



SAMSUNG RESEARCH AMERICA

Mastering Open Source Software: The Path to Software Leadership

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Agenda

- How did we get here?
- 4 core elements to mastering open source
- Samsung' experience
- What did we learn?

Historical perspective: How did we get here?

Gerstner: IBM to invest \$1 billion in Linux next year

NEW YORK -- IBM (ibm) chairman and CEO Louis Gerstner said IBM is planning to invest \$1 billion in Linux in 2001, and another \$4 billion in "e-sourcing" over the next three years. During his Tuesday morning ebusiness Expo and Conference keynote address here in New York, Gerstner outlined IBM's strategy aimed at allowing the company to take a leadership role in the next chapter of e-business.



By [ZDNet Editors](#) | December 12, 2000 -- 00:00 GMT (16:00 PST) | Topic: [IBM](#)

Ericsson Research

What is Linux? What is the GNU GPL?



Why Software Is Eating The World

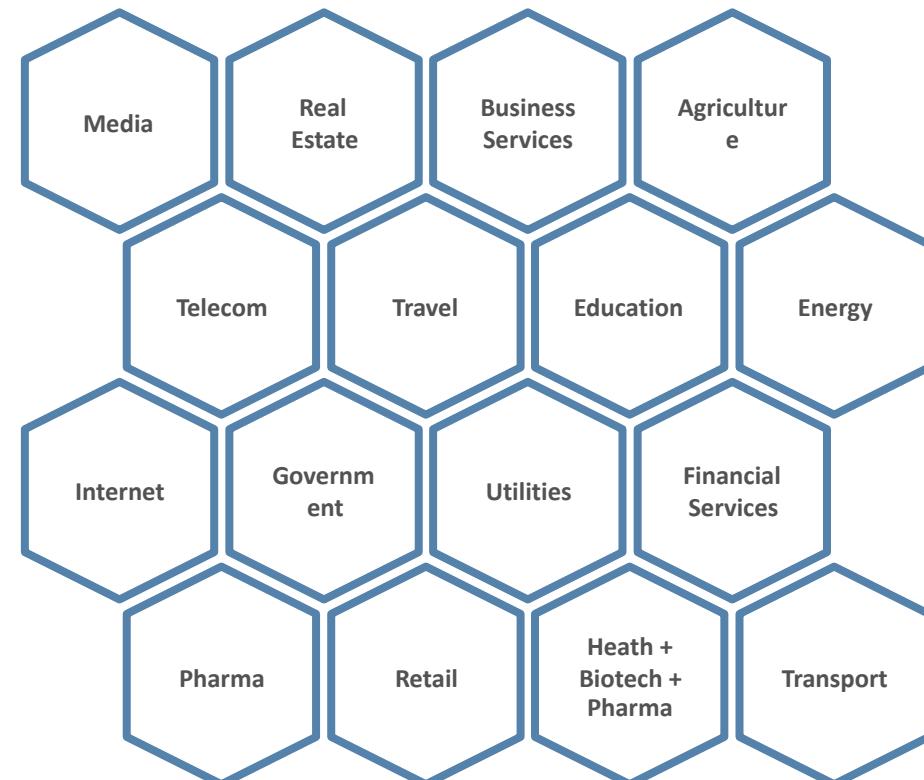


By MARC ANDREESSEN
August 20, 2011

THE WALL STREET JOURNAL.

Software drives all industries

Almost everything we do on a daily basis is shaped by software.



IBM and Linux: The next billion dollars

IBM is renovating its Power computers by investing a billion dollars into making it a full-fledged Linux line for Big Data, cloud, data analytics, and the datacenter.



By Steven J. Vaughan-Nichols for [Linux and Open Source](#) | September 17, 2013 -- 02:40 GMT (19:40 PDT) | Topic: [Data Centers](#)

THE WALL STREET JOURNAL.

Open Source ‘Eating’ Software World: Samsung

By RACHAEL KING

May 5, 2014 5:51 pm ET

San Francisco, Calif. — **Samsung Electronics** Ltd. is aiming for more of a leadership role in various open source projects partially because so many of its products – from refrigerators to mobile devices—now depend on open source software.

As of last day of December 2014, of about 33,000 full-time employees at the Goldman Sacks, 9,000 of them are engineers and programmers.

