# GNOME Foundation

## Fiscal Year 2015 Annual Report

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# Letter from the GNOME Foundation

2015 has been an exciting year for GNOME development, bringing an increased focus on developer experience. GNOME has driven development of the Flatpak project (formerly xdg-app), which will finally enable easy third-party distribution of applications. We've also seen substantial progress on GNOME Builder, an integrated development environment targeted specifically at creating GNOME applications.

GNOME has continued to hold successful hackfests that drive our developer platform forward. In 2015, we had hackfests for developer experience, web engines, GStreamer, and documentation. Hackfests continue to be one of the best uses of Foundation funds to support development efforts and build a strong community.

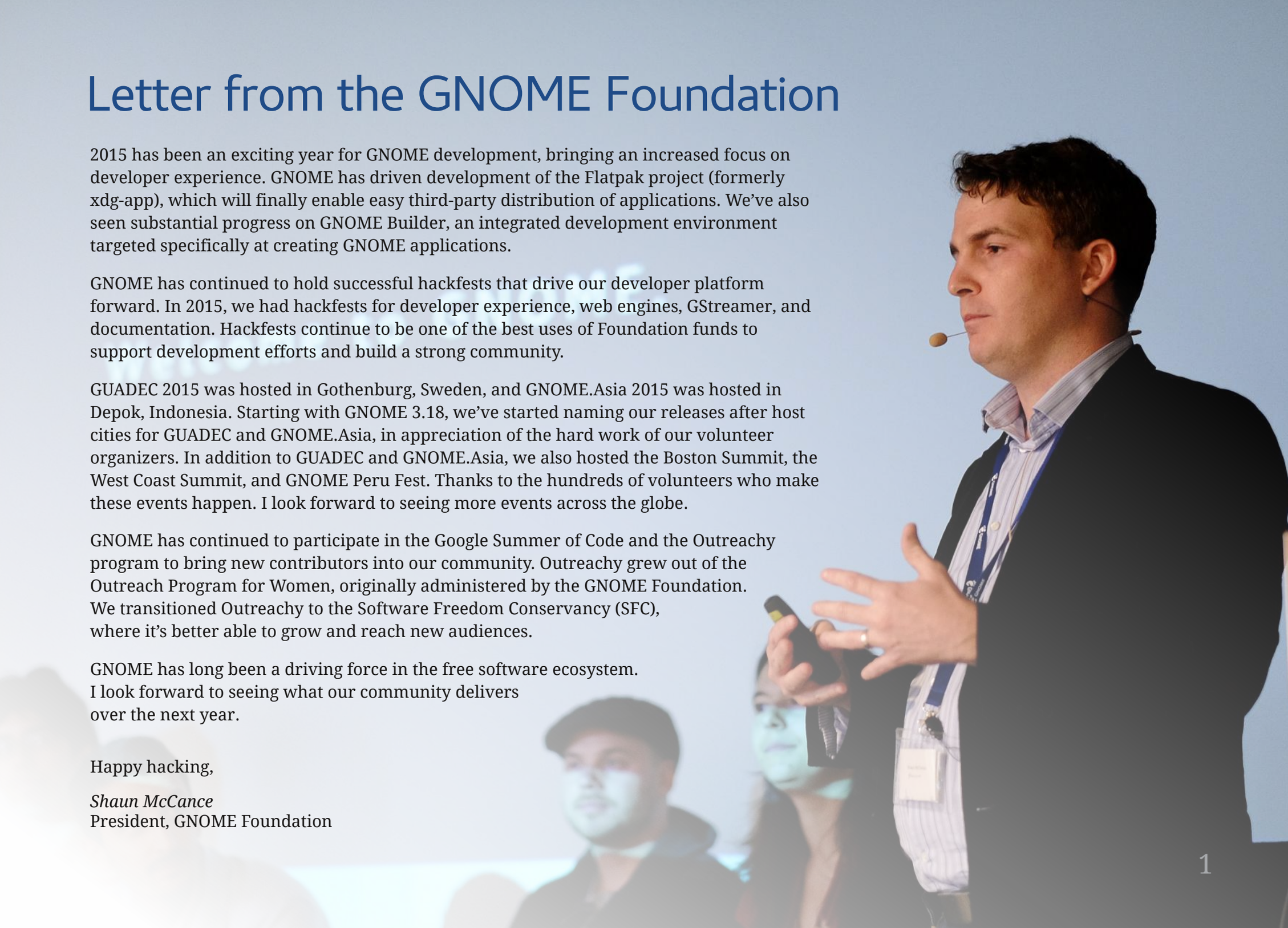
GUADEC 2015 was hosted in Gothenburg, Sweden, and GNOME.Asia 2015 was hosted in Depok, Indonesia. Starting with GNOME 3.18, we've started naming our releases after host cities for GUADEC and GNOME.Asia, in appreciation of the hard work of our volunteer organizers. In addition to GUADEC and GNOME.Asia, we also hosted the Boston Summit, the West Coast Summit, and GNOME Peru Fest. Thanks to the hundreds of volunteers who make these events happen. I look forward to seeing more events across the globe.

GNOME has continued to participate in the Google Summer of Code and the Outreachy program to bring new contributors into our community. Outreachy grew out of the Outreach Program for Women, originally administered by the GNOME Foundation. We transitioned Outreachy to the Software Freedom Conservancy (SFC), where it's better able to grow and reach new audiences.

GNOME has long been a driving force in the free software ecosystem. I look forward to seeing what our community delivers over the next year.

Happy hacking,

*Shaun McCance*
President, GNOME Foundation



# GNOME Never Stops

The **GNOME Foundation** is the charitable non-profit organization that furthers the goals of the **GNOME Project**, helping it to create **GNOME** ™, a collection of Free/Libre and Open Source software that forms a cohesive Free Software computing platform for the general public, designed to be elegant, efficient, and easy to use. The Foundation provides charitable community benefit by broadening access to technology through the development and distribution of a usable free computer desktop software to people in countries around the world for whom operable computers would otherwise have been unavailable or prohibitively expensive.

