

4/11/18

GitHub Constellation

Qualcomm

# Open Source and Standards Collaboration

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Director, Engineering  
Qualcomm Technologies, Inc.





From the  
smartphone to 5G,  
it all starts  
with Qualcomm

\$50+ billion cumulative  
investment in R&D

# Qualcomm Standards Bodies and Industry Organizations

410



Standards and industry  
memberships

2K



Employees participating in  
standards and industry  
memberships

- Cellular
- Automotive
- Wireless Connectivity
- IOT
- Multimedia
- Device Connectivity
- Security

# Qualcomm Open Source Participation

2.5K



Projects vetted for use,  
modification or contribution

2K



Employees trained to interact  
closely with Open Source \*

- Enablement Projects
- Business assistance projects
- Personal Projects

How are Open Source and  
Standards similar and different?

document  
interface  
interoperable  
test  
efficient  
open  
organization  
industry  
develop  
member  
share  
collaborate  
license  
community  
contribute  
participate  
implementations  
compromise  
design  
commoditize

“Open source software is commodity software. It's a level playing field in which anyone can participate.”


“It [a standard] is used to define an interface between two (or more) entities such that they can interact in some predictable fashion and to ensure certain minimum requirements are met. Standards exist to encourage and enable multiple implementations.”




Why do SDOs want to collaborate  
with Open Source?





 This repository Search Pull requests Issues Marketplace Explore

 **github / linguist** Watch 196 Star 5,620 Fork 2,149

[Code](#) [Issues 73](#) [Pull requests 49](#) [Projects 0](#) [Insights](#)

Language Savant. If your repository's language is being reported incorrectly, send us a pull request!

[syntax-highlighting](#) [language-grammars](#) [language-statistics](#) [linguistic](#)

5,718 commits


14 branches












127 releases

696 contributors

MIT

Branch: master New pull request Create new file Upload files Find file Clone or download

 **ildude** Update Travis Config (#4001) Latest commit 49593a6 3 days ago

 <a href="#">.github</a>	Add issue and pull request templates (#3972)	3 months ago
 <a href="#">bin</a>	Handle repo cleanup race more elegantly (#3930)	4 months ago
 <a href="#">ext/linguist</a>	drop max token len to 32 (#3925)	4 months ago
 <a href="#">lib</a>	Replace Kotlin language grammar (#4065)	3 days ago
 <a href="#">samples</a>	Support for PICO-8 as Lua variant (#4072)	3 days ago
 <a href="#">script</a>	Add script to alphabetise submodule list (#4054)	a month ago
 <a href="#">test</a>	Add script to alphabetise submodule list (#4054)	a month ago
 <a href="#">tools/grammars</a>	Whitelist 4 new TextMate grammar fields (#4039)	a month ago
 <a href="#">vendor</a>	Replace Kotlin language grammar (#4065)	3 days ago
 <a href="#">.gitattributes</a>	Merge branch 'master' into 1233-local	4 years ago
 <a href="#">.gitignore</a>	Replace the tokenizer with a flex-based scanner (#3848)	5 months ago



Find Standards

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IEEE STANDARD

## IEEE Std 802-2014 (Revision to IEEE Std 802-2001) - IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture

**Description:** This standard provides an overview to the family of IEEE 802® standards. It describes the reference models for the IEEE 802 standards and explains the relationship of these standards to the higher layer protocols; it provides a standard for the structure of IEEE 802 MAC addresses; it provides a standard for identification of public, private, prototype, and standard protocols; it specifies an object identifier hierarchy used within IEEE 802 for uniform allocation of object identifiers used in IEEE 802 standards; and it specifies a method for higher layer protocol identification. (The PDF of this standard is available at no charge compliments of the GETIEEE Program. Visit <http://standards.ieee.org/getieee802/> for more details.)

