GNU Radio
Project Update

Ben Hilburn
## The Stats Slide

<table>
<thead>
<tr>
<th>Stat</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executed CLAs</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Closed Issues</td>
<td>68</td>
<td>140</td>
</tr>
<tr>
<td>Closed Pull Requests</td>
<td>177</td>
<td>272</td>
</tr>
</tbody>
</table>

**Git clones**

- Clones: 1,606
- Unique cloners: 823

**Visitors**

- Views: 12,839
- Unique visitors: 2,430
Participation in Software Coding Programs

- **Google Summer of Code**
  - **Swapnil Negi**: gr-modtool Overhaul
    - Mentors: Sebastian Koslowski, Nicolas Cuervo
    - Created a GUI, programmatic control through API, YAML Generator, plug-in architecture, + more
    - Status: Merged!
  - **Luca Schmid**: MIMO Improvements
    - Mentors: Felix Wunsch, Marcus Müller
    - Implemented diversity combining, Alamouti, differential block codes, Bell Labs Layered Space-Time (VBLAST), + more
    - Status: Merged!
- Administered by Felix Wunsch this year!
Last Year’s Slide

GRCon17

- Another year of growth!
- Another year of everyone waiting until the last minute to buy their tickets!
- Discussion about next year needs to start soon!
This Year’s Slide

- Y’all will be the death of GRCon Organizers.
GRCon19

- Planning is already underway!
- Organizing committee co-chaired by Michelle Thompson and Steve Conklin
  - To get involved, talk to Michelle here at GRCon18!
- Huntsville, Alabama
- September 16th - 20th, 2019
Changes in GNU Radio Leadership

- Johnathan Corgan has stepped down as GNU Radio maintainer & CTO of the GNU Radio Foundation.
- At the same time, did away with the concept of core development team being mostly “area specific” and responsible for particular parts of the codebase.
- Retained a few key title roles, otherwise leadership roles are more fluid, now.
## Leadership & Governance

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation President, Project Lead, FSF Maintainer</td>
<td>Me</td>
</tr>
<tr>
<td>Foundation Officer, Community Manager</td>
<td>Martin Braun</td>
</tr>
<tr>
<td>Project Maintainer &amp; Officer</td>
<td>Marcus Mueller</td>
</tr>
<tr>
<td>Volk Maintainer &amp; Officer</td>
<td>Nathan West</td>
</tr>
<tr>
<td>DevOps Admin &amp; Officer</td>
<td>Andej Rode</td>
</tr>
<tr>
<td>Officer</td>
<td>Bastian Bloessl</td>
</tr>
<tr>
<td>Officer</td>
<td>Derek Kozel</td>
</tr>
<tr>
<td>Officer</td>
<td>Nate Temple</td>
</tr>
<tr>
<td>Officer</td>
<td>Philip Balister</td>
</tr>
<tr>
<td>CGRAN Maintainer &amp; Officer</td>
<td>Marc Lichtman</td>
</tr>
<tr>
<td>Officer</td>
<td>Richard Prestage</td>
</tr>
</tbody>
</table>
Pushing Core Development

- Merge of `next` into `master` is imminent.

- Once done, will represent an alpha version of 3.8 release.
  - Comprises many substantial updates and improvements.
  - Represents a significant investment of time and effort.

- The progress to-date is a huge accomplishment. Thank a developer!
Ecosystem Activity

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  - BMW ConnectedDrive Hacking: First done in 2015 by Dieter Spaar, in the news again
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● Efforts like VOLK and SigMF continue to grow, expanding outside of even our usual community & ecosystem.
Community Update: gqrx

- gqrx is no longer being maintained
- Latest release is v2.11.5, May 2018

- Created & maintained by Alexandru Csete

- Looking for an adopter!
Open Source Sustainability

- The concept of “sustainable open source” is a hot topic right now.
- The growth & success of an open-source project is often a double-edged sword
  - As the project grows, it becomes more work to maintain it.
  - The vast majority of the user-base is non-contributing.
  - How do you stably maintain a software project without paid developers?
    - Business models, foundations, grants, corporate support…
    - Lots of options, none are easy
    - Real answer: you can’t.
- Remains a serious problem for large & small projects alike.
Open Source Sustainability

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Looking for Work after 25 Years of Octave

From: John W. Eaton
Subject: Looking for Work after 25 Years of Octave
Date: Wed, 8 Feb 2017 15:21:06 -0500
User-agent: Mozilla/5.0 (X11; Linux x86_64; rv:45.0) Gecko/20100101 Icedove/45.2.0

TL;DR: Reflecting on the last 25 of Octave, it's been a great experience. I would love to continue as the Octave BDFL but I also need to find a way to pay the bills.
Open Source Sustainability

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- Remains a serious problem for large & small projects alike.

