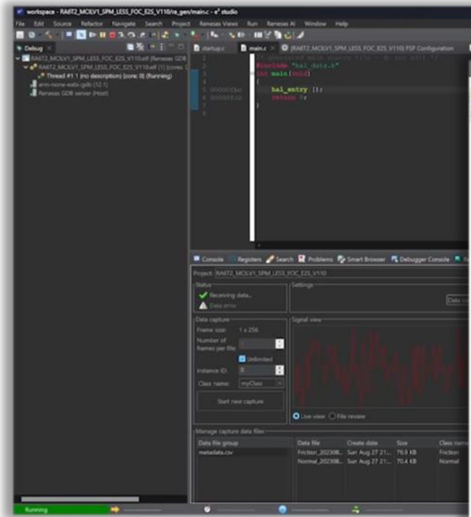
ECLIPSE
CON2023

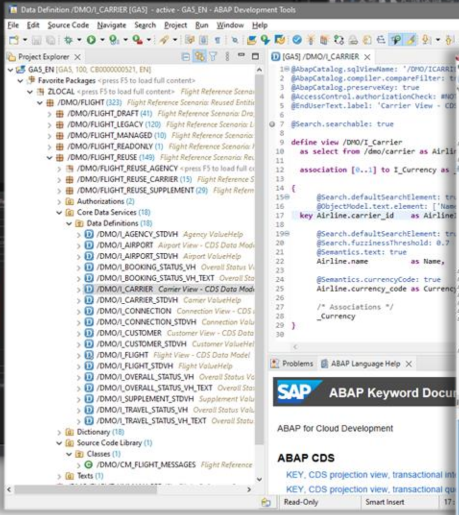
Eclipse IDE and RCP Platform: Unveiling the Past, Present and Future

Johannes Matheis (Vector Informatik GmbH), Mark Goodchild (Renesas), Sebastian Ratz (SAP SE), Heiko Klare (Vector Informatik GmbH)

Eclipse RCP: A Widely Adopted Framework



e² Studio: MCU Development
Renesas



```
@AbapCatalog.sqlViewName: '/DMO/ICARRI
@AbapCatalog.compiler.compareFilter: tr
@AbapCatalog.preserveKey: true
@AccessControl.authorizationCheck: #NOT
@EndUserText.label: 'Carrier View - CDS

@Search.searchable: true

define view /DMO/I_Carrier
  as select from /dmo/carrier as Airlin

  association [0..1] to I_Currency as _

{
      @Search.defaultSearchElement: tru
      @ObjectModel.text.element: ['Name
  key Airline.carrier_id    as AirlineI

      @Search.defaultSearchElement: tru
      @Search.fuzzinessThreshold: 0.7
      @Semantics.text: true
      Airline.name          as Name,

      @Semantics.currencyCode: true
      Airline.currency_code as Currency

      /* Associations */
      _Currency
}
```

ABAP Keyword Docu

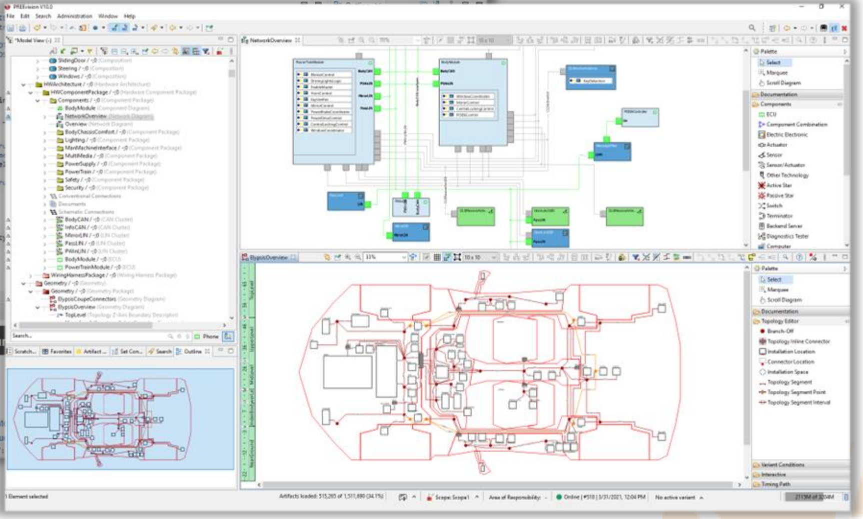
ABAP for Cloud Development

ABAP CDS

KEY, CDS projection view, transactional int

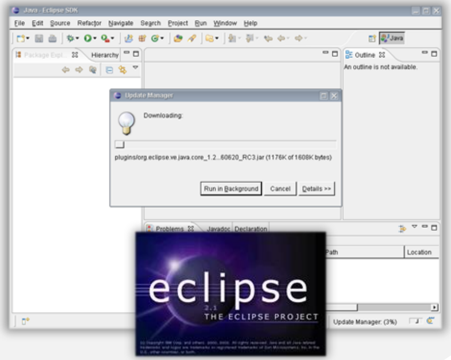
KEY, CDS projection view, transactional qu

ADT: ABAP Development
SAP SE



PREEvision: E/E Design
Vector Informatik GmbH

Eclipse IDE: 20 Years of History

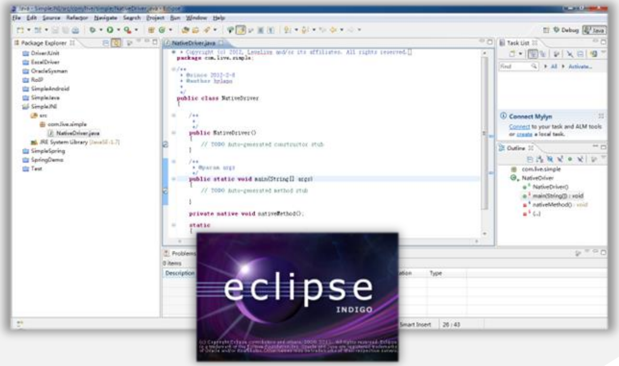


An outline is not available.

