

# Developing sidebar applications for Notes 8... while staying sane!

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# Disclaimer

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# Who am I?

- 31 years old, too soon to be 32
- Blog: [lekkimworld.com](http://lekkimworld.com) / Twitter: lekkim
- Live in wonderful, wonderful Copenhagen (DK)
- Been working with Notes/Domino since version 3.x
- Strong proponent of Java and OOP
- Domino NEXT design partner /  
Writer for THE VIEW
- IntraVision (IBM business partner out of Denmark),  
we're in the showcase
  - OnTime Group Calendar and Meeting  
Manager ([ontimesuite.com](http://ontimesuite.com))



Intra>ision  
Insight Business



# Who are you?

- How many with Java experience?
- How many have developed in Eclipse?
- How many have developed *for* Eclipse?
- How many know what a plug-in/feature is?
- How many have written and deployed a plug-in?
- How many would like to do a plug-in?
- Who is here to sleep/relax/tweet/blog?
  - I usually hate those! 😊



# Agenda

- There's a lot to cover
- I'm just going start and see how far I get
- If I don't make it hopefully I'll get to finish the presentation at Lotusphere :-)
- I have prioritized the items from most important to hardest



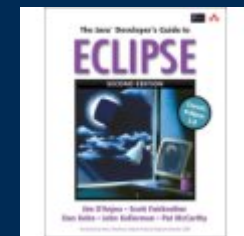
## Real disclaimer

- Sidebar app. dev. != Notes development
- Plug-in development is Java development and should be approached as such
- Interaction with Notes data is troublesome due to threading issues
- Java and Eclipse skills are needed (some XML as well)
- Not for the faint of heart
- Don't rely on Notes 8.5 public beta for sidebar application development as it can/will break stuff

