EclipseSource

The Eclipse Packaging Project and its Usage Data Collector in RAP and RCP Applications

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Agenda...

[0] Introducing EclipseSource

[1] The Eclipse Packaging Project

[2] The Usage Data Collector in RCP applications

[3] Results and Statistics from the Ganymede Release

[4] The Usage Data Collector in RAP applications

[5] Analysing the results with VUA

[6] Non-code aspects of a Usage Data Collector

EclipseSource - Who we are

- Evolved out of Innoopract and Code 9
- Deep involvement in Eclipse from the beginning
- Eclipse Strategic member
- 2 board members (1 elected)
- World class team of recognized experts
- Proven delivery track record
  - Eclipse 1.0, 2.0, 2.1, 3.0, Callisto, Europa, Ganymede
- Offices in Karlsruhe, Ottawa, Portland, Sofia

A strategic member of the Eclipse Foundation

- 12 strategic members, 170+ sustaining members
- Strategic members commit to 8 full time developers working on the open source Eclipse codebase

Eclipse solutions are our business

integration & delivery

Yoxos provides
security
and **tools** that enable
enterprises to manage
and deliver
eclipse technology

technology

Open Source
Projects for tools
and runtimes

Sponsored development
Maintenance

services

Helping corporations to implement Eclipse strategies,

offering **consulting, development, support** and **training**


SIEMENS
NOKIA
Connecting People
DEKRA
nexagent
Solution Delivery Automation
EnBW
BARCO
Visibly yours
VERIGY
the brilliance of innovation
Hessische Zentrale
für Datenverarbeitung
esa
C·A·S SOFTWARE
THALES
heiler software
AixpertSoft
Nokia Siemens
Networks
N·SIDE
StarCore
Gothaer
LAUTERBACH
Deutsche Post
VDO
BOSCH
Gieseke & Devrient
SPITZENVERBÄNDE DER
LANDWIRTSCHAFTLICHEN
SOZIALVERSICHERUNG
CISCO
Alcatel·Lucent
SUNGARD

EclipseSource Leadership at Eclipse

- 2 board members
- Various board committees
- PMCs
  - RT PMC leaders
  - Eclipse PMC leader
  - Tools PMC member
  - Technology PMC member
- 5 Architecture Council members
- Mentor many projects

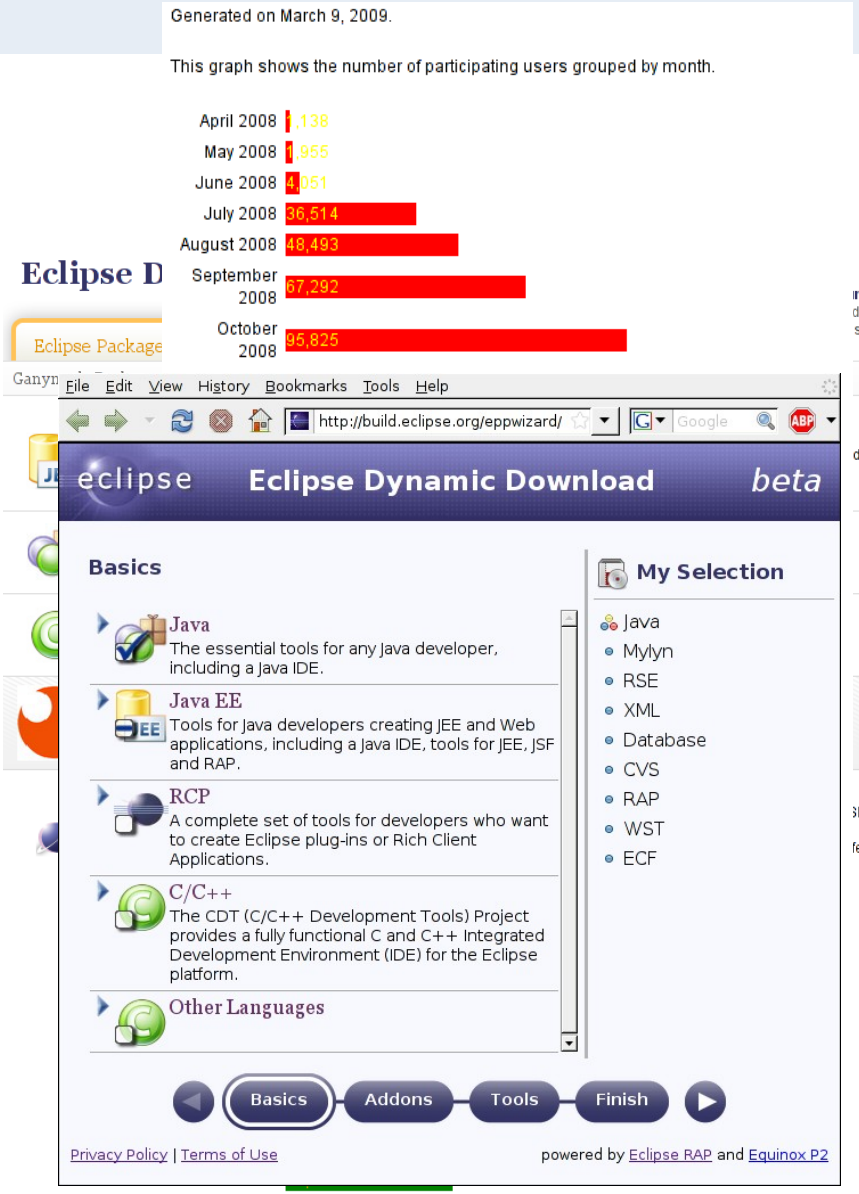
- Projects
  - Equinox co-lead
  - RCP lead
  - RAP lead
  - EPP lead
  - g-Eclipse co-lead
  - ECF lead
  - PDE co-lead
  - Orbit lead
  - Zest lead

EPP - What's it all about?

Create a better end-user experience.

EPP - What's it all about?

- Eclipse Packages Download
  - coordinate, maintain, build, configure, ...
- Usage Data Collector
  - How are developers using Eclipse?
- Eclipse Dynamic Download
  - Wizard-based download configurator



EPP Usage Data Collector

Included in all EPP packages

- Millions of downloads from eclipse.org/downloads
- Currently about 120.000 distinct users uploading every month

UDC: Views, Perspectives, Bundles, Editors, Commands

view	executeCount200901	userCount200901	Average per User
org.eclipse.jdt.ui.PackageExplorer	1546984	67514	23
org.eclipse.ui.console.ConsoleView	1084367	72544	15
org.eclipse.ui.navigator.ProjectExplorer	757932	41273	18
org.eclipse.wst.server.ui.ServersView	262302	19159	14
org.eclipse.ui.views.ResourceNavigator	239341	13033	18

Statistics available from
http://www.eclipse.org/org/usagedata/results.php

EPP UDC in *Your* RCP Product

Include the EPP UDC feature in your product

But ...

