

Writing Open Source Software for BlackBerry

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B10



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```
IMPORT NET.RIM.DEVICE.APL.UI.COMPONENT.  
RICHTEXTFIELD, /* BLACKBERRY DEVELOPER  
CONFERENCE 2008 */ PUBLIC CLASS HELLO  
WORLDDEMO EXTENDS UIAPPLICATION {  
PUBLIC STATIC VOID MAINSTRING SUCCESS;  
ENTRY FOR REGISTRATION.* /  
HELLOWORLDDEMO(/* BUILDING ON SUCCESS.  
*/ PUSHSCREEN (NEW HELLOWORLDSCREEN);  
PUBLIC HELLOWORLDSCREEN ( LABELFIELD  
TITLE = NEW LABELFIELD("HELLO BLACKBERRY  
DEMO", LABELFIELD.ELLIPSIS | LABELFIELD.  
USE_ALL_WIDTH); ADD(NEW RICHTEXTFIELD  
("HELLO BLACKBERRY", FIELD_NON_FOCUSABLE  
/* @SANTA CLARA, CALIFORNIA * / PUBLIC  
VOID CLOSED) /* OCTOBER 21 - 22, 2008 */  
DIALOG.ALERT("GOODBYE BLACKBERRY!");  
}
```

Introduction



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- About Me
 - Derek Konigsberg
 - Desktop developer by day (C#, with some Java and C++)
 - Mobile developer by night (Java on BlackBerry)
- My history with open source software
 - First installed Linux in 1994. (SLS, a precursor to Slackware)
 - Was introduced to *BSD in 1999. (FreeBSD, NetBSD, OpenBSD)
 - Active member of several local user groups
 - Started the “LogicMail for BlackBerry” project in 2006

Overview



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- Open source tools
- Introduction to Open Source
- Candidate Projects
- Makeup of an Application
- What Open Source Offers
- Project Case Study
- Survey of What is Out There

Open Source Tools That You Can Use Now!



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BlackBerry Ant Tools



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- <http://bb-ant-tools.sf.net/>
- **License:** GNU GPL
- A collection of ant tasks for building BlackBerry applications
- Wraps RIM's "rapc" build utility
- Very convenient for separating your build process from an IDE

```
<taskdef name="rapc" classname="ca.slashdev.bb.RapcTask">
  <classpath>
    <pathelement location="../lib/bb-ant-tools.jar"/>
  </classpath>
</taskdef>
<target name="build">
  <mkdir dir="${dist.dir}"/>
  <copy file="${src.dir}/app.png" todir="${dist.dir}"/>
  <rapc output="${module.name}"
        srcdir="${src.dir}"
        destdir="${dist.dir}"
        jdehome="${jde.home}">
    <jdp title="${module.title}"
        vendor="${module.vendor}"
        version="${module.version}"
        type="cldc"
        midletclass="org.generic.FooApp"
        icon="app.png"/>
  <src>
    <fileset dir="${src.dir}">
      <include name="**/*.java"/>
      <include name="**/*.rrc"/>
      <include name="**/*.rrh"/>
      <include name="**/*.png"/>
    </fileset>
  </src>
</rapc>
</target>
```

KeePass for BlackBerry



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- <http://sf.net/projects/keepassbb/>
- **License:** GNU GPL
- BlackBerry password database application
- Has grouping, multiple storage options, import/export, etc.

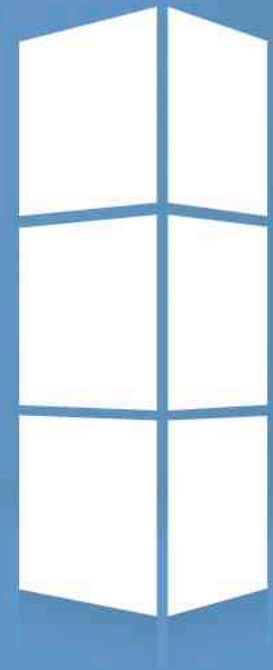


Barry - Sync for Linux

- <http://www.netdirect.ca/software/packages/barry/>
- **License:** GNU GPL
- BlackBerry desktop synchronization software for Linux
- Supports charging, data synchronization, backups, and modem use



What is Open Source all about?



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What is Open Source?



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- Free redistribution
- Must include source code
- Must allow derived works
- Maintains the integrity of the author's source code
- No discrimination against persons or groups
- No discrimination against fields of endeavor
- Distribution of license
- License must not be specific to a product
- License must not restrict other software
- License must be technology-neutral



Adapted from "The Open Source Definition"
<http://www.opensource.org/docs/osd>

What is Open Source?

