Session #3: The Eclipse Integrated Development Environment

Background

- 1998 – Object Technology International
  - IBM subsidiary, now Ottawa Lab
  - Existing tools didn't work well together
- 2001 – Eclipse Consortium
  - IBM releases code base as Open Source
- 2004 – Eclipse Foundation
  - Non-profit corporation
  - Independent of IBM

Eclipse Public License (EPL)

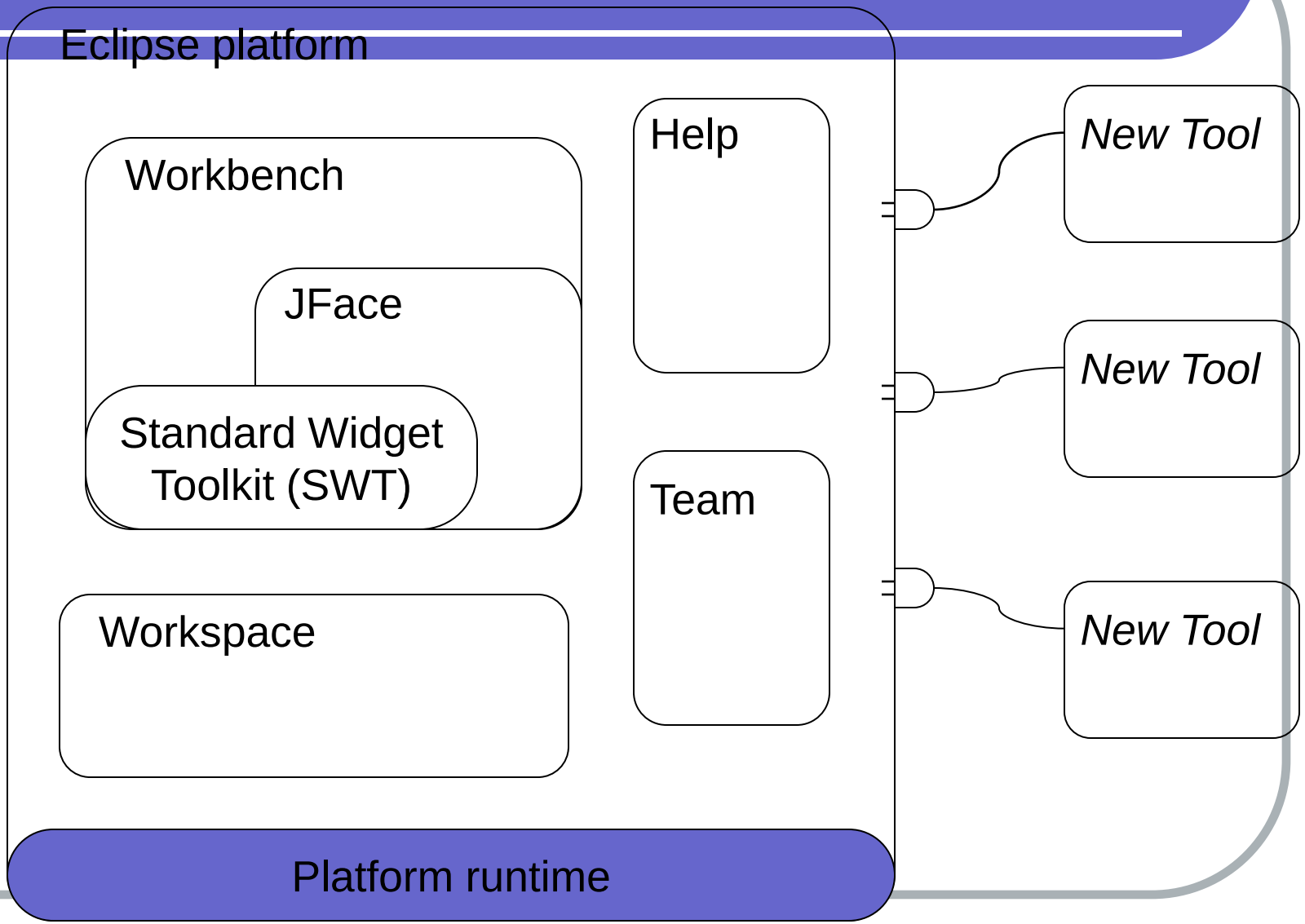
- Approved Open Source license
  - Meets OSI's Open Source Definition critera
- What's a "derivative work"?
  - GPL – almost anything is a derivative
  - EPL – plug-ins can remain proprietary

Status

- Major release every year in June
  - June 2015: v4.5, “Mars”
- Many tool- and application-oriented projects
  - Independent Open Source projects
  - Organized into 10 “project areas”
    - Development Tools
    - Device Software Development Platform (DSDP)

What is it?

