eclipseCON™ 2007

Development with the Embedded Rich Client Platform (eRCP)

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Tuesday, October 13, 2009

Agenda

- Exercise Tracker Exercise ☺
- Overview
- eSWT
  - Introduction
  - Mobile Extensions
  - Developing Mobile applications
- Working with Devices
- Troubleshooting and Debugging
- Conclusion
- Q&A

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- **Exercise Tracker Exercise** ☺
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Exercise Tracker

- **Requirements**
  - Eclipse 3.2.2
    - www.eclipse.org/downloads
  - eRCP
    - www.eclipse.org/ercp
  - Sample Plug-ins
    - http://eclipsezilla.eclipsecon.org/attachment.cgi?id=428

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Exercise Tracker

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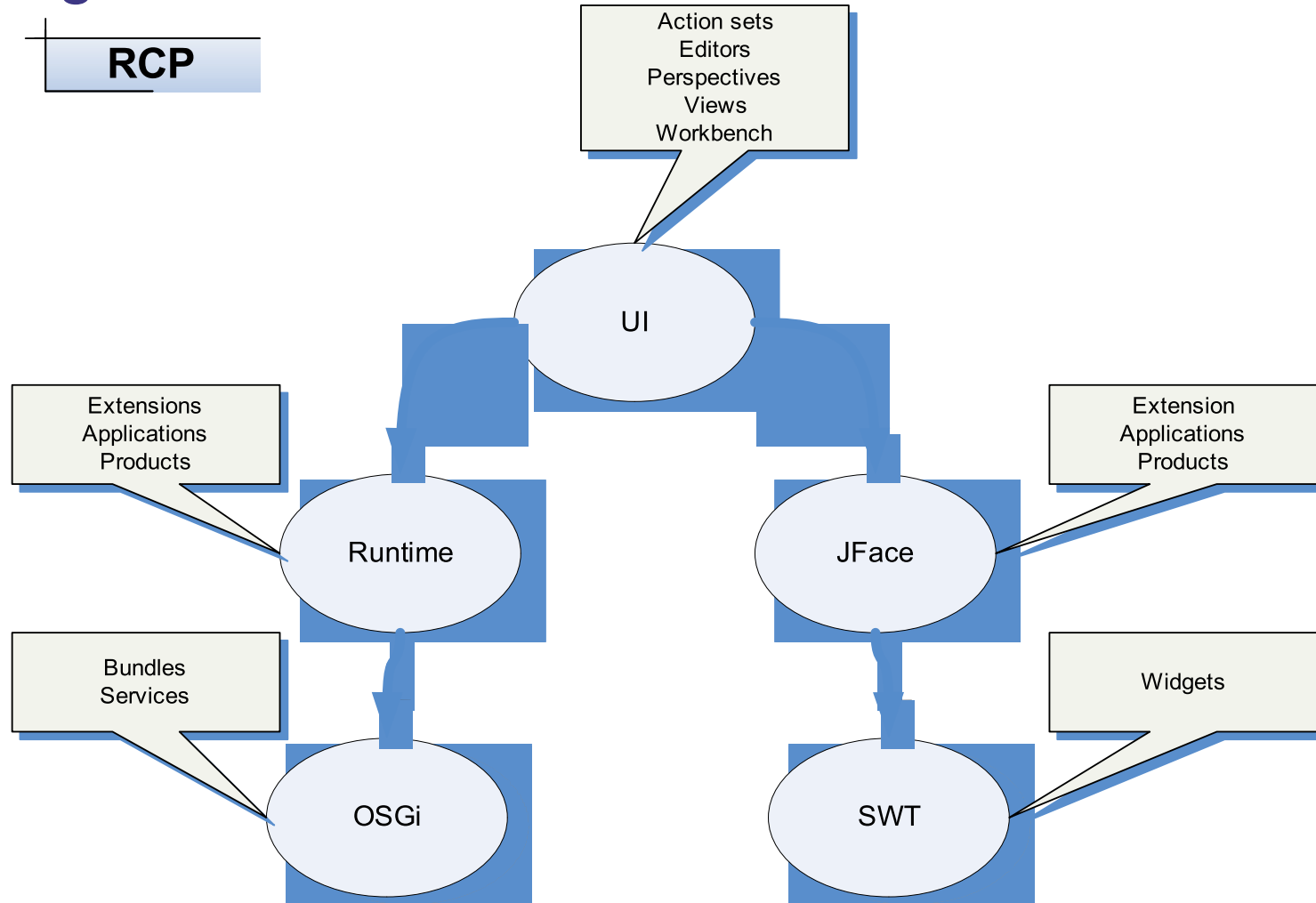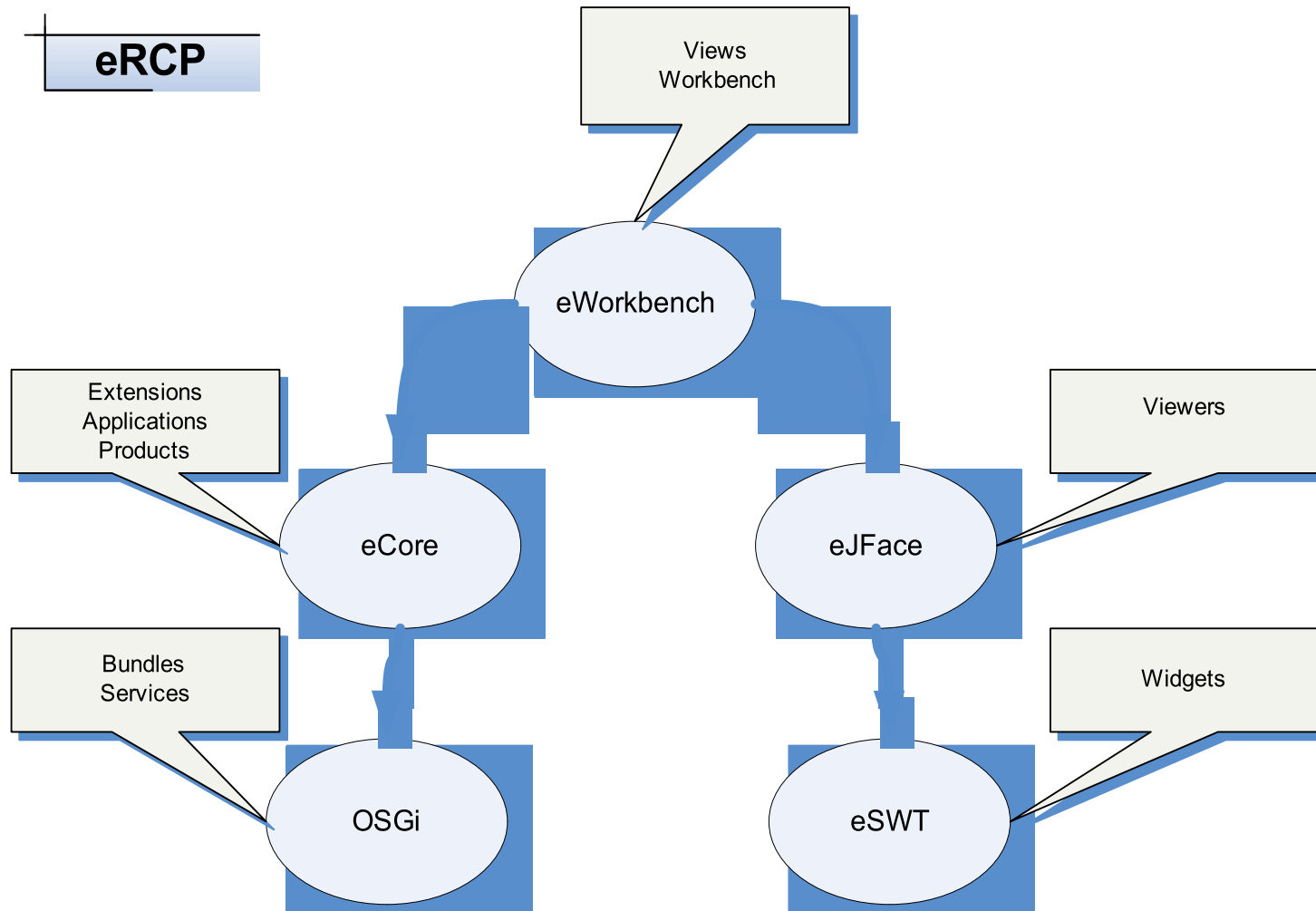
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Relating eRCP to RCP

