Starting an Open Source Program in your Company

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Hi, I'm Chris Aniszczyk (@cra)

› CTO/COO, Cloud Native Computing Foundation (CNCF)

› Executive Director, Open Container Initiative (OCI)

› VP, Developer Relations, Linux Foundation (LF)

› *In a previous life…*

  › *Director of Open Source (@Twitter) / Sr. Eng Manager*

  › *Co-Founder of the TODO Group*

  › *Co-Founder of EclipseSource (via Code9)*

  › *Open Source Committer (Gentoo, Fedora, etc)*

  › *Principal Software Engineer, Red Hat*
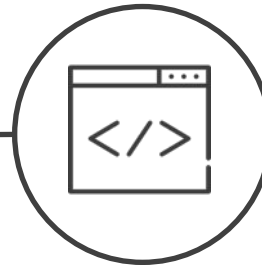
  › *Senior Software Engineer, IBM*

Agenda

› Industry Trends Around Open Source

› Rise of Open Source Programs

› What is the TODO Group?

› Starting an Open Source Program

› Measuring an Open Source Program
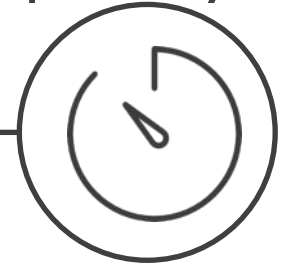
› Q&A

Trend: We all see Open Source is Accelerating
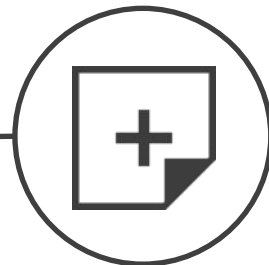
23M+
Open Source
Developers

41B+
Lines of Code

10,000+
New Versions
per Day

64M+
Repositories on
GitHub

1,100
New Projects a Day

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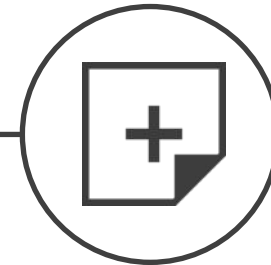
Trend: Open Source is Eating the World

- "78% of companies are using open source… 63% are participating…" (https://www.blackducksoftware.com/future-of-open-source)

iOS: General->About->Legal->Legal Notices

http://www4.mercedes-benz.com/manual-cars/ba/foss/content/en/assets/FOSS_licences.pdf

https://www.tesla.com/blog/all-our-patent-are-belong-you

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Trend: Data Growth is Accelerating

- More services/things are being connected to to the internet and generating data that will help companies optimize their business: http://www.kpcb.com/internet-trends

- Cost to store data is getting much cheaper (also for fun follow @InternetOfShit)

Data in Digital Universe vs. Data Storage Costs, 2010 – 2015

— Data in Digital Universe (Petabytes) — Storage Costs ($/GB)
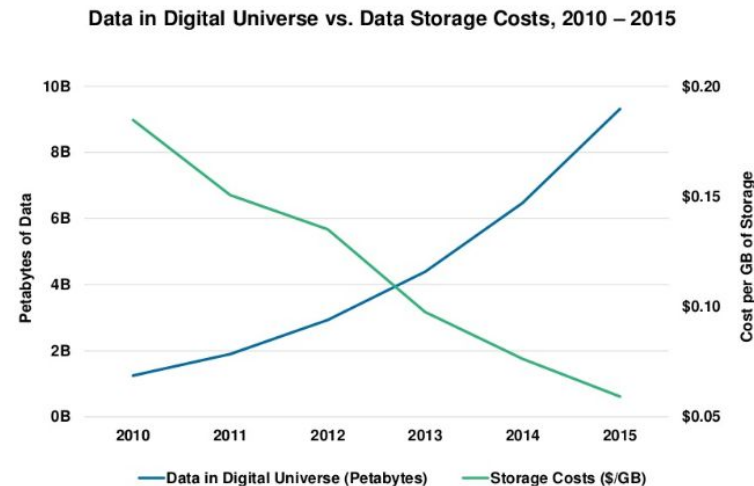
Internet of Shit
@internetofshit

HOW HARD IS IT TO MAKE A COOKIE, LORD
theverge.com/circuitbreaker …

CHiP
Smart Cookie Oven

POWERED BY SIDECHEF

RETWEETS 544   LIKES 773

8:31 AM - 3 Nov 2016

Trend: Web Scale Companies Open Up and Share

› Software is a means to an end for internet/web scale companies
  › Google, Facebook, Netflix, Twitter, LinkedIn, etc…

› Google: Kubernetes, Tensorflow

› Facebook: OpenCompute, HHVM, OpenCellular

› Twitter: Mesos/Aurora/Parquet/Heron

› LinkedIn: Kafka

› Netflix: NetflixOSS: https://netflix.github.io/

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Trend: Closed to Open Ecosystems

› Over time, infrastructure has moved from single-vendor closed ecosystems to multiple cross-vendor open ecosystems

› Infrastructure is one example, happening in other areas too!

