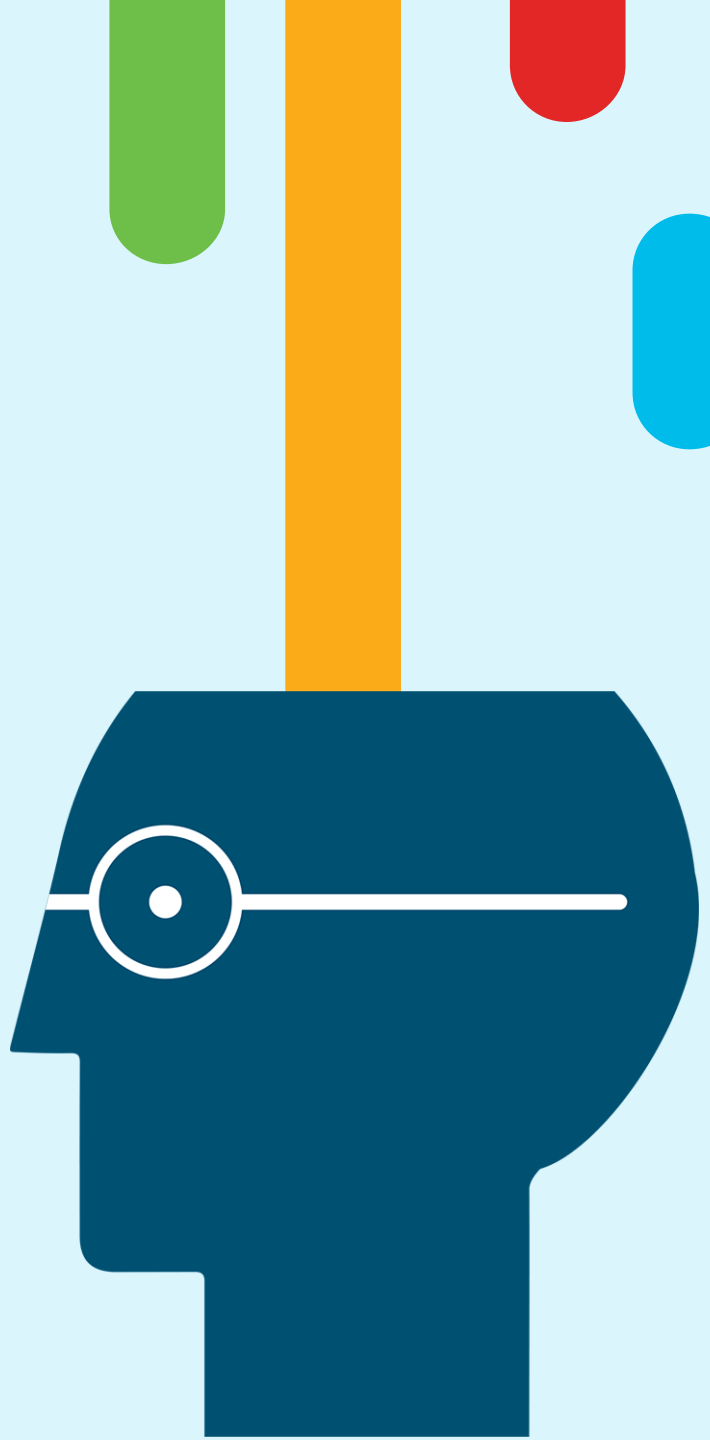
cisco DEVNET

Combining Open Source with Open Standards



Charles Eckel
Open Source Developer Evangelist
November 7, 2017

Why Standards?

- Standards have played key role many/most industries
- Industry demand standards compliance from vendors
  - Avoid lock-in, ensure interoperability
- Vendors work together defining standards
  - Establish credibility for products
  - Ensure interoperability with partners and competitors

Photo credit: https://teching.com.au

Why Open Source?

- Industry demands an open source story from its vendors
  - Open source contributions bring credibility and seat at table w/ customers
- Open source based defense
  - Use standards to drive demand for your products and solutions
  - Support for standards in open source projects protects leadership position
- Open source based offense
  - Use open source offering to commoditize position of competitor
  - Change playing field to align with your strengths

Traditional Standards Process

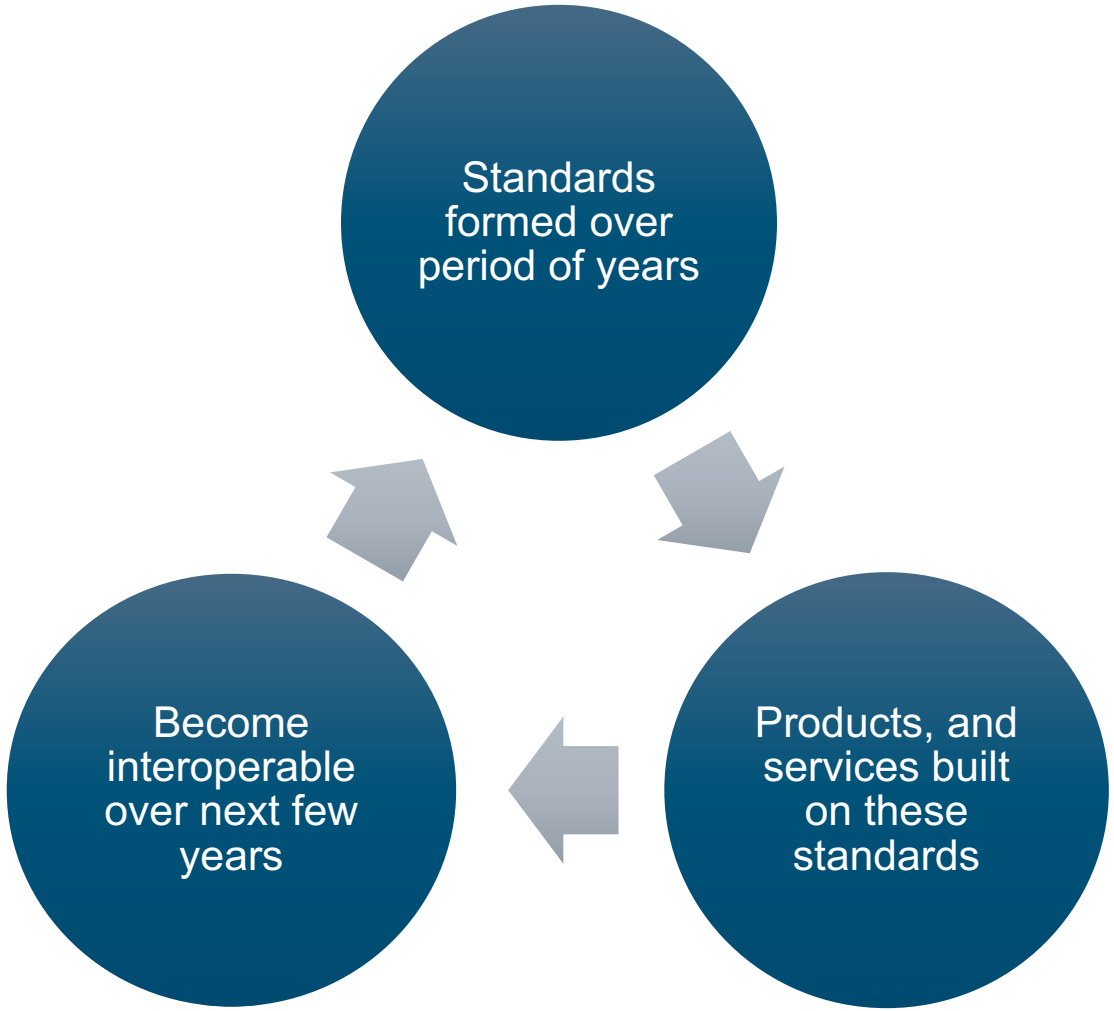


Photo credit:
https://play.google.com/store/apps/details?id=com.mobilerise.hourglass