[1] The data is uploaded to eclipse.org ...

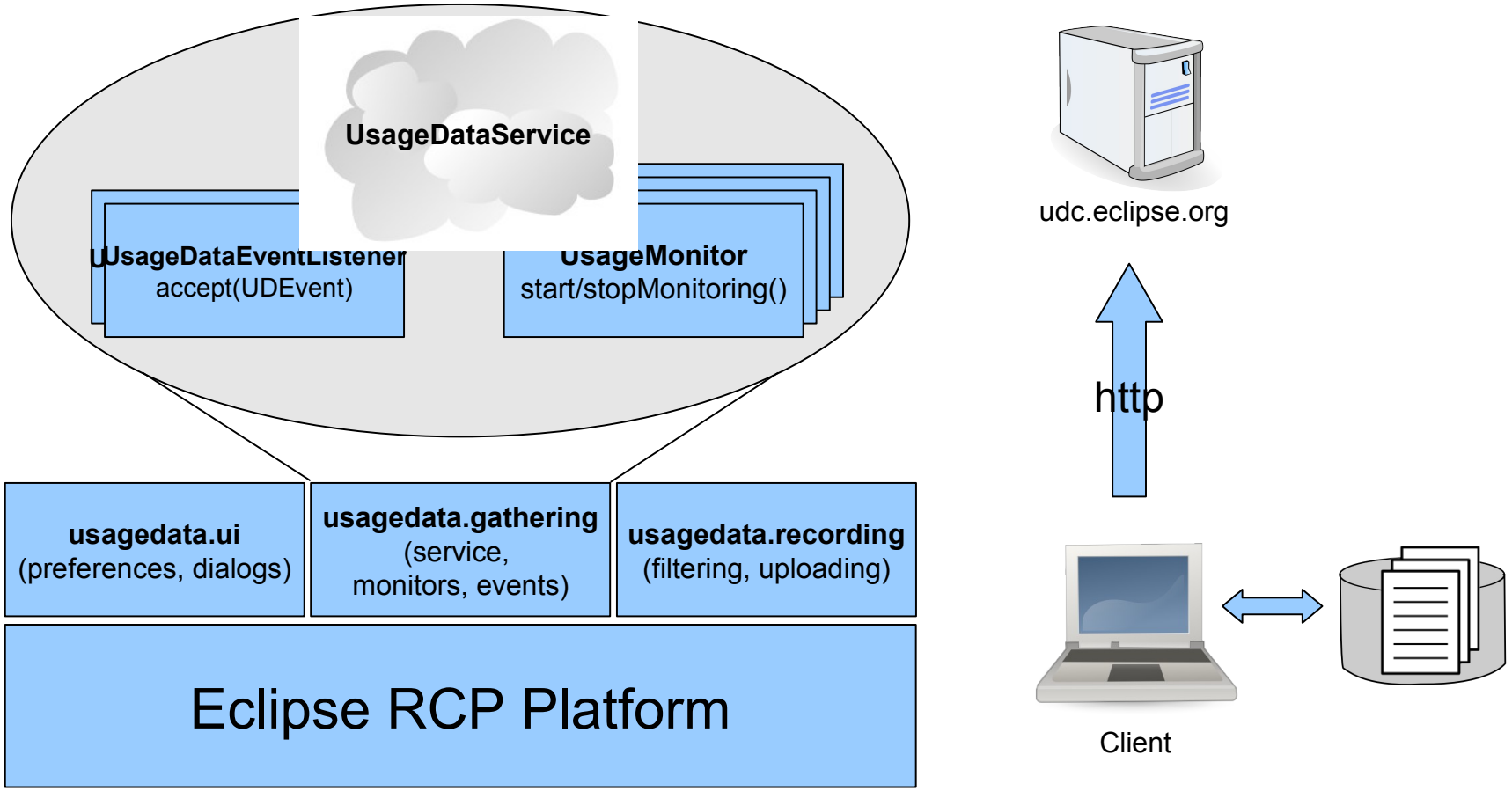
- Only the Eclipse Foundation has access to the raw data
- It is possible to change the upload URL with a property

```
-Dorg.eclipse.epp.usagedata.recording.upload-url=http://udc.eclipse.org/upload.php
```

[2] Where is the server application?

- Eclipse Foundation uses its own implementation (PHP)
- Source code not available
- But it is easy to write your own application

EPP Architecture (Standard RCP)



UDC – Tracking Information: Monitors

Extension Point
`org.eclipse.epp.usagedata.gathering.monitors`

- UsageMonitor: `start/stopMonitoring(UDCService)`
- Examples
  - BundleUsageMonitor
  - PartUsageMonitor
    - Views, Perspectives, Editors
  - LogMonitor – Errors in the log file (IStatus.ERROR)
  - CommandUsageMonitor
  - SystemInfoMonitor
    - OS, architecture, windowing system, locale, JVM, etc.

UDC – Collecting Data: Event Listeners

Extension Point

`org.eclipse.epp.usagedata.listeners.event`

- UsageDataEventListener:

  `accept(UsageDataEvent event)`

- UsageDataEvent:

  ```
  String what, String kind, String description,
  String bundleId, String bundleVersion, long when
  ```

- UsageDataRecorder (RCP Standard)
  stores data in CSV files

  `.metadata/.plugins/org...epp.usagedata.recording/upload0.csv`

UDC – Storing/Uploading Data: Uploaders

Extension Point
`org.eclipse.epp.usagedata.recording.uploader`

- Interface Uploader: `startUpload(), ...`
- Example:
  - AskUserUploader
    asks the user every 5 days to upload data to udc.eclipse.org – see UsageDataRecordingSettings

UDC – Identifying Users???