Non-Virtualized Hardware	Virtualiza-tion	IaaS	PaaS	Open Source IaaS	Open Source PaaS	Containers	Cloud Native
2000	2001	2006	2009	2010	2011	2013	2016+
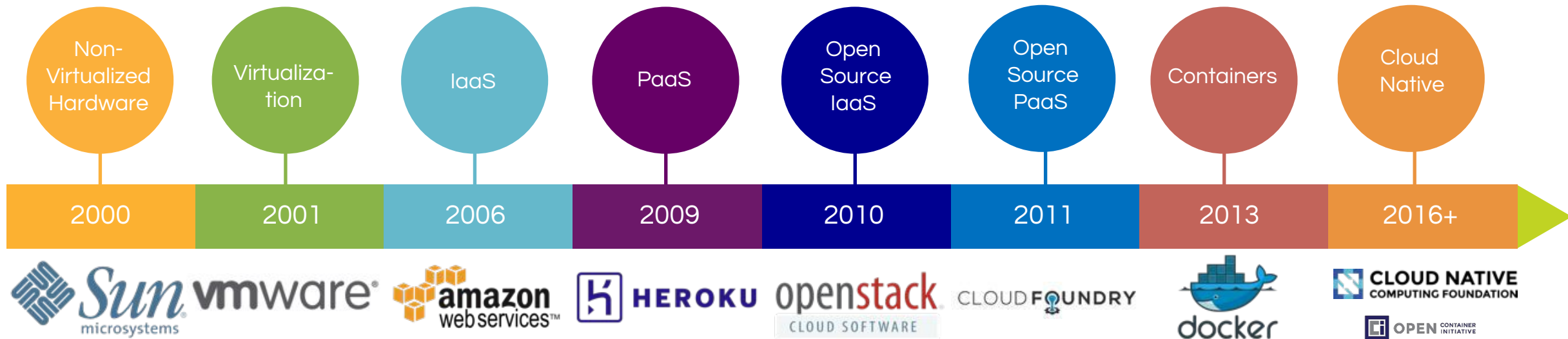
Trend: Open Source Isn't Slowing Down Any Time Soon!
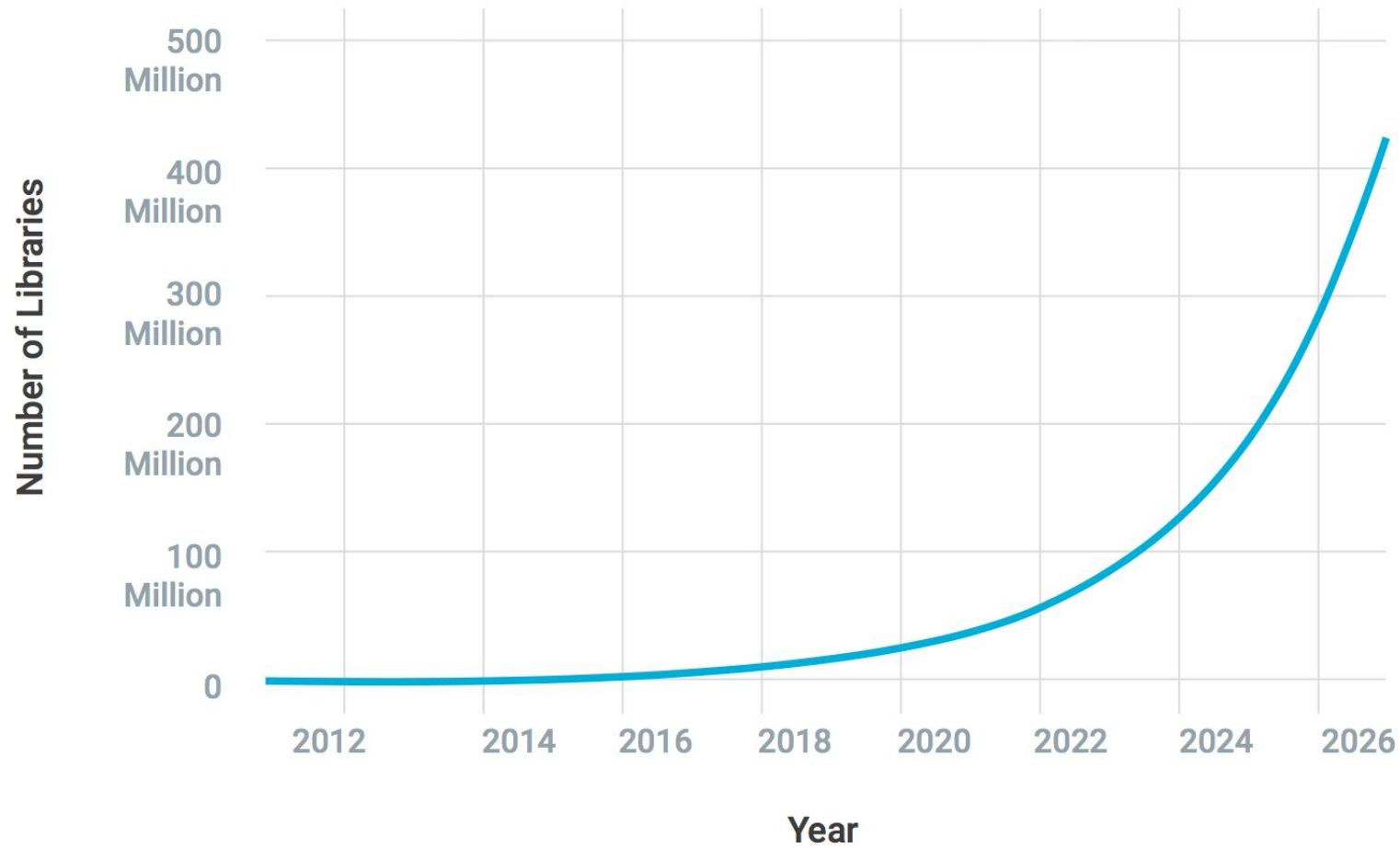
Rise of Open Source Programs

