ECLIPSE RCP WITH BNDTOOLS

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EclipseCon Europe 2017

Seminarräume 1-3

October 25, 2017 – 10:30 to 11:05

Eclipse RCP with bndtools
Speaker

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Eclipse RCP with bndtools
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Agenda

- Motivation
- Eclipse – Insights
- Comparison Eclipse PDE / bndtools
- Masterplan
- Get ready …
- Developing with bndtools
- There and back again
- What‘s next

MOTIVATION

PDE - PAIN POINTS

Eclipse PDE Pain Points

Area	How	Issue
Target	Default: IDE bundles or Target Definition File	**Target Platforms updates** are fragile and brittle **one target** for all projects inside the workspace target configuration for p2 repos/update sites is **not** supporting mixed slicer and planner configurations
BuildPath	`.classpath`, `MANIFEST.MF`, `build.properties`	**Default: Required Plug-ins** Bundle classpath is constituted from Require-Bundles **Alternative: Automated Management of Dependencies** Bundle is added to the Plug-in Dependencies and maintained inside build.properties file

Run configurations	`Product or Application`
	
	`Feature or Plugin based`
		Non-deterministic launch behaviour when launching bundles with same BSN and different versions
		Fragments from bundle pool are picked up inside launch, cause they are part of the bundle pool, but not inside the Run config

ECLIPSE INSIGHTS

Eclipse Insights

Topic	Responsibility
Product	Branding, splash-screen, native executables
Application	Only one application gets to run in a given Eclipse instance. Platform shuts down after exiting applications run method
Features	Collection for plugins with specification of their dependencies (either features or other plugins) Eclipse uses Singleton Directive - OSGi spec 10.1.15.110 Singleton installable IU e.g. org.eclipse.swt or ExtensionPoint Provider

BNDTOOLS

BOSCH

Comparison PDE vs. BNDTOOLS

Topic	PDE (Manifest first)	Bndtools
Dependency Management	Explicit manual/semi-automated	Generated
Package imports	Manually (manual triggered calculation)	Bytecode-based import calculation with semantic versioning
Import/export package versions	Explicit properties	Implicit conventions
Launch defaults	Persisted, No Update	Clean, Hot Bundle Deploy
Bundle handling	IDE uses „virtual bundle“ Explicit export	Instant bundle creation
One Eclipse project	One bundle	Can become multiple bundles