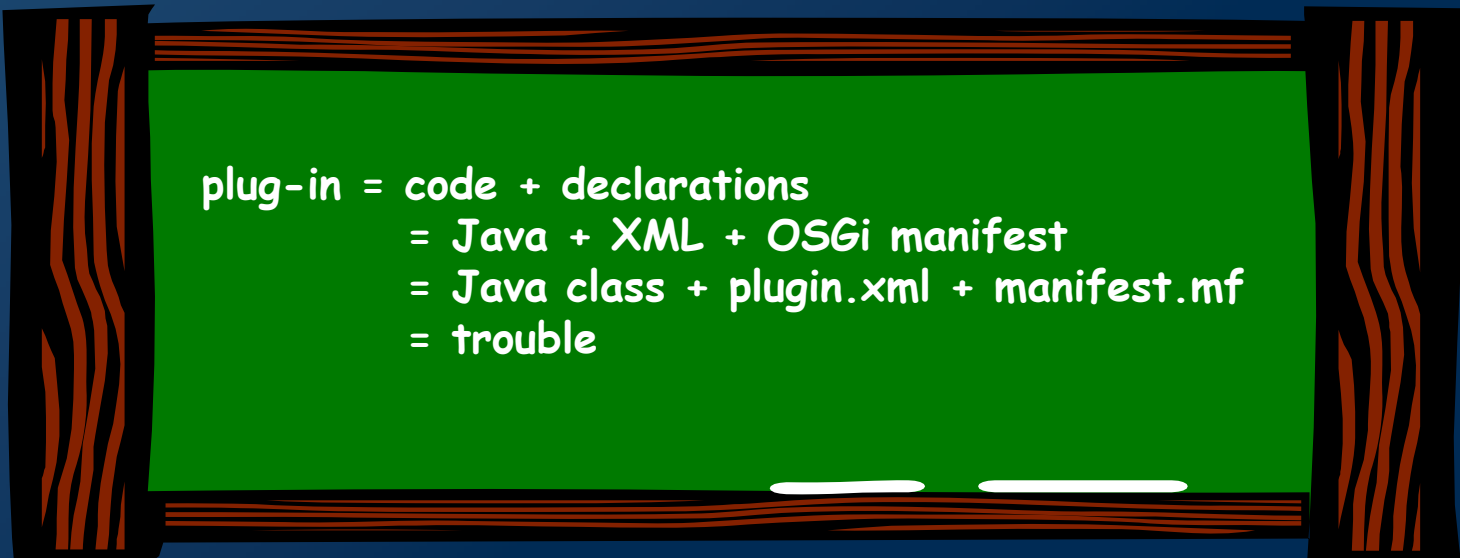


# Resources

- My blog ([lekkimworld.com](http://lekkimworld.com))
- IBM Lotus Composite Application wiki ([www.ibm.com/developerworks/wikis/display/appdev](http://www.ibm.com/developerworks/wikis/display/appdev))
- Composite application blog ([www.ibm.com/developerworks/blogs/page/CompApps](http://www.ibm.com/developerworks/blogs/page/CompApps))
- Eclipse.org articles ([www.eclipse.org/articles](http://www.eclipse.org/articles))
- Book: The Java Developer's Guide to Eclipse (2nd Edition)



# Plug-ins 101 - what's a plug-in?



```
plug-in = code + declarations
         = Java + XML + OSGi manifest
         = Java class + plugin.xml + manifest.mf
         = trouble
```

A plug-in is a

- piece of managed code that can plug into stuff
- piece of managed code that may have other plug-ins plug into it

Think of an electric socket and plugs.



# Eclipse math\*

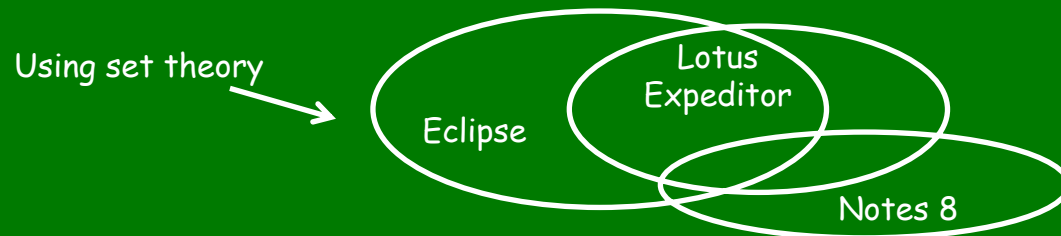
Eclipse = a generic workbench + IDE plug-ins

Lotus Expeditor = Eclipse 3.2

- the IDE specific plug-ins
- + a bunch of IBM Lotus plug-ins

Notes 8 = Lotus Expeditor + even more plug-ins

- some other plug-ins
- + plug-ins with native code bindings = trouble



\* What IBM hoped you knew by now... ☺



# Even more Eclipse math\* (cont.)

Eclipse = a generic workbench + IDE plug-ins

Eclipse = Java + UI layer

UI layer = SWT + JFace

SWT = Java UI layer with native bindings (reuse of native widgets)

JFace = coarse grained components built on SWT (e.g. Viewers)

\* What IBM hoped you knew by now... ☺



# Anatomy of a plug-in

- From Eclipse v. 3.1 OSGi became a part of Eclipse
- Bundles are to OSGi what plug-ins are to Eclipse
  - Think of the two as being synonyms
  - The terms are used interchangeably
- plugin.xml
  - Defines extensions ("the plug")
  - Defines extension points ("the socket")
- MANIFEST.MF
  - Exported packages
  - Required packages / required bundles
- Lifecycle (INSTALLED, RESOLVED, STARTING, ACTIVE, STOPPING, UNINSTALLED)



# A bit on widgets

- SWT library holds the low level widgets
  - Label, Button, Text etc.
  - org.eclipse.swt.widgets package
  - Beware of AWT look alikes!
- Remember that the SWT widget classes are only wrappers around the native OS widgets
- If you create it you dispose it!
- Disposing a parent will dispose() its children
- Pay special attention to calling dispose() to free resources you set outside constructors (i.e. Image, Color, Font)
- See [www.eclipse.org/articles/swt-design-2/swt-design-2.html](http://www.eclipse.org/articles/swt-design-2/swt-design-2.html) for more info



# Demo time!

- Creating a sidebar plug-in
  - Show just how easy it is to create a sidebar plugin
  - Declarations (plugin.xml / manifest.mf)
  - Define a ViewPart and create a shelfView
  - Plug-in image and build.properties



# Responding to the workbench

- React when user selects a document in a view
- Eclipse workbench selection model
- Finally a use for Notes URL's!
- How to:
  - Add listener to the selection service
  - Get `ISelection` and adapt
  - Get Notes URL



# Demo time!

- Selection events are sent to listeners by the platform
- You listen, adapt and use...



