

# bnd*tools*

Mostly Painless Tools for OSGi

**“Mostly..?!?”**

# No Pain – No Gain



# Good Pain vs Bad Pain

**bndtools**



# Eclipse PDE



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# Challenges

- ★ Dependencies are based on Java packages.
- ★ If we use a package we *must* import it.
- ★ Packages are too numerous to manage by hand.
- ★ Sometimes we are not aware we used a package (e.g. superclasses, return types, JRE packages).



SLOW  
MINEFIELD

# Bnd

- ★ Written by Peter Kriens
- ★ Used by OSGi Alliance to build 1,300+ bundles
- ★ *Very* accurate analysis of package usage based on bytecode scanning
- ★ Does the “right thing”

# Doing the “Right Thing”

- ★ Import generated for each export
- ★ Package-uses constraints generated
- ★ Import ranges based on Semantic Versioning

# Descriptor-Based

```
Bundle-Version: 1.1.1  
Export-Package: org.jdom*;version=${Bundle-Version}
```



```
Manifest-Version: 1.0  
Export-Package: org.jdom.output;uses:="org.jdom,org.jdom.adapters,org.w3c.dom,org.xml.sax.helpers,org.xml.sax,org.xml.sax.ext";version="1.1.1",org.jdom.input;uses:="org.xml.sax,org.jdom,org.w3c.dom,javax.xml.parsers,org.xml.sax.helpers,org.xml.sax.ext";version="1.1.1",org.jdom;uses:="org.jdom.output,org.jdom.filter,org.xml.sax";version="1.1.1",org.jdom.filter;uses:="org.jdom";version="1.1.1",org.jdom.adapters;uses:="org.jdom,org.w3c.dom,org.xml.sax,org.jdom.input,javax.xml.transform,javax.xml.parsers,oracle.xml.parser,oracle.xml.parser.v2,org.apache.xerces.parsers,org.apache.xerces.dom";version="1.1.1",org.jdom.transform;uses:="org.xml.sax.ext,org.jdom,org.xml.sax.helpers,org.xml.sax,org.jdom.input,javax.xml.transform.sax,org.jdom.output,javax.xml.transform,javax.xml.transform.stream";version="1.1.1",org.jdom.xpath;uses:="org.jaxen,org.jdom,org.jaxen.jdom";version="1.1.1"  
Bundle-Version: 1.1.1  
Tool: Bnd-1.0.0  
Bnd-LastModified: 1276770707148  
Bundle-Name: org.example.libs.jdom  
Bundle-ManifestVersion: 2  
Created-By: 1.6.0_15 (Apple Inc.)  
Import-Package: javax.xml.parsers,javax.xml.transform,javax.xml.transform.sax,javax.xml.transform.stream,oracle.xml.parser,oracle.xml.parser.v2,org.apache.xerces.dom,org.apache.xerces.parsers,org.jaxen,org.jaxen.jdom,org.w3c.dom,org.xml.sax,org.xml.sax.ext,org.xml.sax.helpers  
Bundle-SymbolicName: org.example.libs.jdom
```

# bndtools features

- ★ Assisted editing of bnd descriptors
- ★ Continuous builds: your bundle is *always* built (it's the Eclipse Way!)
- ★ 100% fidelity between Eclipse builds and offline builds
- ★ Don't shut out NetBeans/IntelliJ users

# bndtools

- ★ Encourages best practices:
  - ★ Service/Component Oriented Programming
  - ★ Use of Declarative Services

# bndtools

- ★ 1-n bundles per project
- ★ Don't define bundle boundaries too early
- ★ Easy to refactor bundle contents

**Demo**

# Conclusion

★ Docs and Installation Guide:

★ <http://njbartlett.name/bndtools.html>

★ Both Bndtools and Bnd are hosted on GitHub:

★ Bndtools: <http://github.com/njbartlett/bndtools>

★ Bnd: <http://github.com/bnd/bnd>

★ Please report bugs through GitHub's issue tracker

# To Learn More

- ★ Marcel Offermans' tutorial tonight 20:00
- ★ Tutorial tomorrow: "Distributed OSGi"
- ★ "OSGi Masterclass", 12-15 October in Girona, Spain with me and Peter Kriens
- ★ <http://www.aqute.biz/MasterClass>



# Thanks!