Downloading:

plugins/org.eclipse.ve.java.core_1.2...60620_RC3.jar (1176K of 1608K bytes)

Update Manager: (3%)



```
 * Copyright (c) 2012, [illegible] and/or its affiliates. All rights reserved.
package com.live.simple;

/**
 * @since 2012-2-8
 * @author [illegible]
 *
 */
public class NativeDriver
{

    /**
     *
     */
    public NativeDriver()
    {
        // TODO Auto-generated constructor stub
    }

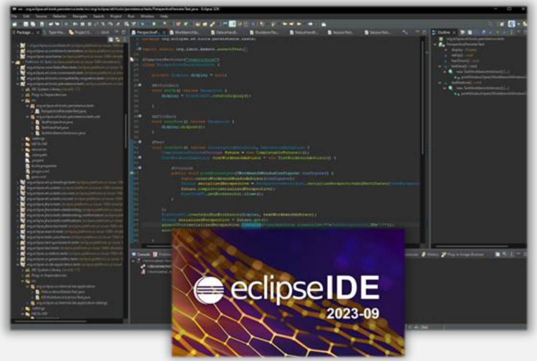
    /**
     * @param args
     */
    public static void main(String[] args)
    {
        // TODO Auto-generated method stub
    }

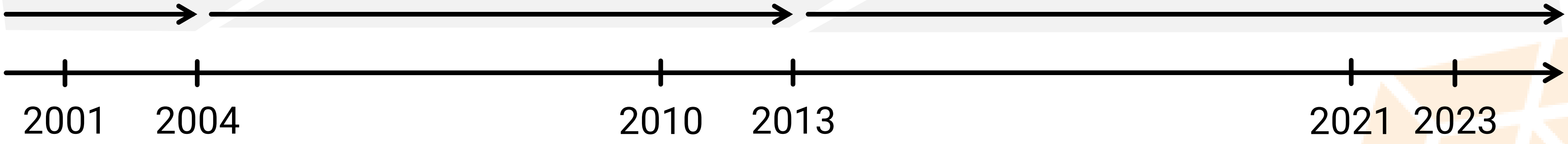
    private native void nativeMethod();

    static
    {
```

Connect Mylyn

Connect to your task and ALM tools or create a local task.





Eclipse 3.x

Eclipse 4.x

2001 2004 2010 2013 2021 2023

ECLIPSE FOUNDATION

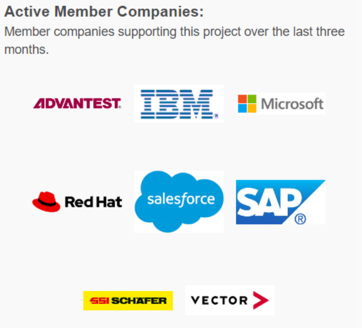
eclipse

https://www.adictosaltrabajo.com/2006/07/06/callisto/

Drivers for Eclipse Adoption

Vendor Neutral

ECLIPSE FOUNDATION



Active Member Companies:

Member companies supporting this project over the last three months.