Power of Open Source Software

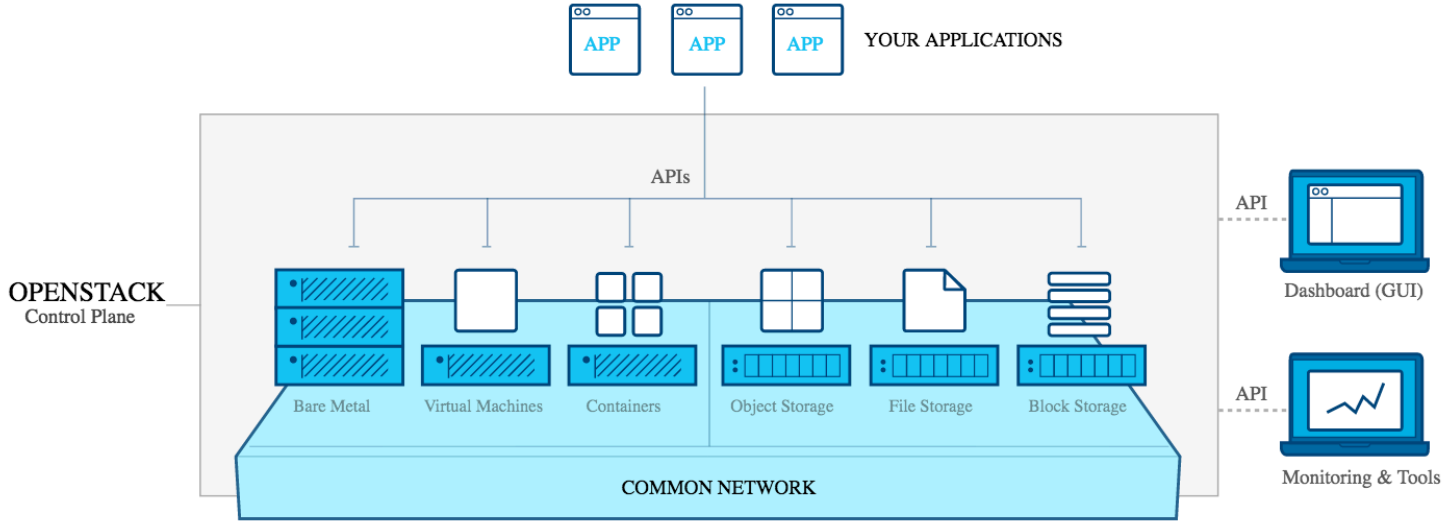
- Fuel industry transformation
- Leverage a vast community
- Innovate at rapid pace
- Result in de facto standard

Complexity of Open Source

- Some assembly required
- Poor documentation
- Projects fade away
- Fragments

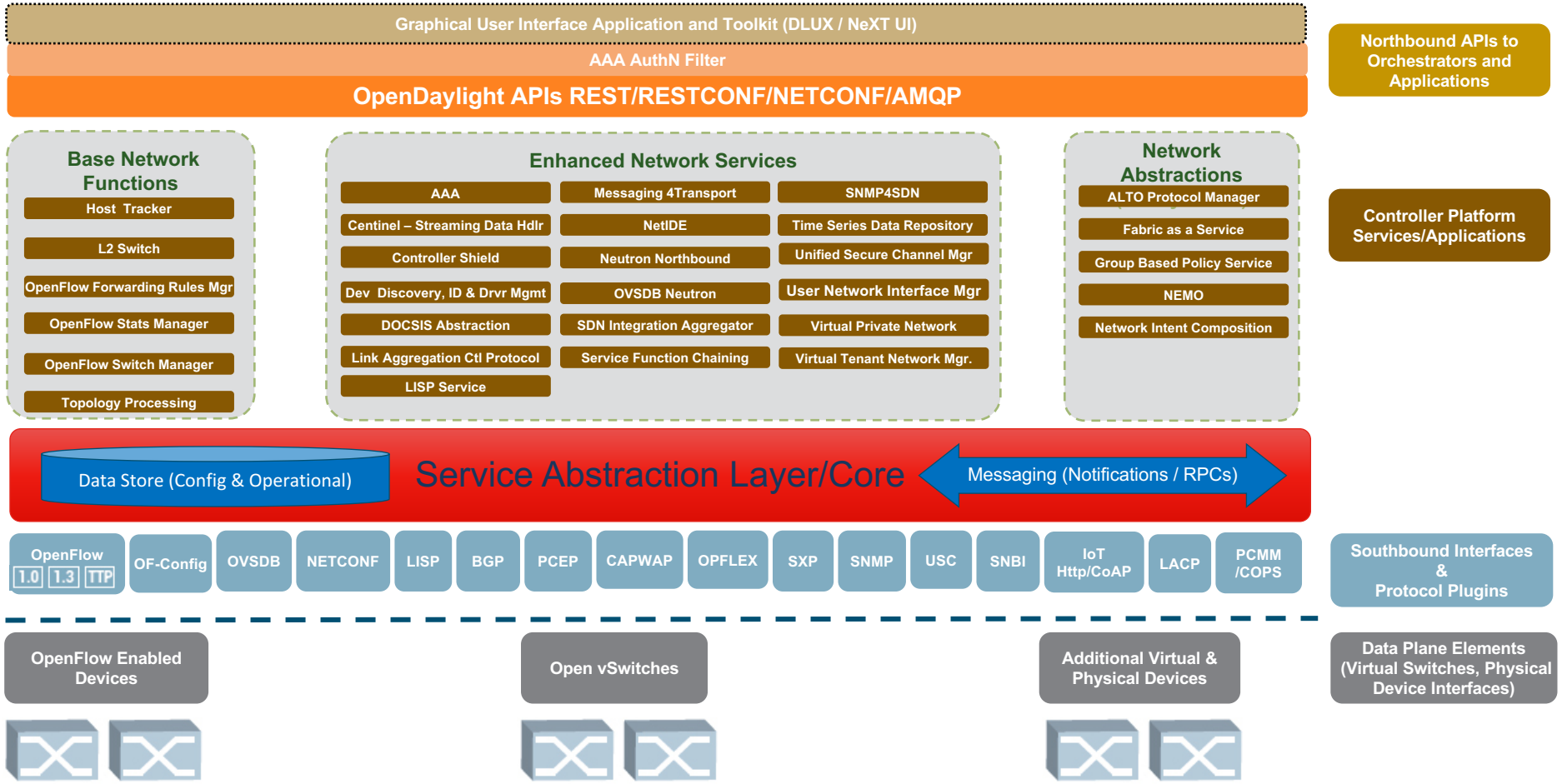
openstack

- Cloud computing platform for public/private clouds
- Abstracts data centers into pools of resources
- Provides management layer for efficient, automated allocation of resources
- Empowers operators, admins, users via self service portals
- Provides APIs to develop cloud-aware applications



