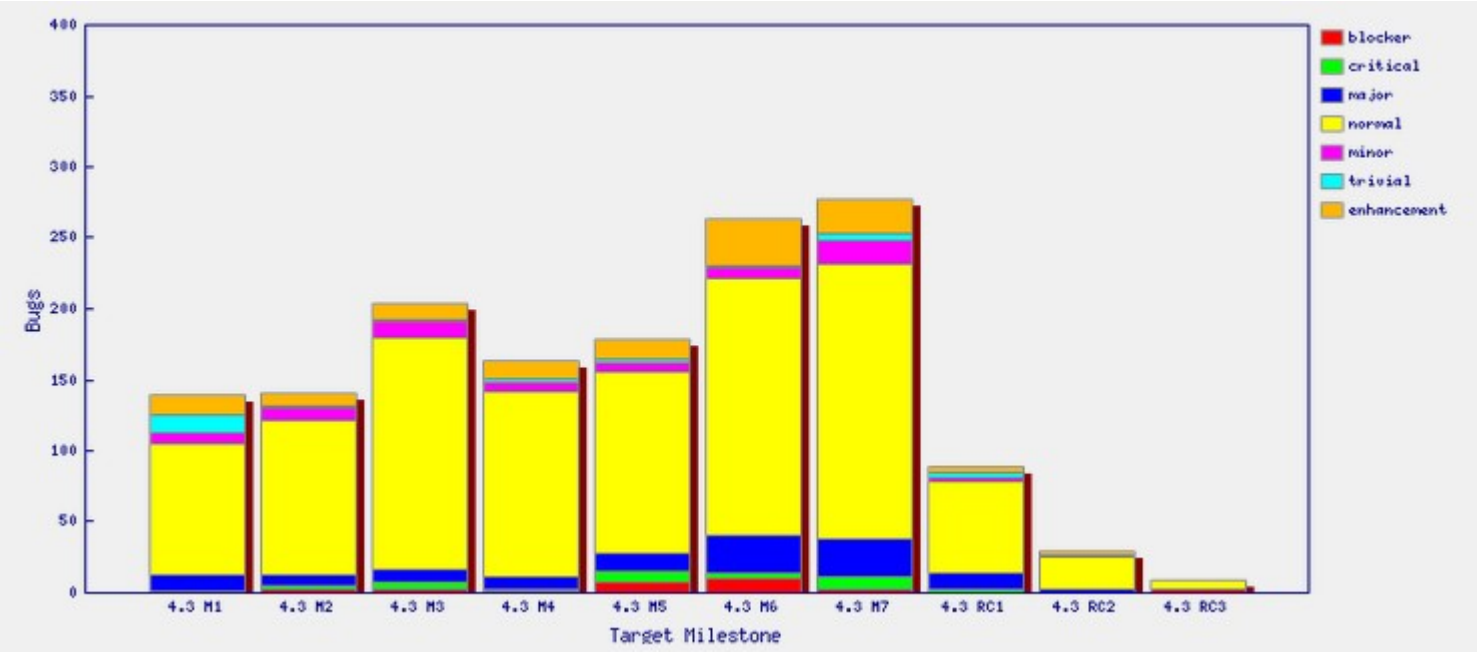
Bugzilla

- Between June 26, 2012 and May 28, 2013
  - More than 5413 reports were created
  - Over 3,567 were resolved
  - Over 450 back-ported to 3.8.x and 4.2.x maintenance
- Current state (RC3) is
  - 22 blockers, 193 critical
  - 0 P1, 75 P2
- 4.2 final state was
  - 5 blockers, 145 critical
  - 0 P1, 69 P2