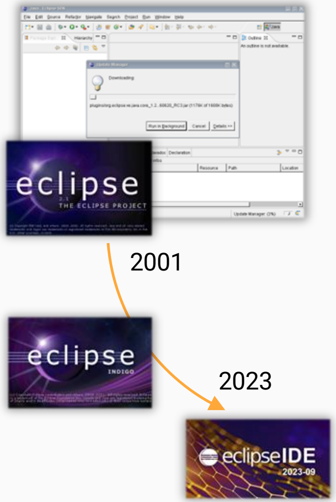
Open Source / Open to Contribute

GitHub

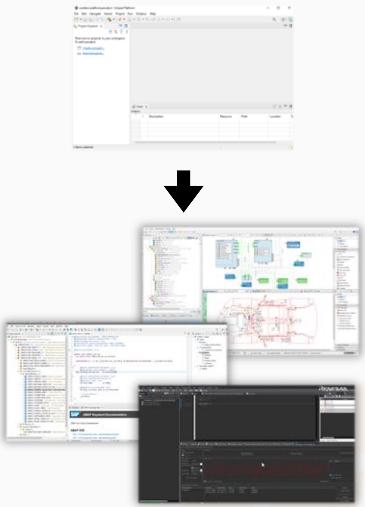
Eclipse Platform

Eclipse Platform™

Proven and Stabilized



Extensible

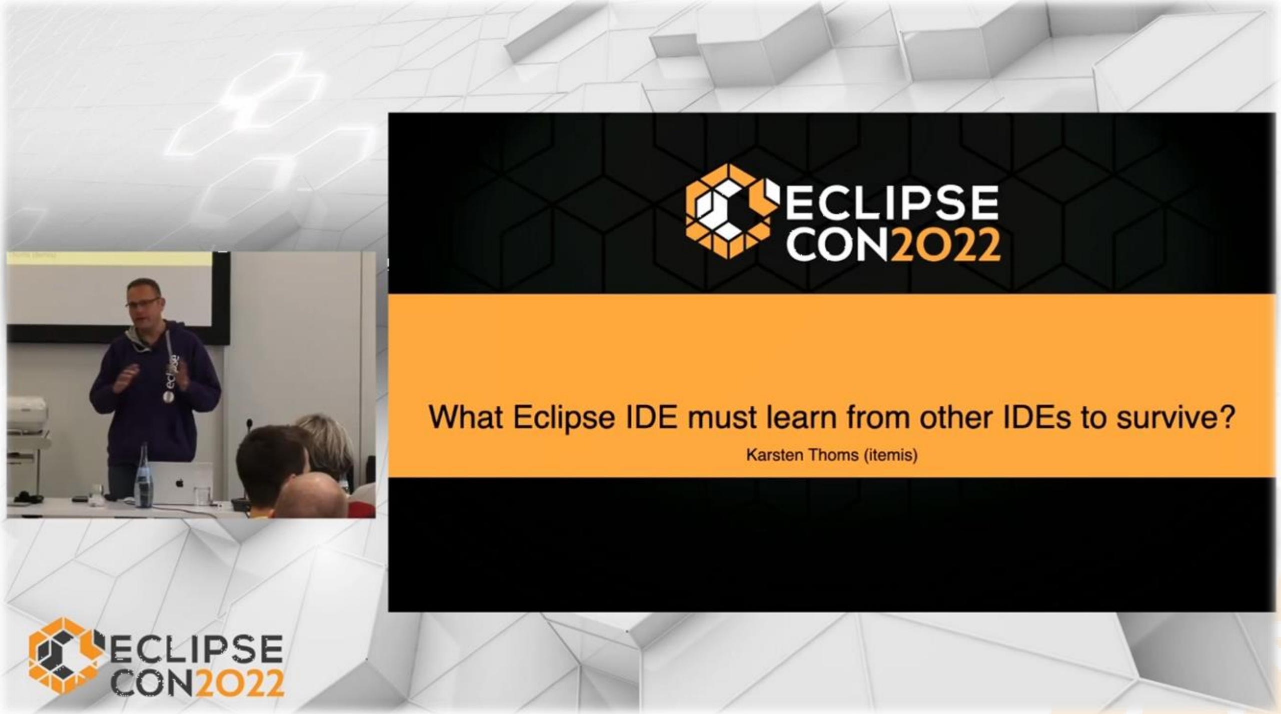


Current State of the Eclipse IDE / RCP

Still several USPs

… *but lacking*

- Attractiveness
- Responsiveness
- Ease of use
- …

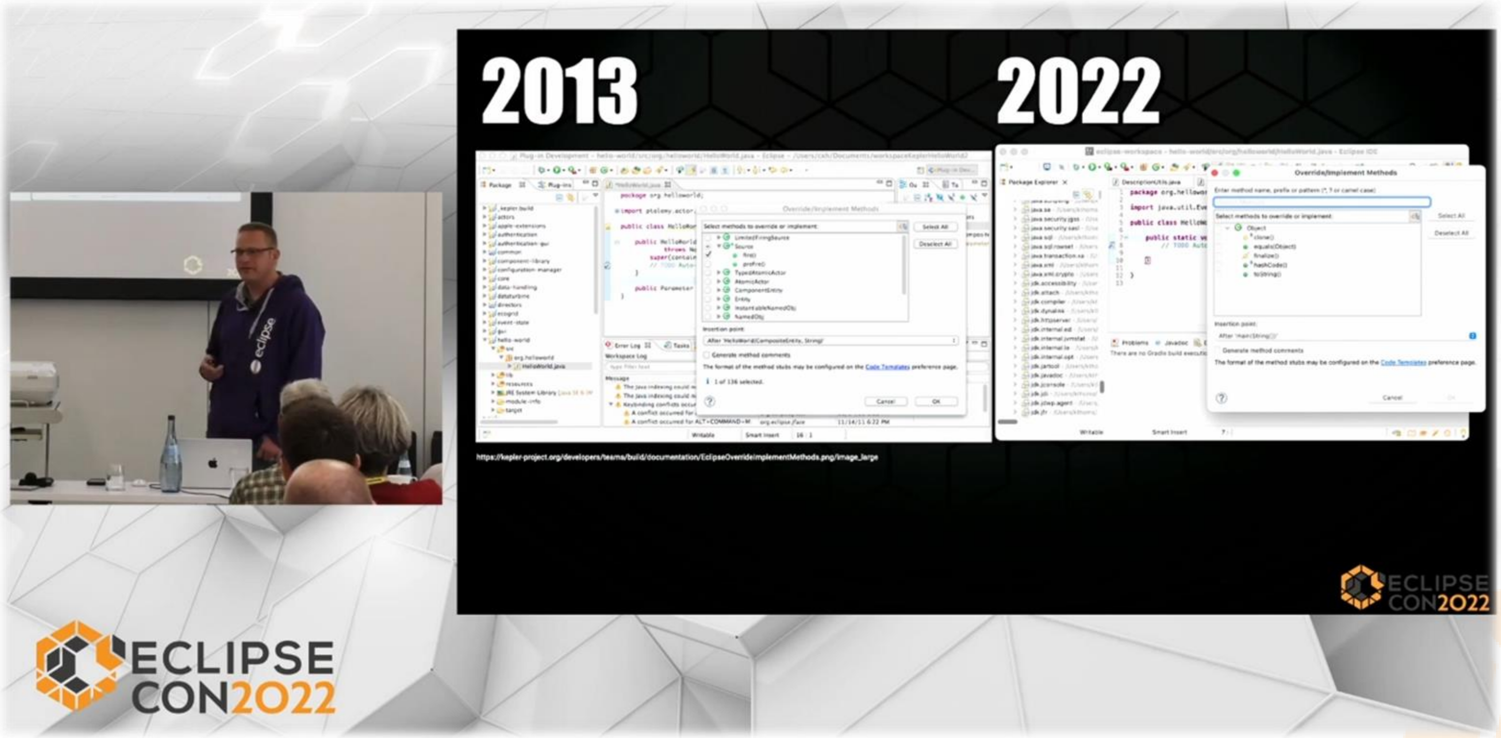


What Eclipse IDE must learn from other IDEs to survive?

Karsten Thoms (itemis)

https://www.youtube.com/watch?v=jyIYPz67KKA

Missing Progress in Last Decade



https://kepler-project.org/developers/teams/build/documentation/EclipseOverrideImplementMethods.png/image_large

https://www.youtube.com/watch?v=jyIYPz67KKA

Trends in IDE Development

🧩 Supported via extensible RCP platform

Simplification of Dev Workflows

Improve UX/UI / responsiveness / setup

AI-Supported Coding 🧩

Improve ease-of-integration (e.g., LSP)

Emerging Technologies 🧩

Integrate dev containers (see VS Code)

Rise of APIs 🧩

Cloud IDEs

Improve browser integration / portability

Greater Emphasis on Security

Security and vulnerability initiative at EF

Ecosystems, not just Communities

Improve ease-of-use / monetization

Social Coding 🧩

Progress Since EclipseCon 2022

Eclipse IDE Working Group Investments

- Secured investments
- Additional funding & developers
- New charter

Simplification of Development Workflows

Started analyzing and addressing fundamental issues:

- Attractiveness / ease of use
- Responsiveness
- Keep up with new trends (AI)

Eclipse Hackathon at SAP

eclipse

ECLIPSE IDE WORKING GROUP

IDE Hackathon Day

JULY 5, 2023

SAP in Walldorf / St. Leon-Rot, Germany

RENESAS vmware

EclipseSource

Yatta VECTOR

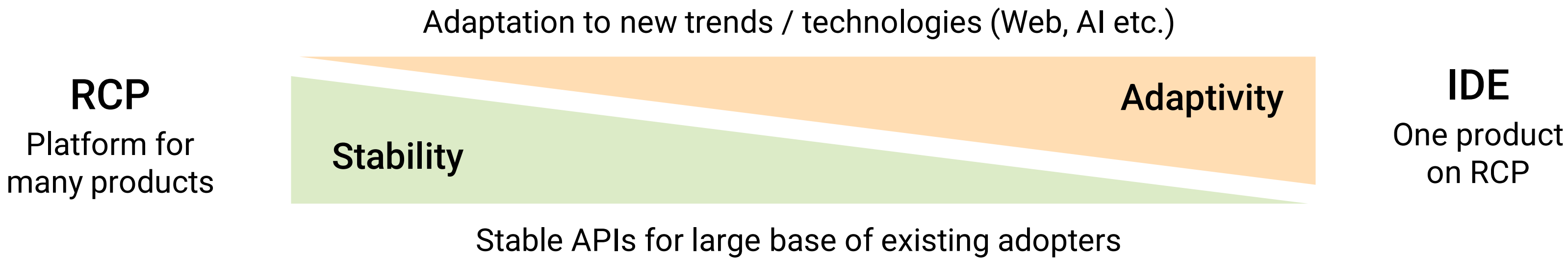
kichwa coders

Sigasi;

BOSCH Invented for life SAP IBM

Challenges in Platform Development

Trade-Offs



Adaptation to new trends / technologies (Web, AI etc.)