MASTERPLAN

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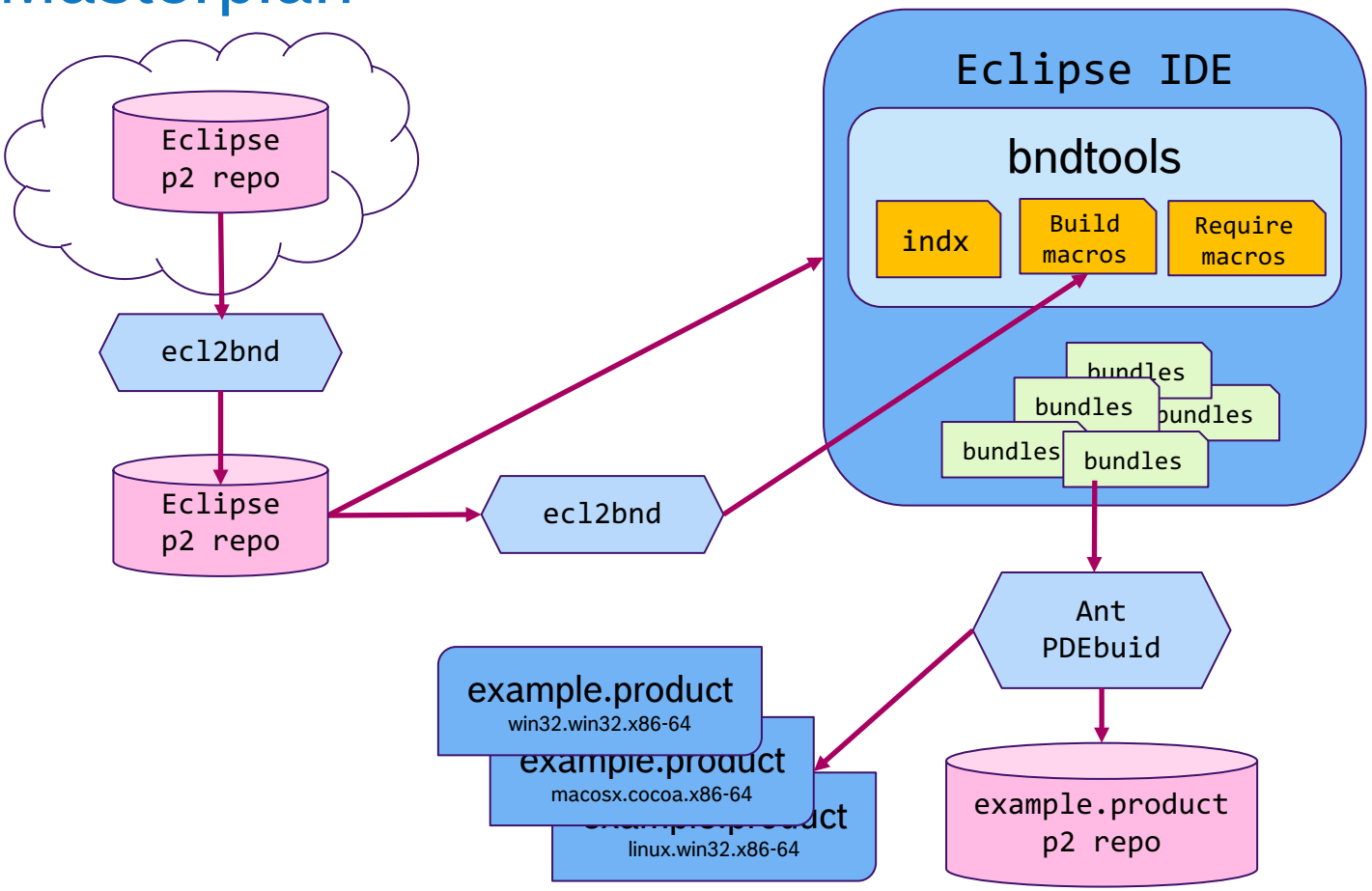
Masterplan



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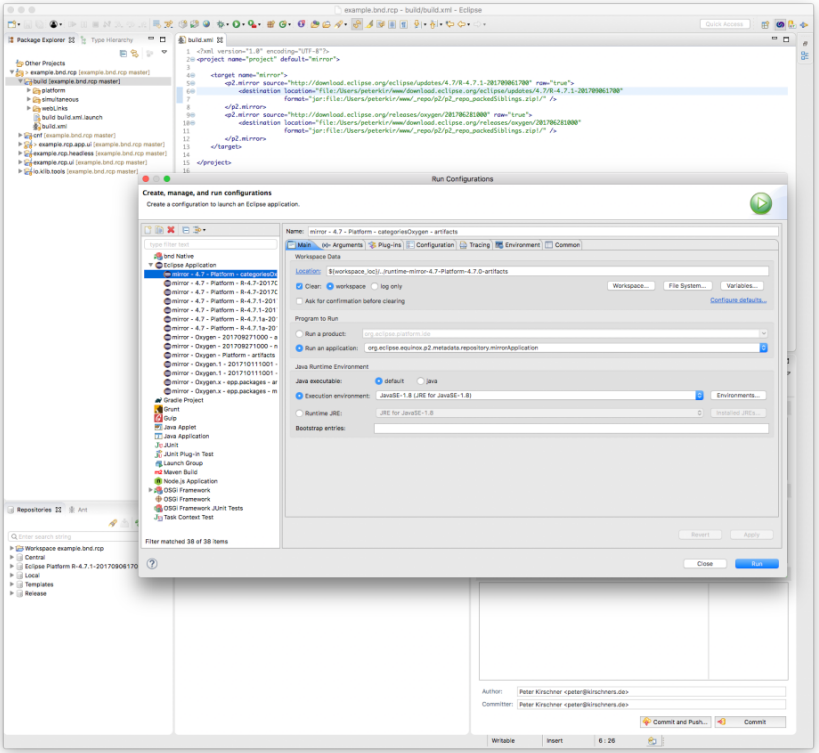
GET READY...