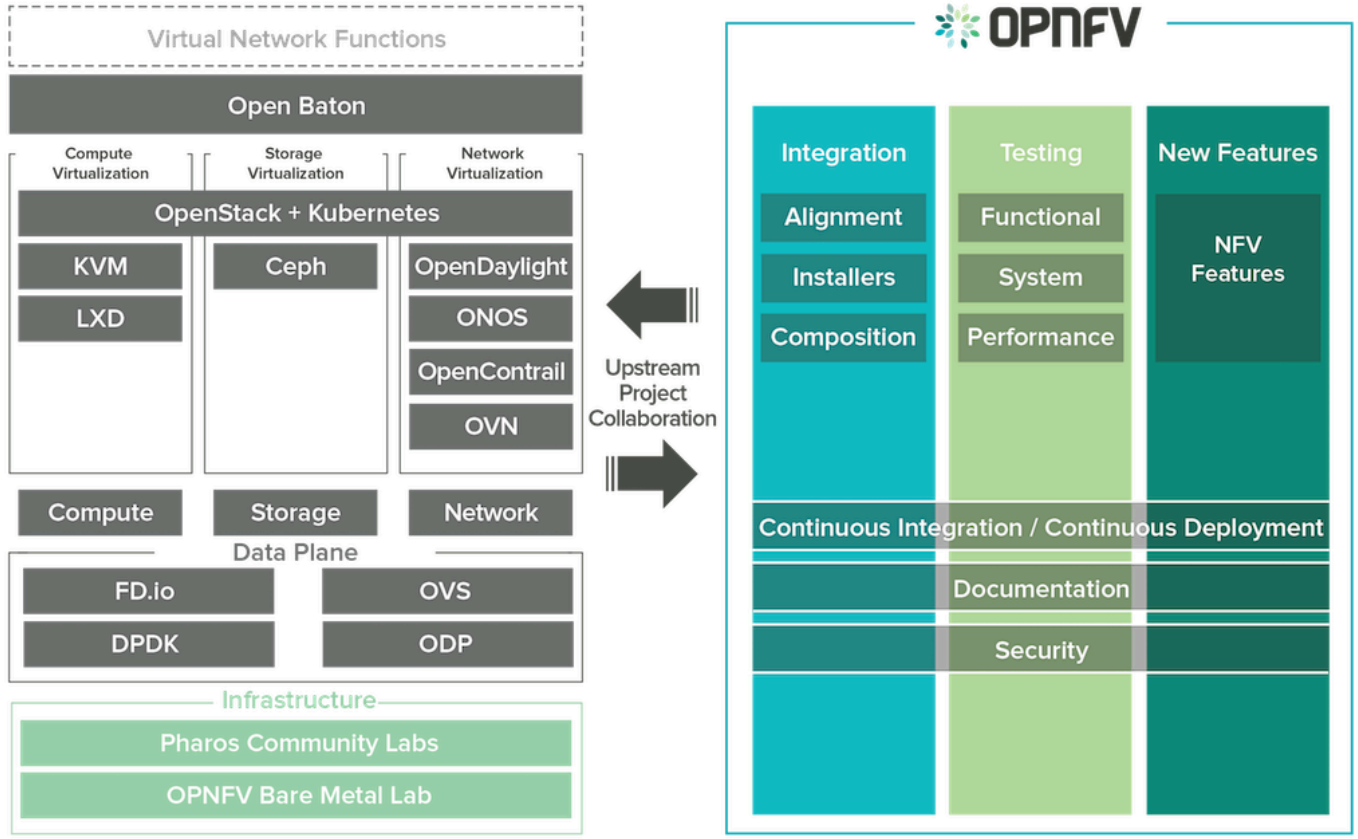
OPEN DAYLIGHT

- Software Defined Networking (SDN) Controller
- Platform for Network Aware Apps
- Program network via YANG, NETCONF, RESTCONF



OPNFV

- Carrier grade platform for network function virtualization (NFV)
- Realization of ETSI NFV architecture
- Systems Integration as an open source project
- Upstream contributions to open source projects
- Automated platform testing and deployment



Combine Standards with Open Source

- Advance pace and relevance of standards
- Support key standards in relevant open source projects
- Use open source projects in reference implementation of standardized architectures
- Activities: Hackathons, Interoperability events
  - Cultural events, collaborative, friendly competition

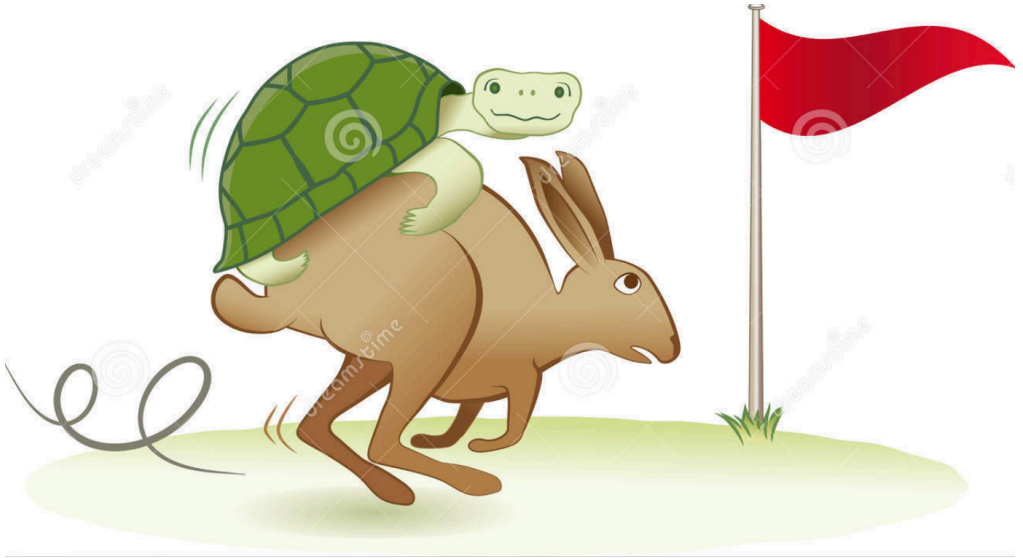


Photo credit: dreamstime.com

IETF

- Internet Engineering Task Force
- Founded in 1986
- Goal – Make the Internet Work Better
- Definition of Internet Drafts (I-Ds) and RFCs
- Networking protocols, e.g. TCP/IP, DNS, HTTP, TLS, YANG, NETCONF, RESTCONF, VXLAN, GRE, …
- Most work occurs online via mailing lists
- Meet three times per year
- Working sessions, not conferences

We reject kings, presidents and voting. We believe in rough consensus and running code.

- David Clark, Tao of the IETF

Challenges

- Slow
- Aging community
- Too much time on rough consensus, not enough on running code
- Overrun by pace of innovation
- Code (potentially open source) as de-facto standard

IETF Hackathons

- Cisco DevNet brought to IETF 92, March 2015
- Funded and ran for 2015 (3 per year)
- Advance pace and relevance of IETF standards
- Attract new/young people to IETF

IETF Hackathon

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

Technologies: The IETF Hackathons cover 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!

Goals:

* Advance pace and relevance of IETF standards activities by bringing the speed and collaborative spirit of open source development into the IETF (e.g. targeted standards areas where ideas are flushed out, sample code is produced, and useful utilities are developed)
* Bring developers and young people into IETF and get them exposed to and interested in IETF

Subscribe for the hackathon mailing list: https://www.ietf.org/mailman/listinfo/hackathon
Hash Tag: #ietfhackathon

Goals

- Running Code (RFC 6982)
- Open Source
- Collaborate and Learn
- Have Fun!
- Cookies!!
- and BEER!!!