RCP
Platform for
many products

Adaptivity

Stability

IDE
One product
on RCP

Stable APIs for large base of existing adopters

Architectural Challenges

- Synchronous execution
- SWT paradigm

Current Work on Essential Topics

Simplification of Dev Workflows

Improve UX/UI / responsiveness / setup

AI-Supported Coding

Improve ease-of-integration (e.g., LSP)

Emerging Technologies

Integrate dev containers (see VS Code)

Rise of APIs

Modernized UX / UI

- Modernized look and feel
- Proper HiDPI support
- Performance (responsiveness, freezes)

Lightweight Setup (IDE + Workspace)

- Onboarding

Adoption of AI Trends

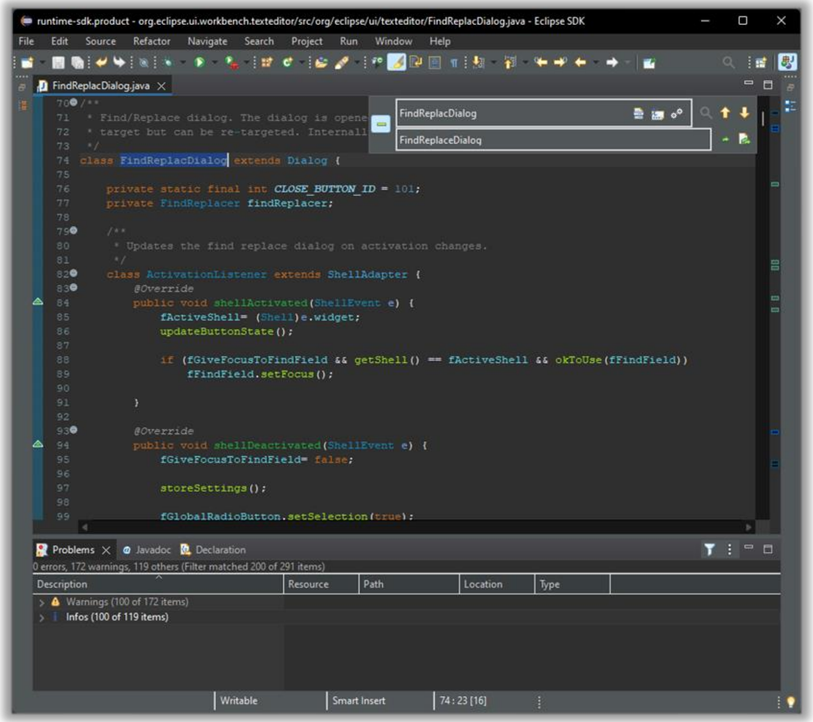
Support for Technology Providers

Social Coding

Modernized Find and Replace

State: WiP

Proposal approved,
Initial PR in discussion



runtime-sdk.product - org.eclipse.ui.workbench.texteditor/src/org/eclipse/ui/texteditor/FindReplacDialog.java - Eclipse SDK

FindReplacDialog.java

Find: FindReplacDialog

Replace: FindReplaceDialog

```
/**
 * Find/Replace dialog. The dialog is opene
 * target but can be re-targeted. Internall
 */
class FindReplacDialog extends Dialog {

    private static final int CLOSE_BUTTON_ID = 101;
    private FindReplacer findReplacer;

    /**
     * Updates the find replace dialog on activation changes.
     */
    class ActivationListener extends ShellAdapter {
        @Override
        public void shellActivated(ShellEvent e) {
            fActiveShell= (Shell)e.widget;
            updateButtonState();

            if (fGiveFocusToFindField && getShell() == fActiveShell && okToUse(fFindField))
                fFindField.setFocus();

        }

        @Override
        public void shellDeactivated(ShellEvent e) {
            fGiveFocusToFindField= false;

            storeSettings();

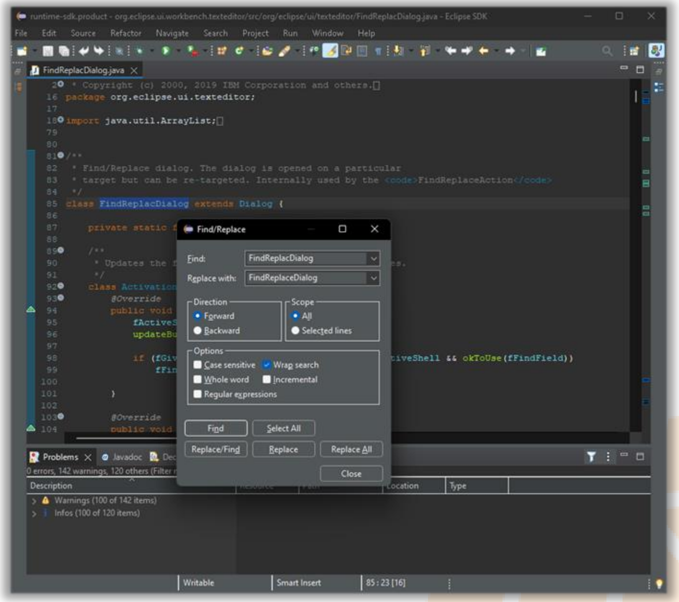
            fGlobalRadioButton.setSelection(true);
```

```
0 errors, 172 warnings, 119 others (Filter matched 200 of 291 items)
Description                  Resource   Path   Location   Type
> Warnings (100 of 172 items)
> Infos (100 of 119 items)

Writable    Smart Insert    74 : 23 [16]
```

New:
Overlay or integrated in view

Existing:
Free-floating dialog



runtime-sdk.product - org.eclipse.ui.workbench.texteditor/src/org/eclipse/ui/texteditor/FindReplacDialog.java - Eclipse SDK

FindReplacDialog.java

```
 * Copyright (c) 2000, 2019 IBM Corporation and others.
package org.eclipse.ui.texteditor;

import java.util.ArrayList;


/**
 * Find/Replace dialog. The dialog is opened on a particular
 * target but can be re-targeted. Internally used by the <code>FindReplaceAction</code>
 */
class FindReplacDialog extends Dialog {

    private static f

    /**
     * Updates the f                                         es.
     */
    class Activation
        @Override
        public void
            fActiveS
            updateBu

            if (fGiv                                          tiveShell && okToUse(fFindField))
                fFin

        }

        @Override
        public void
```