Trend: Web Scale Companies + Open Source Programs

The internet scale companies pioneered the creation of open source programs:

› Google: https://developers.google.com/open-source/

   › *"...tasked with maintaining a healthy relationship with the open source software development community"*

› Facebook: https://code.facebook.com/opensource

   › *"...we're keen users and publishers of open software. We'll keep you up-to-date with our new projects..."*

› Twitter: http://todogroup.org/blog/why-we-run-an-open-source-program-twitter/

› Netflix: https://netflix.github.io

Trend: Traditional Companies + Open Source Programs

Traditional companies have begun creating open source programs too!

› Autodesk
  › https://github.com/todogroup/guides/blob/master/casestudies/autodesk.md
› Comcast
  › https://github.com/todogroup/guides/blob/master/casestudies/comcast.md
› Intel: https://01.org *("...international team dedicated to working within open communities.")*
› Salesforce
  › https://github.com/todogroup/guides/blob/master/casestudies/salesforce.md
› Samsung: http://commit101.org
  › *"The Open Source Group was formed in 2013 to do the following: Help guide the company in effective consumption, collaboration, and development of open source software. Provide advocacy on behalf of Samsung in external open source communities....*

Trend: Startups* + Open Source Programs

Forward looking startups also created open source programs in their earlier days

› Box: http://opensource.box.com

  › http://todogroup.org/blog/creating-an-open-source-office-box/

  › "we give back to the open source community whenever possible, by contributing code to outside projects and sharing projects that we've developed internally"

› Dropbox: https://opensource.dropbox.com

  › "Dropbox loves open source! We participate in the open source community by using open source software internally and open sourcing our own projects"

› Uber: https://uber.github.io

  › "Uber loves open source and contributing to the open source community"

› GitHub: http://todogroup.org/blog/why-we-run-an-open-source-program-github

Trend: Open Source Program… even Microsoft!

https://microsoft.com/opensource

- *"Microsoft's commitment to openness and collaboration is ingrained… These collaborations have enabled new scenarios for customers and partners to take open source software and integrate it with a Microsoft platform."*

- http://todogroup.org/blog/why-we-run-an-open-source-program-microsoft

Hell they even bought GitHub!
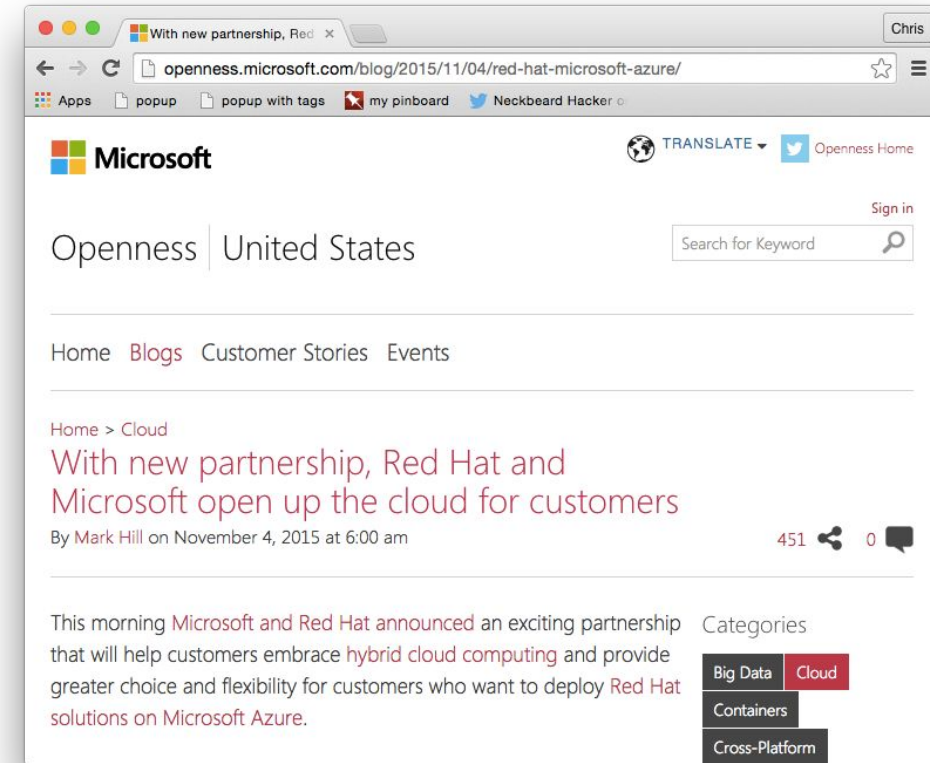
Trend: Open Source Programs… even Governments!?

https://gds.blog.gov.uk/about

- *"We now want to build on that work with a more concerted approach to open source (and "inner source"), building collaboration and reuse internally and making higher impact contributions to the wider open source community."*
- http://www.theregister.co.uk/2016/07/20/gds_recruiting_open_source_chief/
- https://www.linkedin.com/jobs/view/169669924

UK Government Digital Service looking for a "Chief Penguin"

Submitted by Adrian Offerman on August 23, 2016

(☒ ★★★★★) 5/5 | 1 votes |

The UK Government Digital Service (GDS) is looking for an Open Source Lead, or "Chief Penguin", as The Register prefers to call the new position.