Champions

- Anyone can volunteer to “champion” a project
- Before the Hackathon
  - Update hackathon wiki with details about project
  - Share ideas and preparation materials via the hackathon list
  - Recruit participants from working groups, open source projects, etc.
- At the Hackathon
  - Create and display poster for their project
  - Make themselves available to answer questions and help others
  - Hack on things themselves

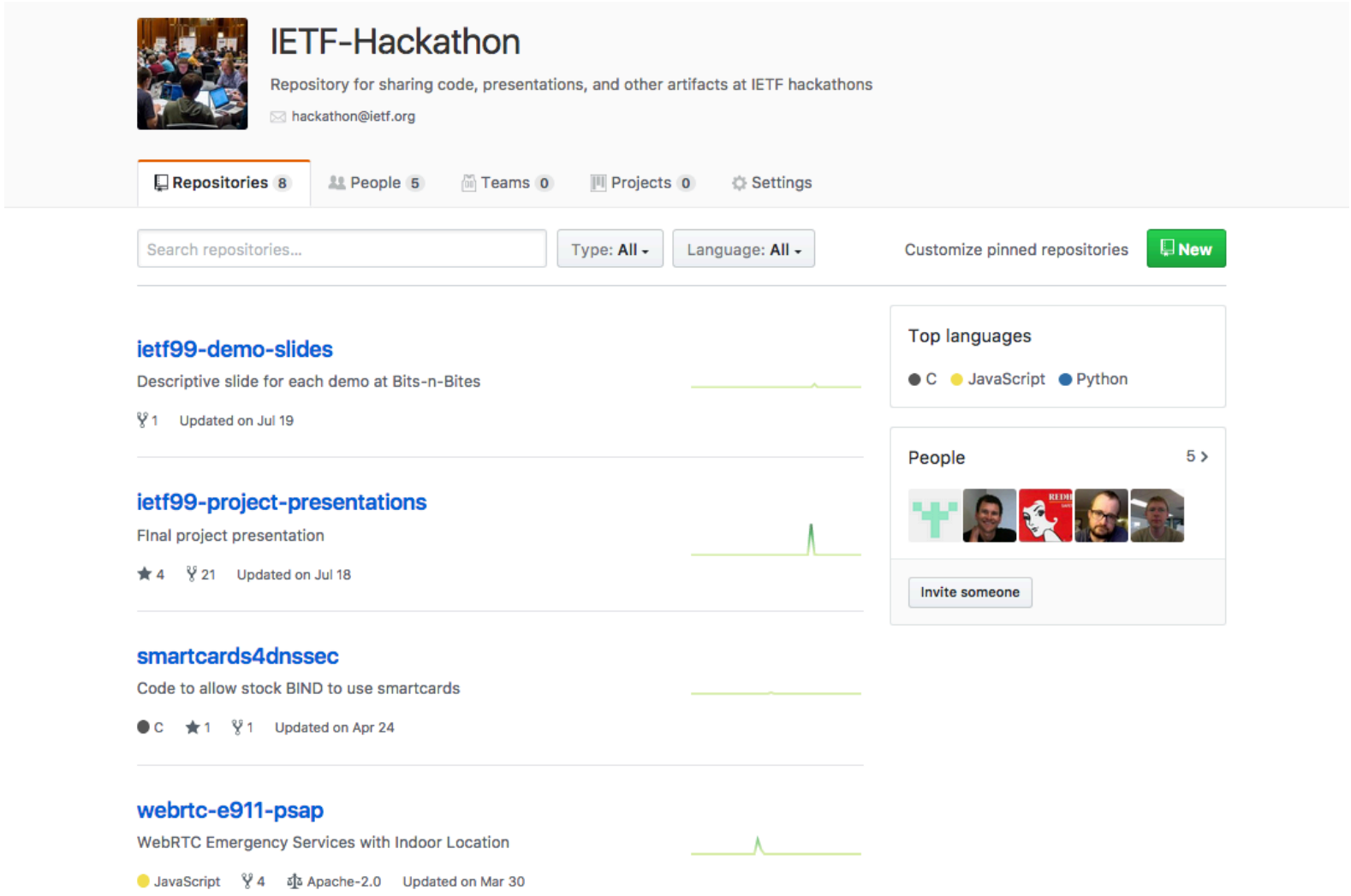
Judging Criteria

- Advance pace and relevance of IETF standards
  - Bring speed and collaborative spirit of open source software into the IETF
  - Flush out ideas, feed into WG session
  - Produce sample code/reference implementations
  - Create useful utilities
- Attract developers, young people to IETF
  - There’s cool shit at IETF
  - #IETFhackathon, #IETF99