**Working Group:** [WG802.1 - Higher Layer LAN Protocols Working Group](#)

**Oversight Committee:** [C/LM - LAN/MAN Standards Committee](#)

**Sponsor:** [C - IEEE Computer Society](#)

**STATUS:**

Active Standard

### Get This Standard

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Access

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Standards](#)  
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\* actual savings vary per standard

**Get Networked.  
Stay Connected.**

## Contact a Liaison

PLEASE FILL OUT THE INFORMATION BELOW TO SUBMIT YOUR LIAISON INQUIRY. \*Required

Topic: Contact a Staff Liaison

\*First Name: \*Last Name: \*Email Address: \*Confirm Email Address: \*Your Message: \*Preferred Method of Contact: Daytime Phone: Country/Province Code:   
(if outside the U.S.)Extension (optional): How did you hear about IEEE   
(optional):☐ I'm not a robot

## IEEE-SA Corporate Membership Online Application

If you are an existing IEEE-SA Corporate Member, please log into the [Corporate Membership Community](#) and use the automatically-populating renewal form to renew your membership.

An IEEE Web Account username is required to complete this application.

## Before you start

Prior to completing the membership application form we recommend that you:

1. Verify if your organization is already a member of IEEE-SA. Please check your entity status by reviewing IEEE-SA's online [member directory](#).
2. Review the following policies that will provide you with information on IEEE-SA and the privileges, rights and obligations of its member entities.

[IEEE Code of Ethics](#)  
[IEEE Intellectual Property Rules](#)  
[Policies and Procedures for Corporate Standardization](#)

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1. You will receive an electronic receipt confirming that the application form has been submitted.
2. The membership team will review the completed application form within 48 hours of receipt. An invoice will be sent to the primary contact via email.
3. Full membership is granted upon payment of required appropriate membership dues to IEEE.
4. A welcome letter will be sent to the primary contact when full membership is granted.
5. At any time during the process, the IEEE-SA Membership team is available to answer any questions. Please feel free to contact +1 732 562 6361, [corp-mem@ieee.org](mailto:corp-mem@ieee.org).

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New Applicants: Enter your preferred email address in the box below to proceed with this application. By providing your email address, you agree to receive emails from IEEE Standards Association - Corporate Membership.

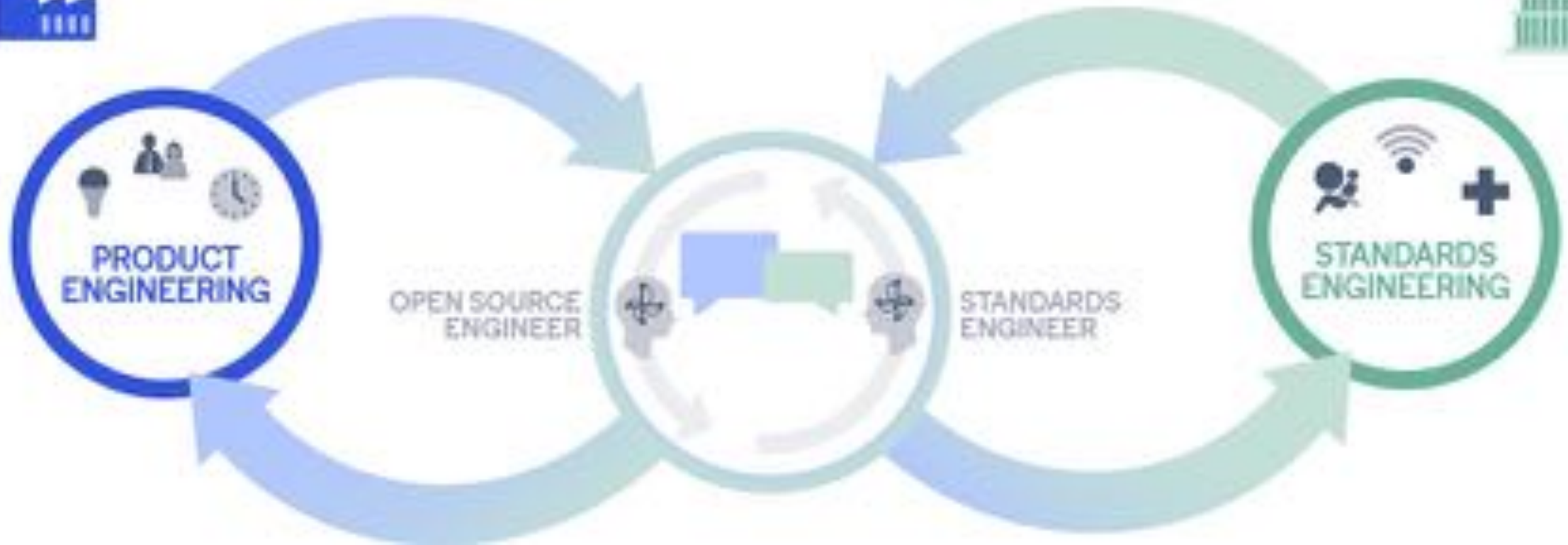
Email: 