According to the job description on LinkedIn, the new role has been created as part of a change of course to "a more concerted approach to open source, building collaboration and reuse internally and making higher impact contributions to the wider open source community". The new Lead will "work with teams in GDS and across government to help build their open source community, both through driving specific, focused projects and by providing tools and an environment that allow the work to grow and thrive". At the same time, the job requires technical hands-on capabilities as well: "day to day responsibilities will alternate between programming, liaising with colleagues from other professions (eg. communications, legal and delivery management), community building and leading projects".

GBP 1.7 billion in year-on-year savings

The GDS was established exactly five years ago, bringing together six elements of the government's existing digital services in one place at the Cabinet Office. Its main task is to transform government digital services. Open standards and open source have been strategic parts of its work [1, 2].

According to an internal audit report, the GDS in 2015 contributed at least GBP 1.7 billion in year-on-year savings to the government budget.

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Trend: Chief "Open Source" Officer

Companies are hiring executive open source leads...

▸ *"As VMware broadens its ecosystem from traditional engagements in the data center space to areas such as software-defined networking and Cloud Native and mobile app technologies, we have been releasing more and more of our new offerings as open source software," said Ray O'Farrell, executive vice president and Chief Technology Officer, VMware. "Dirk brings a new level of leadership, best practices and creativity to help us drive these open source contributions and projects."*

▸ http://thenewstack.io/makers-dirk-hohndel-vmware-role-open-source-commercial-software/
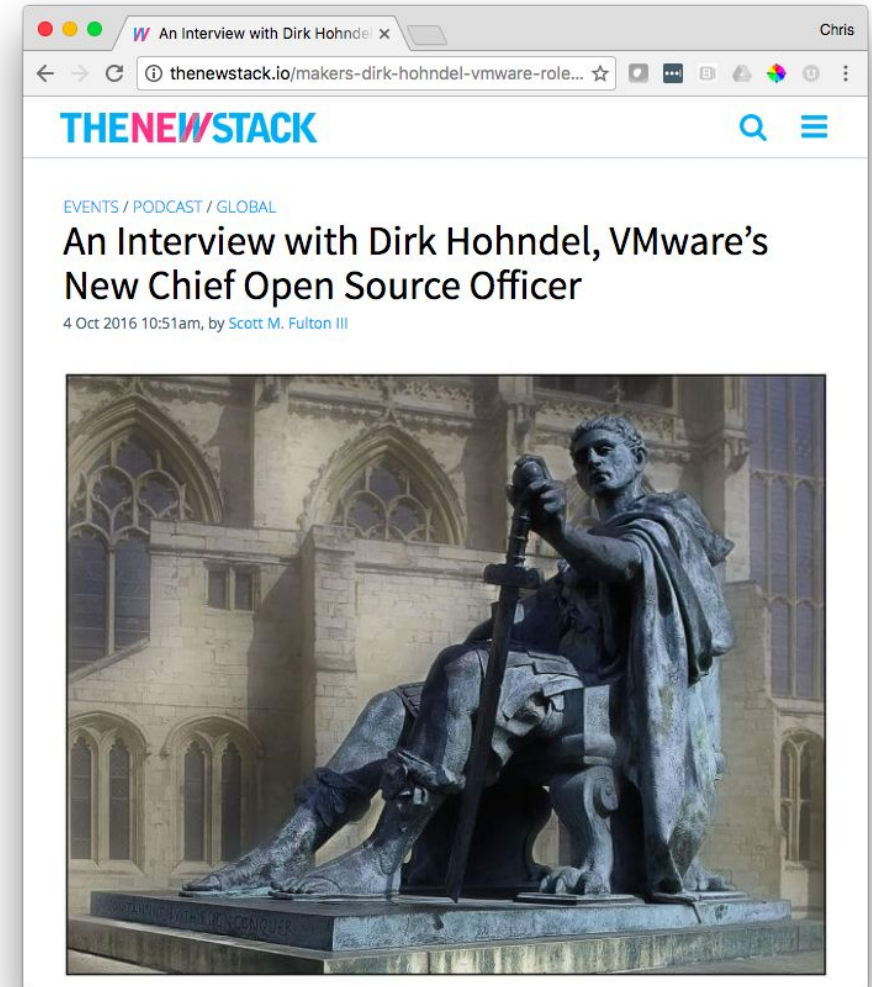
TODO Group

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Origins of the TODO Group: todogroup.org

‣ Many of us who ran open source program offices shared a private mailing list to commiserate…

‣ It was an avenue to discuss issues in private and even find ways to collaborate on open source projects…

‣ Focused on Silicon Valley companies initially

‣ In 2014 we had an idea of scaling and opening up the the community more…

‣ Announced the TODO Group @Scale 2014 conference!