A new version of GNOME is released every six months, which requires a great amount of effort and coordination from contributors all around the world. This page serves to illustrate this process, and page 4 goes into further detail about the two releases made during the 2015 fiscal year.

Boston Summit
(page 9)

Public campaign to defend our trademark begins and is an overnight success

Web Engines Hackfest
(page 5)

Fiscal Year 2015 begins >

OCT NOV DEC

FSCONS
(page 9)

**255**
Foundation Members

**149** ballots
were cast in the 2015 Board of Directors elections

FOSDEM
(page 9)

OPW renamed to *Outreachy* and migrated to the SFC

GNOME Peru Fest
(page 9)

JDLL
(page 9)

GNOME.Asia Summit
(page 8)

West Coast Summit
(page 7)

GUADEC + AGM
(page 8)

Open Help Hackfest
(page 7)

GStreamer Summer Hackfest
(page 7)

JAN FEB MAR APR MAY JUNE JULY AUG SEP

Docs Hackfest
(page 5)

Developer Experience Hackfest
(page 5)

GStreamer Hackfest
(page 6)

GNOME 3.16 released

GNOME Foundation's new Board of Directors is elected

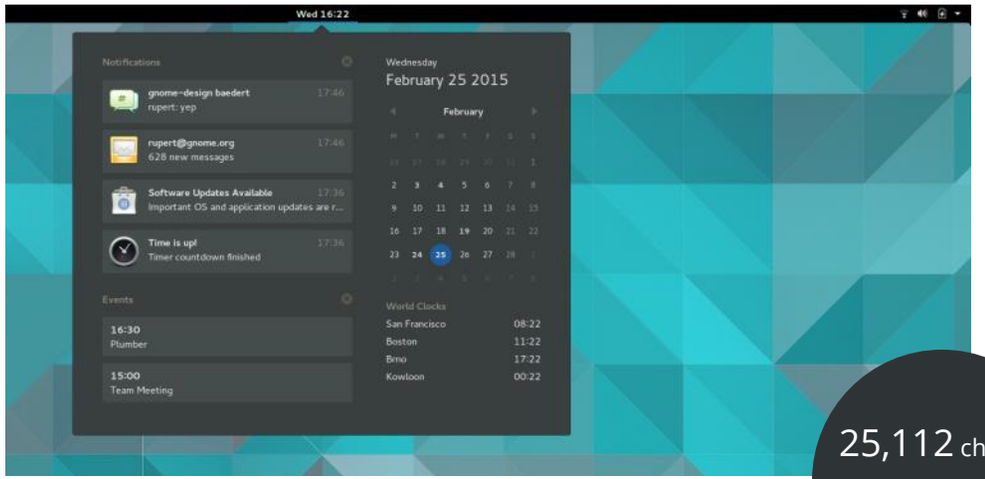
GNOME is 18 years old

GNOME 3.18 released

25,137
new bug reports

16,417
bug reports closed

# Releases




25,112 changes incorporated in GNOME 3.18

The GNOME project produced two new releases during the 2014-15 financial year: versions 3.16 and 3.18. As is typical for GNOME, each release included significant improvements to the GNOME 3 user experience, GNOME technologies, and to the GNOME developer experience.

To improve the user experience, GNOME Shell's notifications were overhauled for the 3.16 release. The new design provided a modern and easy-to-use experience that was positively received by users. Other improvements to the core experience for 3.16 and 3.18 included support for multitouch touchpad gestures, a better experience when interacting with text via a touchscreen, automatic screen brightness support, and firmware updates via the *"Software"* application.

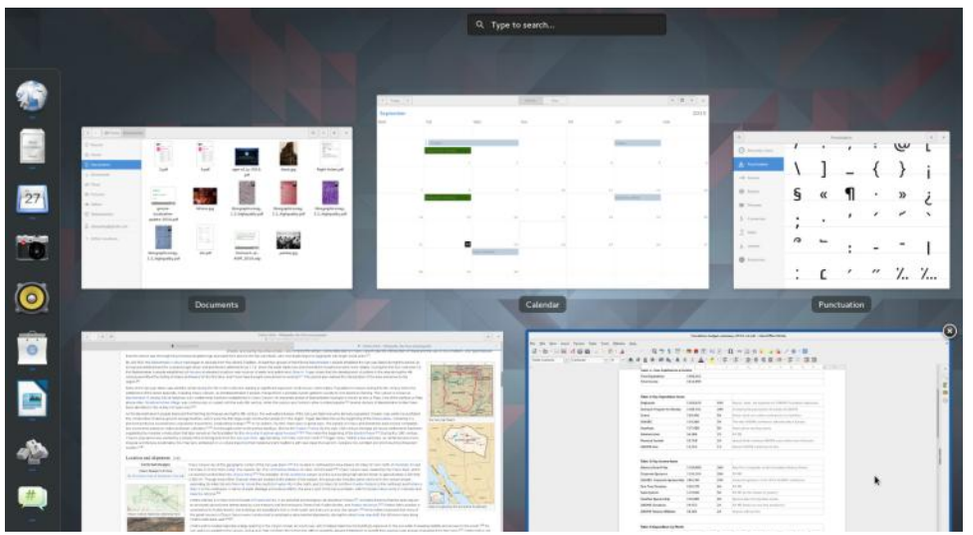
GNOME's applications also had many updates during the 2014-15 financial year. For example, Files had a great number of minor enhancements to give it a much more polished experience, and it gained a major new feature with Google Drive integration. Other applications updated included Maps, Calculator, Polari, Boxes, and the Image Viewer. A number of new apps were also introduced including Calendar, Characters, Books, and To Do.