- Platform for building IDEs and "rich client" applications
- Written in Java
  - Runs anywhere
  - Originally a Java development platform
- Generic functionality
  - Application-specific functions come from "plug-ins"


Eclipse platform
Workbench
JFace
Standard Widget Toolkit (SWT)
Workspace
Help
Team
Platform runtime
New Tool
New Tool
New Tool

Starting Eclipse

- /usr/local/eclipse/eclipse & in shell window
  - Create a script in /usr/bin with the above line
- Double-click eclipse executable in file manager window

Workspace

- Standard location for project files
  - Default -- ~/workspace
  - Each project gets a directory under the workspace directory
- Can have multiple workspaces
  - Only one workspace open at a time

Workbench elements

- Menu – like any good graphical program
- Tool bar
  - Icons change depending on context
- Perspective
  - Collection of views to accomplish a specific task
- Editor
  - Big window in the middle
- View
  - Navigation and alternate presentations
  - Can move views around

Create Project

- File > New > C Project
  - Name it hello
- Expand Executable project type
  - Select Hello World ANSI C Project
- Next
  - Modify properties
- Finish
- Open hello.c

C/C++ Perspective

- Project Explorer view
  - Hierarchical view of project resources
  - Import/export resources
  - Double-click file to open
- Outline view
  - Header files
  - Global variables
  - Functions

Other Views

- Problems
  - Lists build problems
- Tasks
  - “To do” list
- Console
  - Output of build tools and locally running programs
- Properties
  - Not terribly useful

Editor features

- Syntax coloring
- Brace matching
- Context-sensitive help
  - Roll mouse over puts()
- Auto fill and completion
- Code folding

Menu

- File
  - Convert Line Delimiters to
  - Import
  - Export
  - Switch Workspace
- Refactor
- Search
  - File
  - C/C++ elements
  - Text

Edit Menu

- Incremental Find Next/Previous
- Add Bookmark
- Add Task
- Word Completion (Alt + /)
- Content Assist (Ctrl + Space)
- Quick Fix
- Parameter Hints (Shift + Ctrl + Space)
- Format

Navigate Menu

- Open Declaration (in editor)
- Open Type Hierarchy (view)
- Open Call Hierarchy (view)
- Open Include Browser (view)
- Open Resource (dialog)
- Last Edit Location

Project Menu

- Open/Close project
- Build
  - All
  - Project
  - Configurations
  - Automatically
- Clean
- Make Target
- Properties

Window Menu

- New Window
- Show View
- Perspective
  - Open/Close/Close All
  - Customize
  - Save as
  - Reset
- Navigation
- Preferences

Help Menu

- Welcome
- Help Contents
- Search
- Dynamic Help
- Key Assist
- Software Updates

Context Menu

- Right-click on any object
- Type of object determines menu contents

New project – record_sort

- record_sort <datafile> [1 | 2]
  - 1 – sort by name (default)
  - 2 – sort by ID
- Download and untar record_sort.tar.gz
- File > New > C Project
  - Name: record_sort
  - Click Next twice, then Finish
- Project is empty

Getting content into project

- Right-click record_sort
  - Import > File System > Next
  - Browse to record_sort_files directory
  - Select All, Finish
- File > New > Source File
  - Source Folder: browse to record_sort
  - Source File: record_sort.c
- Enter text from record_sort.pdf
- Save file and build project

Debugging record_sort

- Select record_sort project in Project Explorer
- Run -> Debug Configurations
- Click "new" icon
  - Name, Application and Project are filled in
- Select Arguments tab
  - In Program arguments, enter "datafile"
- Click Apply, then Debug

Debug Perspective

- Debug view toolbar
  - Resume
  - Interrupt
  - Terminate
  - Step: into, over, return
- Editor
  - Green arrow shows current program counter
- Variables
- Breakpoints

Breakpoints

- Right-click in marker bar at line 33
  - Click Toggle Breakpoint
  - Check Breakpoint view
- Click Resume
  - Program stops at breakpoint
- Roll cursor over nrecs
  - Displays current value
- Set breakpoint at line 36
- Disable breakpoint at line 33

Breakpoint Properties

- Right-click breakpoint entry and select Properties
- Actions
  - Sound
  - Log
  - Resume
  - External Tool
- Common
  - Condition
  - Ignore count

Review

- What is Eclipse?
  - History
  - Status
- Elements of Eclipse
  - Workbench
  - Perspective
  - Editor
  - View

Review II

- Eclipse Projects
  - Creating a project
  - Editing source files
  - Debugging