# Notes data access

- Get get a session and be on with it
  - `NotesPlatform.getInstance().getSession()`
  - `NotesFactory.createSession()`
- Beware of the threading issue – all requests for Notes data must run within the Notes thread
  - `NotesThread.sinitThread`
  - `NotesJob.runInNotesThread`



# The UI thread

- Update to UI can only be done from the UI thread (or you will get an `IllegalThreadAccessException`)
- Easiest way to update the UI is using a `UIJob`
- Nesting of jobs is often necessary
- In the selection demo before we were already in the UI thread



# Demo time!

- Notes data access from sidebar plug-in
  - `NotesPlatform.getInstance().getSession()`
  - `NotesJob.runInNotesThread`
  - Get `lotus.domino.Session` and resolve the URL (`session.resolve(String)`) to a database/view/document
- Update UI from the UI thread only



# Debugging

- Eclipse debugger is your friend
  - Nice when debugging asynchronous code
  - Set breakpoints in Eclipse



# Demo time!

- All the hard work has been done by the Eclipse IDE
- Simply launch Notes using the debugger and sit back...



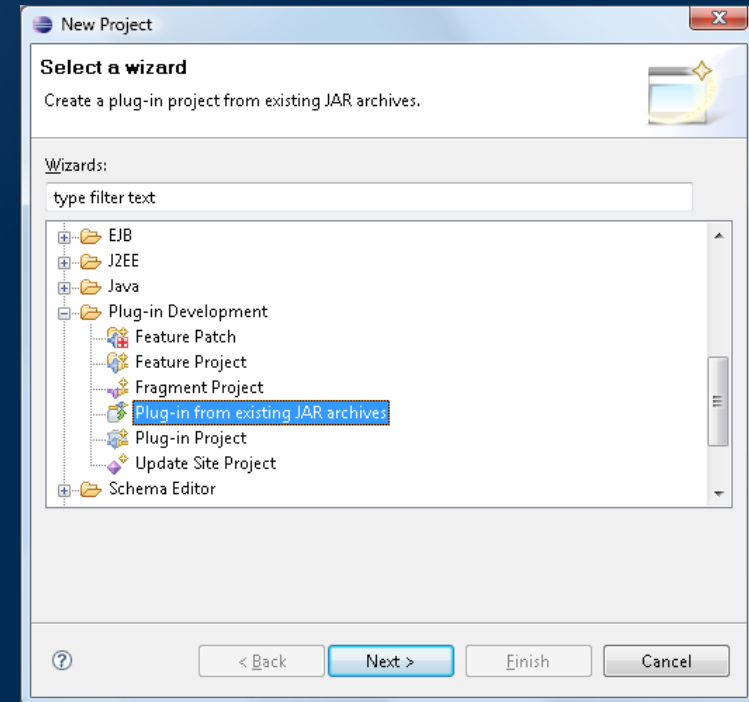
# Componentization

- Sidebar applications should be constructed into logically units i.e. multiple plug-ins
  - UI
  - Business logic
- Think about separating generic parts from more specific parts
- No overhead from using multiple plug-ins vs. keeping it all in one all-encompassing plug-in
- Use extension points to tie your plug-ins together
- Componentizing is also useful for testing and for catering for different platforms and situations
  - Notes 8 (`NotesPlaform.getInstance().getSession()`)
  - Sametime (`NotesFactory.createSession()`)



# Componentization – 3rd party code

- Third party code is best distributed as separate plug-ins as it lets you manage the jar-file independently from the plug-in
  - Release new versions of the plug-in without redistributing the jar-file plug-in
- Easily, and best, imported into Eclipse using the “New Project”-wizard
  - Set jar-file version as the plug-in version in manifest.mf
- Use the equivalent library distributed with Lotus Expeditor/Notes 8 whenever possible (especially for patched libraries such as Jakarta HttpClient)