‣ **Moved to the Linux Foundation in 2016!**

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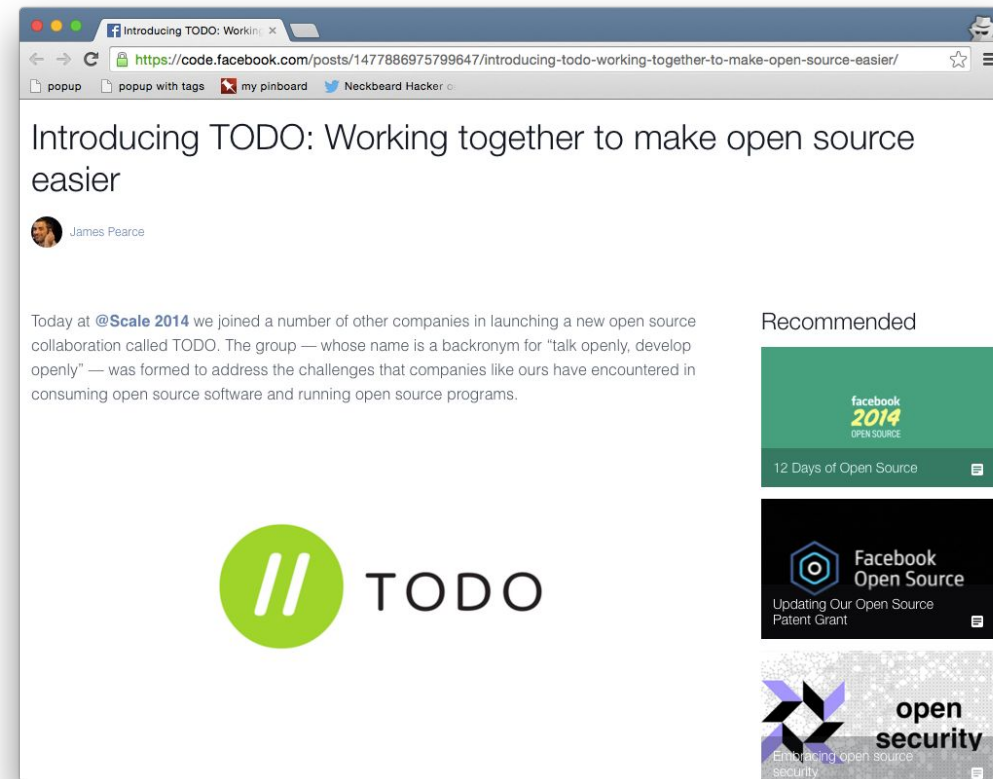
What is the TODO Group?

- ‣ TODO Group is a group of companies who want to
  - collaborate on best practices on running open source programs
  - share open source policies and training material
  - codify quality criteria for well-run open source projects
  - build and share tools to maintain those quality standards

- As we scaled our open source programs, we realized we all built similar tools for the purposes of corporate scale open source…

- What is corporate scale open source?
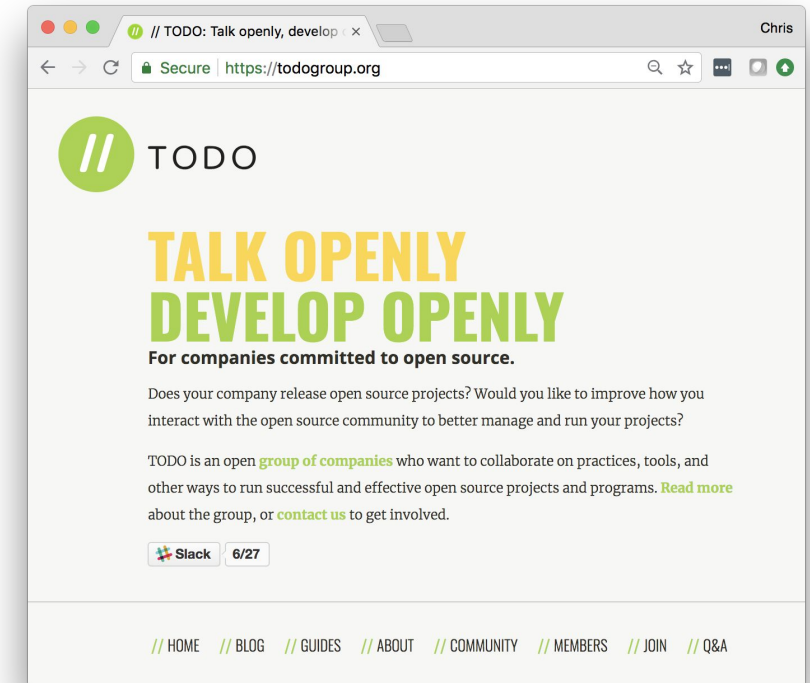
FYI: **Corporate Scale** Open Source

- Corporate participants in open source have a number of unique concerns ranging from:
  - scale (i.e., Google and Microsoft have thousands of open source projects)
  - insights
  - cultural
  - legal / governance

- Companies doing open source generally want to be good community citizens, to be open and inclusive. They also need to run a business and be aware of responsibilities to their employees, shareholders and the broader community.