RCP

Action sets
Editors
Perspectives
Views
Workbench

UI

Extensions
Applications
Products

Extension
Applications
Products

Runtime

JFace

Bundles
Services

Widgets

OSGi

SWT

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Relating eRCP to RCP

eRCP

Views
Workbench

eWorkbench

Extensions
Applications
Products

eCore

Viewers

eJFace

Bundles
Services

OSGi

Widgets

eSWT

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Architecture

- OSGi underpinnings
- eRCP applications run in a workbench similar to Eclipse IDE plugins
- Also supports stand-alone eSWT applications
- Applications provide a View *extension* which the eWorkbench instantiates on demand
- Applications and services run in the same JVM
  - Consumes fewer resources than separate JVMs
  - Allows sharing of services
  - Enables variety of life cycle choices

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Application Model

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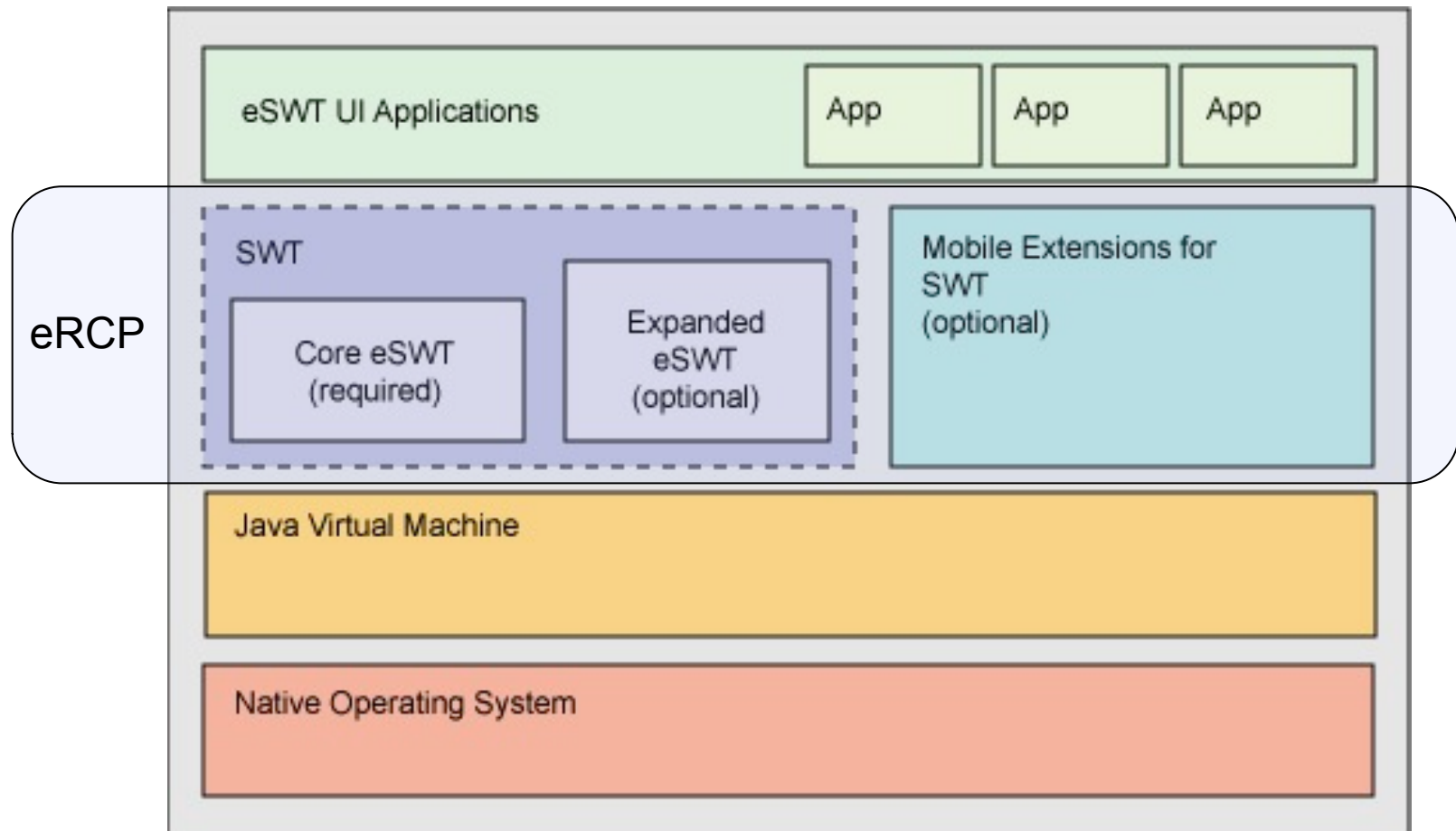
eWorkbench