772 contributors in the 3.18 cycle

The GNOME developer experience continued to improve with GTK+ receiving OpenGL integration and new typographic features. Tooling was enhanced, with the creation of the gtk-builder-tool and enhancements to GTK+ Inspector, including a live JavaScript prompt. GLib gained instance counting (which allows it to debug memory issues), and a new list model and network monitor interface were added. WebKitGtk+ also received major improvements.

Perhaps most significantly, 2014-15's two releases included major developments in long-term GNOME initiatives. 3.16 included the first release of Builder, GNOME's new integrated development environment, which matured significantly for the 3.18 release thanks to a successful crowdfunding campaign. 3.16 and 3.18 also included major progress in GNOME's effort to support the Wayland display protocol, and 3.18 included the first release of Flatpak (formerly called xdg-app), the new cross desktop, cross distro application distribution framework, that is being strongly supported by the GNOME project.

The 3.16 and 3.18 releases included many other improvements and more details can be found in their release notes. Release videos are also available on the GNOMEDesktop YouTube channel.



# Hackfests

## Web Engines

A Coruña, Spain — December 7 to 10, 2014

For its sixth edition, the WebKitGTK+ hackfest expanded its scope and was renamed to *Web Engines* hackfest. Over 30 developers gathered to discuss various aspects of the open web platform and its integration with the desktop.

Support for HTML5 notifications using libnotify was merged in WebKitGTK+, and work was started on a new threaded compositor for WebKit's multi-process architecture. The GStreamer backend was extended to support the Web Audio and Media Source Extensions specifications, as well as becoming a way to share OpenGL context between GStreamer and WebKit.

The implementation of new CSS3 specifications was examined, with fixes in both Chromium's engine and the W3C test suite as a result. Developers also discussed the performance of modern web engines on low-powered devices, Mozilla's new Servo engine, and the state of the art of JavaScript interpreters.

Thanks to Igalia for hosting and organizing the Web Engines hackfest.

## Docs

Cambridge, UK — January 24 to 29, 2015

In this edition, the documentation team discussed the future of Mallard, the GNOME documentation format, and its new Ducktype lightweight syntax. Feedback from the GNOME Help website was triaged and integrated back into user documentation, and development was started for an integrated feedback feature in Yelp. Documentation for GNOME games, the Files application, and the guide for system administrators were also expanded and updated together with a large number of other fixes.

The developer documentation demos were improved and expanded to cater to an audience of developers approaching GNOME's platform for the first time.

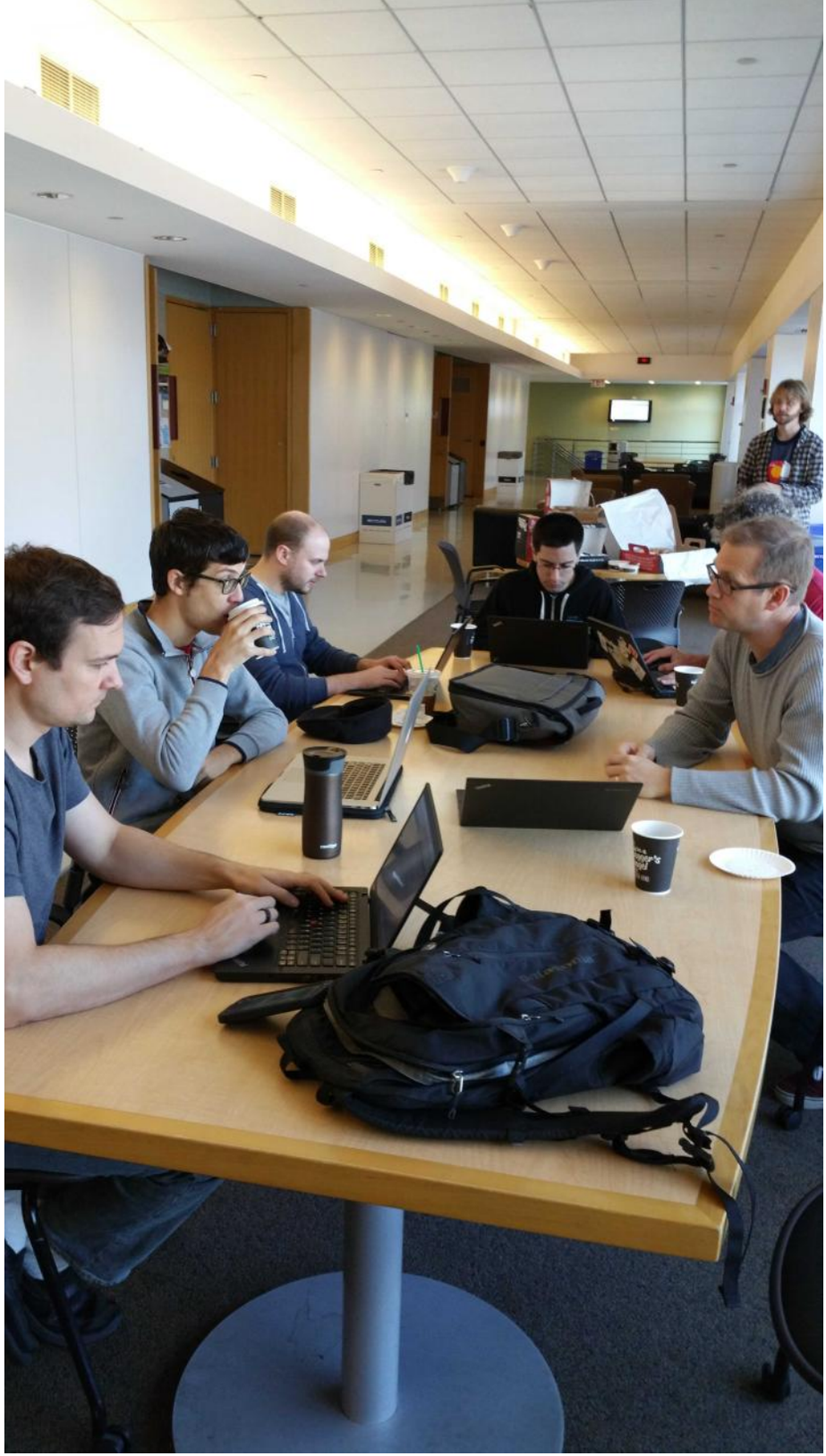
Thanks to UEA School of Computing Sciences for hosting the Docs hackfest.