Comparable to total headcount at Facebook (9,199), LinkedIn (6,897) or Twitter (3,638) for that year.

“ Every industrial company will become a software company. ”

Jeff Immelt
CEO, General Electric

Healthcare
Aviation
Energy
Appliances
Lighting
Oil & Gas
Power systems
Mining
Transportation

2016



Microsoft Job Search

Only the first 500 search results are shown. Refine search results by adding more keywords or using filters.

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Title

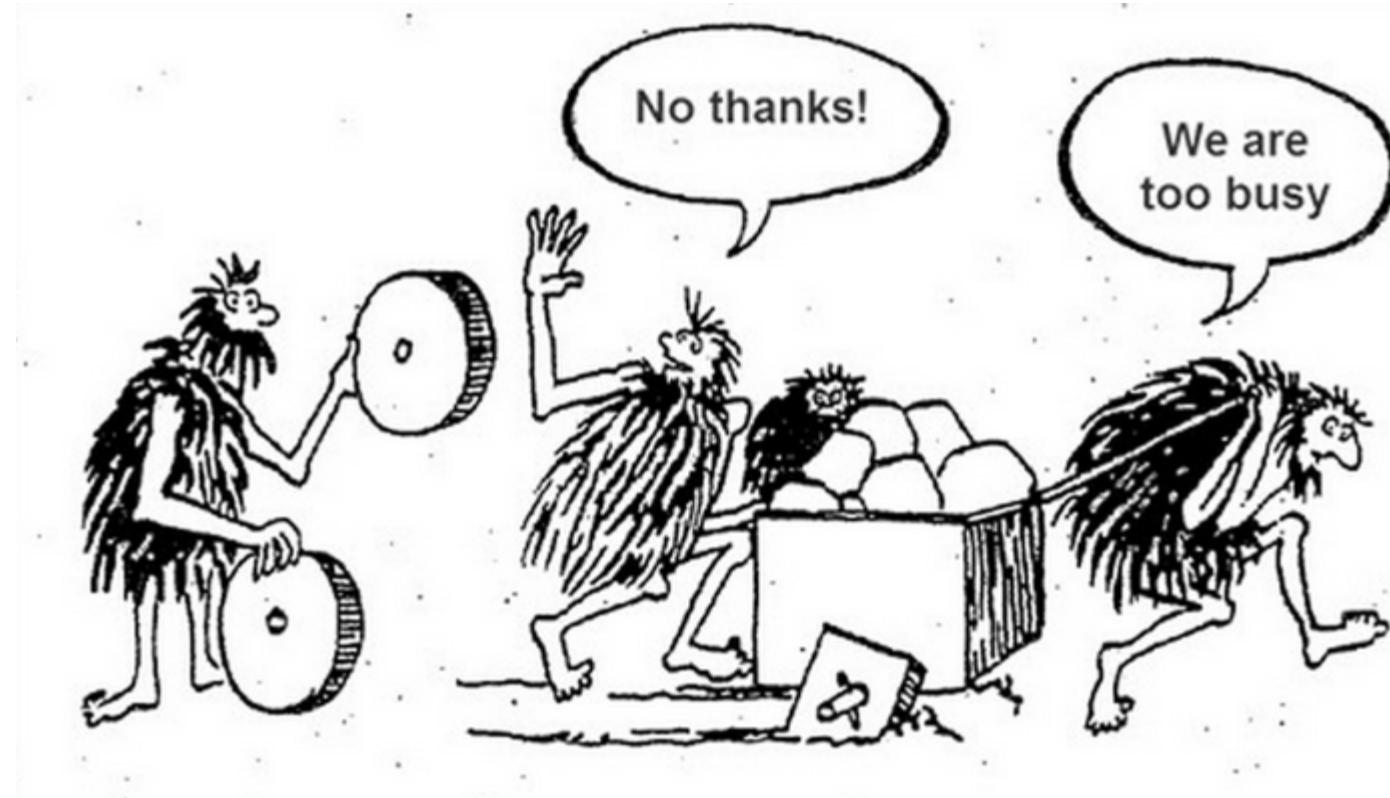
Job family

Senior Software Engineer_OSTC

Development (engineering)