- Applications provide a View extension which the eWorkbench instantiates on demand
- Applications and services run in the same JVM
    - Consumes fewer resources than separate JVMs
    - Allows sharing of services
    - Enables variety of life cycle
- Owns eSWT UI thread
- Applications are registered using *org.eclipse.ercp.eworkbench.applications* extension point

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Introduction to eSWT

- Subset of SWT and additional mobile specific widgets
- Provides efficient, portable access to the user interface facilities of the operating system
- Consists of 3 packages
    - SWT subset divided into two
        - *core* package
        - *expanded* package
    - *mobile* package - new eSWT components defined for mobile world

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# Class Diagram

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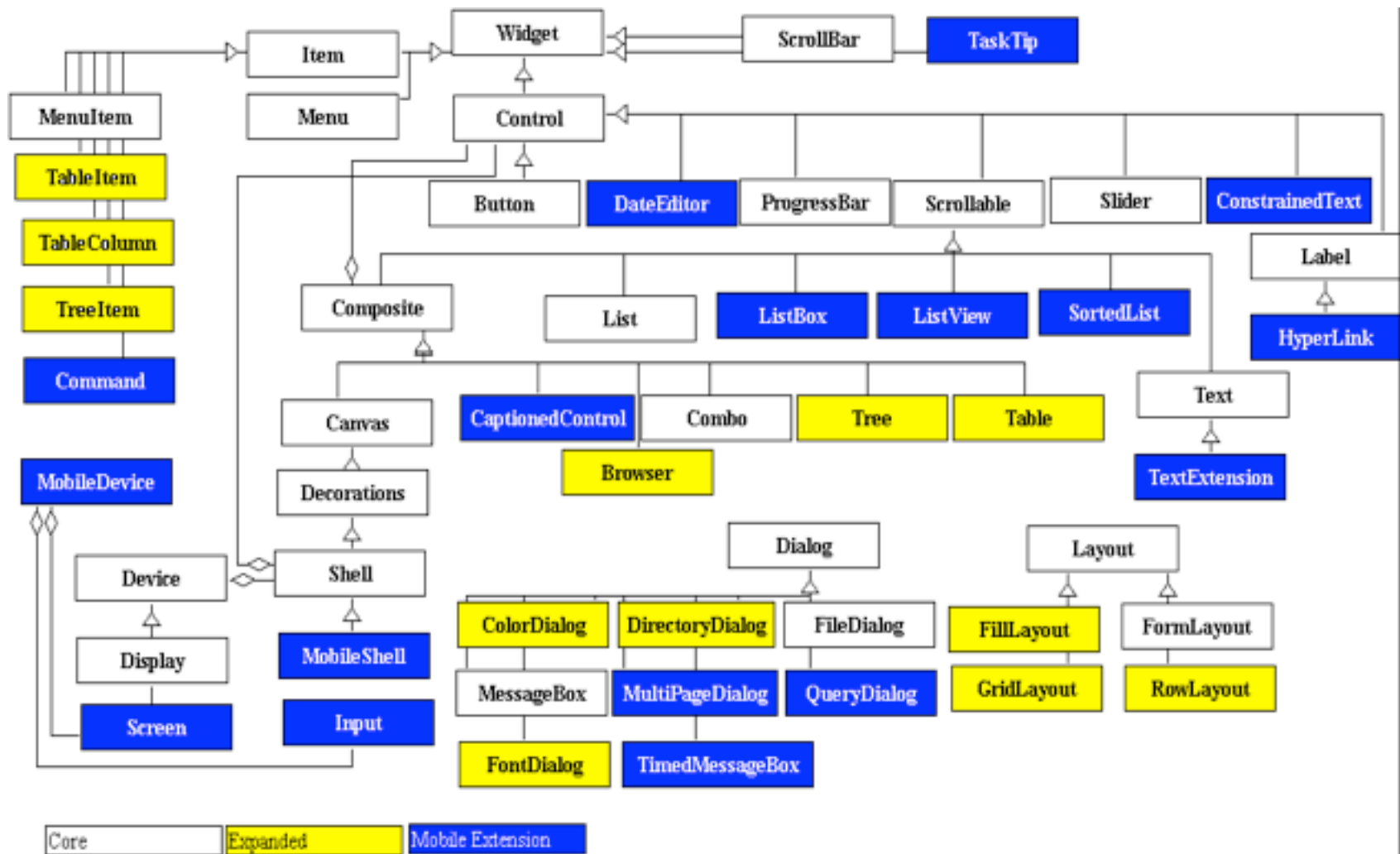
Mobile package - MobileShell
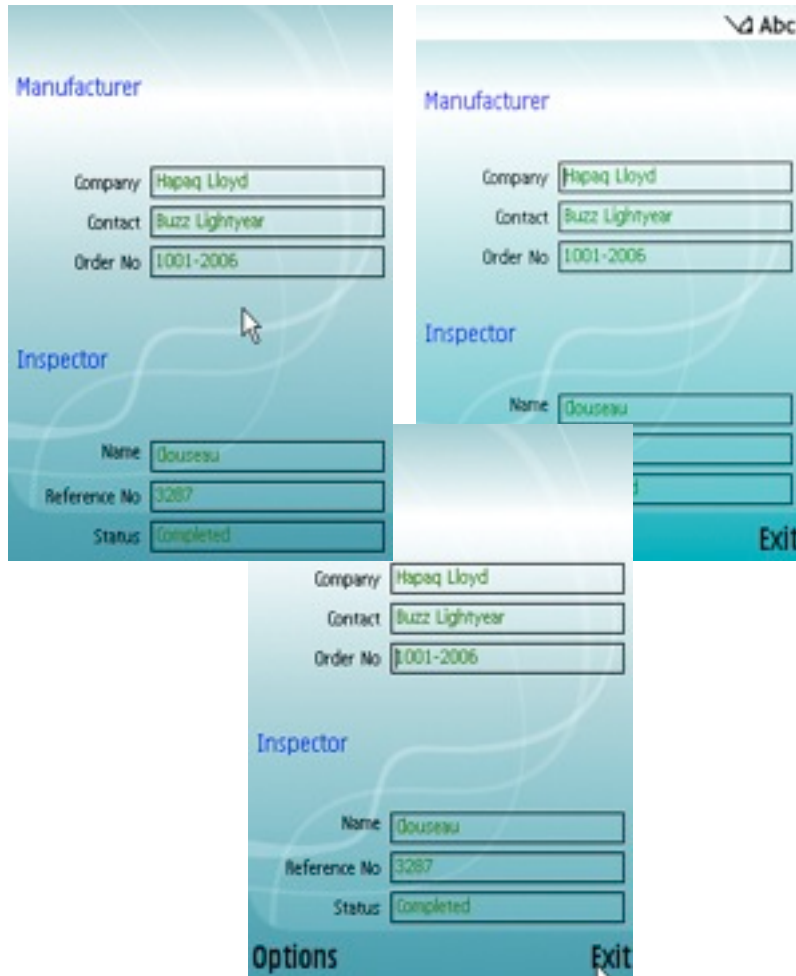
- A device tailored Shell that can change the trimmings dynamically
  - Top-level shell
  - Full screen mode
  - Allows key press polling
- Introduces status pane styles
  - NO_STATUS_PANE
  - SMALL_STATUS_PANE
  - LARGE_STATUS_PANE
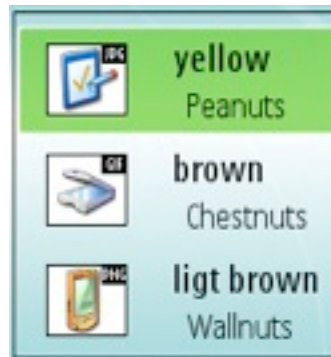
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Mobile package -Basic controls