How should SDOs collaborate using  
Open Source?

COMPANY

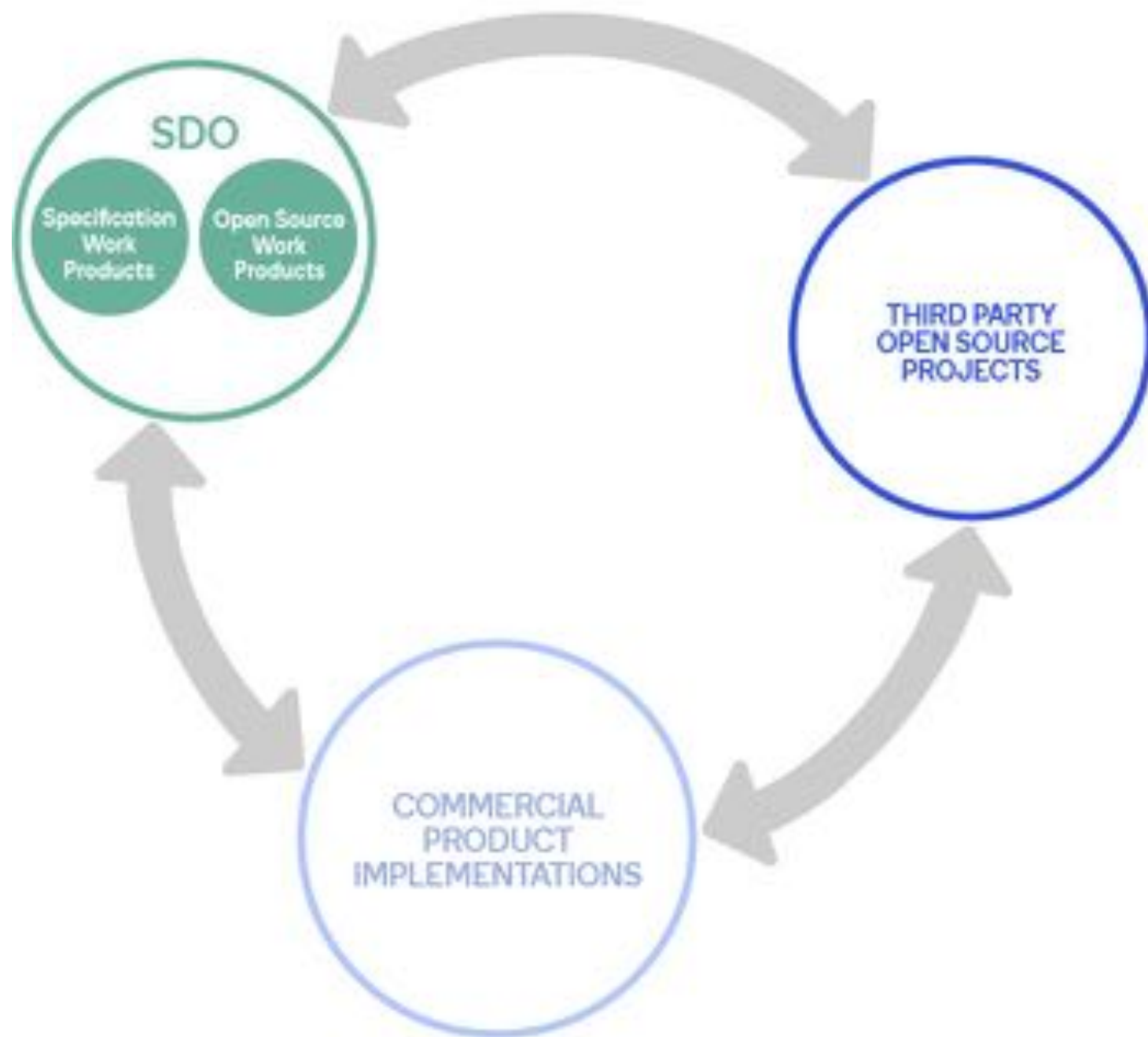


SDO

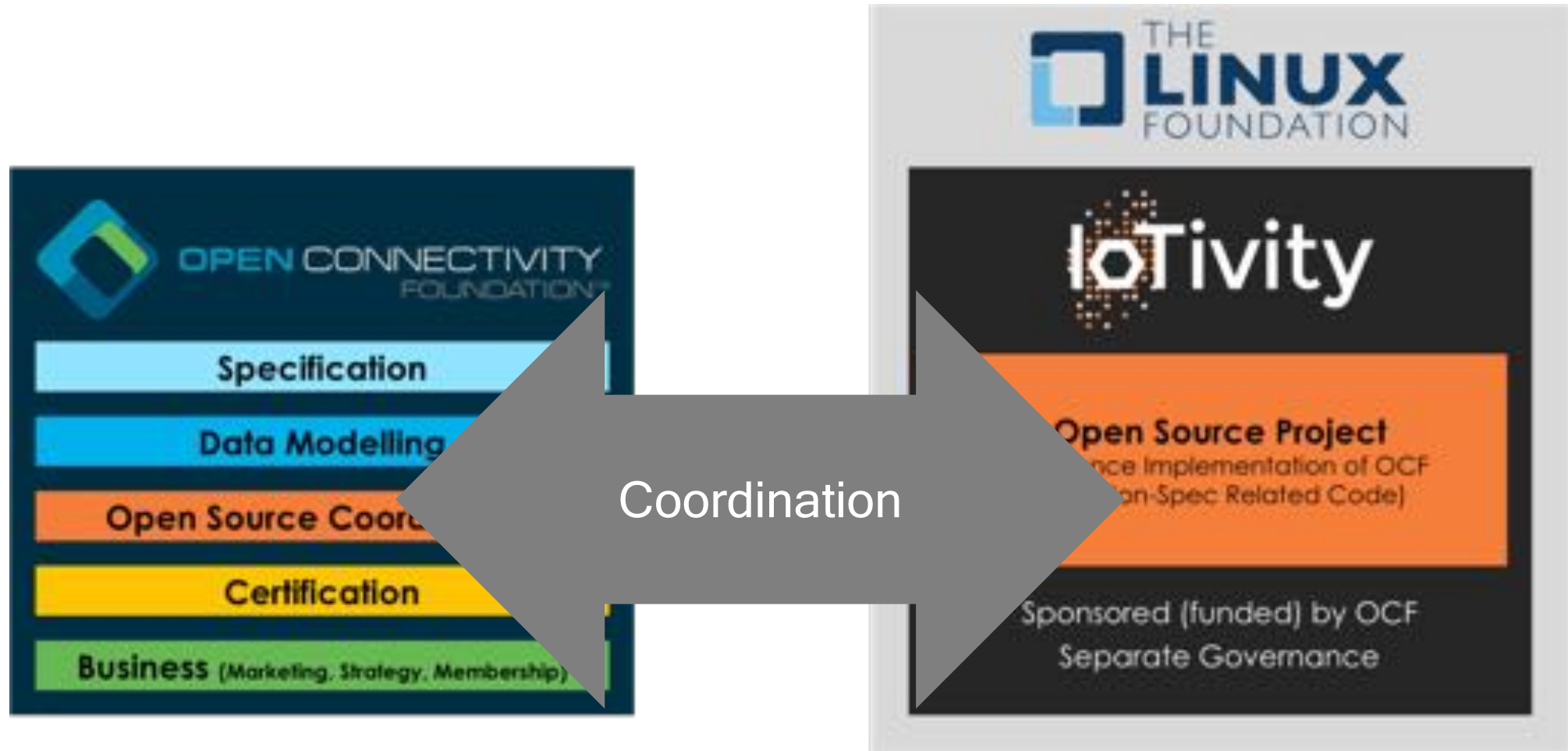



Open Source participation enables feedback loops across the board






# Open Connectivity Foundation and IoTivity



 This organization Search Pull requests Issues Marketplace Explore



# Open Mobile Alliance

Delivering Standards for Global Connectivity

<http://openmobilealliance.org/> [github@omaorg.org](mailto:github@omaorg.org)