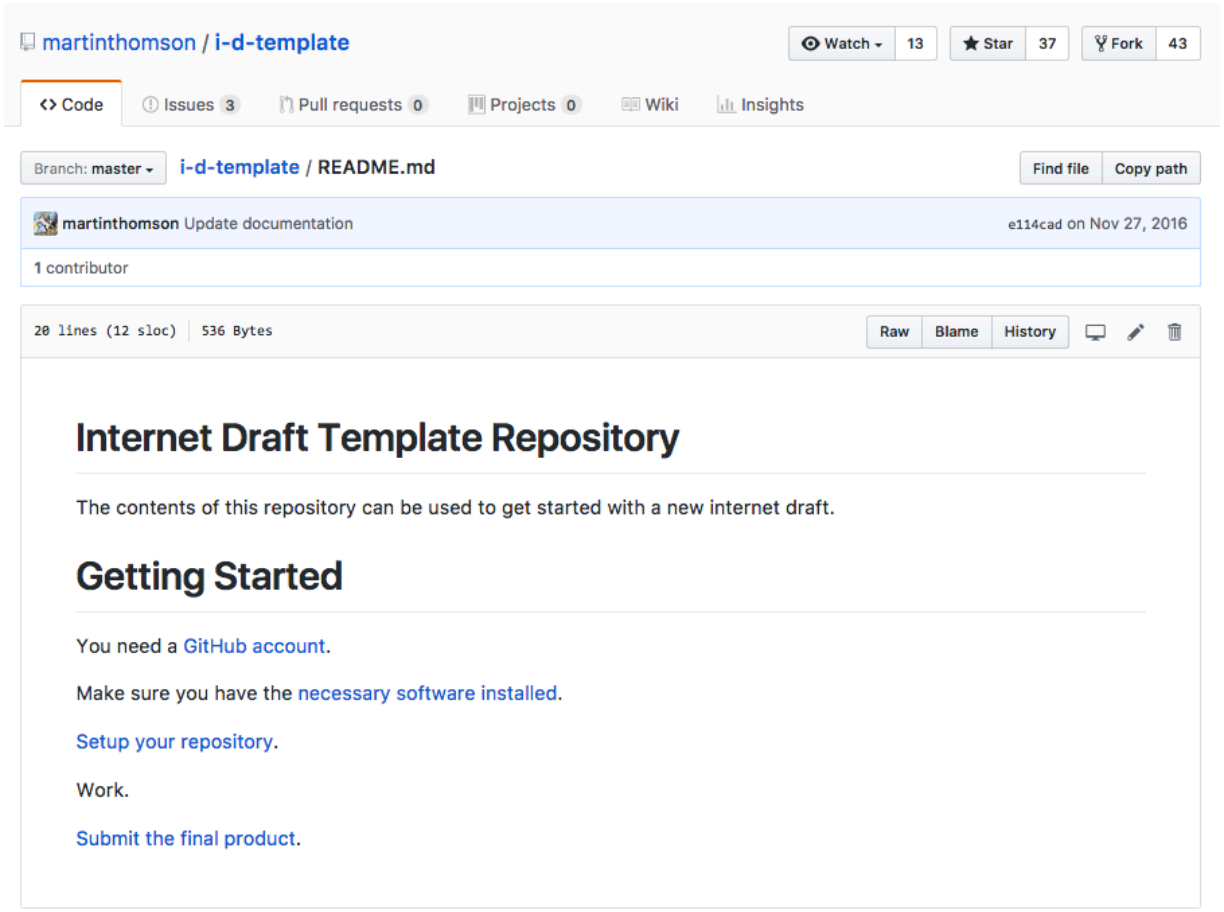
IPR and Code Contribution Guideline

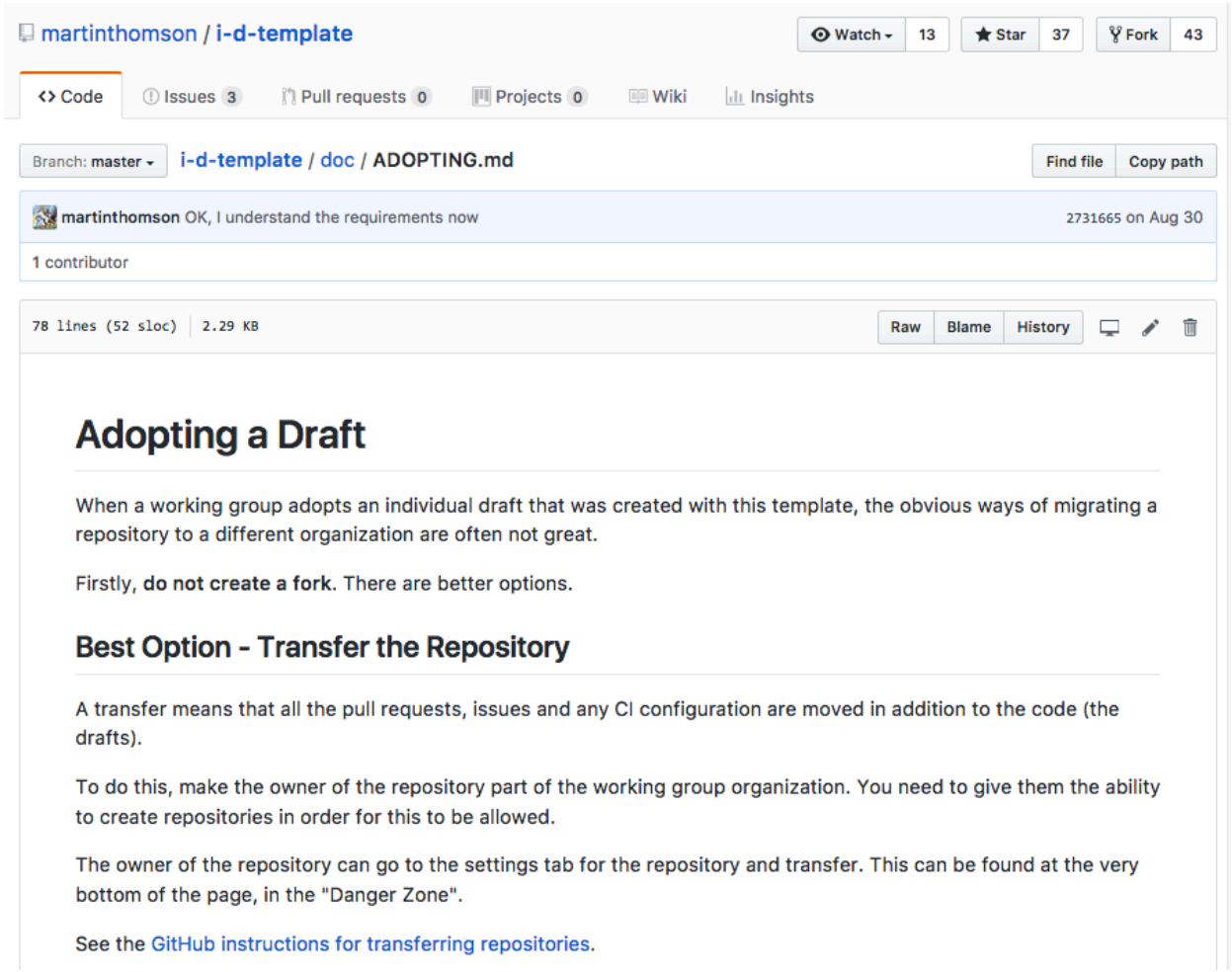
- Hackathon participants free to work on any code
- Rules regarding that code are what each participant's organization and/or open source project says they are
- The code itself is NOT an IETF contribution
- Discussions, presentations, and demos done as part of the hackathon are the same type of IETF contributions as those made in working groups; therefore, the usual IETF copyright and/or IPR disclosure rules apply

https://github.com/ietf-hackathon



Software Tools Incorporated into Standards Process





IETF Hackathon

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

Technologies: The IETF Hackathons cover a range of topics including; BIER (Bit Index Explicit Replication), HTTP/2.0, NETCONF/YANG, OpenDaylight, RIOT, SFC, and SPUD (S Underneath Datagrams). New technologies are always encouraged!

IETF 92 IETF JOURNAL • JULY 2015 • VOLUME 11, ISSUE 1

IETF HACKATHON BRINGS RUNNING CODE BACK TO IETF

By Charles Eckel

THE FIRST-EVER IETF HACKATHON WAS HELD 21–22 MARCH, THE WEEKEND before IETF 92 in Dallas, Texas. It was a late addition to the meeting schedule, an answer to the call to action in Dave Ward's talk at IETF 91, Open Standards, Open Source, Open Loop (see www.internetsociety.org/publications/ietf-journal-march-2015/open-standards-open-source-open-loop). Cisco's DevNet team collaborated with IETF leaders to put the event together in short order. Stated goals included bringing running code back into the IETF, bridging the gap between open source and open standards, and introducing more developers and young people to the IETF. It was a huge success by these and other measures, as evident by the announcement of a second Hackathon at IETF 93 in Prague.

> "My personal thanks for helping out in the IETF Hackathon and plugging me to the right group to contribute. I should say I had good time hacking as a first time IETFer."
>
> —Hariharan Ananthakrishnan