# Componentization (TwitNotes)

- TwitNotes distro. is made up of six plug-ins
  - Generic AttentioNotes plug-in (main UI, lifecycle, rendering, client services)
  - Twitter plug-in (plug-ins into AttentioNotes and provides Twitter specific implementations)
  - 4 plug-ins with third-party code (imported jar-files)
- Development plug-ins
  - A plug-in is used as data provider in development when offline or Twitter.com is down (yes, it happens)
  - A plug-in is used as a demo submit area provider to demo/test this extension point
  - A plug-in is used to supply OSGi console commands (more on this later)



# Dependency management

- Plug-ins must export the packages they want 3rd party plug-ins to see (no packages visible by default)
  - Be sure to export packages containing extension point interfaces
- Plug-ins can depend on plug-ins by
  - Requiring a specific plug-in
  - Requiring a specific package (no matter who supplies it).
  - Both may be versioned
- Only plug-in where all dependencies are fulfilled will be started (otherwise they are left in the INSTALLED state – more later)



## More on OSGi

- The OSGi console is your friend when developing plug-ins
- Some very useful built-in commands
  - Help: help
  - Plug-ins: start/stop/ss/diag
  - Logging: setlogrlev
- Automatically launched when starting Notes from Eclipse IDE
- Can be invoked for Notes outside Eclipse IDE as well
  - `<Notes dir>/framework/rcp/rcplauncher.exe -config notes -console`
- You can add your own commands easily which can be quite useful



# Demo time!

- Dependency
  - Demonstrate dependency diagnostics
  - Demonstrate OSGi console commands



# Dependency mgmt. safety slide

```

Java - Eclipse SDK
File Edit Navigate Search Project Run Window Help
Notes 8 [Client Services] D:\Notes\framework\rcp\eclipse\plugins\com.ibm.rcp.j2se.win32.x86_1.5.0.5R6-200802132253\jre\bin\javaw.exe (02/06/2008 20.35.08)
547 ACTIVE org.eclipse.ui_3.2.1.M20061108
548 RESOLVED org.eclipse.ui.forms_3.2.0.v20060602
549 RESOLVED org.eclipse.ui.ide_3.2.1.M20060915-1030
550 RESOLVED org.eclipse.ui.views_3.2.1.M20060906-0800
551 ACTIVE org.eclipse.ui.workbench_3.2.2.M20070119-0800-RCP200802132253
Fragments=552
552 RESOLVED org.eclipse.ui.workbench.compatibility_3.2.0.I20060605-1400
Master=551
553 RESOLVED org.eclipse.ui.workbench.texteditor_3.2.0.v20060605-1400
555 RESOLVED org.eclipse.update.configurator.n11_3.2.1.v200609270227
Master=10
556 RESOLVED org.eclipse.update.configurator.n12_3.2.1.v200609270227
Master=10
557 RESOLVED org.eclipse.update.configurator.n12a_3.2.1.v200609270227
Master=10
558 RESOLVED org.eclipse.update.configurator.n1Bidi_3.2.1.v200609270227
Master=10
559 ACTIVE org.eclipse.update.core_3.2.2.v20070125-RCP200802132253
Fragments=410, 411, 412, 560
560 RESOLVED org.eclipse.update.core.win32_3.2.2.R32x_v20061214
Master=559
561 RESOLVED org.eclipse.update.scheduler_3.2.2.R32x_v20061214
562 RESOLVED org.eclipse.update.ui_3.2.2.200802132253
563 RESOLVED org.eclipse.wst.common.ui.properties_1.0.101.v200609140551
564 RESOLVED org.eclipse.xsd_2.2.2.v200702131851
565 RESOLVED org.eclipse.xsd.edit_2.2.1.v200702131851
705 INSTALLED com.lekkimworld.logging_1.0.0

osgi> diag 705
update0../../../../Eclipse/workspace/com.lekkimworld.logging/ [705]
Missing required bundle com.lekkimworld.logging.dependency_0.0.0.

osgi>
    
```