Repositories 11 People 4 Projects 0

Search repositories... Type: All Language: All

## OMA\_Lwm2M\_for\_Developers

Public - OMA LightweightM2M specifications and Lwm2M Developer Tool Kit for public review.

[iot](#) [m2m](#) [internet-of-things](#) [specification](#) [lwm2m](#) [oma](#)

★ 112 🗲 27 1 issue needs help Updated 8 days ago

## openmobilealliance.github.io

Publication. Contains OMA Technical pages.

HTML ★ 4 🗲 8 Updated 10 days ago

## OMA\_Dictionary

Public - dictionary for oma specifications

HTML ★ 1 🗲 5 Updated 22 days ago

## svg\_images


Temporal repository to store all the svg images created for Lwm2M v1.1


### Top languages

JavaScript HTML

### People

4 >

 This organization Search Pull requests Issues Marketplace Explore



# IETF HTTP Working Group

<https://httpwg.github.io/>

Repositories 5 People 4 Projects 0

Search repositories... Type: All Language: All

## Pinned repositories

### http-extensions

HTTP Extensions in progress

Python ★ 145 🗲 38

### wg-materials

HTTP Working Group Materials

HTML ★ 35 🗲 20

### http-core

Core HTTP Specifications

HTML ★ 16 🗲 1

## http-core

Core HTTP Specifications

[http](#) [standards](#) [rfc](#) [ietf](#)

HTML ★ 16 🗲 1 Updated 4 hours ago

## http-extensions

HTTP Extensions in progress

[http](#) [standards](#) [ietf](#) [httpbis](#)

Python ★ 145 🗲 38 Updated 12 hours ago

### Top languages

HTML Python

### Most used topics

[http](#) [ietf](#) [standards](#)

### People

4 >

# IETF Hackathons

IETF Hackathons encourage developers to collaborate and develop utilities, ideas, sample code and solutions that show practical implementations of IETF standards.

The IETF Hackathons aim to:

- Advance the pace and relevance of IETF standards activities by bringing the speed and collaborative spirit of open source development into the IETF
- Bring developers and young people into IETF and get them exposed to and interested in IETF

Past IETF Hackathons have covered a range of topics including: DNS, HTTP 2.0, NETVC, OpenDaylight, ONOS, VPP/FD.io, RiOT, SFC, TLS 1.3, WebRTC, YANG/NETCONF/RESTCONF. New technologies are always encouraged.

The [next IETF Hackathon](#) will be held in London, March 17-18, 2018.

Can Open Source improve  
collaboration with lessons from  
Standards development processes?

“Foster an open ecosystem by establishing interoperable APIs, ensuring interoperable implementations with vendor commitments and open source tools.”











<https://pixabay.com/en/abstract-blur-britain-british-1239439/>

“The fast pace of updates to these projects has created some unexpected problems for the people who deploy and use them.”