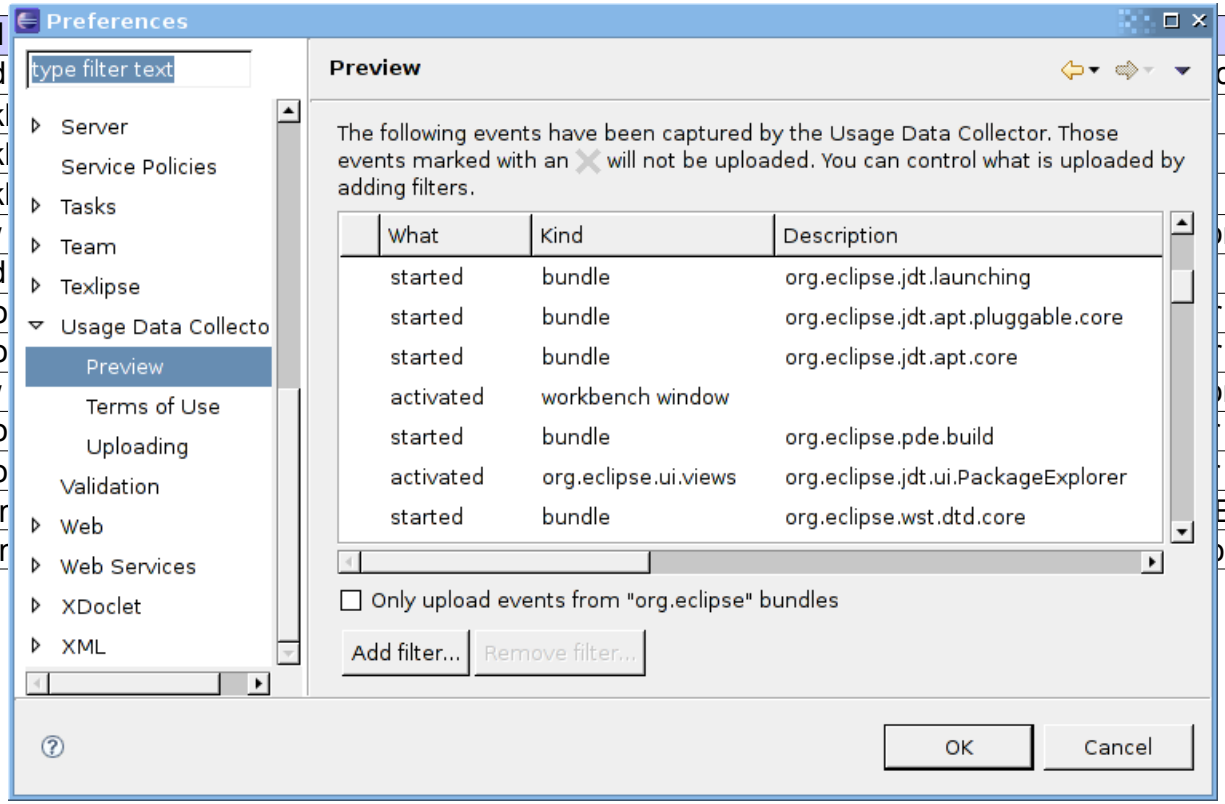
- Identifying users is a no-go, at least in open source.
- For statistical reasons it is important to associate data to a certain user

Solution: Create neutral UUID for user and workspace:

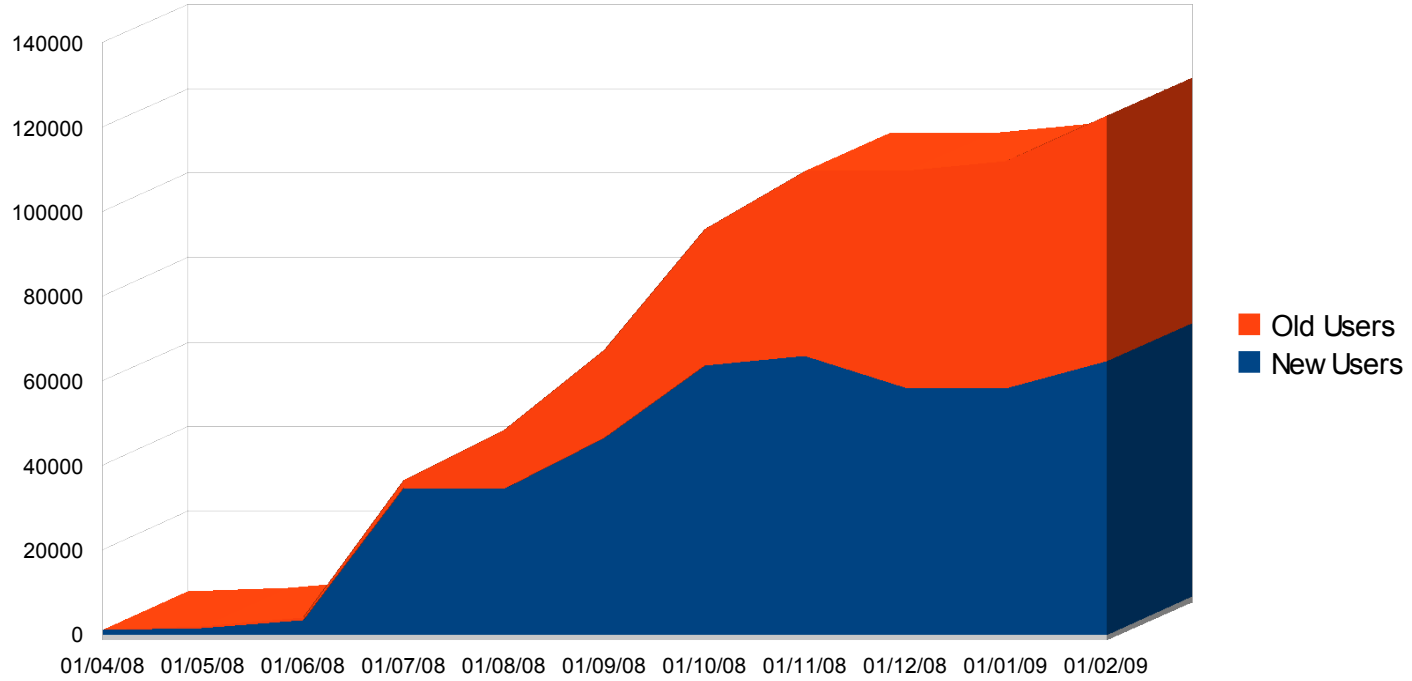
- `$HOME/.org.eclipse.epp.usagedata.recording.userId`
- `WS/.metadata/.plugins/org.eclipse.epp.usagedata.recording/.org.eclipse.epp.usagedata.recording.workspaceId`

RCP UDC Example Data

what	kind		time
started	bund	onne	1237484685840
activated	workl		1237484687277
deactivated	workl		1237484687292
activated	workl		1237484747712
activated	view	rer	1237484751790
started	bund		1237484757338
opened	edito		1237484758274
activated	edito		1237484758535
activated	view	rer	1237484767806
opened	edito		1237484782149
activated	edito		1237484782207
executed	comr	End	1237484792864
executed	comr	rdPr	1237484795809



Feedback results – number of uploads



120.000 distinct users are uploading data every month.

http://www.eclipse.org/org/usagedata/results.php

Analysing the Data

Here is some data from January 2009.

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Feedback results – Commands (Execution)

command	executeCount200901	userCount200901	# per user
org.eclipse.ui.edit.delete	4228796	75815	56
org.eclipse.ui.file.save	3629929	79836	45
org.eclipse.ui.edit.paste	2756112	84245	33
org.eclipse.ui.edit.copy	1938088	77638	25
org.eclipse.debug.ui.commands.StepOver	1316288	17236	76
org.eclipse.ui.edit.text.goto.lineEnd	1217421	47416	26
org.eclipse.ui.edit.undo	1089139	60178	18
org.eclipse.ui.edit.text.contentAssist.proposals	978616	39627	25
org.eclipse.ui.edit.text.goto.lineStart	966017	39241	25
org.eclipse.ui.edit.text.goto.wordNext	886107	16637	53
org.eclipse.ui.edit.text.goto.wordPrevious	715297	16595	43
org.eclipse.ui.edit.text.select.wordPrevious	493556	15786	31
org.eclipse.ui.edit.text.select.wordNext	485328	15669	31

What's the most used command?