Since CEO Satya Nadella publicly declared "Microsoft loves Linux" in 2014, Microsoft has been taking big steps in embracing Linux and open source. Many of our products and technologies have become cross-platform, such as .Net core, VS Code, Powershell, etc. More and more products now support Linux, including Hyper-V, SQL Server, Operations Management Suite, etc. And Visual Studio as well as many of our Azure cloud services support non-MS languages such as Java, NodeJS, Python, etc. Many open... [More](#)

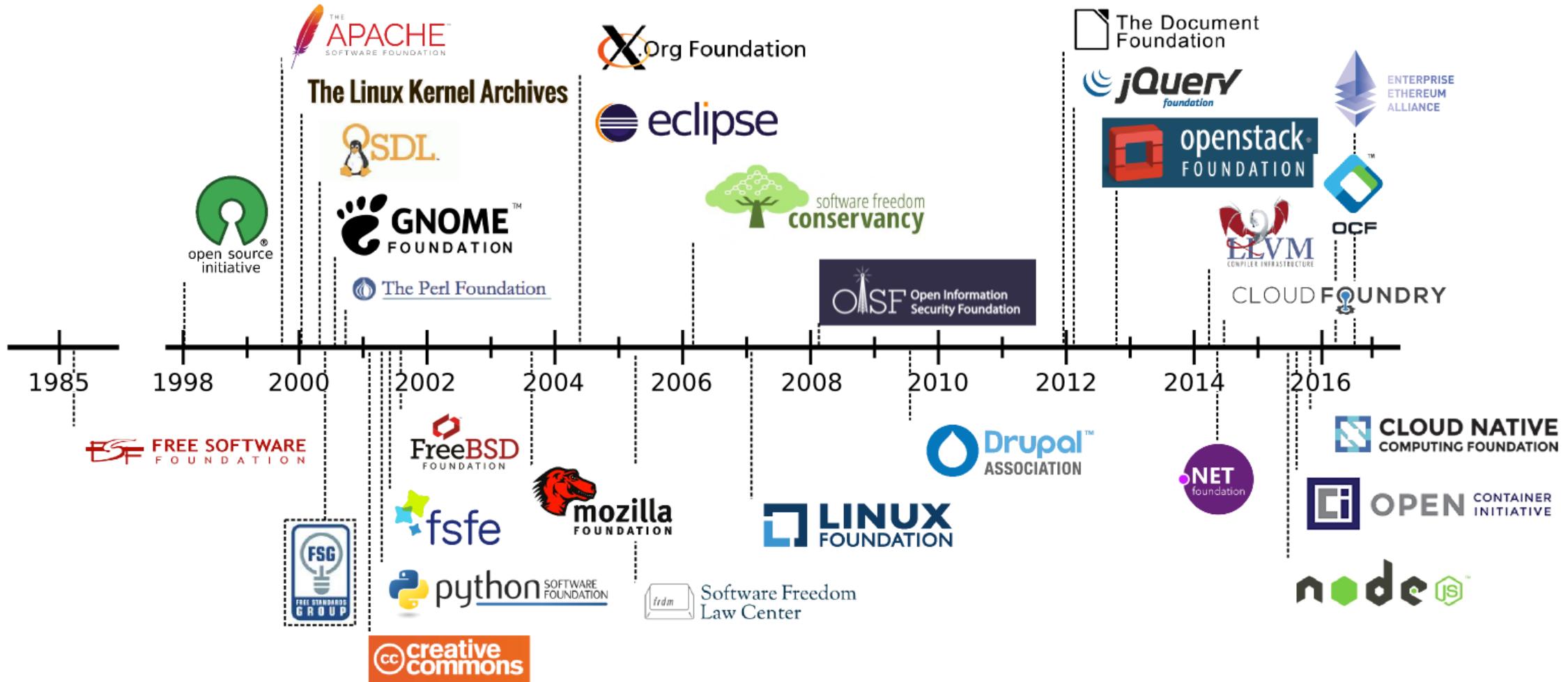
Open source is the new normal. Saying no to open source is like ...



The rise of open source foundation

Organizing open source R&D

Formal structures to enable collaboration across companies with competing commercial interests.



