Using Packages

Or how I learned to stop worrying and love the .deb
A. Maitland Bottoms
bottoms@debian.org
AA4HS
Getting Started

- `apt install gqrx-sdr`
- `apt install gnuradio-dev`

will pull in ~470 packages to meet all dependencies
So – what’s in there...

- A handy receiver GUI application gqrx
- GNU Radio and volk
- Hardware support:
  airspy, bladerf, hackrf, rtl-sdr, uhd
  (and more thanks to Osmocom)
OOD Development

- Needs some more dev tools:
  ```
  apt install build-essential cmake
  ninja-build
  ```
- ...and some libfoo-dev and libbar-dev for your module using foo and bar features
- libvolk1-bin libfftw3-bin
Packages are great, but:

- They are old and not the version I need.
- They are not built with the right options.
- They won’t install on my system.
- The software I need is not packaged.
- Packages and Distributions are a barrier between developers and users.
What is packaged?

- For my OS instance (using apt)
  `apt-cache search <keyword>`
- For applications, look to AppStream
  (the AppStream future is a work-in-progress)
Quick fixes are not so hard

- Use the source
  `apt source <some package>`
- Edit the source, say to add your USB device ids, add your own feature
- Build locally
  `debuild -us -uc`
- Deploy locally
  `dpkg -install <your debs>`
Roll your own

- Doing your own packaging is really not so hard.
  Lots of tools, instruction, and examples
- Doing your own package repository is really not so hard.
  Lots of tools, instruction, and examples
  - Helps form a team with shared experience
• Distributions come with Overhead
  but they are a focal point for review of license, code, and suitability. Derivatives depend upon these features.
• Policy – we don’t need no stinkin’ policy
  but it is often the thing that allows us to work together with fewer conflicts
• Developers are best to support users directly
  Distributions have teams of translators, security bug fixers, build systems, debugging tools, QA and monitoring, larger lifecycle support.
Debian the Distribution

• A Community around Free Software
• Has sub-distributions:
  – Unstable – new bits
  – Testing – bits are not immediately buggy
  – Stable – release for widespread use
• Has many derivative distributions
  best to get it right in Debian
Interacting with Debian

- Debian has a bug tracking system
- Unpackaged software has special bugs:
  RFP: Request for Package
  ITP: Intent to Package
- Debian has web based tracking tools
- Email – mailing lists, irc
Debian Source and Binary distribution

- Install binary software without compiling on target machine
- Lots of tooling at the package level
- It’s really all about the source
  - Source to end users
  - Source for review and audit
  - Source for derivation and improvements
GNU Radio and Debian

• An natural fit, we value Free Software
• Most of the ecosystem is licensed to uphold the Debian Free Software Guildelines (DFSG).
• If you contribute to GNU Radio, expect to find yourself to be contributing to Debian.
Credit where credit is due

- Copyright your work
- License your work

• State the Above clearly
  - Credit others whose work you derived
  - Comply with the licenses of others work

• We all would not be here except for authors specifically licensing code to allow sharing.
Release clearly

• Early and often is fine
• Debian, other distributions, and archivists love tarballs on a public site
  But will settle for git release tags.
• Extra points for cryptographic hashsums for integrity and cryptographic signatures for verifiable attributions
include(GNUInstallDirs)

- Adds additional control variables useful in the install step.

CMAKE_INSTALL_LIBDIR, CMAKE_INSTALL_*

- GNU Coding Standards
- Multi-Arch Support
- Debian tools do the right things
Debian is old school. Policy tells us to document applications in `/usr/bin` with unix man pages.

But yeah, keep doing Doxygen and keep trying to do better modern documentation practices.

It turns out, work done in documentation often leads to successful outcomes.
The Package Maintainer’s point of view


- If this is an eye chart, you should follow the links...

  Info of versions, automatic testing, notice of new upstream releases.

  Links to bug reports.

- http://tracker.debian.org/
Questions?

A. Maitland Bottoms <bottoms@debian.org>

07CA 87DD C4C2 B062 40B6 B174 5041 F189 1F44 E090