[ecl2bnd] Mirroring Eclipse repos locally

- Eclipse with p2 mirrorApplications
  - `Run configurations` are inside the GIT repository
- Ant p2 tasks – p2.mirror
  - `External Tool Configuration` available inside GIT repo

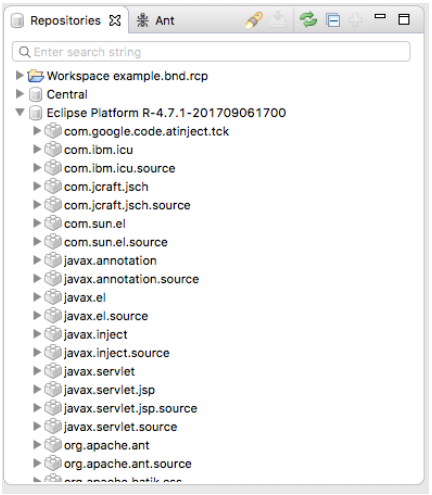
Mind the gap
Eclipse p2 pitfalls
- Composite Repo structure
- Blobstores during mirroring



[ecl2bnd] Indexing repository

- Since bndtools version 3.3 P2 repositories can be directly referenced

```
-plugin.eclipse.platform.4.7.1: \
    aQute.bnd.repository.p2.provider.P2Repository; \
        name  = "Eclipse Platform R-4.7.1"; \
        url   = "${eclipse.platform.url}"; \
        cache = "${cache}"
```



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[ecl2bnd] Map Eclipse Features to bnd macros

p2 repo feature folder

```
org.eclipse.core.runtime.feature_1.2.1.v20170928-1321.jar
org.eclipse.cvs_1.4.401.v20171009-0410.jar
org.eclipse.cvs.source_1.4.401.v20171009-0410.jar
org.eclipse.e4.core.tools.feature_4.7.0.v20170515-1617.jar
org.eclipse.e4.core.tools.feature.source_4.7.0.v20170515-1617.jar
org.eclipse.e4.rcp_1.6.1.v20170928-1359.jar
org.eclipse.e4.rcp.source_1.6.1.v20170928-1359.jar
org.eclipse.ecf.core.feature_1.4.0.v20170516-2248.jar
org.eclipse.ecf.core.feature.source_1.4.0.v20170516-2248.jar
org.eclipse.ecf.core.ssl.feature_1.1.0.v20170110-1317.jar
org.eclipse.ecf.core.ssl.feature.source_1.1.0.v20170110-1317.jar
org.eclipse.ecf.filetransfer.feature_3.13.7.v20170516-2248.jar
org.eclipse.ecf.filetransfer.feature.source_3.13.7.v20170516-2248.jar
org.eclipse.ecf.filetransfer.httpclient4.feature_3.13.7.v20170516-2248.jar
org.eclipse.ecf.filetransfer.httpclient4.feature.source_3.13.7.v20170516-2248.jar
org.eclipse.ecf.filetransfer.httpclient4.ssl.feature_1.1.0.v20170110-1317.jar
org.eclipse.ecf.filetransfer.httpclient4.ssl.feature.source_1.1.0.v20170110-1317.jar
org.eclipse.ecf.filetransfer.ssl.feature_1.1.0.v20170110-1317.jar
org.eclipse.ecf.filetransfer.ssl.feature
org.eclipse.emf.common_2.13
org.eclipse.emf.common.sou
org.eclipse.emf.ecore_2.13.0
org.eclipse.emf.ecore.source_
org.eclipse.equinox.compend
org.eclipse.equinox.core.feat
org.eclipse.equinox.core.sdk_
...
```