## Developer Experience

Cambridge, UK — January 25 to 29, 2015

Several GNOME hackers from around the world gathered at this hackfest to plan the 3.16 cycle of our developer platform.

New features for GLib and GObject were discussed and implemented, including support for automatically releasing out-of-scope variables, a much more compact way to declare object



types, a new list model abstraction, general-purpose reference counted memory areas, and better static analysis techniques.

The integration between GTK and OpenGL was improved taking into account the feedback from early users of the API, leading to more flexibility and a better support for modern versions of the GL protocol. The behavior of GtkPopover widgets under X11 was also improved, and work started towards a new file preview functionality.

A new abstraction layer for the internals of GNOME Builder, LibIDE, was architected, together with several improvements for the user interface; developers also discussed the basic mechanisms of xdg-app sandboxing, and details of how bundles will be packaged.

# GStreamer

Staines, UK — March 13 to 15, 2015

In this edition, of the GStreamer hackfest, the GStreamer team agreed on a plan to support the DASH streaming standard together with a generic and extensible decryption framework. The GStreamer OpenGL output plugin gained a feature to support sharing a GL context with external clients, which will be used by WebKit, together with a feature to render content decoded through VA-API in a near zero-copy fast path. The behavior of the RTP implementation under edge network conditions was discussed resulting in plans for how to improve it.

A large number of patches were developed during the hands-on sessions of the event, including improvements to Video4Linux format renegotiation, progress towards supporting stereoscopic video, adding support for an Android camera source element, file-descriptor passing between GStreamer processes, and a new feature for clients to declare the kind of media stream they are playing.

Thanks to Google for hosting the GStreamer hackfest at their offices.

## West Coast Summit

San Francisco, CA, USA — June 29 to July 1, 2015

GTK+ and Elementary OS developers sat down together to reduce technical divergence in some of the technologies used by the projects; as a result, patches were written to extend styling support in a few GTK+ widgets and adding edge tiling support to the Mutter window manager.

Several sessions were held around xdg-app and GNOME Builder, a prototype for a document portal to be used in Evince was written, and a roadmap for building and deployment of xdg-app repositories was discussed. Different implementations of sandboxing systems were the subject of another session with Sandstorm.io.

Finally, several text rendering features were discussed, including Emoji support in Cairo and Pango, a custom font for GNOME Builder's minimap, and improvements to font support in GTK+. Thanks to Endless for sponsoring and hosting the West Coast Summit at their offices.

## GStreamer Summer Hackfest

Montpellier, France — August 14 to 16, 2015

Performance and hardware integration were the focus of the event: a new encoder element was released making use of NVIDIA's hardware video encoding capabilities; the algorithm for capabilities negotiation was vastly improved, leading to a faster startup time for applications using GStreamer; a new fast path was implemented for the libav-based video decoders, which was changed to use direct rendering and avoid extra copies of frames during playback; finally a plan was formulated for a new architecture of the decoding stack better suited for embedded devices or environment with constrained resources.

The developers also started experimenting on moving the project issue tracking from GNOME's Bugzilla to a Phabricator instance.

## Open Help

Cincinnati, OH, USA — September 28 to 30, 2015

Following the Open Help conference, some members of the GNOME documentation team organized a three-day hackfest to update the user help for the 3.18 release.

In addition to updating all the help pages to match the new features, the team worked on a new version of the "Getting Started" pages, restructured the networking documentation, and developed an initial plan for a broader reorganization of the high-level topics covered by the user guide.

# Conferences

## GNOME.Asia

GNOME.Asia Summit 2015 was held from May 7-9 in Depok, Indonesia.
The conference attracted more than 320 attendees from all over the world.

There were three keynotes: Aidil Chendramata spoke about the inherent security and benefit of using free software, Mohammad Anwari shared how he uses GNOME as a basis for creating a distribution targeted to the Indonesian market, and Tobias Mueller gave an overview of the past, current, and future of the GNOME project. In addition, 48 speakers presented talks with topics including promotion to new users, usage of free software in various industries, and audio input and output in GNOME.

Four workshops were open to attendees and showed them how to contribute to the GNOME project. Over 50 people took part and successfully completed these workshops.

## GUADEC

GUADEC is where many GNOME contributors meet annually to catch up on what has happened and plan for the future. This year, the conference took place in Gothenburg, Sweden from August 7-9 and had 157 attendees. Twelve attendees self-identified as women and two attendees self-identified as genderqueer, comprising 8% and 1% of attendees respectively. There were two women speaking, or 8% of the speakers.

Keynote speakers were Matthias Kirschner, Christian Hergert, and Pamela Chestek. Matthias talked about the fight against restrictions placed on computers. Christian discussed Builder—an IDE focused on simplicity and design. Pam showed off the power of community and how it was wielded with rousing success in the battle against Groupon. All three keynote presentations were well received by attentive audiences. In addition, a special *Defender of GNOME* award handcrafted by Federico Mena-Quintero was presented to Pam for her work on our behalf.