Delete???

Feedback results – Commands (Execution by User)

command	executeCount200901	userCount200901	# per user
org.eclipse.ui.edit.text.goto.lineDown	59786	427	140
org.eclipse.ui.edit.text.goto.lineUp	49540	395	125
org.eclipse.ui.edit.text.goto.columnNext	41878	399	105
org.eclipse.ui.edit.text.deletePrevious	5383	63	85
org.eclipse.ui.edit.text.goto.columnPrevious	30553	359	85
org.eclipse.debug.ui.commands.StepOver	1316288	17236	76
org.eclipse.ui.edit.delete	4228796	75815	56
org.eclipse.ui.edit.text.goto.wordNext	886107	16637	53
org.eclipse.ui.edit.text.deleteNext	22237	438	51
org.eclipse.ui.file.save	3629929	79836	45
org.eclipse.ui.edit.text.goto.wordPrevious	715297	16595	43
org.eclipse.ui.edit.text.cut.line.to.end	22134	580	38
org.eclipse.ui.edit.findNext	135955	4063	33
org.eclipse.ui.edit.paste	2756112	84245	33

If someone knows *this* it is used very often.

Users of the Ganymede Release...

- How many different Views are being used?
  - ~ 120
- How many different Editors are being used?
  - ~ 80
- How many Perspectives are being used?
  - ~ 30

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Perspective – Top 5

perspective	executeCount٢٠٠٩٠١	userCount200901
org.eclipse.jdt.ui.JavaPerspective	307220	69176
org.eclipse.jst.j2ee.J2EEPerspective	120420	38447
org.eclipse.debug.ui.DebugPerspective	90679	23079
org.eclipse.team.ui.TeamSynchronizingPerspective	57534	12093
org.eclipse.cdt.ui.CPerspective	39212	9960

- Most people do Java programming
  - Followed by J2EE and C/C++
- Is creating another Perspective a good idea?

Views – Top 10

view	executeCount200901	userCount200901
org.eclipse.jdt.ui.PackageExplorer	1546984	67514
org.eclipse.ui.console.ConsoleView	1084367	72544
org.eclipse.ui.navigator.ProjectExplorer	757932	41273
org.eclipse.wst.server.ui.ServersView	262302	19159
org.eclipse.ui.views.ResourceNavigator	239341	13033
org.eclipse.debug.ui.DebugView	229363	22349
org.eclipse.search.ui.views.SearchView	216037	21674
org.eclipse.ui.views.ContentOutline	209932	36984
org.eclipse.ui.views.ProblemView	173191	40000
org.eclipse.team.sync.views.SynchronizeView	137594	13251

Package Explorer and the Console View...

Who thought this?

Editors – Top 10

editor	executeCount2009	userCount20090
org.eclipse.jdt.ui.CompilationUnitEditor	4878831	78668
org.eclipse.cdt.ui.editor.CEditor	559440	8932
org.eclipse.jst.jsp.core.jspsource.source	438950	16762
org.eclipse.wst.xml.ui.internal.tabletree.XMLMultiPageEditorPart	393683	28678
org.eclipse.ui.DefaultTextEditor	231430	25574
org.eclipse.jdt.ui.ClassFileEditor	120639	20771
org.eclipse.ui.browser.editor	118697	9564
org.eclipse.compare.CompareEditor	115190	12226
org.eclipse.wst.html.core.htmlsource.source	96529	8103
org.eclipse.jdt.ui.PropertiesFileEditor	83958	12187

Very popular: Java, C/C++, XML, ...

EPP Usage Data Collector

UDC available for RCP applications, but...

- NEW: Extension for RAP-based environments

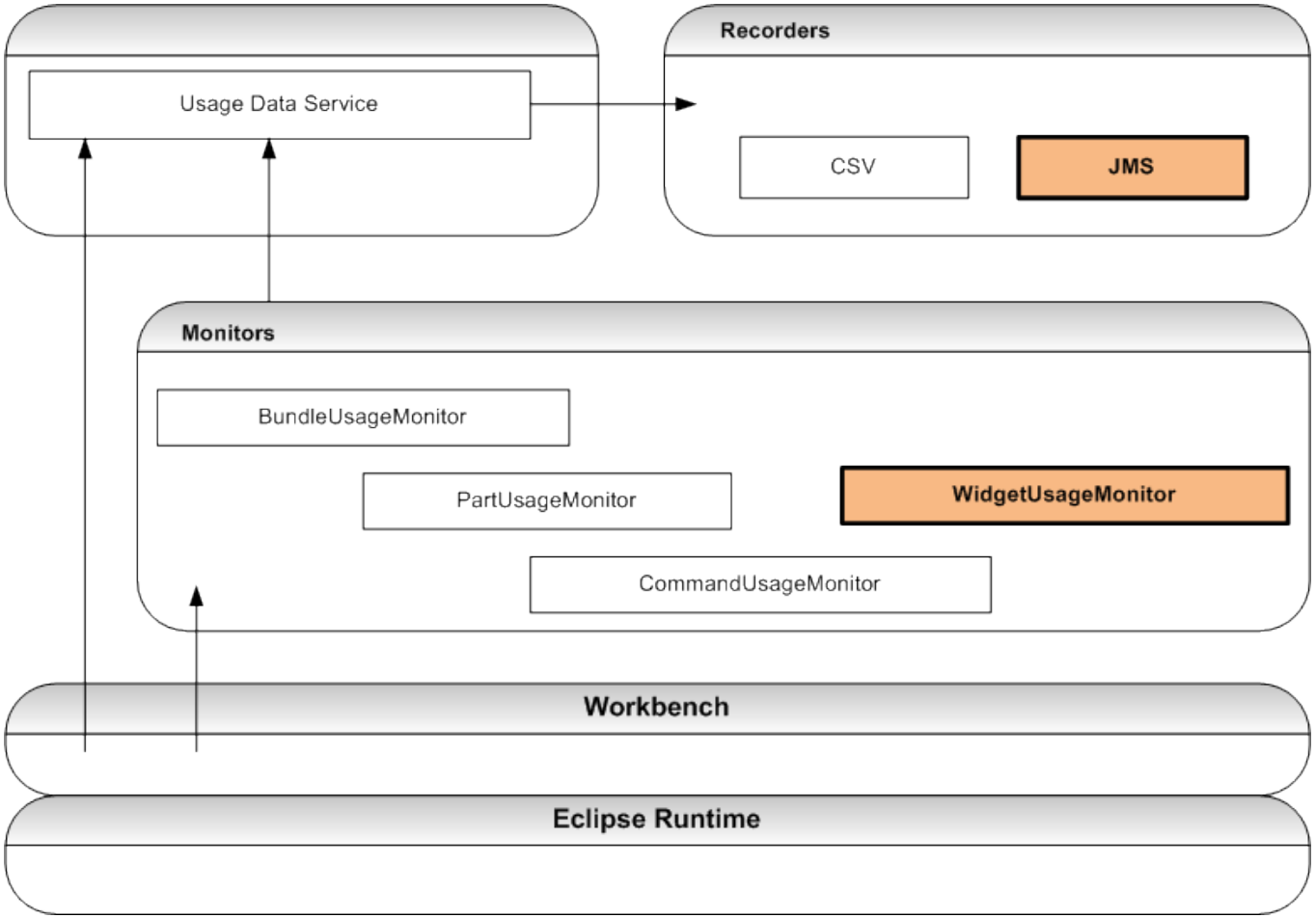
but this is only half of the story...