TODO Group + GitHub

- GitHub has won as the default host for open source projects but wasn't designed for corporate large scale open source so there are considerable feature gaps… the TODO Group is helping identify and fill those gaps (i.e., multiple org management, CLAs, community metrics)

- We also work with GitHub as a "product council" to help improve their platform that we continued to depend on (e.g., improved org management and required commit status features)

- **See https://github.com/todogroup/gh-issues**

TODO Group Members (40+ organizations)

Andrew Spyker (Netflix)

Christine Abernathy (Facebook)

Chris Aniszczyk (LF)

Gil Yehuda (Oath)

Guy Martin (Autodesk)

Ian Varley (Salesforce)

Ibrahim Haddad (Samsung)

Jeff McAffer (Microsoft)

Jeff Osier-Mixon (Intel)

Joe Beda (Heptio)

Nithya Ruff (Comcast)

Sarah Novotny (Google)

Stormy Peters (Red Hat)

Will Norris (Google)
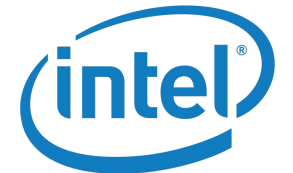
Starting an Open Source Program

What is an Open Source Program/Office?

- By creating an open source program office, businesses can enable, streamline and organize the use of open source in ways that tie it directly to a company's long-term business plans. **An open source program is designed to be the center of the universe for a company's open source operations and structure, helping to bring all the needed components together.**

- **See**
    - https://github.com/todogroup/guides/blob/master/creating-an-open-source-program.md

Open Source Program Responsibilities

The responsibilities of a program office are varied. These include:

- Clearly communicating the open source strategy within and outside the company

- Owning and overseeing the execution of the strategy

- Facilitating the effective use of open source in commercial products and services

- Ensuring high-quality and frequent releases of code to open source communities

- Engaging with developer communities and seeing that the company contributes back to other projects effectively

- Fostering an open source culture within an organization

- Maintaining open source license compliance reviews and oversight

For every company, the role of the open source program office will likely be custom-configured based on its business, products, and goals. There is no broad template for building an open source program that applies across all industries — or even across all companies in a single industry. That can make its creation a challenge, but you can learn lessons from other companies and bring them together to fit your needs.

Open Source Program Structures

- An open source program structure depends on your company's primary business and your open source strategy, they can be located in the office of the CTO or other locations.

  - **Legal**: For companies that have large intellectual property portfolios, that could mean the open source program office might be a perfect fit in the legal office, where developers can work closely with the legal team on issues that arise. That might be a good fit for a hardware company because it's always concerned about potentially running into IP-related legal issues.

  - **Engineering**: Other companies are more engineering-driven, so they choose to maintain their open source program offices within their engineering departments. That allows them to focus their efforts directly on making their developers more effective and productive in their work.

  - **Developer Relations/Marketing**: In other cases, some open source offices are located inside the marketing wing of organizations because they use open source to funnel leads aimed at selling the products they build using open source.

Open Source Program Activities

Open Source Office – Non Development Activities

Relationships Collaborations

- Linux Foundation
- Open Invention Network
- Software Freedom Law Center
- Mozilla Foundation
- GNOME Foundation
- Free Software Foundation
- Apache Foundation
- Software Conservancy Center

Open Source Legal Compliance

- Manage and support open source compliance process
- Advise on open source compliance
- Help resolve compliance inquiries
- Provide guidelines and checklists to enable internal education and awareness on the topic
- Sensing on emerging open source legal concerns

Strategy, Community, Engagement

- Develop, maintain and execute corporate open source strategy & policy
- Internal and external evangelism
- Represent open source views in internal policy discussions
- Launch new open source projects, support open sourcing internal code
- Sponsor, publish, speak at open source conferences
- Organize community events
- Develop and deliver internal open source training
- Provide engineering mentorships to grown internal open source expertize
- Conduct internal technical workshops
- Advise on community matters

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Creating an Open Source Program: #1 Find a Leader

- Regardless of how your planning starts, it's important to find the right leader to help develop and then run the fledgling program office inside a company. The top candidate will have a detailed understanding about how open source works, along with some technical chops from working as a developer, contributor, or committer on existing open source projects. They should have a broad understanding of your company's business along with the business acumen and management skills to help inform strategy and plan across business units.

- In the spirit of open source collaboration, a plethora of online resources exists to help find the best candidates including detailed sample job description postings for open source program managers and other leaders from a variety of companies that established such roles, including Capital One, Box, VMware, Microsoft, and more.

- See https://github.com/todogroup/job-descriptions

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Creating an Open Source Program: #2 Define Operations

- The budget, staffing, and technology tools and systems needed by a new program office are also key issues to resolve in establishing its operations. Some companies begin with a part-time manager, but learn they will only get so far with that approach. **Making the position someone's full-time job is a solid step to get the program off the ground, along with a small support staff to keep it nimble.**

- An example of a well-defined open source program office is one that drives needed policy, processes and tools, while also operating with a mantra of eliminating friction where it is found, using tools to automate what can be streamlined, and delegating tasks which need to be accomplished.

- A program office must offer structured policies and processes but also remain flexible. When open source users and contributors need help, the office operates more like a consultancy, providing guidance while still allowing employees to make individual or group business decisions relating to their work. **Ultimately, the goal is to establish the right balance of duties and responsibilities to meet the needs of your company and its open source users.**

Creating an Open Source Program: #3 Seek Buy-in

- Establishing an open source program office isn't something that should be done in a vacuum. Because it will have a central role in your business, creating it successfully will require open and honest input and feedback from all involved parties inside enterprises. Making sure that everyone from the executives to the developers have a say in its creation will help give the effort broad-based support.

