Lessons Learned from Packaging Pantheon

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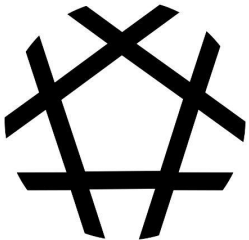
flock 2019

https://decathorpe.fedorapeople.org/flock2019/pantheon.pdf

About me

- Fabio Valentini
  "decathorpe" on [fedora](#), [twitter](#), [GitHub](#), etc.

- fedora {proven,}packager

- Member of Packaging Committee and Go SIG, and founder of the Stewardship SIG

- I blog about fedora on [decathorpe.com](#)

A short history:

Bringing Pantheon and elementary Packages to fedora

Getting started in COPR

- First builds were **manual bzr snapshot builds** of the granite GTK+ toolkit extension library in COPR in December 2015

101851	granite	0.3.0~rev862-1.fc22	4 years ago	4 minutes	⊘ succeeded

My first fedora package

- I submitted my first fedora package about one year later (granite - it's needed by almost everything else, after all)

Packaging progress

- ~35 new packages - and two months - later (February 2017), most important elementary packages were available in fedora; the session did **technically** work

- ~25 additional, non-essential packages added in 2017 and 2018

Big thanks to @ngompa for helping me out with most of the package reviews!

Procedures and Tools to make this possible

COPR repositories help with integration

- Nightly bzr (and later, git) snapshots are built for my elementary-nightly COPR, catching upstream issues early

- Stable releases of projects not ready for inclusion in fedora are built in my elementary-stable COPR (later moved to elementary-staging)

Helpful fedora services

- All packages are tracked in koschei to catch downstream and rawhide integration issues early (in the [decathorpe/elementary](#) group)

- All packages are tracked with release-monitoring (in addition to me also monitoring upstream with GitHub RSS feeds)

Automations I created myself

- Automated submission of bzr / git snapshot builds via builpy (deprecated) and kentauros

- Today: kentauros checks upstream git repositories every full hour and automatically submits RPM builds to COPR **without any human being involved**

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Recurring issues:

Build systems are (mostly) awful

(CMake really is awful, meson is nice)

Build system issues: CMake 🙄

- Some projects discarded CFLAGS from build environment (resulting in hilarious build failures)

- Hard-coded installation paths (instead of detecting LIBDIR / LIBEXECDIR automatically)

Build system issues: CMake 🙄

- Some elementary projects relied on external CMake modules (for Vala, GResources, translations, etc.) instead of bundling them.

- At first they were only available as bzr snapshots lp:~elementary-os/+junk/cmake-modules

  (yes, I'm serious)

Build system solutions: meson ❤️

- Everything eventually got ported from CMake to meson (I helped with that, e.g. I ported granite)

- Third-party CMake modules are no longer necessary

- Meson made it easier for me (and other downstreams) to contribute back to upstream

Recurring issues:

bzr and launchpad.net were awful

Source hosting: launchpad.net 😦

- Originally all development of elementary projects happened in bzr repositories, hosted on launchpad

- Issue tracking and merge requests were ... not good

- Discoverability of projects - and determining which package was built from which bzr branch - was **BAD**

Source hosting: GitHub 🎉

- One project at a time things got cleaned up and migrated to git / GitHub (including obscure branches, like the CMake modules)

- Existing issues were migrated as well

- Contributions from third-party developers spiked because of the easier (and more familiar) workflow

Recurring issues:

ubuntu destroys linux on the desktop

Dealing with ubuntu-isms

- Pantheon session settings are tailored to the latest ubuntu LTS - I ended up forking them for fedora: github.com/decathorpe/pantheon-session-settings

  I maintain support for different fedora releases in branches (..., 29, 30, master), adapting to changes - primarily GNOME breaking things again

Dealing with ubuntu-isms

Switchboard plugs depend on ubuntu LTS-specific components:

- Date & Time: doesn't work at all on fedora

- Locale: requires apt-daemon for langpack handling

Dealing with ubuntu-isms

Switchboard plugs depend on ubuntu LTS-specific components:

- Mouse & Touchpad: required patches for recent GNOME releases for **years**

- Useraccounts: depends on ubuntu-specific downstream modifications of accountsservice

- ...

Recurring issues:

GNOME makes things harder than they need to be

Dealing with GNOME

- GTK+ CSS styling changes with 3.18 completely broke the elementary theme for about a year

- Almost every major new version of Vala introduces lots of compilation failures because of stricter checks

- DBus interfaces (of gnome-settings-daemon, etc.) change and introduce hard-to-debug issues

Dealing with GNOME

- GSettings support is brittle - once GNOME upstream changes something, elementary apps will just crash

- Mutter often changes APIs and breaks Pantheon

  gala still only supports mutter <=3.28, so I have to maintain a compat package for fedora 29 and 30

Recurring issues:

elementary isn't used to being an upstream

Upstream issues

- Granite lacks support for parallel installability of different versions (due to unversioned gir / typelib), so I can't introduce compat packages after granite ABI bumps

- elementary apps soon require the new granite version though, which means I can only update these apps in rawhide

Upstream issues

- elementary just pushes everything to stable and doesn't deal with ABI stability **at all** (this sometimes breaks their third-party apps though)

- gala **doesn't do releases**, so I have been packaging git snapshots for fedora (taking educated guesses about which commits to include on which fedora branch)

Current state

(fedora 30)

Current state

- Locking the session does only work on top of LightDM (light-locker doesn't support GDM)

- AppCenter was **retired** from fedora 30 due to numerous issues (it even crashed dbus-broker and completely bricked the entire system)

Current state

- Media Keys no longer work in fedora 30, because gnome-settings-daemon 3.32 changed its DBus interface (this **does** work on fedora 29)

- Some components are still not packaged for fedora due to the issues I mentioned - or because Mail still depends on WebKitGtk3 💀

Current state

But basically, everything else **just works**

"Thank you for your great work. Pantheon on Fedora feels much stable than even on the elementary OS."
- marlock9 on GitHub

Conclusions?

Conclusions?

- ubuntu does its downstreams no big favors by forward-porting ancient stuff for "compatibility" and introducing non-standard features downstream

  (Or maybe elementary should not rely on ubuntu-specific downstream modifications in the first place)
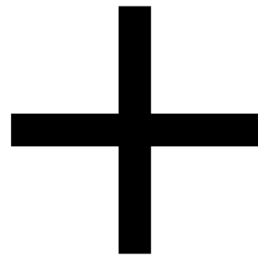
Conclusions?

- Maybe it's time for elementary to fork some GNOME components instead of piggy-backing onto them.

- For example, sharing gnome-settings-daemon with GNOME introduces all kinds of weird issues

  This would also work around GNOME breaking DBus / GSettings interfaces frequently ...

Demo

(if there's time)

Thank you for your attention -

Time for questions!