- NEW: Widget based monitor

...and how do we analyse the data?

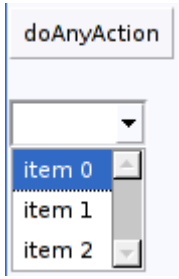
- NEW: VUA – Visual Usage Analytics

Inside the EPP Usage Data Collector



Additional Monitor: Widget based monitor

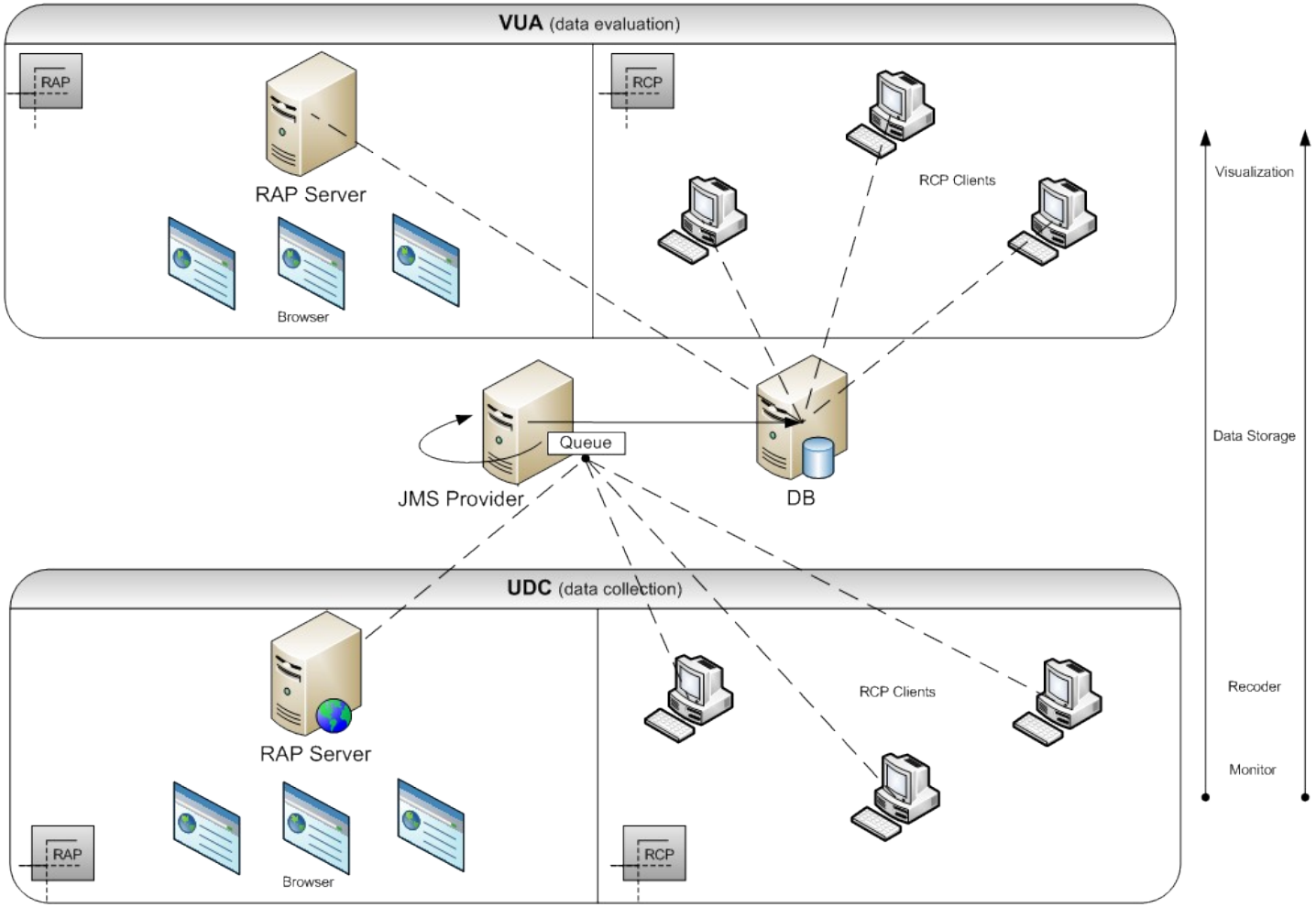
Problem: In order to visualize user interactions, one needs to track the widget (button, etc.) that was responsible for the event.