Find/Replace

Find: FindReplacDialog

Replace with: FindReplaceDialog

Direction: ● Forward ○ Backward

Scope: ● All ○ Selected lines

Options: □ Case sensitive ☑ Wrap search □ Whole word □ Incremental □ Regular expressions

```
0 errors, 142 warnings, 120 others (Filter r
Description                  Location   Type
> Warnings (100 of 142 items)
> Infos (100 of 120 items)

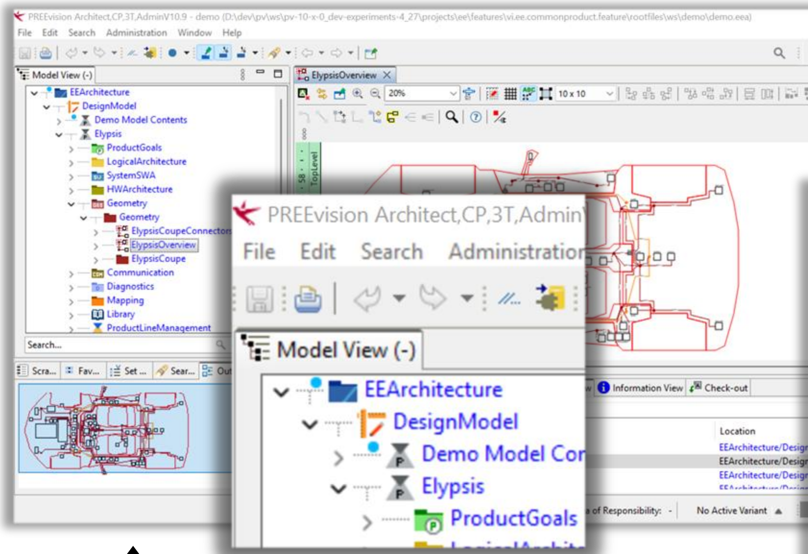
Writable    Smart Insert    85 : 23 [16]
```

https://github.com/eclipse-platform/eclipse.platform.ui/pull/1192

Multi-Monitor HiDPI Support

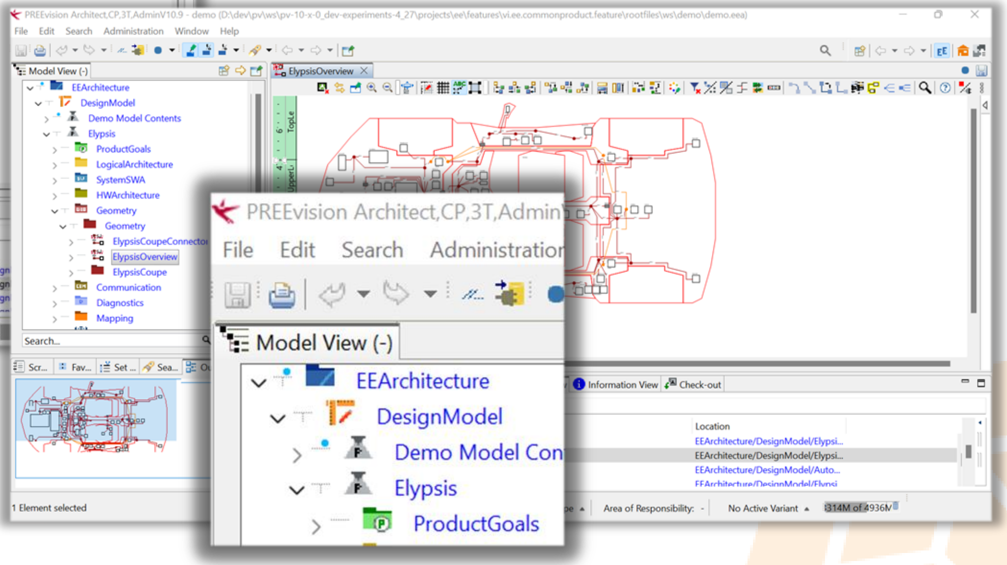
State: WiP

Advanced technical realization



Current:
Blurry scaling

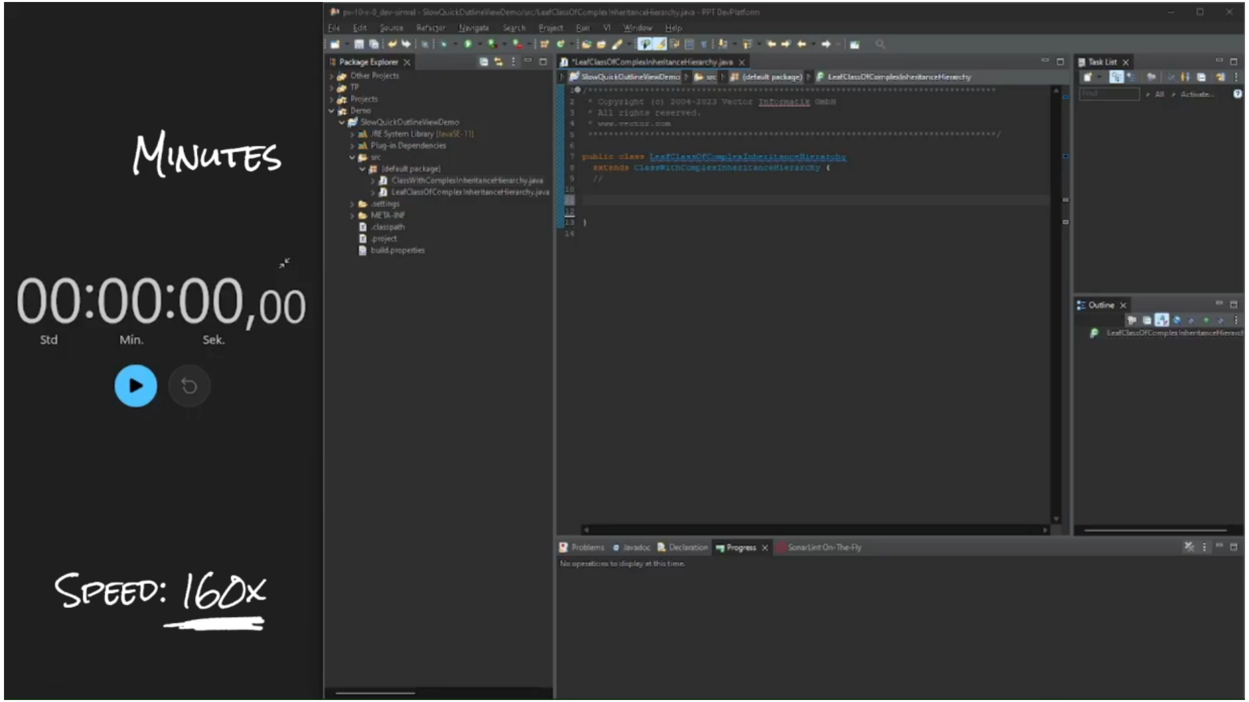
New:
Sharp scaling



Moving to Monitor With Different DPI Scaling

Here: 150%

Long UI Freezes in IDE



```
/*****************************************************************************
 * Copyright (c) 2004-2023 Vector Informatik GmbH
 * All rights reserved.
 * www.vector.com
 *****************************************************************************/

public class LeafClassOfComplexInheritanceHierarchy
  extends ClassWithComplexInheritanceHierarchy {
  //


}
```

No operations to display at this time.