The talks at GUADEC covered varying topics including Flatpak, map rendering, fonts, application design, translation tools, how the release videos are made, and community building. The lightning talks and intern lightning talks gave the audience a window into numerous projects and gave the presenters an appreciative audience to present their achievements.

The Annual General Meeting (AGM) gave a forum for the many GNOME teams to present to the membership all they have accomplished in the past year. The Board of Directors were introduced and answered questions from the audience. The highlight of the AGM was the presentation of the GNOME Pants award. This year, the award went to Emily Chen for her tireless efforts towards the GNOME.Asia conference and her work on the travel committee. We are very grateful to have Emily as a member of the GNOME community.

Beyond the conference hall, social events at GUADEC included a walking tour of Gothenburg, a picnic at the park, the annual football match, and the sixth annual women's dinner.

The conference continued after the core days with BoF sessions and hackfests. 14 different topics were discussed—including l10n & i18n, documentation, Builder, Wayland, PulseAudio, and engagement.

# GNOME Peru Fest

Aimed at stirring interest and welcoming new contributors, GNOME Peru Fest invited interested parties to learn about GNOME and our internship opportunities. The 2015 GNOME Peru Fest took place on March 13, 2015 in Centro Cultural PetroPeru.

Using videoconferencing technologies, speakers from around the world were able to address the audience. Federico Mena-Quintero introduced the GNOME project, Laura Castro talked about the GNOME community, Marina Zhurakhinskaya explained the internship possibilities with Outreachy and Google Summer of Code, and a number of prior interns in these programs discussed what they worked on and how much they had gotten out of the experience.

320 attendees

at the 2015
GNOME Asia Summit

# Boston Summit

The Boston Summit took place on October 11-13, 2014 on the MIT campus. About twenty GNOME contributors gathered to make progress on technologies such as GTK+, GNOME Builder, application runtime and bundling, Wayland, webkit2, and kdbus. Christian Hergert did a demo of GNOME Builder. Richard Stallman came by and spent an hour with the group, discussing the history of Free Software and current challenges. Breakfasts and pool at Flap Top Johnny's were generously sponsored by Red Hat and Codethink.

# Other Conferences

GNOME had a presence at other conferences as well. GNOME staffed booths at FOSDEM (Brussels, Belgium) and JDLL (Lyon, France). Five GNOME members gave talks at FSCONS (Gothenburg, Sweden).

157 participants

at GUADEC 2015

# Finances at a Glance

*Our financial year ran from October 1st, 2014 to September 30th, 2015.*

## Income

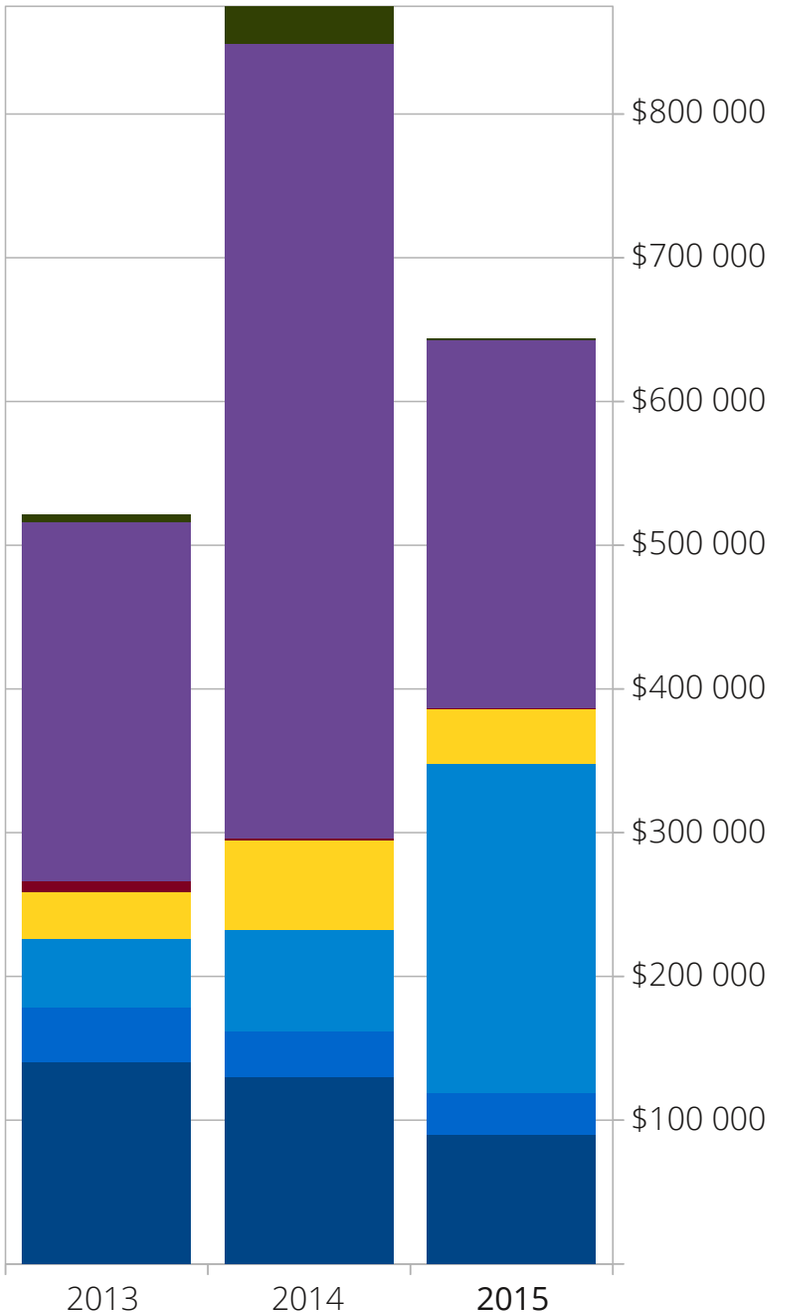
There was a drop in our corporate income this year which was partly offset by a large increase in donations from the community.