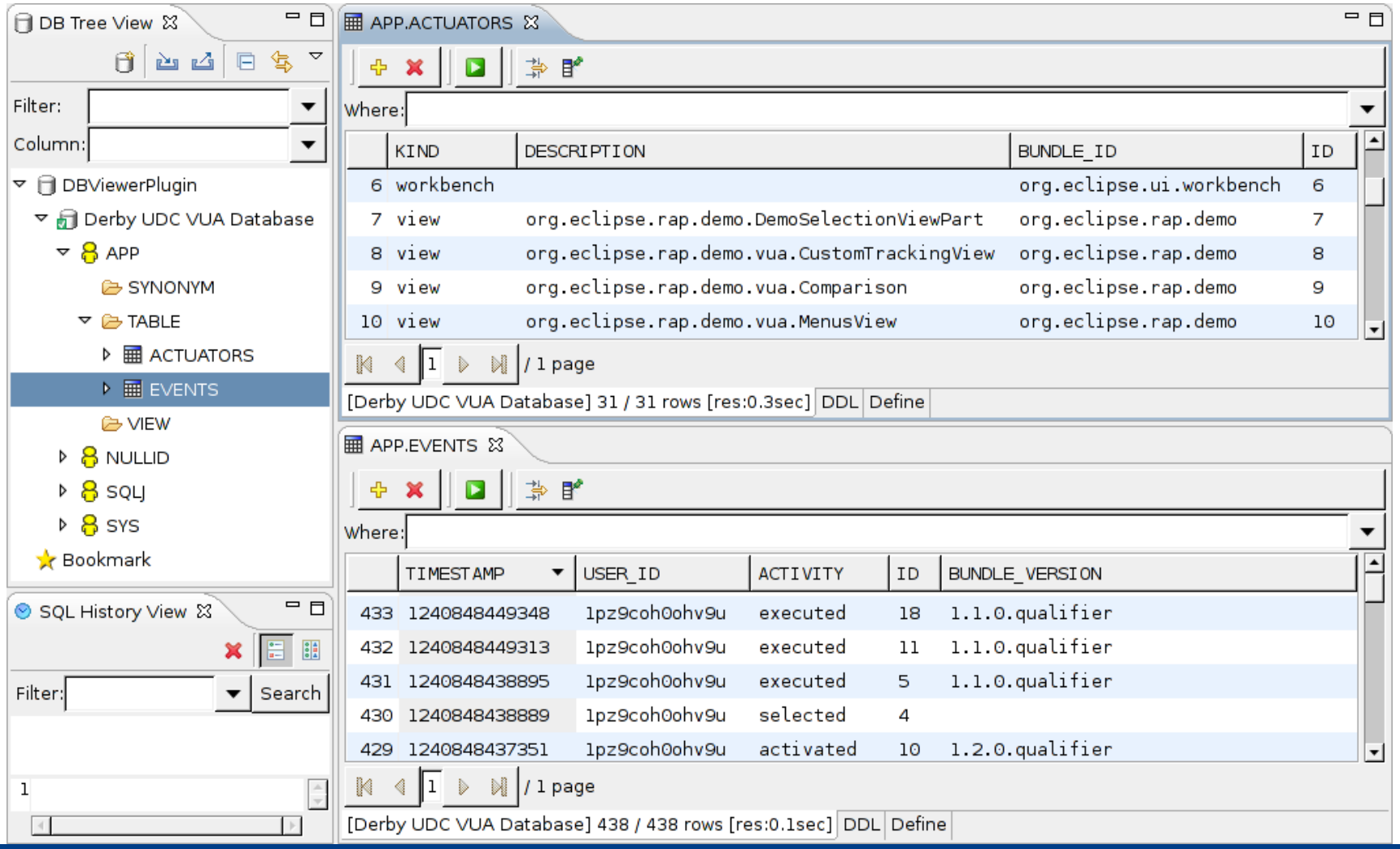
Solution: Widgets that need tracking must be marked manually with a distinct identifier!

```
widgetXY.setData( "org.eclipse.epp.udc",
                  "yourInternalIdentifier" );
```

UDC and VUA Interaction – Reference Architecture



The Database



The Setup for the Demonstration

[1] Derby as database system

```
export DERBY_HOME=...
./bin/startNetworkServer -h 127.0.0.1
```

[2] Apache ActiveMQ as queuing service

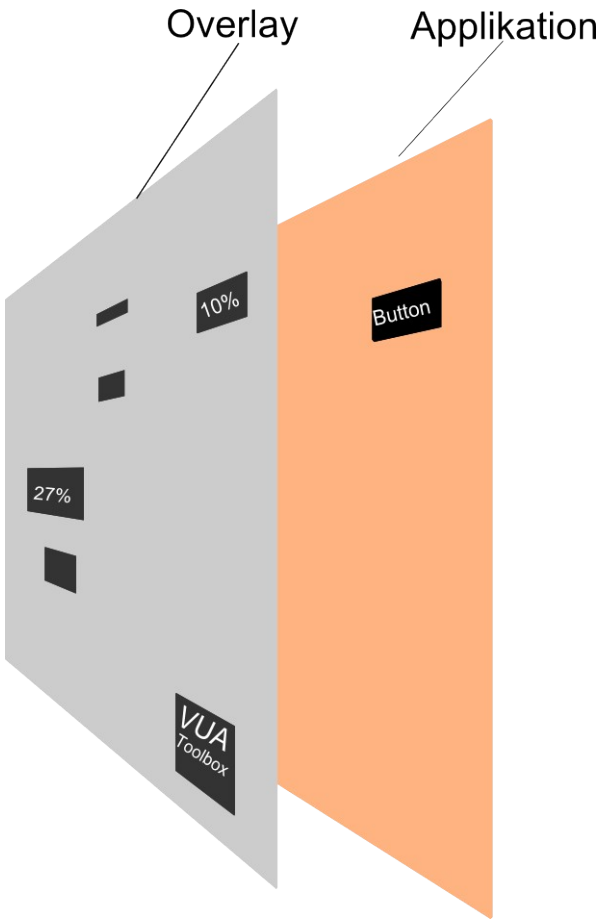
```
./activemq
http://0.0.0.0:8161/admin/queues.jsp
```

[3] MQC (Message Queue Client) – reads the queue and writes to the database

```
java -jar mqc.jar
```

EPP Visual Usage Data Analytics (VUA)

- The VUA allows the interactive analysis of the usage data
- No code changes
- It only needs a connection to the DBMS
- It can be used in both, RCP and RAP environments
- See DEMO



VUA – A custom widget

Button Example:

```
Button btn = new Button(showcase1, SWT.None);
btn.setData( "org.eclipse.epp.udc",
             "btn1ShowCaseCustomTracking" );
```

Combo Box Example:

```
Combo comboDropDown
  = new Combo(showcase1, SWT.DROP_DOWN | SWT.BORDER);
comboDropDown.setData( "org.eclipse.epp.udc",
                       "combo1ShowCaseCustomTracking" );
```

VUA – Compare User Interactions (Example)