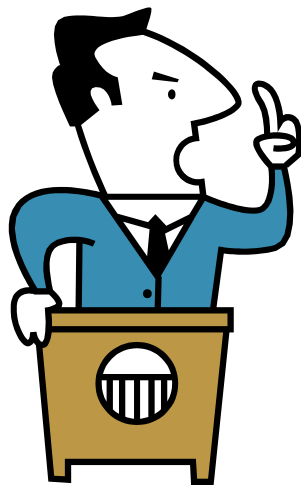
The simple version...



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- Software developed by a community of people that is freely and openly available, with source code.
- Software that the users have the freedom to modify and redistribute.



Free speech



Free beer

Why Open Source?



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- Lowers user barriers to adoption
- Dramatically increases developer interest
- Raises the relative value of what developers actually like to do:
 - Design and build better BlackBerry software
 - Avoid having to reinvent the wheel
 - Leverage what others have done before
- Customers become involved in tailoring the software to suit their needs

Distribution Approaches



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- Commercial / Shareware

- Value as a supported product
- Updates from a sole source who has an incentive to provide them
- If abandoned, quickly becomes worthless and often unavailable

- Freeware

- Value as a current product, with no assurances of future value
- Updates from a sole source who has no incentive to provide them
- Easily abandoned once the developer loses interest, giving users no recourse

- Open Source

- Value

- As a supported product
- As a body of source code
- Building a community involving the developers and the users

- Updates

- Provided by developer
- Provided by the users

- Longevity

- If abandoned, can be easily picked up by others
- Users are empowered to support it themselves

Candidate Project Types



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- Reusable libraries
 - UI solutions
 - Network connection management
- Developer tools
 - Integrated Development Environments
 - Testing frameworks
 - Build utilities
- Utility applications
- Full-blown applications

What makes an application?



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- Project Management Tools
 - Planning
 - Issue tracking
- Development Tools
 - IDEs
 - Build automation
 - Source control
- Common Libraries
 - Platform API
 - Platform integration code
 - Testing frameworks
 - Utility code
 - User interface support code
- Application-specific Code
- Final Integrated Application

How much is *really* proprietary?
How much just makes your life easier?

What makes a great platform?



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- Well supported development environment
 - Selection of capable development tools
 - Flexible platform API and documentation
- Availability of common libraries and examples
 - Covers everything left out of the platform API
 - Avoids the need to constantly reinvent the wheel
- Helpful community of developers
 - Gets you out of those rough spots
 - Provides a source of tips and best practices

Open Source is the *best* facilitator!

How does Open Source facilitate?



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- Everyone needs development tools
 - But not everyone wants to write them
- Everyone needs common libraries
 - But not everyone has the time to maintain them
- Everyone wants to be part of a community
 - But not everyone knows how

With Open Source, much of the effort can be shared by all. This way, you can focus on what you really want to be developing.

But why should I help my competitors?



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- With Open Source software, you increase the overall value of the BlackBerry solution.
- The more valuable the BlackBerry solution, the more great software is written for it.
- The more great software exists for the BlackBerry solution, the more users adopt it.

In other words, would you rather:

Have a good application
on a platform with few
good applications

-OR-

Have a great application
on a platform with many
great applications

What does Open Source offer?



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- Increased interest in the project
 - *“I could modify this to meet my business needs, instead of rolling my own from scratch.”*
 - *“If its insecure, I can figure out why.”*
- External contributors
 - *“I really wish this had a certain feature, but no one is working on it. I might as well do it myself.”*
 - *“This thing has a bug only seen in my environment. No one else will be able to fix it for me.”*
- Widespread popularity
 - Open source software can adapt better to the users, because the users play a role in developing it
 - Reducing barriers to entry always drives adoption

License Options



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- GNU General Public License
 - Software is open source
 - Author maintains copyright
 - Derived work must also be open source, licensed under the GPL
- BSD-Style License
 - Software is open source
 - Author maintains copyright
 - Limited to no restrictions on derived work
 - Sometimes has an attribution clause
- Dual-license
 - GPL-style or BSD-style
 - Limited support
 - Usually a free version
 - Attracts users to build a community
 - Commercial license
 - Fully supported
 - For users who typically pay for software
 - May include additional features
 - May include additional licensed code

Note: There are *many* more licensing options.
However, most of them fit within the above categories

Open Source Builds a Community



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- With closed source, you have two sides:
 - The maker of the software
 - The users of the software
- With open source, its so much more!