- ConstrainedText
- DateEditor
- HyperLink
- TextExtension
- CaptionedControl
- SortedList
- TaskTip
  - Suitable for providing info on long running tasks
  - Text and optional ProgressBar

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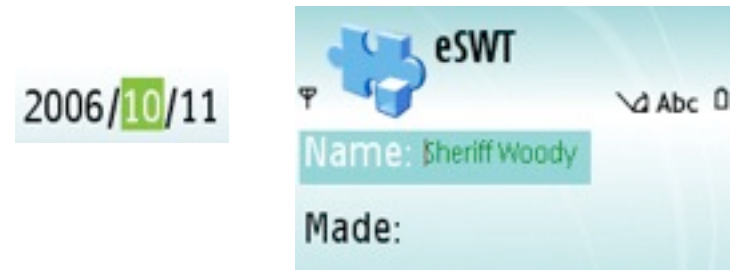
Mobile package - Advanced Controls

- ListBox : A list control with enhanced capabilities to display icons
- ListView : Selectable control that can display items in a multi-column way
- MultipageDialog : A tabbed dialog

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Mobile package – Dialogs

- QueryDialog: Several query types
    - STANDARD: alphanumeric input
    - NUMERIC
    - TIME
    - DATE
    - PASSWORD
- TimedMessageBox:
    - 4 Different system Icons (working, information, warning, error)
    - Icons can be replaced

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Mobile package – Commands

- Maps to a specific mechanism depending upon device capabilities
- Has logical types that are typically mapped to Soft keys (GENERAL, SELECT, OK, CANCEL, DELETE, BACK, EXIT, STOP, HELP)
    - COMMANDGROUP can contain other sub-commands
    - S60 implementation maps DELETE commands to 'C' clear key.
- Bound to focus context

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Mobile package – MobileDevice, Screen & Input

- MobileDevice
    - Discover device capabilities and characteristics
    - Register listeners for changes in input, screen capabilities
- Screen
    - Query the capabilities of the screen(s)
- Input
    - Determine input device capabilities

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Tips: Building mobile applications using eSWT

- Do not rely on Shell trimmings some platforms do not support trimmings like SWT.CLOSE
- Do not use too deep menu hierarchies.
- Use Commands in relation with the focus context to avoid the soft keys getting crowded
- Use MobileDevice, Screen, and Input to adjust the behavior at runtime
  - Active screens, active input methods may change
- Always use layout managers
- Check the computed layout size and add use scrollbars if greater than screen size
- Tailor your application according to aspect ratios

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Tips: Choosing the right input widget

	Multiple Lines	Numeric	Decimal	Phone Number	Date/Time	Duration/Offset	E-Mail	URL	Initial Case	Initial Input Mode	Turn off Prediction	Latin Input Only	Password
Text	✓	✓	✓	✓	✓	✓	✓	✓	🚫	🚫	🚫	🚫	✓
TextExtension	✓	✓	✓	✓	✓	✓	◉	◉	◉	◉	◉	◉	✓
ConstrainedText	🚫	◉	◉	◉	🚫	🚫	🚫	🚫	🚫	🚫	🚫	🚫	🚫
DateEditor	🚫	🚫	🚫	🚫	◉	◉	🚫	🚫	🚫	🚫	🚫	🚫	🚫
QueryDialog	🚫	◉	✓	✓	◉	✓	✓	✓	🚫	🚫	🚫	🚫	◉

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Installing eRCP on a Device (1/3)

embedded Rich Client Platform (eRCP)

The intent of this project is to extend the Eclipse Rich Client Platform (RCP) to embedded devices. eRCP is largely a set of components which are subsets of RCP components. It basically enables the same application model used on desktop machines to be used on devices.