Command is available

- by pressing a button

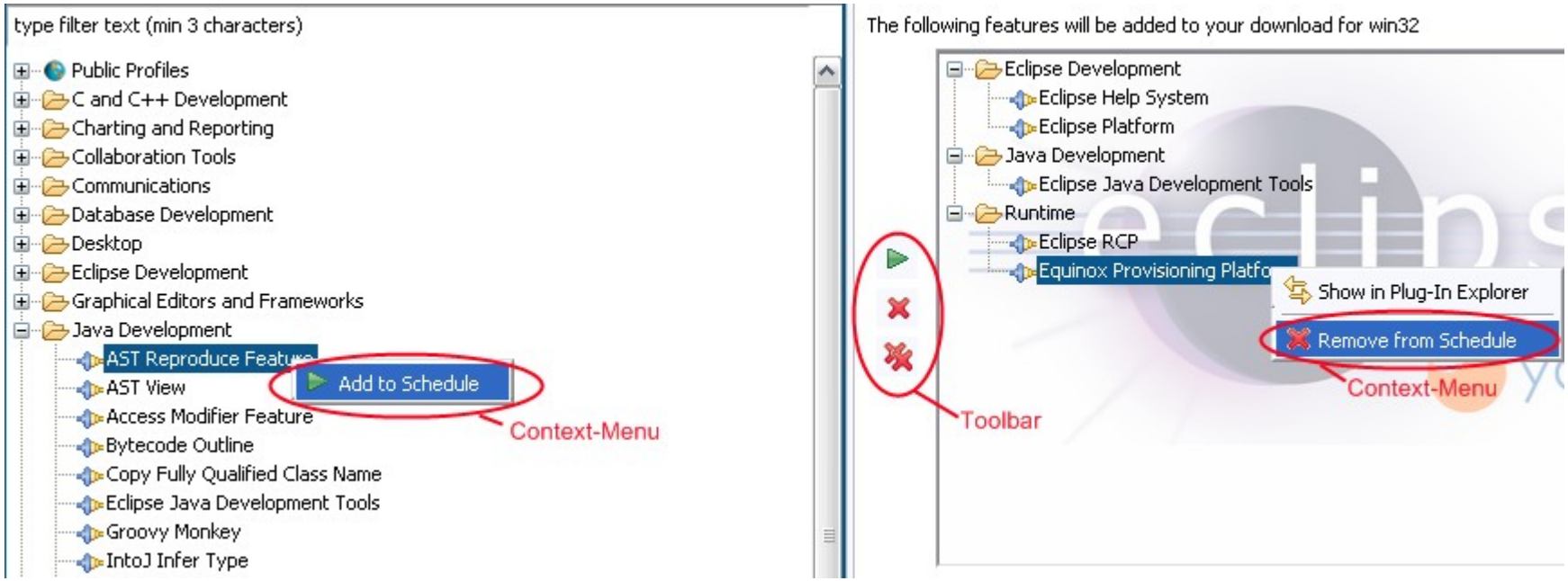
```
Button btn = new Button(parent, SWT.None);
btn.setText( "send Message" );
btn.setData( "org.eclipse.epp.udc", "btnSendMessage" );
btn.addSelectionListener( new SelectionAdapter() { ...
```

- from the toolbar

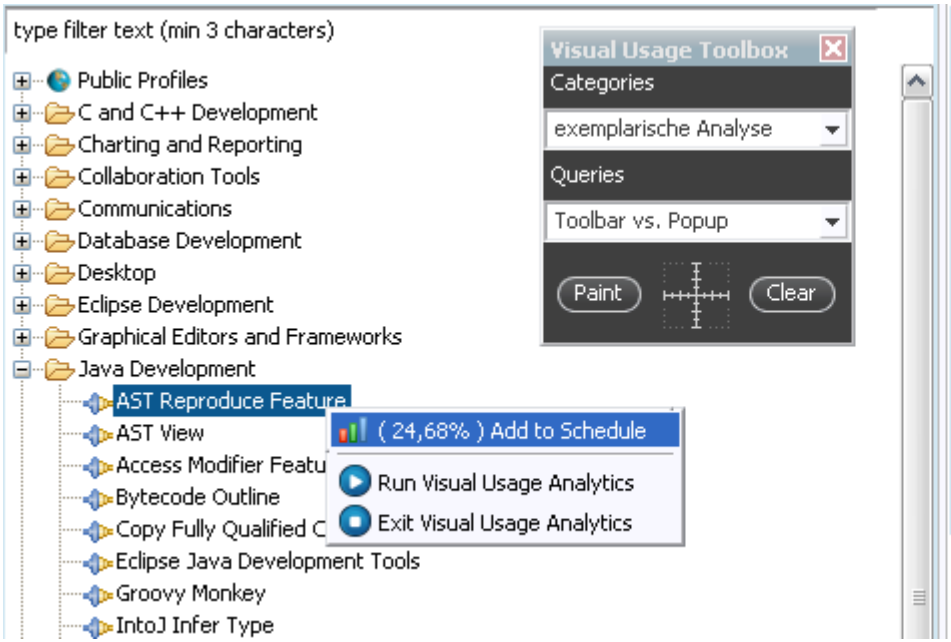
Comparison by database query defined in plugin.xml:

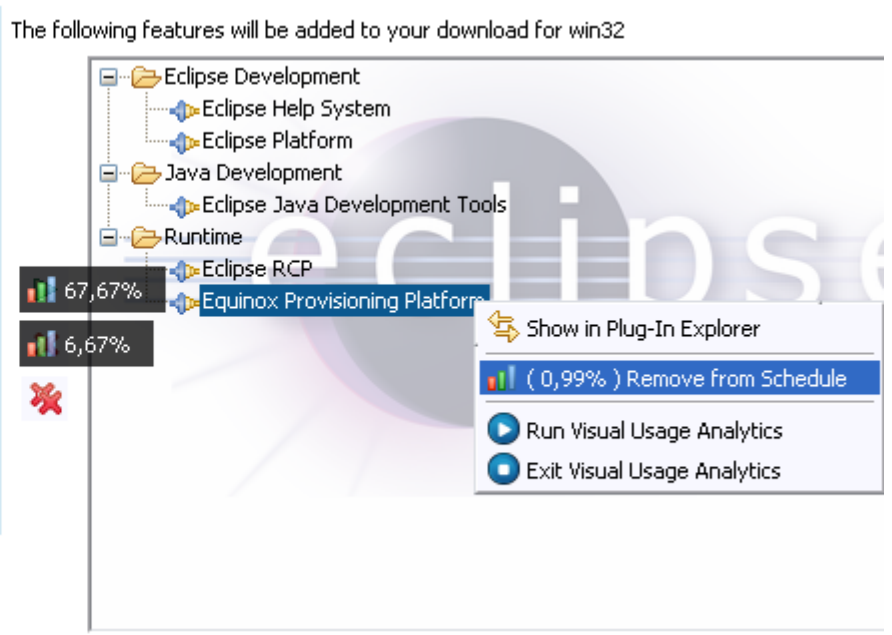
```
<extension point="com.innoopract.vua.visualization.queries">
  <queries id="Comparison"
      query_string="select a.ID, a.KIND, a.DESCRIPTION, ...">
    <output format="0.00%" quotient="true" />
  ...
```

EPP UDC VUA Screenshot – The Application



EPP UDC VUA Screenshot – The UDC Results





Non-code Aspects: Privacy and User Data

manager-magazin.de

URL: http://www.manager-magazin.de/it/artikel/0,2828,583203,00.html

09. Oktober 2008, 16:23 Uhr

Telekom

Datenklau wohl kein Einzelfall

Tröpfchenweise kommen die Datenpannen bei der Deutschen Telekom ans Licht - so wie auch nun wieder: Offenbar gibt es drei neue Fälle von Datendiebstahl bei dem Konzern. Wieder sollen Tausende Telekom-Kunden betroffen sein. Und wieder gelobt Vorstandschef René Obermann Besserung.

Bonn - Der am Wochenend
der Deutschen Telekom ist
In diesem Jahr habe die Tel
in Bremerhaven seien die S
In München sei ein Datentr

FOCUS ONLINE

Url: http://www.focus.de/finanzen/news/bahn-bespitzelung-skanda dimension_aid_365798.html

28.01.09, 16:43

Bahn-Bespitzelung

„Skandal völlig neuer Dimension"

Rund 173 000 Mitarbeiter der Deutschen Bahn sind ohne ihr Wissen ausgespäht worden. Politiker laufen Sturm. Sie sehen „schutzwürdige Interessen" verletzt und beklagen „Missbrauch". Der Konzern muss mit einer hohen Geldbuße rechnen.