Governance Model & Membership Management

Events Support

IP Management

Continuous Project Guidance

Technical and Hosting Infrastructure

Launching collaborative projects is hard.

Open source foundations can help.

Awareness and Reach

Ecosystem Development

Marketing Platform

Critical Mass at Launch

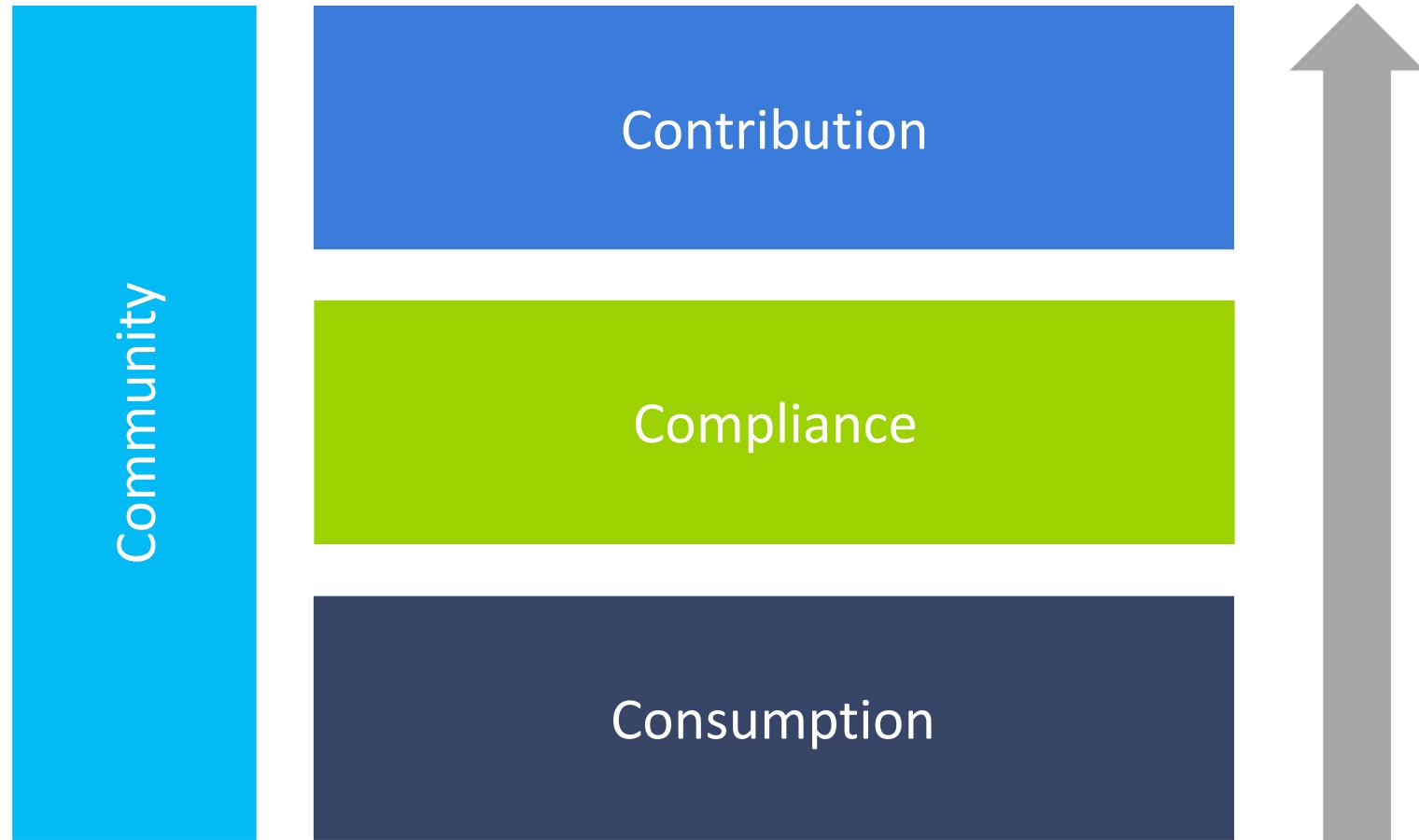