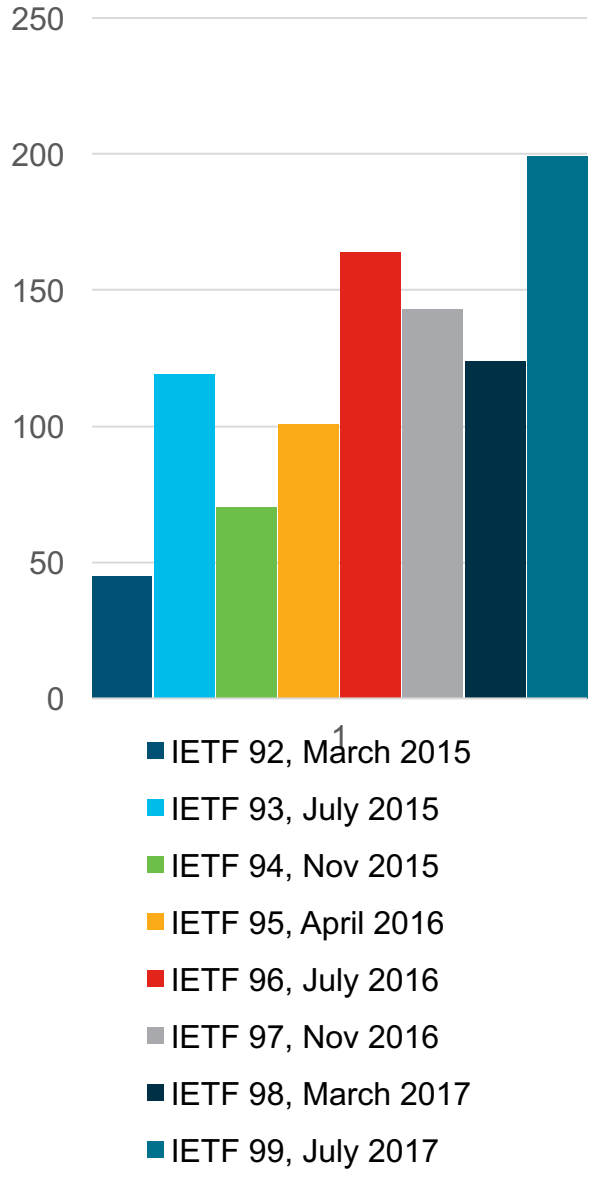
There was no loss of enthusiasm the next morning—many people arrived before the advertised start time of 09:00. Even a few new faces arrived, their previously established travel plans or airline strikes not allowing them to participate the previous day. They were welcomed, plugged into existing teams, and started contributing.

By Sunday midafternoon, teams switched gears to prepare and deliver short presentations of their accomplishments to their peers and a set of esteemed judges: Jari Arkko, Richard Barnes, and Mark Nottingham. Following the presentations, the judges conferred to determine the winners. At stake were bragging rights, plus tech goodies that included Raspberry Pis, Infiniter green laser pointers, and Kill-o-Watt power meters.

Projects included the following:

- BIER powered HOMENET multicast

Participants



Record Breaking Hackathon at IETF 96 in Berlin

Posted by eckelcu in Open Source and Open Standards on Aug 22, 2016 6:14:00 PM

The IETF Hackathon in Berlin, held July 16-17, was the biggest and most impactful IETF Hackathon to date. A record 158 participants registered, and even more showed up over the course of the weekend to work on more than 20 projects spanning at least 15 different technologies. This hackathon was the first IETF hackathon for almost half of the participants, and it was the first IETF experience or any sort for more than 25 individuals. This speaks very well of how the hackathon is doing in terms of meeting its objective of introducing more people to the IETF and making their first experience a positive one.

Cenk Gündoğan, RIOT maintainer – *The IETF Hackathon provides an excellent opportunity to connect with hackers around the world and share experiences about their implementations as well as interoperability.*

Hariharan Ananthakrishnan, Packet Design – *My personal thanks for helping out in the IETF Hackathon and plugging me to right group to contribute. I should say I had good time hacking as a first time IETFer.*

Sunil Vallamkonda, F5 – *I got to learn a lot and meet talented folks. I do not know why such an event never happened till 2015, it should have part of IETF since day one.*

Vladimir Vassilev, TransPacket, travelled from Oslo to Seoul just for hackathon - *You get all these people with passion for what they are doing trying to accomplish something in these two days that will make the world better in a very practical way.*

Nathan Egge, Mozilla – *We had Cisco committing to Daala and Mozilla committing to Thor, which truly shows the collaborative spirit of the IETF. Having a hackathon is an excellent way for new ideas to be tested out in running code and NETVC will be back for the IETF 94hackathon in Yokohama.*

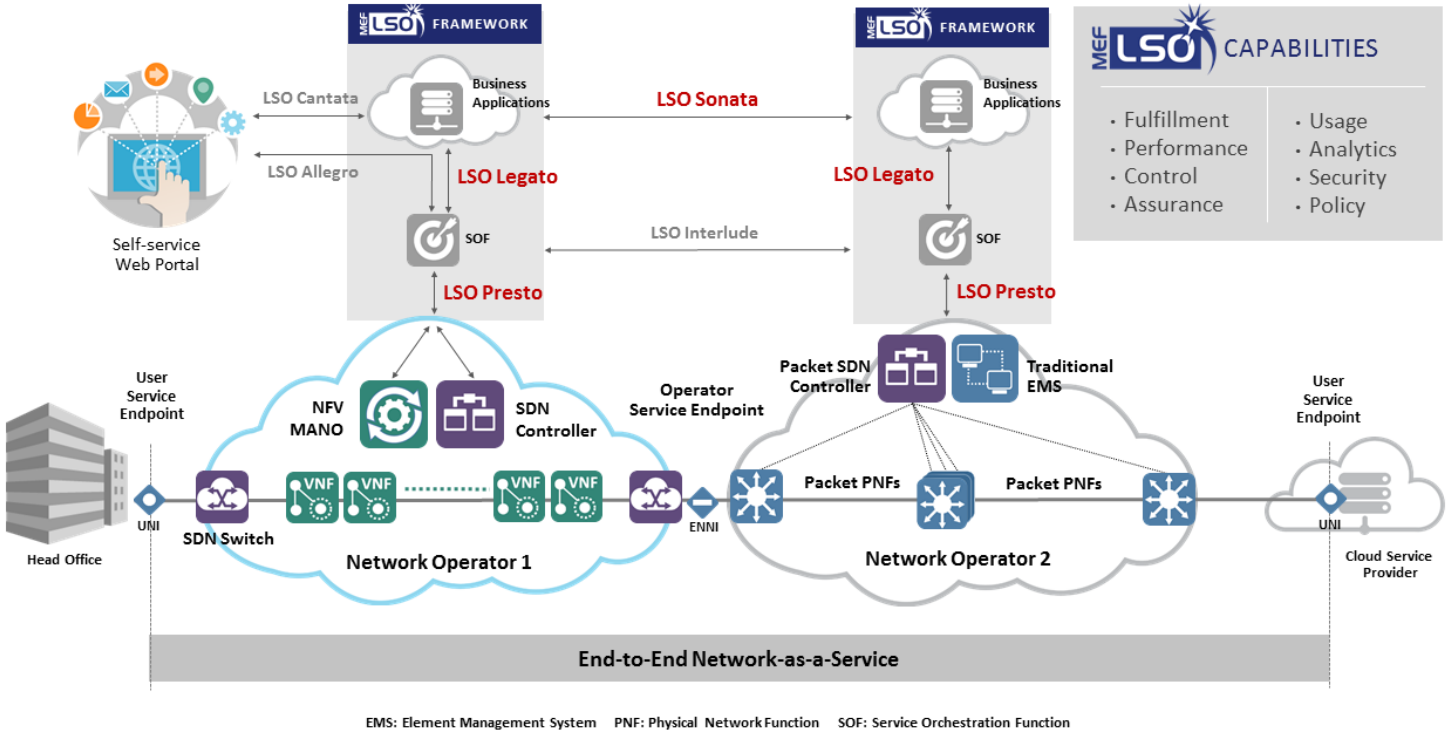
MEF

- Global Deployment of Carrier Ethernet Networks Services
- Found in 2001
- 210 + member companies
- Certification Programs
- Multi carrier interworking is key

The MEF is the driving force accelerating the industry transition to agile, assured, and orchestrated services … that offer user-directed control over service capabilities and cloud connectivity.