Kevin Fleming, Bloomberg

<https://opensource.com/article/18/2/important-conversation>





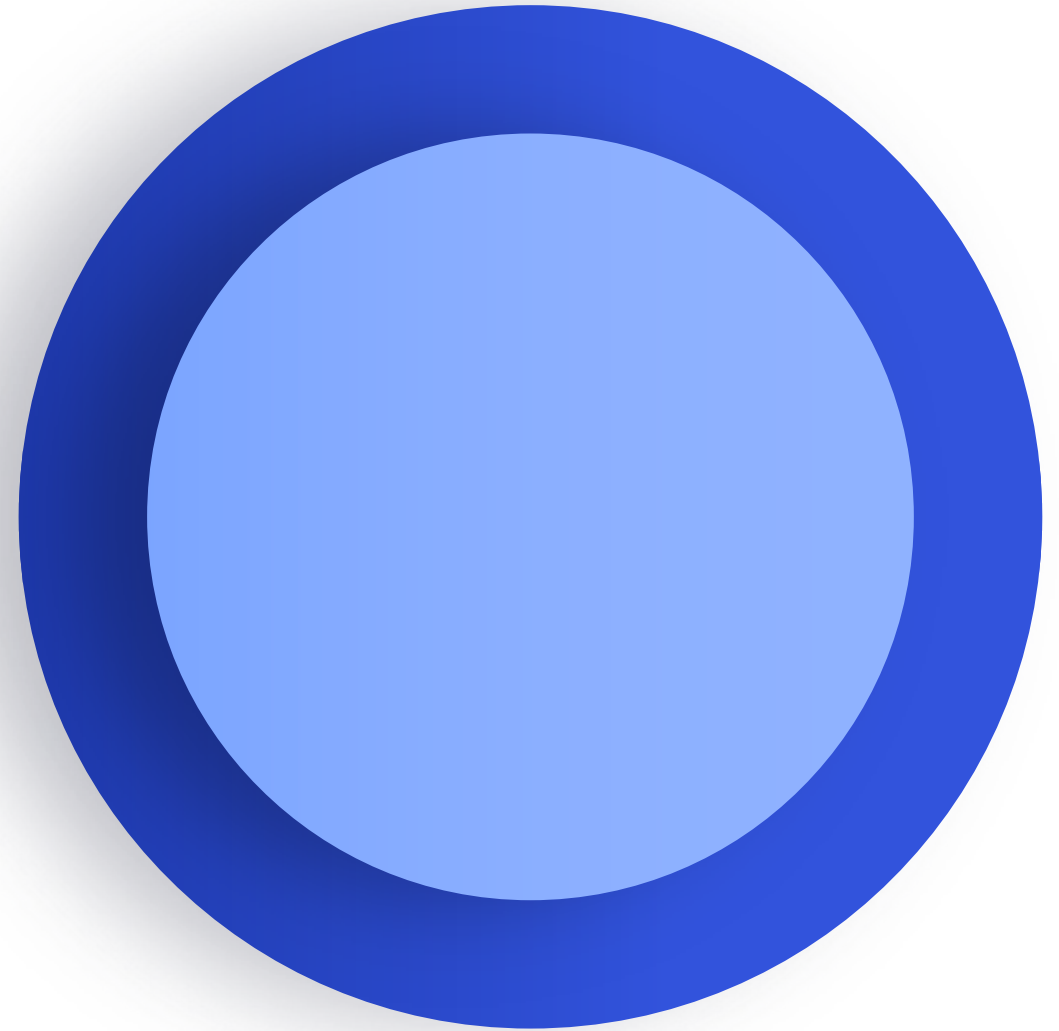


# IP Policy

- Many SDOs have FRAND or disclosure-only IP policies
  - Have worked very well
- Using only RF Open Source licenses will not work in all situations, it may:
  - Make unclear what is “standards essential”
  - Only apply RF terms to the specific implementation
  - Reduce motivation to contribute and participate in technology areas that require a large R&D investment
- May be better to keep SDO IP policy intact
  - Make source code license copyright-only (suggest BSD or MIT)
  - Add an explicit pointer to the SDO IP policy

# Call to Action

What can we do?



# Educate!

- OSPO - Open Source Program Office
- ISPO - Industry Standards Program Office

Robert Burns: Oh would some power the gift give us, To see ourselves as others see us.

# What your ISPO & SDO needs to learn about Open Source

- Open Source Compliance and effect of non-compliance
  - Review of the software products and contributions
  - Inbound & Outbound processes and policy
- Open Source Development practices
  - CI/Testing
  - Community parity
  - Security
- Open Source Community best practices
  - Issues/Bug tracking, Documentation, Chat
  - Fair and efficient review and responses
  - Monitoring and metrics for project health