 - The integrator of the project
 - The contributors
 - The users of the software
 - Entities that want to benefit from synergy in the community
 - *“Lets put support for our support for our company’s infrastructure in this popular client application.”*

How do you get started?



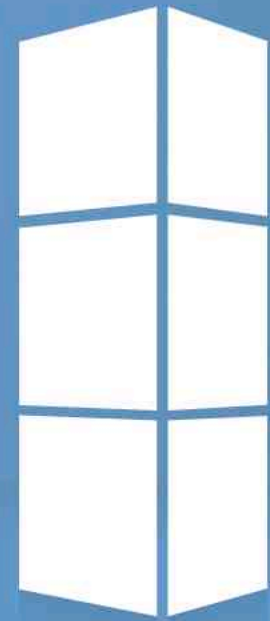
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- Decide what you will be open sourcing
 - Existing project you have the rights to release
 - New project being started
 - Portion of a new or existing project that is sufficiently common and non-proprietary in nature
- Decide which license you will be using
 - Straight-up GPL-style or BSD-style
 - Company-specific license that still meets open source criteria
 - Multi-license approach
- Provide a public face to the project
- Release and celebrate!

LogicMail for BlackBerry

A project case study, from the front lines...



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LogicMail Case Study

Why did the project get started?



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- There was a need waiting to be fulfilled
 - No currently supported application met my needs for a standalone non-service-based E-Mail client
 - One abandoned open-source project was on the same track, and could be leveraged (Mail4ME)
 - One abandoned commercial project might have worked, but vanished from availability (ReqWireless EmailViewer)
- Perfect candidate for open source
 - Wanted to increase the selection of open source software for the BlackBerry solution
 - Was more interested in using the software than profiting off of it
 - Wanted to release early and often, without customer pressure
 - Open user involvement helps to drive feature plans

LogicMail Case Study

Gathering the development tools



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- RIM BlackBerry JDE

- <http://na.blackberry.com/eng/developers/>
- **License:** Proprietary
- **Usage:** Platform API, build tools, and device simulator

- Eclipse

- <http://www.eclipse.org/>
- **License:** Eclipse Public License
- **Usage:** Development IDE

- Subversion

- <http://subversion.tigris.org/>
- **License:** BSD-style
- **Usage:** Source control

- CruiseControl

- <http://cruisecontrol.sf.net/>
- **License:** BSD-style
- **Usage:** Continuous integration build system

- Apache Ant

- <http://ant.apache.org/>
- **License:** Apache License
- **Usage:** Build automation

- BlackBerry Ant Tools

- <http://bb-ant-tools.sf.net/>
- **License:** GNU GPL
- **Usage:** Ant wrapper for the BlackBerry JDE build tools

- Trac

- <http://trac.edgewall.org/>
- **License:** BSD-style
- **Usage:** Integrated issue tracking, project management, and project web presence

LogicMail Case Study

Leveraging other projects



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- Mail4ME

- <http://mail4me.objectweb.org/>
- **License:** Enhydra Public License
- **Usage:** Starting point for network connection management and mail protocols
- **Modifications:** Bug fixes and reimplementations where necessary

- Fast MD5 Implementation in Java

- http://www.twmacinta.com/myjava/fast_md5.php
- **License:** GNU LGPL
- **Usage:** MD5 support for authentication mechanisms, without imposing the code signing restriction of RIM's MD5 API.

- Base64 Encoder/Decoder

- <http://iharder.net/base64>
- **License:** Public Domain
- **Usage:** Base64 encoding/decoding support on OS v4.0 devices

- J2MEUnit

- <http://j2meunit.sourceforge.net/>
- **License:** Common Public License
- **Usage:** Unit testing of non-interactive application code
- **Modifications:** Project integration and custom test-runner UI

- Tango Desktop Project

- <http://tango.freedesktop.org/>
- **License:** Creative Commons Share-Alike
- **Usage:** Application icons
- **Modifications:** Minor tweaks to suit specific icon use cases

LogicMail Case Study

Providing a public presence for the whole project



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- Decided to use a BSD-style license
- Created a project on SourceForge.Net®
 - Provides project visibility to the community
 - Also provides hosting services for web, source control, issue tracking, forums, mailing lists, etc.
- Created a project website
 - Provides public face of the project
 - Directs users and developers to important information and resources
 - Using Trac, was able to provide better project resources than SourceForge, but still retained some SourceForge presence for the visibility
- Soon enough, the E-Mails and Tickets started flowing...

LogicMail Case Study

Retrospective on the project thus far...