Creating an Open Source Program: #4 Setting Policies

- With many of the other important components now planned or assembled for your company's open source program office, from its creation to its structure to personnel, the next step is to develop well-defined policies and processes which will enable consistent implementation of your company's open source strategy. Crucially, they should require minimal overhead. Microsoft looks at its open source program office policies and processes with the goal of making them as unobtrusive as possible for developers and other team members.

Creating an Open Source Program: #4 Setting Policies

- For open source program policy examples:
  https://github.com/todogroup/policies and
  https://opensource.google.com/docs/

  - How your company accepts external contributions to their open source projects
  - How to prepare for open source releases
  - How approvals are received
  - How developers can use open source code they find on GitHub and other code repositories
  - Procedures and rules explaining how open source code can be brought into your company
  - How the incoming code is catalogued so others know it is being used
  - How a company can grow a community of like-minded external developers around it to keep it thriving
  - Rules that help determine when code should be released as open source or kept as intellectual property

Creating an Open Source Program: #5 Develop Tooling*

REPO LINTER

https://github.com/todogroup/repolinter

mention-bot commented 2 minutes ago

By analyzing the blame information on this pull request, we identified **@vjeux** to be a potential reviewer.

https://github.com/facebook/mention-bot

The GHTorrent project

Welcome to the GHTorrent project, an effort to create a scalable, queriable, offline mirror of data offered through the Github REST API.

Follow @ghtorrent on Twitter for project updates and exiting research done with GHTorrent.

What does GHTorrent do?

GHTorrent monitors the Github public event time line. For each event, it retrieves its contents and their dependencies, exhaustively. It then stores the raw JSON responses to a MongoDB database, while also extracting their structure in a MySQL database.

GHTorrent works in a distributed manner. A RabbitMQ message queue sits between the event mirroring and data retrieval phases, so that both can be run on a cluster of machines. Have a look at this presentation and read this paper if you want to know more. Here is the source code.

The project releases the data collected during that period as downloadable archives.

How much data do you have?

Currently (Jan 2015), MongoDB stores around 4TB of JSON data (compressed), while MySQL more than 1.5 billion rows of extracted metadata. A large part of the activity of 2012, 2013, 2014 and 2015 has been retrieved, while we are also going backwards to retrieve the full recorded history of important projects.

How can I help?

GHTorrent needs contributions on the following fronts:

http://ghtorrent.org

https://github.com/Netflix/osstracker

https://github.com/Azure/azure-oss-portal

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*https://github.com/todogroup/guides/blob/master/tools-for-managing-open-source-programs.md

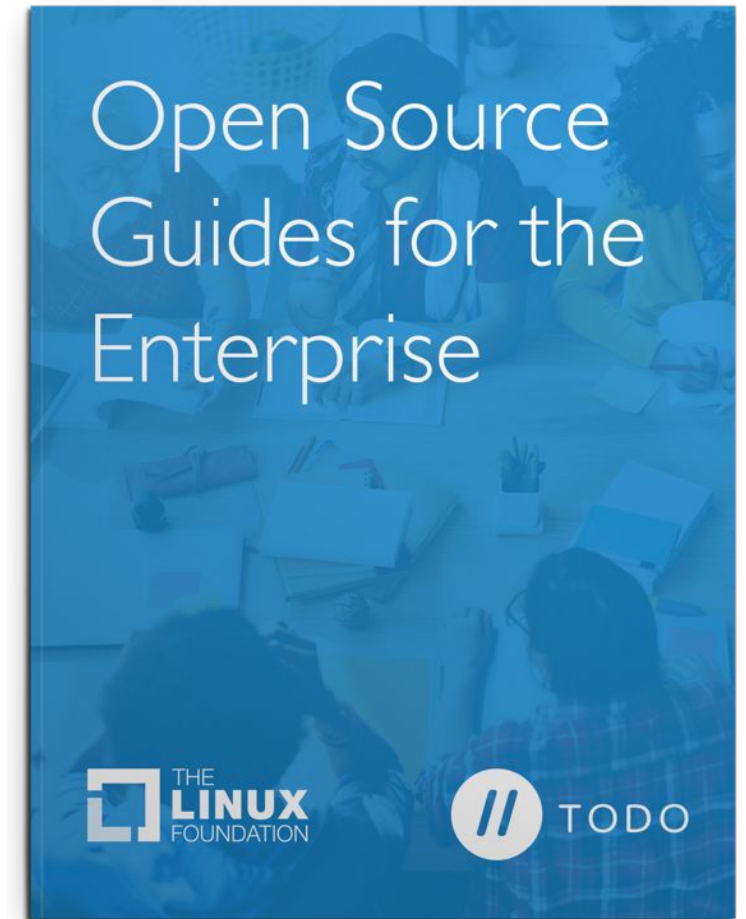# Learn from Others: TODO Open Source Guides

› Developed in collaboration with TODO Group

› Leverage best practices to run or start an open source project within your organization

› Topics include:

  › Creating an Open Source Program

   Tools for Managing Open Source Programs

  › Measuring Your Open Source Program's Success

English: https://linuxfoundation.org/resources/open-source-guides
Japanese: https://www.linuxfoundation.jp/resources/open-source-guides/

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Measuring an Open Source Program

Setting Goals and Metrics

- **Strategy alignment:** Do your goals align with core business strategy, product goals, and other internal business goals?