Bastien Guerry @bzg2 · 2h
Okay, here is the situation: I badly need to replace my 3yo dying computer but I can't afford to buy one. If you ever considered making a donation for #emacs #orgmode but didn't take the time, now is your chance :)
Reach me at liberapay.com/bzg/ or

Pay Bastien Guerry using PayPal.Me
paypal.me
Open Source Sustainability

This is an area I'd really like to put effort into. It’s not an easy problem to solve by any means (or it already would be resolved), but we need something other than the #Heartbleed strategy of waiting until an impending implosion to support widely used and valuable work.

7:40 AM - 4 Mar 2018

1 Like

Ben Hilburn @bhilburn • May 3

What "is" terrifying are important & widely used FOSS projects that don’t have the resources and support they need. This is how #Heartbleed happened - a key library that the entire Internet relied on was maintained by four unsupported devs struggling without needed resources.

Ben Hilburn @bhilburn • May 3

Sustainable open-source is a super difficult problem to solve, and (IMO) the future of FOSS rides on the current generation’s ability to find solutions. Many have tried & failed, and many others are trying new things.

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Ben Hilburn @bhilburn • May 3

The ideal solution, I think, is something that is flexible and can easily support development, but I don’t think it comes easy.

Ben Hilburn @bhilburn • Mar 7

Replying to @saurabhur

In my experience, a donation-based business model relies on foundations, but is not a sustainable way to support certain classes of SW (e.g., utilities like ‘curl’).

Ben Hilburn @bhilburn • Mar 4

Sustainable #FOSS is a really serious challenge, for large and small projects alike, and the solution is definitely not just relying on donations. The #FOSS ecosystem needs a realistic solution to sustain the value it has created.

Ben Hilburn @bhilburn • Mar 4

Sustainable open-source is such a hard problem to solve, and we so a solution; it shouldn’t take a #Heartbleed-level crisis to get support. I case with OpenSSL. And agreed - OSS foundations, as they exist not solve the problem.

Ben Hilburn @bhilburn • Feb 8

Replying to @ChrisShort @jaspraz

Open-source business models can be tricky, for sure. I’ve done a fair amount of work both with and within them. I think the solution here, though, can’t be “start a company”. That’s too burdensome for smaller efforts (e.g., org-mode), and requires too much outside knowledge.

Ben Hilburn @bhilburn • May 24

There’s so much speculation about #FOSS, IMO. It’s a lot of projects that really do need help.

Ben Hilburn @bhilburn • Aug 4

Open Source Sustainability

Worth noting that in the latter scenario, improving the current state of sustainable FOSS will go a long way to making leads feel empowered to enforce community standards if they otherwise feel coerced. It’s not an excuse, but important to understand their situation.

Ben Hilburn @bhilburn • May 12

Replying to @bhilburn @xcraft

We’ve raised $15m from @gnow, @foundrygroup, and former Red Hat CEO Matthew Szulik. @dfritex explains how we are using it to help open source creators and users.

Thought Creek

7:40 AM • 4 Mar 2018

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Ben Hilburn @bhilburn • May 24

This is really cool, and IMO is the most exciting aspect I’ve seen yet for addressing the problem of #Sustainable. The model of selling professional-grade assurances and then sharing revenue with the maintainers is really promising, I think.
GNU Radio Sustainability

● GNU Radio was founded with a $320,000 donation for development.
  ○ Thanks, John Gilmore!
● Many millions of dollars are invested every year in using GNU Radio.
● How much is invested in GNU Radio itself?
  ○ Every time someone on the mailing list helps you, how much is that worth?
  ○ How much would you pay for regular & thorough tutorial blogs, videos, and examples?
  ○ If GNU Radio disappeared overnight, how much would you pay to bring it back?
● Not trying to shame anyone, but rather raise a topic that will be significant discussion point in the community over the next 1-2 years.
  ○ It’s on us to make it possible to generate revenue.
GNU Radio’s Status

● Of GNU Radio core development team:
  ○ 6 employed by private industry
  ○ 2 employed in academia
  ○ 1 is a student
  ○ 1 is self-employed as a consultant
  ○ 1 employed at a federally funded research lab

● GNU Radio will require paid work to maintain its position & utility.
  ○ The core runtime (i.e., the scheduler) needs a refresh.
  ○ Tools like GRC need to be updated.
  ○ Our workflows need to be updated to reflect the modern GNU Radio community.
Sustainable GNU Radio

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● We have The GNU Radio Foundation, but not steady income.

● If we change nothing, we will level out and eventually become obsolete.
   ○ Just to be clear, this is years out. Talking long-term, here.

● Even if we had income, how do we run what is effectively now a (non-profit) business, and who will take on paid roles?
Don’t Panic

● This isn’t meant to sound dire!

● The GNU Radio community is arguably the strongest SDR ecosystem in the world, and our footprint is substantial.
  ○ Open-source software is just a product of the community behind it.

● The goal is prepare and plan now for what is necessary, before it really becomes an, “Okay, now you can panic,” sort of thing.
Summary

● In the last year, the GNU Radio community has continued to grow, and the project has seen a substantial increase in activity and contributions.

● We need to be thinking about how to keep pushing GNU Radio forward, and how to reach sustainable development & maintenance.

● If you want to get involved, contribute, or just chat, please do!