Downloads	Community
→ eRCP 1.0.1 Now Available!	→ Documents
→ eSWT bundles for WSDD (from M7)	→ eRCP newsgroup (Password Required) - Web Interface
→ eSWT 1.0 Spec - updated Aug/03/06 (zip)	→ dsdp-ercp-dev mail list (archive)
→ eJFace JavaDoc - updated Dec/07/05 (zip)	→ Bugzilla
	→ CVS

- Download the latest eRCP runtime for your device from http://www.eclipse.org/ercp
- Unzip the run-time and copy it over to the root directory of the device
  - Make sure you device has a JRE installed!

Installing eRCP on a Device (2/3)
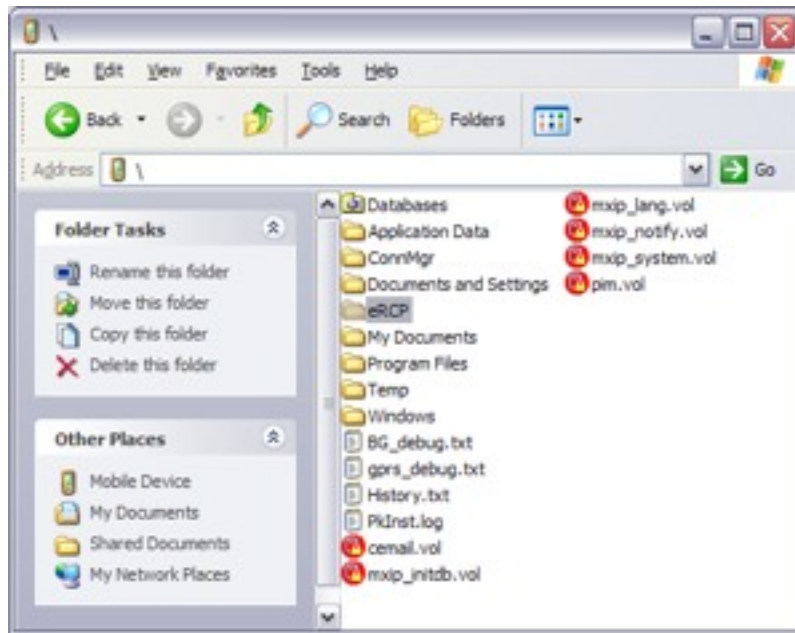
- The eRCP directory should be copied to the root of the device
- Browse to the eRCP directory on the actual device
  - Notice the familiar eclipse directory structure

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Installing eRCP on a Device (3/3)

- Run the j9foun-hello shortcut

- You should see something similar to what's picture on the left

- You have successfully installed eRCP on your device!

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Running Applications

- All eRCP applications are Eclipse-based applications
  - `org.eclipse.core.runtime.applications`
  - `IPlatformRunnable`'s
- If you look at one of the sample shortcuts included, they simply launch Eclipse
  - i.e., `<jvm> -cp <startup.jar> -application <app>`

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Troubleshooting

- Make sure the target platform is set to the eRCP target platform
- The application ID extension point isn't unique, check the ID in the *org.eclipse.ercp.eworkbench.application* extension point

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Debugging

- **Tips**
  - Develop as much as possible on the device runtime
  - Take advantage of a resizable workbench window to test different screen sizes and proportions
  - Copying plug-ins directly to the device will work if you have the osgi.checkConfiguration property set to "true"

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Conclusion

- eRCP brings the RCP paradigm to mobile devices
- Website
  - http://www.eclipse.org/ercp
- Newsgroups
  - news://news.eclipse.org/eclipse.dsdp.ercp
- Always looking for contributors!

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Questions & Answers

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