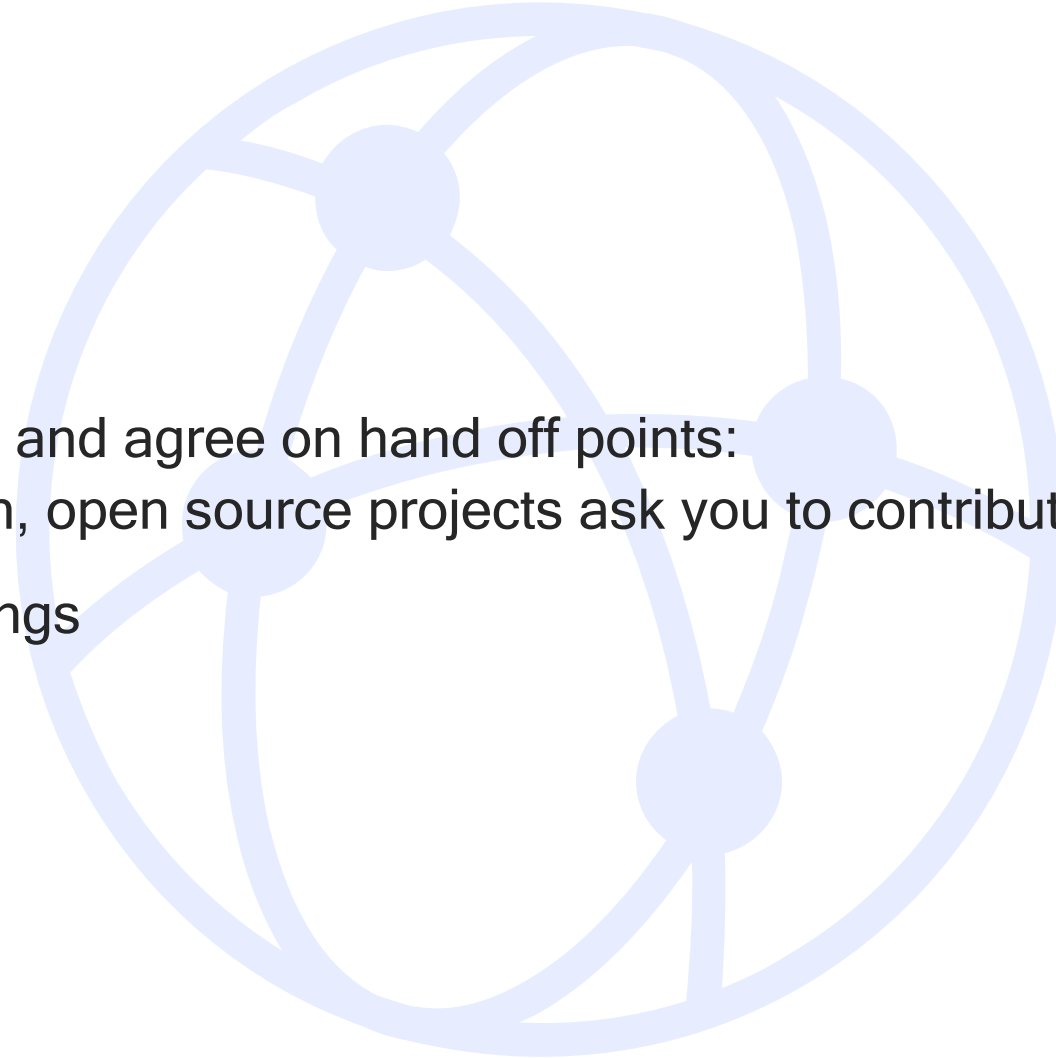
# What OSPO & Open Source can learn from ISPOs & SDOs

- Expectation of complete releases and high quality standards
- Governance and Antitrust compliance
- Interoperability and backwards compatibility
  - “There are numerous examples I can cite where open source projects are updated so frequently that new versions will, usually unintentionally, break backwards compatibility.” - Kevin Fleming
- Long term strategy, roadmaps, and planning
- Clear rules for contributors, participation and IP declaration



# Our internal collaboration between OSPO & ISPO

- Collaborate on:
  - Training/Awareness
  - Compliance
  - Outreach
- Align review processes and agree on hand off points:
  - “SDO’s ask you to join, open source projects ask you to contribute.”
- Regular strategy meetings






# Standards and Open Source will blend further over time





# Thank you!

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