The rise of collaboration projects

Sample projects at the Linux Foundation



*Companies must master open source
if they are to master software.*

Essential elements to master open source



CONSUMPTION AND COMPLIANCE PROGRAM ELEMENTS

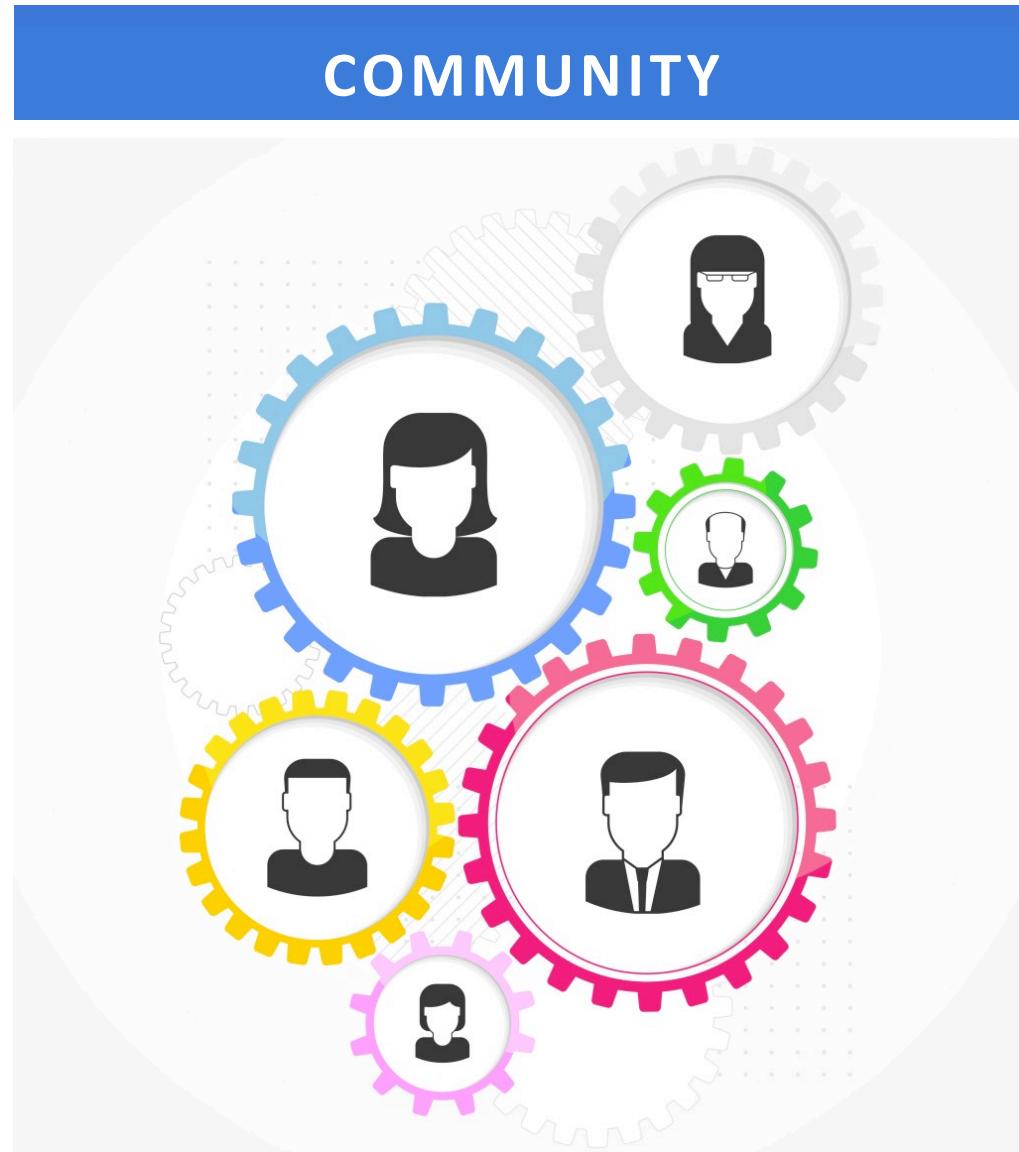
Executive Sponsor + Financial Commitment