State: Analysis

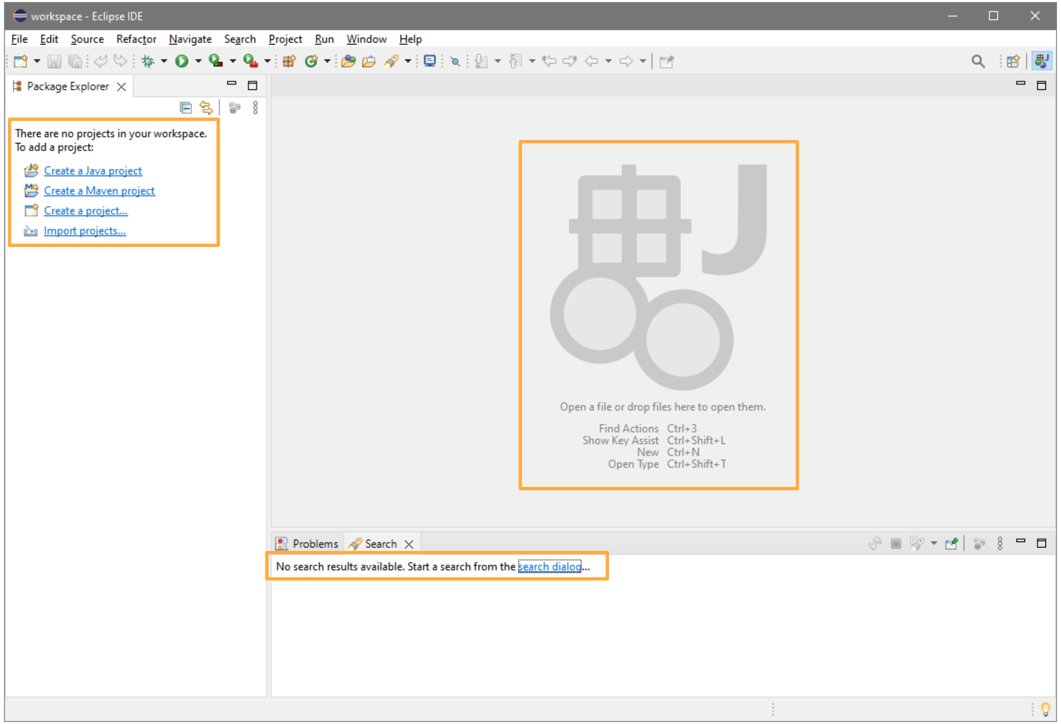
To be addressed
in the next time

Quick Outline in Class With Complex Hierarchy

Severe performance issue in large projects

2000 Plug-ins – PREEvision

Improved Onboarding



workspace - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Package Explorer
Problems Search

There are no projects in your workspace.
To add a project:

- Create a Java project
- Create a Maven project
- Create a project...
- Import projects...

Open a file or drop files here to open them.

Find Actions Ctrl+3
Show Key Assist Ctrl+Shift+L
New Ctrl+N
Open Type Ctrl+Shift+T

No search results available. Start a search from the search dialog...