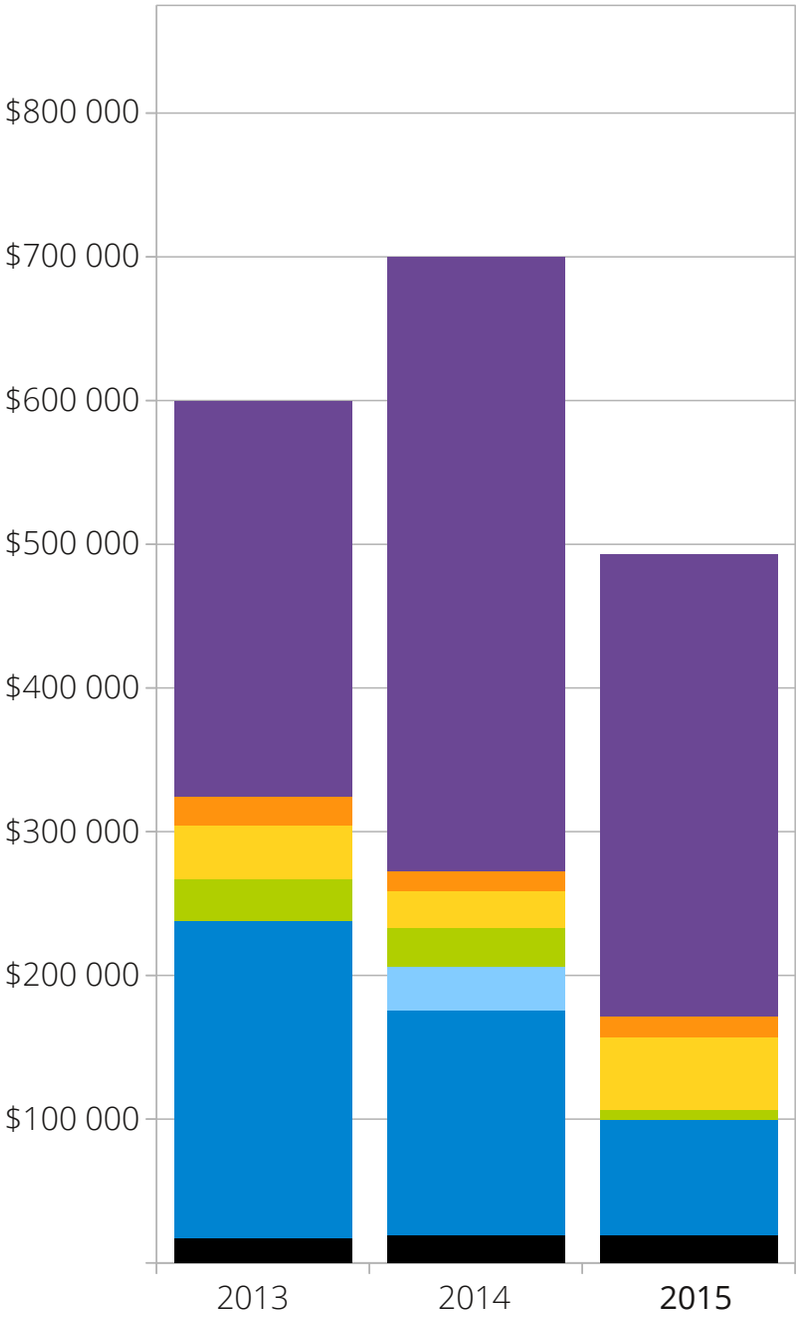
Some of these funds were donated by the larger free software community during our dispute with Groupon.

The drop in OPW income comes from the project becoming its own entity and leaving the GNOME Foundation mid-year.

| | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|
| Advisory Board | $160 000 | $130 000 | $90 000 |
| Sponsorship | $38 635 | $31 421 | $28 773 |
| Individual donations | $47 417 | $71 178 | $229 057 |
| GUADEC | $32 906 | $62 436 | $38 244 |
| Royalties | $7 336 | $974 | $450 |
| OPW | $249 500 | $552 850 | $256 273 |
| Other | $5 434 | $26 033 | $1 377 |
| **Total** | **$521 228** | **$874 892** | **$644 174** |

Note: Conference income from any specific year often shows up on the budget for the following year. For example, the income from 2013 GUADEC shows up in the 2014 accounts, and income from 2014 GUADEC shows up in the 2015 accounts. Some GUADEC conference income and expenses are handled by the organizing teams, so these numbers are not an exact indication of turnover. Royalties are from merchandise sales and Amazon referral fees.






# Expenditures

In this fiscal year, expenditures were down, mostly due to not having an executive director's salary on the books as well as OPW moving out mid-year.

| | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|
| Administration fees | $17 305 | $19 503 | $19 750 |
| Employees | $220 262 | $156 520 | $79 714 |
| GUADEC | $37 377 | $26 082 | $50 155 |
| Hackfests | $29 534 | $26 817 | $6 981 |
| Miscellaneous events | $19 746 | $13 631 | $14 481 |
| Marketing | $600 | $320 | $350 |
| Contracts | 0 | $30 000 | 0 |
| OPW | $275 369 | $427 535 | $321 723 |
| **Total** | **$600 193** | **$700 408** | **$493 155** |

Note: The GNOME Foundation employed an administrator and contracted a system administrator in 2015.

# Flatpak

## The evolution of packaging software and apps

## The problem with shipping software

What application authors need, and have been desperately asking for, is a way to untangle the release cycle of applications from that of distributions. When GNOME introduced predictable, time-based releases every six months, it revolutionized the industry, but these long release cycles don't work well for every application. Consider a developer who misses the window to get into a new distribution by a few days, or a developer who needs to get fixes out the same day they change their server software—in both instances, a long release cycle just isn't ideal.