- **Level of control:** Do your program managers have direct control over results, or does that live with engineering, legal, or some other function? Set goals that are achievable, within your control.

- **Project variation:** Goals can and should vary by project, depending on its purpose, community composition, technology stack, and other variables. For example, Facebook has noticed that its Javascript projects tend to be forked more often. They've learned (after many cycles of tracking!) these metrics aren't necessarily the best indicators of project health for this type of project.

- **Quantity vs. quality:** Not all goals should be tied to a number. Process improvements that boost the quality of your projects are just as important, if not more so. Just because you're hitting all the numbers, doesn't necessarily mean your projects are healthy. Conversely, a very small project that's not growing could also be extraordinarily healthy.

> "I tend to find metrics based on what the community is feeling as pain, and try to change those metrics for the better to improve the community health." – Sarah Novotny, Kubernetes Community Manager at Google.

Goal 1: Ensure the efficient legal compliance of code

- How much open source code do you consume?

- How well is that consumption tracked?

- The policy for using open source code is clear and developers are aware of it.

- The processes and tools for bringing in code is clear and devs are following it.

- Which products and services are third-party code being used in?

- How many compliance issues are you having and how quickly are they resolved? (See the Open Compliance Program for more on this topic)

Goal 2: Increase Developer Productivity and Efficiency

- Number of commits made to external projects identified as strategic to the organization

- Number of developers contributing. Also, who are they and which projects do they contribute to?

- Number of project maintainers employed by the organization (hired and grown)

- Project health for the projects you contribute to

- Sentiment analysis: your organization's reputation in open source communities

- Are developers aware of the policy for contributing? (You have one, right?)

- Do they follow the process for contributing? (ie must they sign a CLA, etc.)

- Do they ask you for help and are you prompt in providing it?

- Amount of time between software releases – is it increasing or decreasing?

- What are the engineering costs associated with contributing upstream vs. maintaining forked code?

Goal 3: Create and Grow Open Source Projects

- Is there a clear policy for creating new open source projects and are developers aware of it?

- Is there a clear and easy process for creating new projects and are developers following it?

- How easy is it for outsiders to contribute to your organization's projects?

- Project maintainers are welcoming and helpful

- Projects are well-maintained and supported

- Code is well documented

- How to contribute is well-defined

- Other quantitative metrics such as number of new contributors, number of issues created, amount of time it takes to close issues, etc.

- Number and diversity of external contributions your projects receive

- Popularity of your organization's projects: GitHub stars, social media followers, etc.

- Number of users in deployment and/or production

- Number, breadth, and quality of projects your organization launches. For example, mobile or data infrastructure-related projects, etc.

- Performance increases in your project and related product

- Time between releases

Goal 4: Recruit and Retain Developers

Participating in and creating open source projects as an organization is a great way to attract developers – and onboard them quickly, with fewer resources devoted to training. **Developers who use or contribute to your projects will already be familiar with your processes, tools, and technologies when they join the organization.**

To help make a more direct connection between program efforts and recruiting, Facebook conducts a biannual survey which asks new hires three basic questions:

- Are they aware of the company's open source program?

- How did that awareness influence their decision to join the company?

- Does their experience with open source apply to the work that they are doing now?

Goal 5: Promote Open Source Culture

It's important to track how open source culture advances within your organization to measure your program's effectiveness. Some common ways to measure adoption of open source culture include:

- Awareness of and support for the open source strategy and program among management and individual contributors across all departments, from engineering to marketing and public relations

- Branding and awareness in open source communities – how your organization is perceived

- Participation – you are participating actively in open source communities in a positive way.

- Training and mentorship – you work with developers to improve their open source contributions and projects, find opportunities to contribute, and learn the tools and processes of open source communities, ensure that contributors receive support from their peers and managers

- Adoption of a common toolset

- Code quality is acceptable for open source/external consumption

- Advocating on behalf of the organization – attending and speaking at conferences, writing articles or tutorials

- Sponsoring foundations, groups, or hackathons

Goal 6: Align open source interests with business needs

Community and developer advocacy is a fairly new, but increasingly popular, role in open source programs. This is an important role that ensures your products and services are benefiting from your open source communities,and thus that your open source program stays in line with the organization's broader business strategy and objectives.

Some metrics to track success in your advocacy include:

- How many contributions are coming from outside the organization?

- How many full-time contributors are outside your organization?

- How much externally contributed code is making it back into products?

- How many hires are coming from open source contributions?

Conclusion and Q&A

Summary and Final Thoughts...

› Open source will continue to eat new industries (i.e., world)

  › You will see more open source foundations around industries/problem areas: OpenAI, OpenCelluar

› Every company will become a software company, *so learn lessons from others!*

  › They will also act more like internet-scale companies like Google, Facebook, Netflix

  › They will establish open source programs and hire open source leads

› **Contribution brings influence and is the currency in open source… contribute or lose relevance! https://todogroup.org/join/**

› **Read: https://github.com/todogroup/guides**

Thank you!

https://twitter.com/cra
https://aniszczyk.org
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