Challenges

- Victim of own success
  - Carrier Ethernet Network Services deployed globally
  - Now what?
- Move up the stack to L3-L7
- Lifecycle Service Orchestration (LSO) for Next-Gen Networks Services
- LSO architecture and APIs



LSO Hackathon

- Cisco DevNet introduced MEF to hackathon at GEN15, Nov 2015
- Funded by MEF, run by DevNet
- Transformed LSO architecture and APIs into running code

GEN15 LSO Hackathon

The place for hands-on collaboration and development of orchestrated Carrier Ethernet services!

The MEF is holding its first LSO Hackathon to accelerate the development of Lifecycle Service Orchestration (LSO) APIs, SDN controller plugins and LSO orchestration solutions. The LSO Hackathon will facilitate discussion, collaboration and the development of ideas, sample code and solutions that can be used through the Open Source community for the benefit of service providers and technology vendors.

MEF LSO Hackathon

Supported by:

cisco DevNet

OPEN DAYLIGHT OPNFV

tmforum connecting digital ecosystems

MEF LSO Hackathons

Created by Daniel Bar-Lev, last modified by Charles Eckel yesterday at 4:14 PM

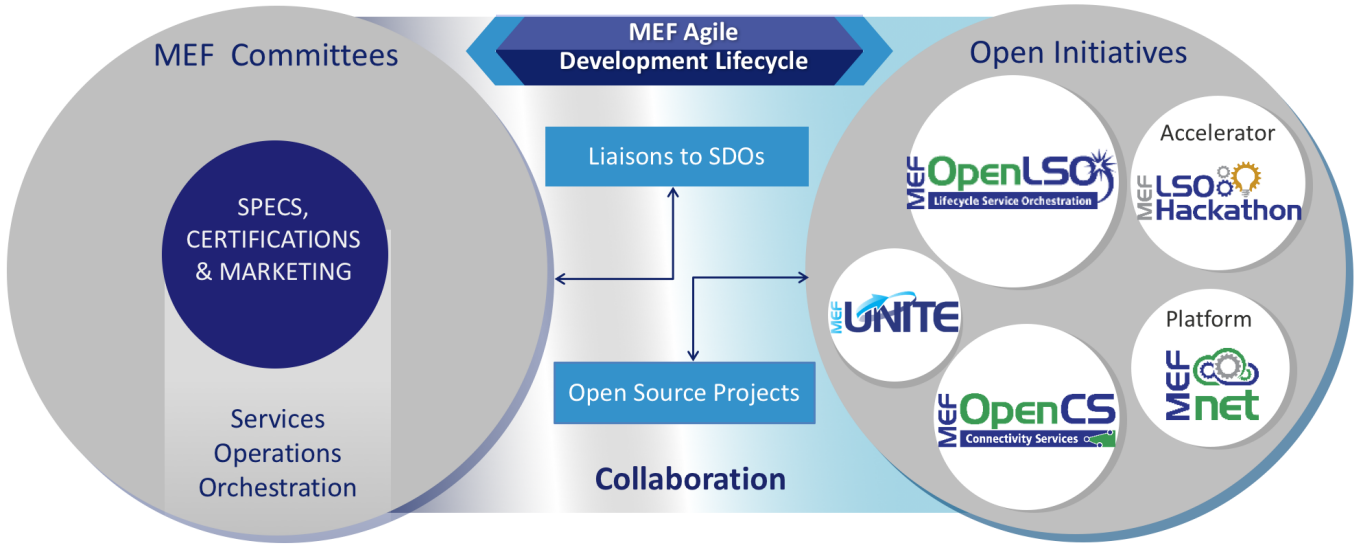
MEF LSO Hackathon iometrix THE STANDARD FOR TESTING cisco DEVNET

ECI THE ELASTIC NETWORK PCCW Global SPARKLE TATA COMMUNICATIONS

Overview	Calendar
MEF LSO Hackathons encourage software developers and network experts to collaborate and develop utilities, ideas, sample code and solutions that show practical implementations of MEF-defined services and LSO APIs.	**Current LSO Hackathon** MEF17 LSO Hackathon - Orlando, Nov 13-15, 2017

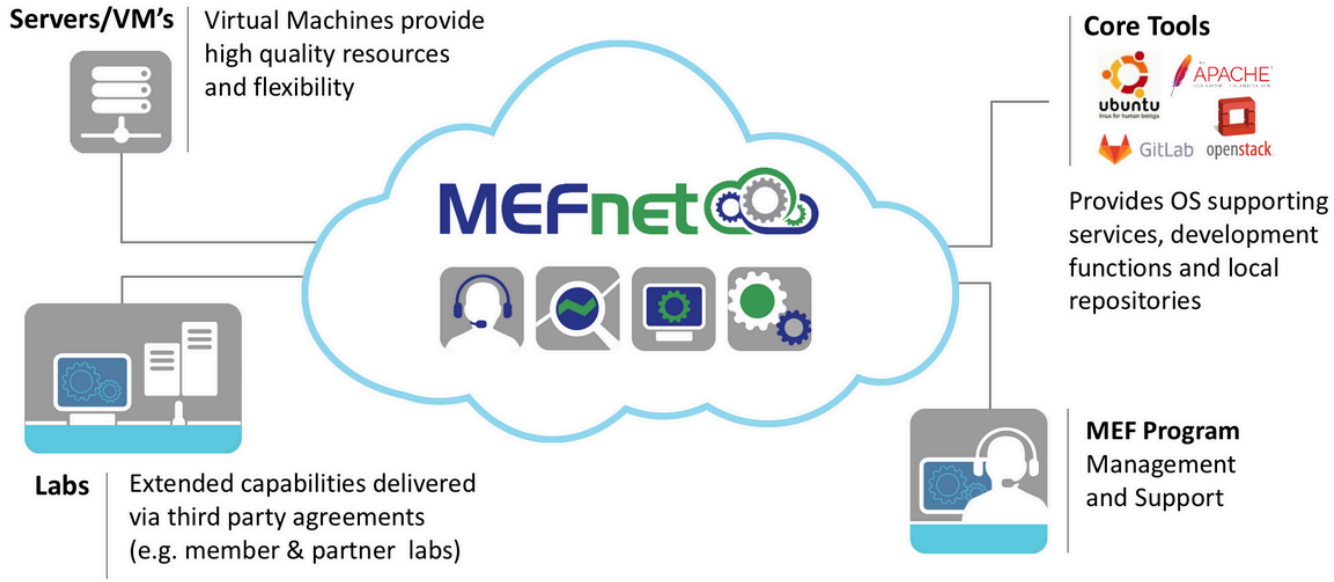
MEF Open Initiatives

- Run by MEF Office of the CTO
- Includes OpenLSO and OpenCS projects, MEFnet, LSO Hackathons and the MEF UNITE program
- Mission: Create reference implementations of standards based components for Next Generation network services



MEFnet

- Storage and compute platform
- Hosts reference implementations
  - Open source and commercial software
  - OpenLSO projects, OpenCS projects
  - LSO Hackathons
  - MEF Software Developer Community
- Runs on OpenStack



The MEF LSO Hackathon: Building Community, Swatting Bugs, Writing Code

December 11th, 2015 by Industry Viewpoints · Leave a Comment

This Industry Viewpoint was authored by Alan Zeichick, Principal Analyst, Camden Associates

A Hackathon – like the debut LSO Hackathon held in November 2015 at the MEF's GEN15 conference – is where magic happens, where theory turns into practice, and the state of the art advances. Dozens of techies sitting in a room, hunched over laptops, scribbling on whiteboards, drinking excessive quantities of coffee and Diet Coke. A hubbub of conversation. Focus. Laughter. A sense of challenge.