Separating application releases from distributions is a difficult problem to solve because distributions provide such a great amount of value. They often have the infrastructure to deliver software to millions of users, and offer things like build systems, software updates, bug reports, and many other integration points. Unfortunately, each distribution also has its own configurations with their own runtime environment. Developers often aren't willing to support all the various configurations necessary to run their software on multiple distributions, so distributions have to patch software to work on their system and are constantly battling the addition of new software, security backports, and component integration. There is plenty of opportunity for something unexpected to break along the way.

We can drastically simplify the process of creating and testing software. Instead of having to test each distribution individually—a costly and unsustainable practice—application authors and distributions can meet in the middle. Together, we can choose the stability guarantee that allows us both to flourish with great new software.

## Flatpak—a solution

GNOME developers have talked about the software distribution process for many years: how can we simplify the process of getting high-quality, stable software safely onto users' computers? Alexander Larsson has thought about this problem a lot. Drawing from his previous experience with Glick and his work on Docker file systems, this time he and many other contributors have brought us Flatpak.

Flatpak provides all the tooling necessary to create predictable runtimes and SDKs. To help developers build software for those runtimes, it provides tooling to make it simple. To build a safer and more trustworthy experience for users, it comes with sandboxing and a new concept called Portals, which help users safely give applications minimal access to personal information.

Flatpak also provides an incredibly fast update mechanism based on OSTree, which could be described as "git for binaries". And it wouldn't be a GNOME project without a simple, beautiful interface to manage it, built into GNOME Software.

Best of all, Flatpak works across most modern Linux distributions.

## Making life easier for developers

When developing an application, the developer chooses a target runtime. For example, GNOME can provide a "GNOME 3.20 runtime" which includes all of the core components of such version of the system. Application authors can target this runtime and their application will run everywhere it's installed.

When building their software, developers can use the flatpak-builder tool to build their application and any necessary dependencies not part of the runtime, whether they're a favorite EXIF library or a node.js module. The *Builder* IDE is also gaining a system allowing a developer to start from nothing to a Flatpak App in a matter of minutes, further simplifying the experience.

**Did you know?** Flatpak used to be called xdg-app during the development stage.

The new name was announced as part of the formal launch of Flatpak as ready-for-use on May 18, 2016.

When it comes time to ship, all that is needed is a web server to host the application. The web server doesn't require any special features and the application can be hosted as a single file or as a content addressed repository, similar to git.

## Creating a larger app ecosystem

We've been updating GNOME Software to support Flatpak natively so it will be seamless for users to update both the distribution and applications no matter where the software comes from.

Because Flatpak uses OSTree, application updates are minimal deltas between versions. This means less bandwidth, faster updates, and less frustration about the excessive bandwidth usage often seen with mobile applications.

Another side-effect of Flatpak is improving the longevity of software. Many of us remember using some niche game or application and wish we could relive that experience. With how much our systems change over the years, reliving the experience is increasingly difficult. Flatpak helps running our software much longer into the future by providing a consistent environment even as our underlying operating system changes.

## Ensuring safety through sandboxing

Historically, we've put our trust in distributions to audit the source and build applications for us—authors that aren't from our known distributions aren't as trusted. To address security concerns and allow more authors onto the playing field, Flatpak includes a sandboxing functionality that is implemented using cutting edge Linux kernel features, some of which have been pushed forward by the Flatpak development.

One area of the Flatpak sandbox that we expect to play a big role going forward, is the concept of Portals, a way for a sandboxed application to interact with the host operating system. For example, it's unlikely that a user will want to grant a sandboxed application unrestricted access to her video cameras. However, she might want to grant it access to take a picture once for an avatar or for a video conference. Using a camera-mediator portal, the application can request access to a video stream and the user can be asked for authorization before proceeding, with the application never gaining full access to the camera device outside of the API.

## Flatpak is the future!

GNOME is creating a technology where developers, users, and distributions all stand to win. In the process we make everyone's lives a little bit easier, the software better, and the experience safer. That leaves me very excited about the future of the Free Software desktop.

*- Christian Hergert*

Pictured: Alexander Larsson, main developer of Flatpak

# Outreach

GNOME had 24 Google Summer of Code (GSoC) students and 4 Outreachy interns in 2015. The GNOME Foundation hosted its ninth round of the Outreach Program internships from December 2014 to March 2015 and transitioned the program to Software Freedom Conservancy under a new name, *Outreachy*, for the May to August 2015 round. The GNOME Foundation is proud to have launched the program and remains a core partner of Outreachy by providing infrastructure support. GNOME also continues offering Outreachy internships. In 2015, the GNOME Foundation and the Free Software Foundation provided dedicated sponsorship for GNOME Outreachy interns and Akamai, Cisco, Google, and HP provided general sponsorship for Outreachy, some of which was used to fund GNOME interns.

24 GSoC students in 2015

We celebrate past GSoC and Outreachy participants who became mentors for the programs. In 2015, we had five such people—Sebastian Dröge, Izidor Matušov, Tobias Mueller, Lasse Schuirmann, and Carlos Soriano. Additionally, Lasse Schuirmann joined the ranks of GSoC administrators for GNOME.

We continued making an emphasis on engaging our interns with the community by having a collaborative application process in which applicants were required to work on relevant contributions with mentors. We encouraged and helped interns attend GUADEC, and also required them to blog and aggregated their blog posts on Planet GNOME. With the help from the GNOME Foundation, Google, and GUADEC sponsors, 16 GSoC students attended GUADEC 2015.

4 "Outreachy" interns in 2015

We made sure they felt welcome and integrated by having an interns' lunch at the conference and hosting a lightning talks plenary session in which they presented their work.