Strategy	Portals	Policy	Process	Development	Team	Education	Inventory	Communication	Tools
Compliance	Internal site (Educational)	Universal usage and compliance Policy	Universal usage and compliance Process	Integrate compliance checkpoints in the development and QA process	Compliance teams (core and support)	Training on company policy	Inventory management	Internal messaging	Source code scanning
Managing Inquiries	External site (Obligation fulfillment, source code distribution)	Distribution	Distribution	Scoreboard and success metrics	Guidelines and best practices	Training on open source licenses	Inventory of 3 rd party code	External messaging	Linkage analysis
Legal (Risk tolerance)		Auditing	Auditing	Integrate compliance tools with build systems	New employee orientation	Checklist for product team			Project management
M&A, Corporate Development		Notices	Notices		Checklist for developers	Checklist for SW procurement			Bill of Material
Software Procurement		Usage	Usage		Compliance mentorship	Professional formal training			Automation for online forms and workflow
		Company policy on open source licenses	Obligation Fulfillment		Invited speakers				IP evaluation tool
		Company policy on mixing code under different licenses							

CONTRIBUTIONS PROGRAM ELEMENTS

Executive Sponsor + Financial Commitment

Organizations	Contribution	Dedicated Group	Open Standards
The Linux Foundation	Policy and process on project contributions	Establish open source group	Participate in relevant open standards
OpenChain	Guidelines and contribution training	Hire from open source projects	Consider open sourcing internal technology as reference implementation
SPDX	Contribution Approval Team	Support open source foundations	
Open Compliance Program	Increased participations in key open source projects	Host open source events	
TODO Group		IT infra to support open source development	
Software Freedom Law Center		Establish/recognize open source career path	
Open Source Initiative			
Free Software Foundation			
Software Freedom Conservancy		Support communities of projects you depend on	



Open source is beyond just development

Relationships / Collaborations

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

Open Source Legal Compliance

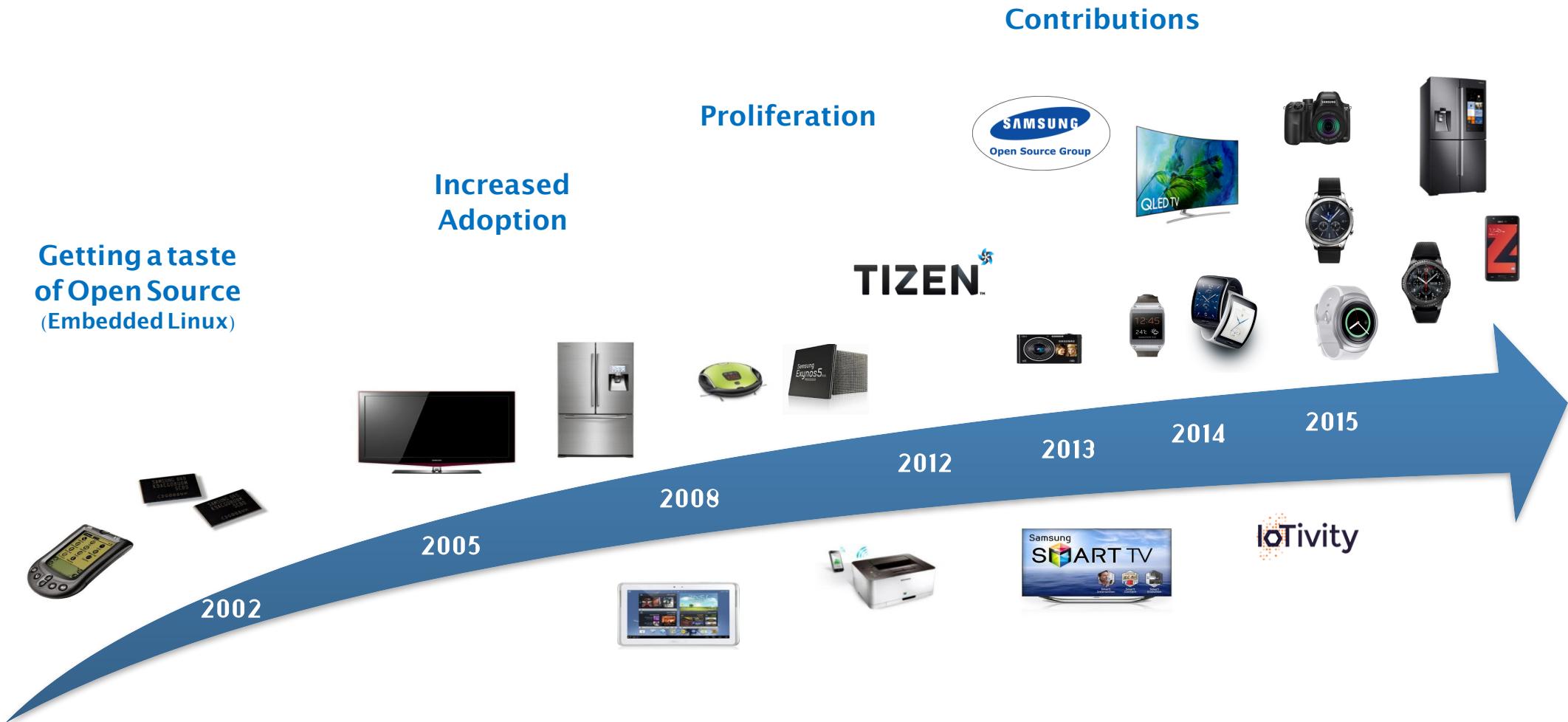
- Manage and support open source compliance process
- Advise on open source compliance
- Help resolve compliance inquiries
- Provide guidelines and checklists
- Track emerging open source legal concerns