Der Antikorruptionsbeauftragte des Konzerns, Wolfgang Schaupensteiner, sprach am Mittwoch im Verkehrsausschuss des Bundestags von 173 000 Beschäftigten, wie Teilnehmer der nicht öffentlichen Sitzung sagten. Die Mitarbeiterdaten wurden demnach von einer Detektei mit denjenigen von rund 80 000 Lieferanten des Konzerns abgeglichen, um mögliche Verbindungen aufzudecken. Bislang war lediglich die Überprüfung von rund 1000 leitenden Mitarbeitern in den Jahren 2002 und 2003 bekannt gewesen.

Die Bahn bespitzelte ihre Mitarbeiter dpa

FOCUS ONLINE

Url: http://www.focus.de/wissen/diverses/datenschutz-bild-cds-mit-persoenlichen-daten-von-17-000-buergern-verkauft_aid_324157.html

12.08.08, 06:57 Drucken

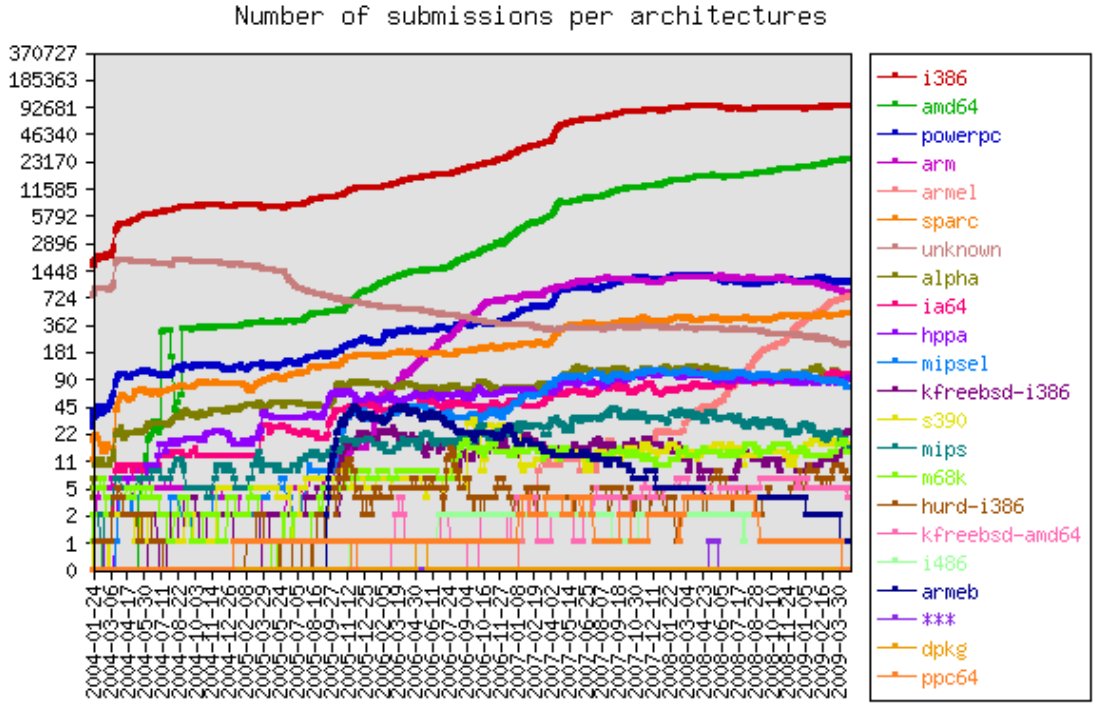
Datenschutz

„Bild": CDs mit persönlichen Daten von 17.000 Bürgern verkauft

Laut „Bild" hat eine Firma in Nordrhein-Westfalen Daten-CDs mit Namen, Geburtstagen, Adressen, Telefonnummern und Kontonummern von 17.000 Bundesbürgern an andere Unternehmen verkauft. Die Verbraucherzentrale Schleswig-Holstein vermute weiter einen Zusammenhang mit einer Reihe von Konto-Betrugsfällen in den vergangenen Tagen.

Other Examples: Debian Popularity Contest

You can help out the Debian Project by sending your popularity-contest results to us anonymously. With information from enough people, we can determine which packages are most often used, which are often installed but not used, and which are nearly never used. (...)



http://popcon.debian.org/

Non-code aspects of the Usage Data Collector

- Make it as transparent as possible!
- Tell your users what you are going to do!
- Let the user decide! - Opt-In
- Check for possible legal issues!
- Let the users see the results!
- Make the source code available!

Keep in mind that usage data is sensitive data!

Further Information

EPP Project Webpage

- http://www.eclipse.org/epp

EPP Usage Data Collector and VUA

- http://www.eclipse.org/epp/usagedata/index.php
- http://www.eclipse.org/org/usagedata/
- http://wiki.eclipse.org/EPP/Framework_for_Visual_Analytics_of_user_tracking_information

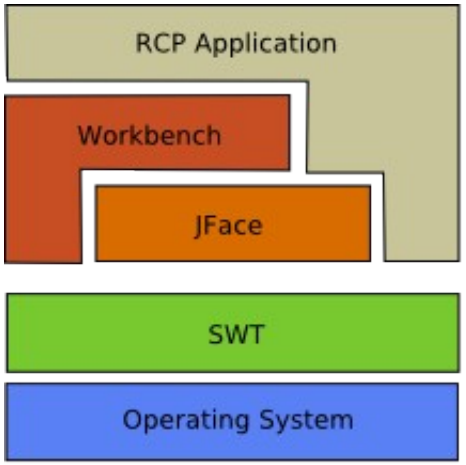
Mailing List

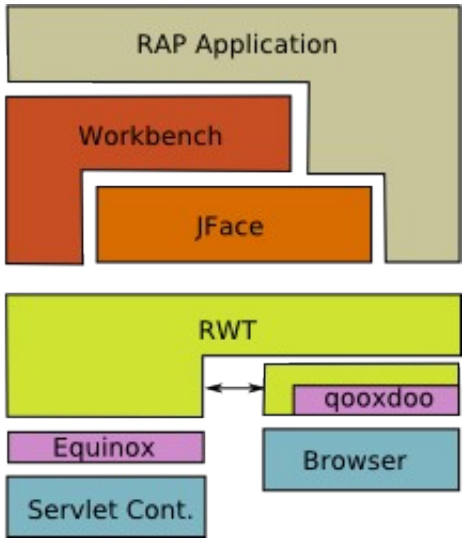
- https://dev.eclipse.org/mailman/listinfo/epp-dev

EclipseSource

Backup

RCP vs. RAP – Architecture





http://www.eclipse.org/rap/