Bugs fixed during 4.3

Severity	Target Milestone											
	4.3	4.3 M1	4.3 M2	4.3 M3	4.3 M4	4.3 M5	4.3 M6	4.3 M7	4.3 RC1	4.3 RC2	4.3 RC3	Total
blocker	.	.	3	2	1	7	10	2	.	.	2	27
critical	.	1	2	6	1	8	4	9	3	.	.	34
major	.	12	8	8	9	13	26	27	11	2	.	116
normal	9	92	109	164	131	128	181	194	64	23	7	1102
minor	.	8	8	11	6	6	8	16	3	1	.	67
trivial	.	12	2	1	3	3	1	5	4	.	.	31
enhancement	4	14	8	12	12	14	33	24	4	3	.	128
Total	13	139	140	204	163	179	263	277	89	29	9	1505

Fixed bugs – 4.3



Standards

- Annotation Processing APIs
  - com.sun.mirror 1.5
  - javax.annotation.processing 1.6
- Java compiler API
  - javax.tools 1.6
- User Assistance consumes (parses) a small subset of RSS 1.0 to get news from eclipse.org
- JUnit 4.11
- Java SE
  - Tools are built against Java SE 6
  - Compiler can generate Java 1.1 through Java 1.7 code
  - Eclipse Platform can run on Java SE 6 or 7
- SWT
  - Win32, GDI, GDI+, OLE, IE, Cocoa, Core Graphics, Quick Draw, Safari, ATSUI, X Windows, X/t, GTK+, GDK, Pango, Cairo, ATK, Mozilla, Uniscribe, OpenGL

UI Usability

- Strings are externalized to support translation into other languages.
- Extensive use of mnemonics and shortcut keys in the user interface enhances usability.
- Full Bidirectional support (mirroring) on Windows and Linux GTK, bidirectional text on Mac OS X
- Accessibility support for Windows, Linux GTK and Mac OS X
- Eclipse User Interface Guidelines followed

Schedule

- Milestones every 6 weeks, 6 cycle duration
  - API frozen on March 15 (M6), Feature freeze May 3 (M7)
  - http://www.eclipse.org/projects/project-plan.php?projectid=eclipse#release_milestones
- Tracked schedule
  - All milestones delivered as planned
- End game (release candidate) milestones for 4 cycles
  - Duration reduced from 2-week to 1-week cycles at RC2
  - No new features or API allowed without proper approvals
  - Development to end on June 5, 2013
  - Increasingly stringent approval, checking, and change notification requirements in this stage
  - http://www.eclipse.org/eclipse/development/plans/freeze_plan_4_3.php

Process

- The Eclipse project is developed using an open, transparent, and inclusive process
- Teams rely on Bugzilla, mailing lists and forums for input
- Started using Gerrit for code reviews
- Weekly planning calls conducted with the PMC and component leads
  - Public PMC minutes: http://wiki.eclipse.org/Eclipse/PMC

Community

- Eclipse team active in Bugzilla, forums, and mailing lists
- Many Eclipse blogs on http://planeteclipse.org
- Some teams are using IRC to communicate
  - irc://irc.freenode.net#eclipse-dev
  - irc://irc.freenode.net/#eclipse-e4
  - also see: http://wiki.eclipse.org/index.php/IRC
- Major Eclipse presence on http://stackoverflow.com
- The Eclipse team participates in code camps, conference presentations, and tutorials, including
  - EclipseCon, EclipseCon Europe, Eclipse Demo Camps, JavaOne, JavaWorld, JAOO, JAX, JAX Asia, JSConf
- The Eclipse team interacts with other open source projects, standards bodies, and other projects on eclipse.org, including
  - OSGi, Apache Ant, JCP, WTP, GCJ, GTK

IP Issues

- All significant and third party contributions have been reviewed and approved by Eclipse legal.
- Using most recent Eclipse Software User Agreement
- About files and license files are complete and correct.
- Final approved IP log:
  - http://www.eclipse.org/eclipse/development/project-log-files/eclipse-project-4.2-log.html

Future Plans

- 4.4 release planned for June 2014
  - Support for Java SE 8
  - Eclipse platform 4 tooling support
  - Full support for GTK+ 3
  - Migrate to refactored Equinox kernel
- 4.3.1 and 4.3.2 maintenance releases
  - Bug fixes only
- Ongoing long term support to Juno stream within LTS forge