Strategy, Community, and Engagement

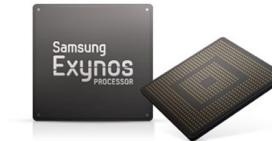
- Develop, maintain, and execute corporate open source strategy and policy
- Internal and external evangelism
- Represent open source views in internal policy discussions
- Launch new open source projects, support releasing internal code
- Sponsor, publish, and speak at open source events
- Organize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

Samsung's Experience

Samsung's open source journey



Today: Which product doesn't use open source software?



Open source R&D is very important to our business

- High product dependency
- Allows shared development and lowers R&D cost.
- Accelerates product development and innovation.
- Commoditizes competitors.
- Gives us strong influence on technologies used in products.
- Gives us ammunition in the ongoing talent war.

Samsung open source group: How are we helping the internal shift?

1. Key staff

Domain expertise.

Committers and maintainers.

Mix of open source and corporate experiences.

3. Separate development from other tasks

Guaranteed upstream time.

Avoid politics.

No un-necessary travel.

No time spent on IT related issues. Own infrastructure.

2. Enable developers to ...

Develop.

4. Focus on unique added value

Develop and upstream code .

Help BUs solve technical problems.

Contributions benefits multiple teams or BUs.

Develop relations with foundations and communities.

*We continue to build, refine, and scale
our open source infrastructure.*

Internal focus on collaboration and software innovation

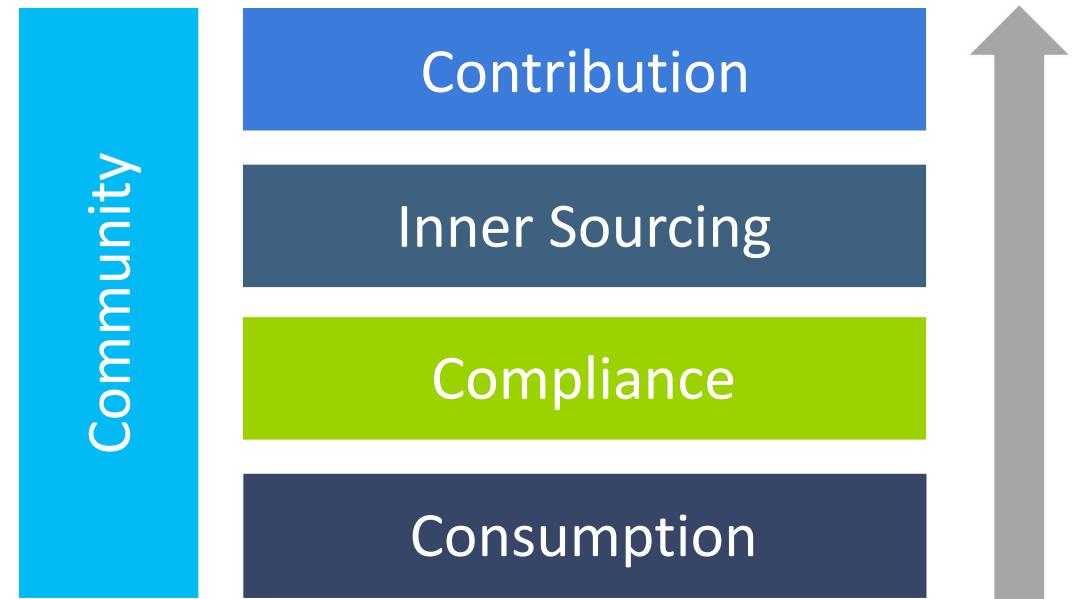
- More open and transparent collaboration across teams and divisions
- Better programming skills
- Better software and system design skills
- Better integration skills
- Modular and scalable coding skills – better software reuse
- Continuous testing and integration cycles