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- Plenty of users found it, and my INBOX was overflowing with questions, feature requests, and bug reports
- Freely flowing suggestions drove my project feature plans
- Community of real world testers, in many environments and locales
- Available source code enabled patches and feature requests only possible through code inspection
- Potential for spin-off projects:
 - Enhanced J2MEUnit test-runner GUI
 - Common UI component library



LogicMail Case Study

Lessons learned



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- SourceForge makes for great project visibility, but Trac is a far more powerful project management solution
- Build environments can be tricky for users to set up, so use a continuous integration build tool to provide the latest software as soon as code is checked in
- Debugging user issues can be quite the challenge, as they are usually data-dependent
- Avoiding the restricted APIs becomes increasingly difficult

Code Signing

How restricted APIs affects open source



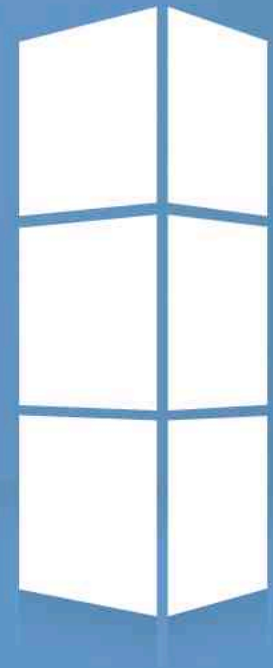
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- What is the situation?
 - Parts of the BlackBerry API require binaries to be digitally signed
 - Commonly desired features cannot be implemented without the using the signed APIs
 - The code signing key costs money
 - There are completely valid reasons for RIM to be doing this
- The Open Source dilemma:
 - Open source is all about empowering the community
 - Code signing places restrictions on rebuilding and redistributing
 - Casual developers may be deterred by this barrier
 - The rest of us pay the \$20 without thinking, and get on with our lives

Open Source Projects for the BlackBerry

A survey of what's already out there...



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- **Barry**
 - <http://www.netdirect.ca/software/packages/barry/>
 - **License:** GNU GPL
 - BlackBerry desktop synchronization software for Linux
- **LogicMail**
 - <http://logicmail.sf.net/>
 - **License:** BSD-style
 - Standalone E-Mail client supporting IMAP, POP, and SMTP directly
- **bbTracker**
 - <http://www.bbtracker.org/>
 - **License:** GNU GPL
 - A simple application for Java-enabled smartphones to create GPS track logs
- **BerrySpeedy**
 - <http://sf.net/projects/berryspeedy/>
 - **License:** BSD-style
 - Adds convenient menu items to the BlackBerry UI
- **BlackBerryTools**
 - <http://sf.net/projects/blackberrytools/>
 - **License:** GNU GPL
 - Collection of popular utility applications
- **KeePass**
 - <http://sf.net/projects/keepassbb/>
 - **License:** GNU GPL
 - Password database application



- ## Blackberry Ant Tools

- <http://bb-ant-tools.sf.net/>
- **License:** GNU GPL
- A collection of ant tasks for building BlackBerry applications

- ## Antenna

- <http://antenna.sf.net/>
- **License:** GNU LGPL
- A collection of ant tasks for building J2ME applications, including support for the BlackBerry

- ## bunit

- <http://sf.net/projects/b-unittesting/>
- **License:** Apache License
- Unit testing framework for RIM Blackberry based on jmunit

- ## J2MEUnit

- <http://j2meunit.sf.net/>
- **License:** Common Public License
- Unit testing framework for J2ME applications

- ## JMUnit

- <http://jmunit.sf.net/>
- **License:** Apache License
- Unit testing framework for J2ME applications (being merged into J2MEUnit)

For More Information



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- Open Source Initiative
 - <http://www.opensource.org/>
- Free Software Foundation
 - <http://www.fsf.org/>
- SourceForge.Net®
 - <http://www.sourceforge.net/>
- Evolution of an Open Source Project
 - The LogicMail Story
 - <http://leap-cf.org/presentations/eoss-pres.pdf>

Thank You

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```
import net.rim.device.api.ui.component.  
RichTextField; /* BlackBerry Developer  
Conference 2008 */ public class Hello  
WorldDemo extends UIApplication {  
public static void main(String args[]) {  
    HelloWorldDemo hwd = new  
    HelloWorldDemo();  
    hwd.run();  
}  
public HelloWorldDemo() {  
    super();  
    title = "Hello BlackBerry!  
";  
    useAllWidth();  
    add(new RichTextField(  
    "Hello Clara, California!  
"));  
    void close();  
    dialogAlert("Goodbye  
BlackBerry!");  
}
```