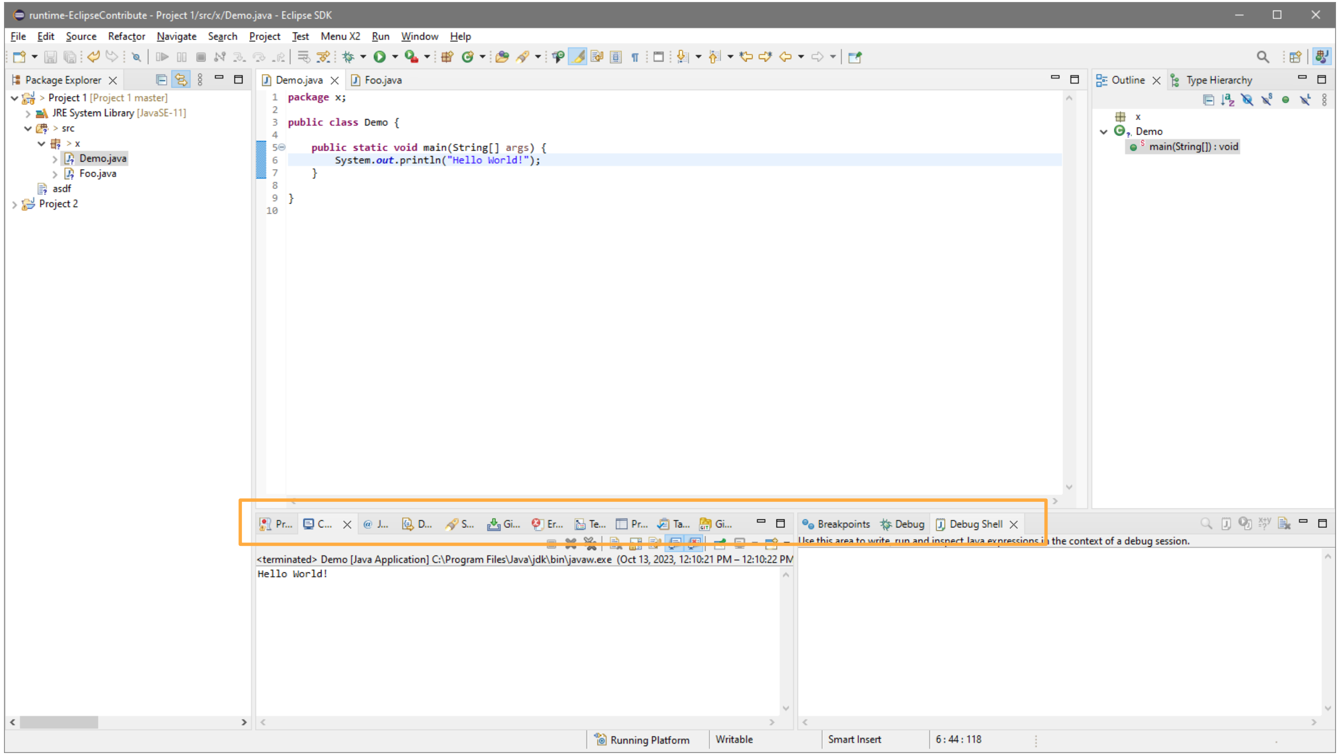
State: Done

Released with 2023-06

Lightweight UI

State: WiP

PR open,
Functionality agreed


runtime-EclipseContribute - Project 1/src/x/Demo.java - Eclipse SDK
File Edit Source Refactor Navigate Search Project Test Menu X2 Run Window Help
Package Explorer
Project 1 [Project 1 master]
JRE System Library [JavaSE-11]
src
x
Demo.java
Foo.java
asdf
Project 2
Demo.java
Foo.java
Outline
Type Hierarchy
x
Demo
main(String[]) : void
Pr... C... J... D... S... Gi... Er... Te... Pr... Ta... Gi...
Breakpoints
Debug
Debug Shell

```
package x;

public class Demo {

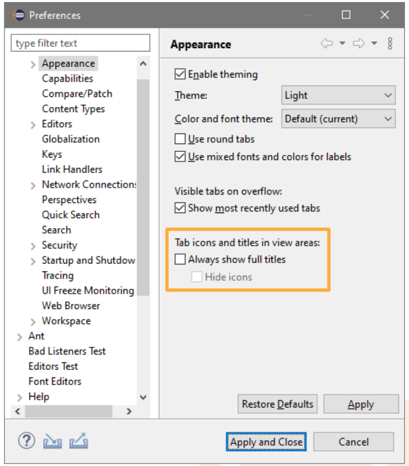
    public static void main(String[] args) {
        System.out.println("Hello World!");
    }

}
```

```
<terminated> Demo [Java Application] C:\Program Files\Java\jdk\bin\javaw.exe (Oct 13, 2023, 12:10:21 PM – 12:10:22 PM
Hello World!
```

Use this area to write, run and inspect Java expressions in the context of a debug session.

Running Platform | Writable | Smart Insert | 6 : 44 : 118



Appearance

☑ Enable theming

Theme: Light

Color and font theme: Default (current)

☐ Use round tabs

☑ Use mixed fonts and colors for labels

Visible tabs on overflow:

☑ Show most recently used tabs

Tab icons and titles in view areas:

☐ Always show full titles

☐ Hide icons

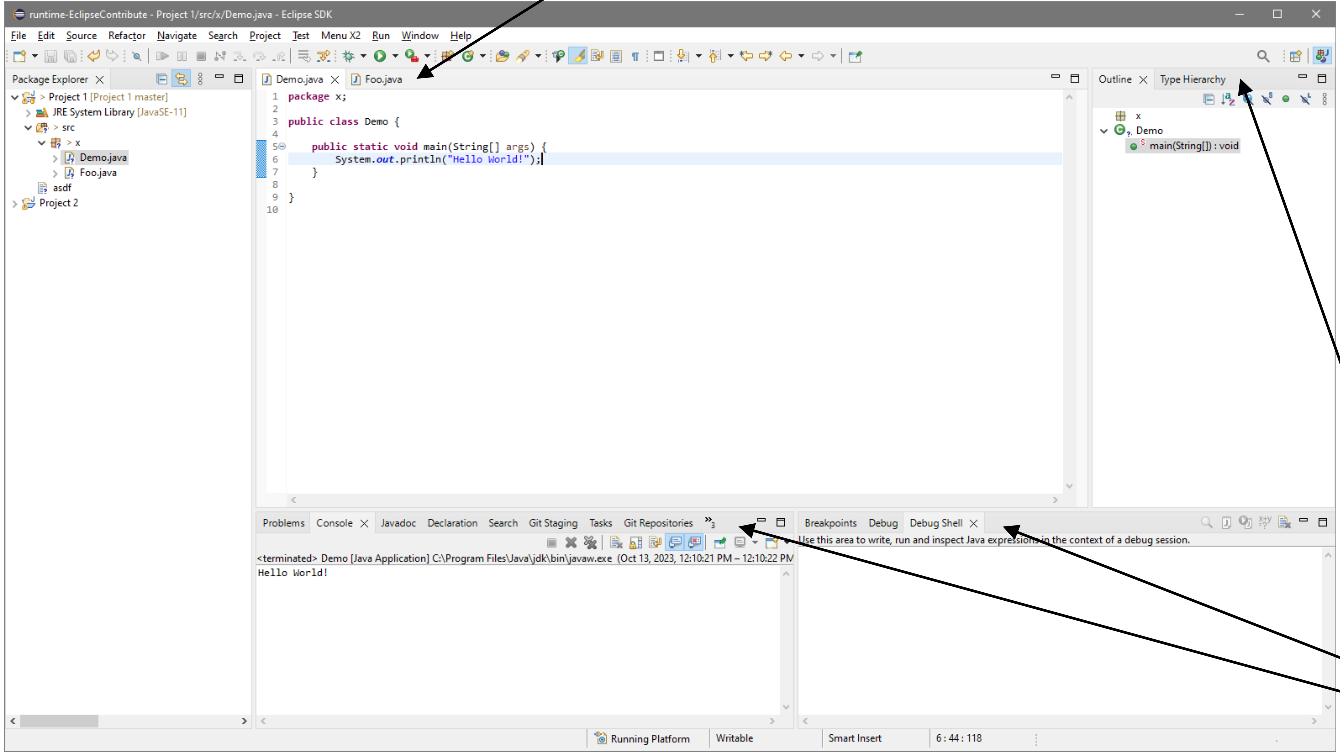
https://github.com/eclipse-platform/eclipse.platform.ui/pull/1071

Lightweight UI

Editor area:
'main actor'