Internal focus on open source skills

**We can get better at software by learning and applying
open source methodology and practices.**

Inner Sourcing

- We also kicked off several inner sourcing efforts.
- We see inner sourcing as:
 - A bridge between consumption and contribution;
 - A method to sharpen your open source skills internally before stepping into upstream contributions.



What have we learned?

Key dimensions to enterprise open source strategy



We need to be good at all 4 corners of an open source strategy to truly benefit our products.

Focused open source upstream development enables better products

Direct product enablement

- Fulfill open source development requests from R&D and product teams.
- Upstream internal code into open source projects.
- Implement and upstream related drivers.
- Support open source compliance efforts.



Indirect product enablement

- Stabilize upstream projects used in products.
- Participate in internal policy discussions and decisions representing the open source perspective.
- Effectively influence the upstream projects via thought leadership and code contributions.



Better products

- Less work for product teams.
- Minimized cost to maintain source code and internal branches.
- Better quality code.
- Faster development cycles.
- More stable code bases for products.
- Better company reputation in upstream projects.

Challenges – We need to adapt to collaborative development practices

Culture	Processes	Tools
Development model Collaboration Transparency Meritocracy Team formation Hiring practices Right success metrics	Governance Usage Compliance Contribution Approvals Operational model	IT infrastructure Development tools Tracking metrics Knowledge sharing Code reuse

It takes time, perseverance, and persistence.
(years/patience/determination)

We can't hire all the smart people in the world.

We need to find ways to collaborate with them.

We also need to grow internal competence.

Open source R&D creates significant value.

Internal R&D claims portion of that value.

Your leverage is much bigger if you are a participant.

We don't need to create the project to benefit from it.

We can join existing project and excel in it.

Abandon the NIH syndrome.

Key elements to succeed

 Focus contributions on upstream projects that would directly benefit your strategy and products. (Internal ROI justification).

 Be the upstream partner for product teams.

 Grow open source talent in specific technology areas relevant to your products. Convert existing developers to contributors.

 Improve internal participation with relevant open source foundations and their projects.

What have we learned from our contribution history?

Internally to our organization

- Decide to upstream for the right reasons.
- Design and implement code with upstreaming in mind.
- Adopt an upstream first policy. Submit patches upstream first, and consume in products downstream.
- Keep developers involved in the open source projects, even if it was just soft involvement.

Externally to our organization

- Ensure proposed contributions are useful to others.
- Follow project's process and coding style.
- Provide documentation and explanation around the contribution.
- Listen to feedback and act on it. Be patient. Get feedback. Rework code. Re-iterate.
- No ego.

Mastering Enterprise Contributions

- Policy and process to guide contributions
- A team to oversee approvals
- Focus contributions in areas that will enable your technologies
- Flexible IT infrastructure
- Training and guidelines on best practices,
- Mentorship program
- Legal support
- Hire from open source projects
- Follow projects' processes and practices

*Mastering open source is an on-going journey
and not a destination.*

Why an ongoing journey?

- Open source leadership can't be given.
 - It must be earned.
 - You earn it by consistent participation and contribution.
- Open source leadership can not be taken away.
 - You lose it by lack of participation and contributions.

Mastery is accelerated enormously by adopting and excelling at consumption, compliance, inner sourcing, and contribution.



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We're hiring open source security and open source networking experts.