Carlos Soriano and Bastian Ilsø, both past GSoC participants, significantly revamped our initiative for newcomers, *GNOME Love*, and renamed it to *Newcomers*. The new Newcomers guide contains a curated list of newcomer-friendly projects, step-by-step instructions for setting up a development environment, explanation of Git usage in the context of GNOME contributions, and general advice and communications etiquette. The guide has an attractive design thanks to Bastian's design skills.

The December 2014 to March 2015 round of the Outreach Program had 44 participants with the following 16 Free and Open Source Software organizations: Debian, Evergreen, FFmpeg, Foreman, GNOME, Linux kernel, Mesos, Mozilla, Open Source Robotics Foundation, OpenStack, Humanitarian OpenStreetMap Team, oVirt, Perl, Wikimedia, X.Org, Xen Project.

These internships were generously sponsored by:

Equalizer Level — *Red Hat and Wikimedia Foundation*
Promoter Level — *Google, Hewlett-Packard, Intel, and Mozilla*
Includer Level — *Akamai, Cisco, Codethink, Debian, Evergreen, FFmpeg, Free Software Foundation, Mapzen, Open Source Robotics Foundation, OpenStack Foundation, Perl, Rackspace, Samsung, Twitter, X.Org, and Xen Project.*

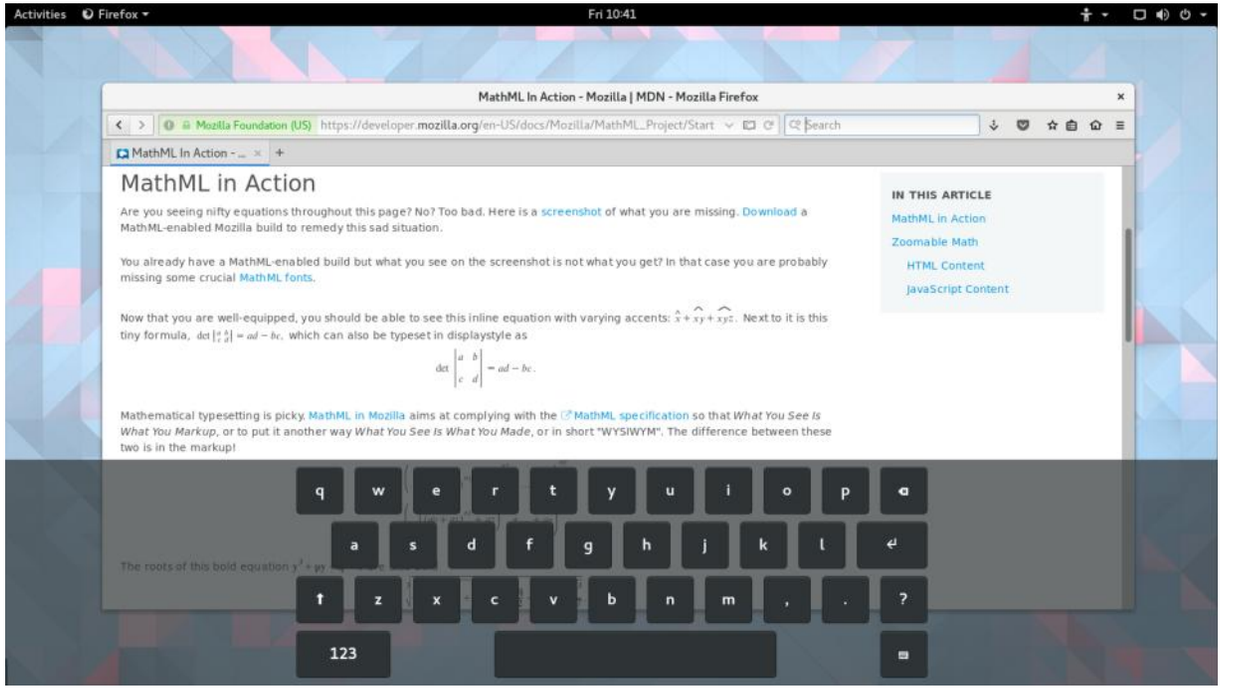
# Accessibility

The accessibility of GNOME is one aspect many contributors are very proud of. Our work on usability and localization helps to make the software we create truly usable by anyone. In the past year, two new versions have been released, and with the help of the community, many bugs have been reported and fixed.

Caribou, the GNOME on-screen keyboard, added a tool to generate keyboard layouts from CLDR (Common Locale Data Repository) files. The Unicode CLDR provides key building blocks for software to support the world's languages, with the largest and most extensive standard repository of locale data available.

Orca introduced support for rewind/fast-forward and structural navigation in its Say All feature. This feature speaks document content from your present location to the end of the document. By default, pressing any key will interrupt Say All's presentation. With these settings, the user can move within the document in order to re-hear something which was just read, skip past text of no interest, or use structural navigation without having to restart Say All.

Evolution, the personal information manager, is again accessible after its migration to WebKitGTK+, and Orca was adjusted to take advantage of this. New ATK roles were added for identifying fractions, roots, subscripts, or superscripts in mathematical content. A new role was also created to reflect static/generic objects. Orca added support for all of these new roles.




One of the major new accessibility features is the support for MathML in Orca. MathML (Mathematical Markup Language) is a markup language used for describing mathematical notations and capturing both its structure and content. It aims at integrating mathematical formulae into World Wide Web pages and other documents. Orca's MathML support works with Firefox, and it is a work-in-progress for WebKitGTK+. Firefox not only received MathML support, but also improvements on Orca performance for Google Docs applications and other rich text editors like Etherpad.

In the accessibility infrastructure side, many tests for AT-SPI ATK has been written, greatly helping to maintain the code quality and avoiding the introduction of new bugs.

# Friends of GNOME

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