State: WiP

PR open,
Functionality agreed



```
package x;

public class Demo {

    public static void main(String[] args) {
        System.out.println("Hello World!");
    }

}
```

```
<terminated> Demo [Java Application] C:\Program Files\Java\jdk\bin\javaw.exe (Oct 13, 2023, 12:10:21 PM – 12:10:22 PM)
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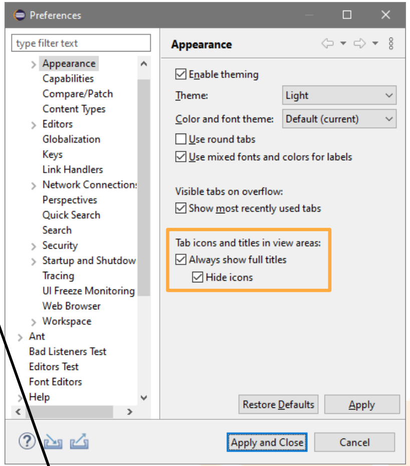

Appearance

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☑ Always show full titles

☑ Hide icons

View areas:
'supporting actors'

https://github.com/eclipse-platform/eclipse.platform.ui/pull/1071

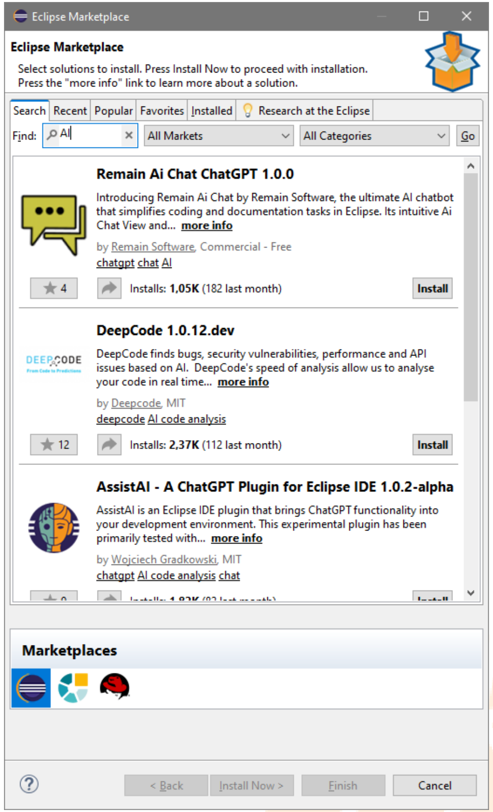
AI Integration

Technical Architecture

- Powerful RCP / IDE extension points
- AI integration is possible and mostly an implementation detail
- Is there something missing?

Variety in the Eclipse Ecosystem

- Some AI extensions already out there
- Not all vendors offer 'official' solutions (yet)
- But users are asking for them*



Eclipse Marketplace

Select solutions to install. Press Install Now to proceed with installation.
Press the "more info" link to learn more about a solution.

Find: AI

Remain Ai Chat ChatGPT 1.0.0

Introducing Remain Ai Chat by Remain Software, the ultimate AI chatbot that simplifies coding and documentation tasks in Eclipse. Its intuitive Ai Chat View and... **more info**

by Remain Software, Commercial - Free

chatgpt chat AI

★ 4 Installs: **1,05K** (182 last month)

DeepCode 1.0.12.dev

DeepCode finds bugs, security vulnerabilities, performance and API issues based on AI. DeepCode's speed of analysis allow us to analyse your code in real time... **more info**

by Deepcode, MIT

deepcode AI code analysis

★ 12 Installs: **2,37K** (112 last month)

AssistAI - A ChatGPT Plugin for Eclipse IDE 1.0.2-alpha

AssistAI is an Eclipse IDE plugin that brings ChatGPT functionality into your development environment. This experimental plugin has been primarily tested with... **more info**

by Wojciech Gradkowski, MIT

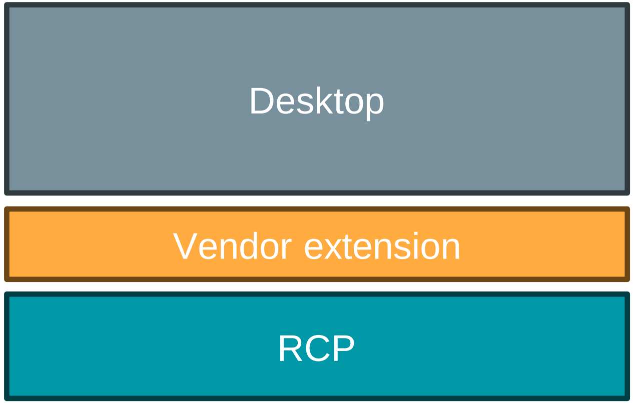
chatgpt AI code analysis chat

* https://github.com/orgs/community/discussions/51197

Vendor Vision and Strategy

‘All-In’ – Opt for Desktop

- Target = end-user desktop machines
- RCP
- -> *dedicated toolsets for industry solutions*



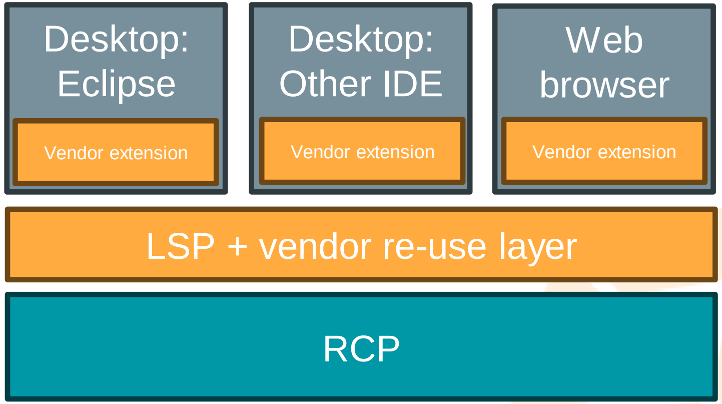
Desktop

Vendor extension

RCP

Choice for End-Users

- Target = multiple environments
- RCP + LSP for maximum re-use
- -> *programming language plug-ins for IDEs, AI*



Desktop: Eclipse

Vendor extension

Desktop: Other IDE

Vendor extension

Web browser

Vendor extension

LSP + vendor re-use layer

RCP

Assessment of the Eclipse RCP and IDE Ecosystem

- RCP offering is uniquely powerful
- Architecture is tried and tested
- Can handle large workloads
- Eclipse is *the* vendor-neutral RCP and desktop IDE
- LSP is showing the way to target more ecosystems

Conclusion

- Simplification of Dev Workflows
- AI-Supported Coding
- Emerging Technologies
- Rise of APIs
- Cloud IDEs
- Greater Emphasis on Security
- Ecosystems, not just Communities
- Social Coding

Let's grow with us!

- Feedback
- Discussion
- **Contributions**
- ...

Join Our BoF Session

Eclipse IDE – Contributors and Committer

Today, 19:00 – 20:00
Schubartsaal

Eclipse IDE Working Group

https://eclipseide.org/working-group/

Eclipse SimRel

https://github.com/eclipse-simrel

Thank you!

Join the conversation:

@EclipseCon | #EclipseCon

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