bnd macros for buildpath / runrequires

```
# ${FEA_org.eclipse.core.runtime.feature_1.2.1.v20170821-1548}
# ${FEA_org.eclipse.cvs.source_1.4.401.v20170906-1700}
# ${FEA_org.eclipse.cvs_1.4.401.v20170906-1700}
# ${FEA_org.eclipse.e4.core.tools.feature.source_4.7.0.v20170515-1617}
# ${FEA_org.eclipse.e4.core.tools.feature_4.7.0.v20170515-1617}
# ${FEA_org.eclipse.e4.rcp.source_1.6.1.v20170829-0553}
# ${FEA_org.eclipse.e4.rcp_1.6.1.v20170829-0553}
# ${FEA_org.eclipse.ecf.core.feature.source_1.4.0.v20170516-2248}
# ${FEA_org.eclipse.ecf.core.feature_1.4.0.v20170516-2248}
# ${FEA_org.eclipse.ecf.core.ssl.feature.source_1.1.0.v20170110-1317}
# ${FEA_org.eclipse.ecf.core.ssl.feature_1.1.0.v20170110-1317}
# ${FEA_org.eclipse.ecf.filetransfer.feature.source_3.13.7.v20170516-2248}
# ${FEA_org.eclipse.ecf.filetransfer.feature_3.13.7.v20170516-2248}
# ${FEA_org.eclipse.ecf.filetransfer.httpclient4.feature.source_3.13.7.v20170516-2248}
# ${FEA_org.eclipse.ecf.filetransfer.httpclient4.feature_3.13.7.v20170516-2248}
# ${FEA_org.eclipse.ecf.filetransfer.httpclient4.ssl.feature.source_1.1.0.v20170110-1317}
# ${FEA_org.eclipse.ecf.filetransfer.httpclient4.ssl.feature_1.1.0.v20170110-1317}
# ${FEA_org.eclipse.ecf.filetransfer.ssl.feature.source_1.1.0.v20170110-1317}
# ${FEA_org.eclipse.ecf.filetransfer.ssl.feature_1.1.0.v20170110-1317}
_2.13.0.v20170609-0707}
v20170609-0707}
2.13.0.v20170609-0707}
v20170609-0707}
n.sdk_3.13.1.v20170811-1407}
ure_1.4.1.v20170821-1548}
3.13.1.v20170821-1548}
...
```

Mind the gap

- platform fragments
- system bundle [org.eclipse.osgi]
- Equinox launcher fragments

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[ecl2bnd] Mind the gap – platform fragments

Example of Eclipse Feature `org.eclipse.e4.rcp`
which has platform specific bundles/fragments

becomes several bnd runrequire macros for given platform configs

```
# ${FEA_org.eclipse.e4.rcp_1.6.1.v20170829-0553}
# ${FEA_org.eclipse.e4.rcp_1.6.1.v20170829-0553_PLATFORM_linux.gtk.x86}
# ${FEA_org.eclipse.e4.rcp_1.6.1.v20170829-0553_PLATFORM_linux.gtk.x86_64}
# ${FEA_org.eclipse.e4.rcp_1.6.1.v20170829-0553_PLATFORM_macosx.cocoa.x86_64}
# ${FEA_org.eclipse.e4.rcp_1.6.1.v20170829-0553_PLATFORM_win32.win32.x86}
# ${FEA_org.eclipse.e4.rcp_1.6.1.v20170829-0553_PLATFORM_win32.win32.x86_64}
```

THERE AND BACK AGAIN

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[bnd2ecl] Creating Eclipse Products

Features	Container for plugins with dependency and include of other features Eclipse uses Singleton Directive - OSGi spec 10.1.15.110 Singleton installable IU e.g. org.eclipse.swt or ExtensionPoint Provider

- 2 Alternatives are available
  - Feature based products (preferred – can be updated by p2)
  - Plug-in based products

[bnd2ecl] From bundles to eclipse features

Tasks:

- create Eclipse Product
- constituted from Eclipse Features
- containing Bundles build by bnd

How:

- Template eclipse product with include to Template Feature
- Template Feature includes Eclipse Features bnd bundles depend on and the
- Dynamically generate Eclipse Feature of all bnd bundles

Re-cap

- Local mirroring
  - development liberation
  - build performance
- Local development
  - bndtools based development process
- Local assembly
  - Native Eclipse Products
  - P2 Repository for online updates

But, ready for the cloud

WHAT‘S NEXT

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Next steps / plans / wishes

- [wip] Make example platform independent
- [wip] Refactor ecl2bnd feature/macro generation as service

- [plan] create bnd workspace configurations for Eclipse Target releases

- [wish] incorporate ecl2bnd feature/macro generation into bnd p2 repositories?

THANK YOU

QUESTIONS
REMARKS
BLAME

Evaluate the Sessions

Sign in and vote at **eclipsecon.org**

- 1 0 + 1

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REFERENCES

References

- BND documentation http://bnd.bndtools.org
- PDE product builds help

- Source Code repo on GitHub