GEN15 LSO Hackathon Focus & Participants

More than 50 network and/or software experts joined the first-ever LSO Hackathon, representing a very diverse group of 20 companies. They were asked to focus on two Reference Points of the MEF's Lifecycle Service Orchestration (LSO) Reference Architecture. As explained by Daniel Bar-Lev, Director of Certification and Strategic Programs at the MEF and one of the architects of the LSO Hackathon series, these included:

- LSO Adagio, which defines the element management reference point needed to manage network resources, including element view management functions
- LSO Presto, which defines the network management reference point needed to manage the network infrastructure, including network view management functions

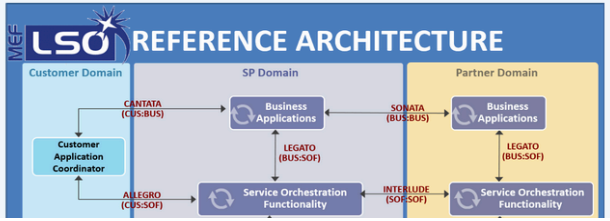
Hackathon participants and their companies were gathered at GEN15, the second annual global networking conference hosted by the MEF. Held during 16-19 November in Dallas, GEN15 drew close to 1,000 professionals from 255 organizations and 34 countries. While the GEN15 LSO Hackathon was a small part of GEN15, it was an important one due to the technical work accomplished and the networking

Euro16 Hackathon Transforms MEF's LSO Architecture into Open Source Code

Posted by eckelcu in Open Source and Open Standards on May 5, 2016 4:32:05 PM

Rome was not built in a day, and neither was a complete reference implementation of the MEF's LSO architecture. However, at the Euro16 Hackathon in Rome last week, a group of talented developers made great progress in that direction. For those not intimately familiar with MEF, the LSO architecture, or the corresponding open source initiatives, here is a bit of background.

MEF, a standards organization with its roots in carrier ethernet, noticed that network service orchestration is the key pain point of service providers today. MEF targeted this by defining Lifecycle Service Orchestration (LSO), an umbrella architecture with APIs enabling agile, assured and orchestrated network services worldwide. It includes inter-provider interfaces ("east/west") as well as intra-provider ("north/south") interfaces.



LSO Hackathons Bring Together Open Standards, Open Source

Open standards and open source projects are both essential ingredients for advancing the cause of interoperable next-generation carrier networks.

Diario TI 28/06/16 22:00:12 When a standards developing organization (SDO), like MEF, creates standards, those written documents themselves aren't the end goal. Sure, the specifications look good on paper, but it takes a lot of work to turn those words and diagrams into hardware, software and services. And if there are any ambiguities in those specifications, or misinterpretations by vendors building out their products and services, interoperability could be problematic at best.

By contrast, when an open-source project is formed, the team's job is obvious: to create software and solutions. All too often, the members of the project are focused on reaching a particularly objective. In those cases they are working in a vacuum, and might write code that works great but which can't be abstracted to solve a more general problem. In those cases, interoperability may also be a huge issue.

The answer is clear: bring together SDOs and open-source teams to write open-source code that's aligned with open specifications. That's what is happening at the LSO (Lifecycle Service Orchestration) Hackathons hosted by MEF: open source teams come together to work on evolving specifications, and the end result is not only solid code but also effective feedback to MEF about its specs and architecture. Another benefit: networking experts from across the communications industry work together with software developers from the IT world face-to-face, fostering mutual understanding of the constraints of their peers in ways that lead to more effective interaction in their day jobs.

GEN15

Attend Program Enterprise Day Speakers Sponsors Media Videos Networking Hall Contact

Home

MEF To Host Industry's First LSO (Lifecycle Service Orchestration) Hackathon At GEN15, 16-18 November 2015

Supported By Cisco DevNet, LSO Hackathon Will Focus On Development of LSO APIs, SDN Controller Plugins, and LSO Orchestration Solutions

Los Angeles, 17 September 2015 – The MEF is pleased to announce that it will host the industry's first LSO (Lifecycle Service Orchestration) Hackathon at the global GEN15 conference (www.gen15.com) being held on 16-19 November 2015 at the Omni Hotel in Dallas, Texas. Supported by Cisco DevNet, the LSO Hackathon will bring together Open Source community developers and Carrier Ethernet services networking experts to collaborate and develop solutions based on MEF specifications in order to accelerate the implementation of agile, assured, and orchestrated Third Network services.

MEF16 LSO Hackathon

The place for hands-on collaboration and development of OpenCS and OpenLSO implementations!

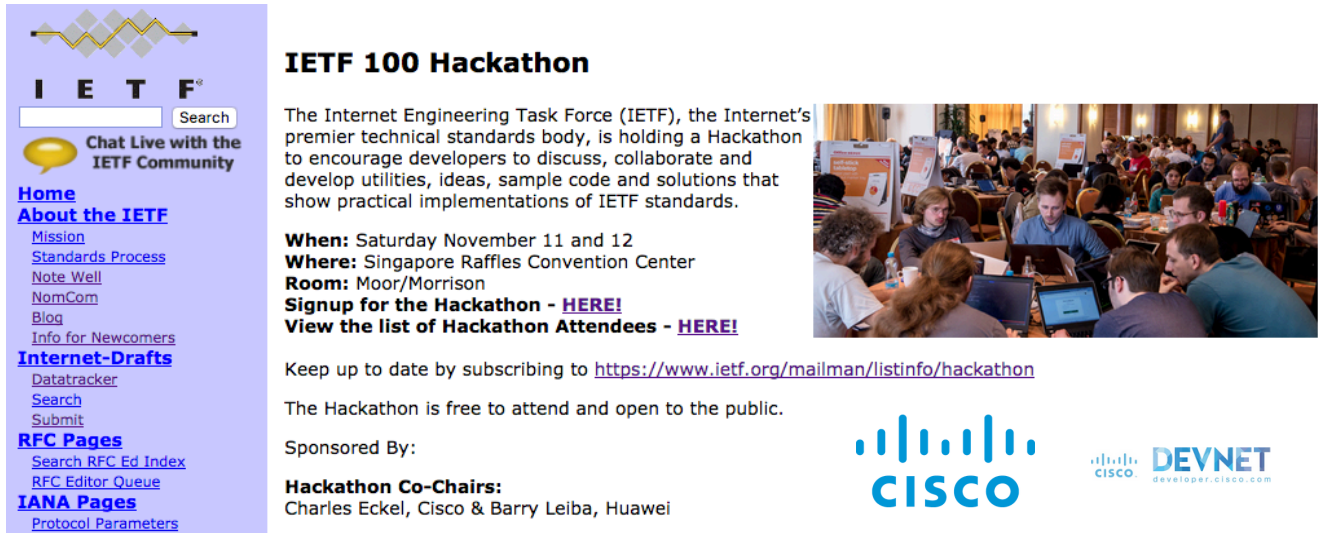
The MEF is holding its third LSO Hackathon co-located with MEF16 to accelerate the development of LSO-SDN-NFV based solutions for Third Network services. The MEF16 LSO Hackathon will facilitate discussion, collaboration and the development of ideas, sample code and solutions that can be used both in the Open Source projects (e.g. OpenDaylight, ON.Lab, PNDA) and in the further development of MEF specifications for the benefit of service providers and technology vendors alike.

It is free to participate although space is limited to 80 hackathoners. Register for your place now, and our LSO Hackathon leadership will confirm your participation after reviewing your details.

cisco DevNet ECI iometrix LB NETWORKS

Call to Action

- Champion combination of standards and open source
- Make standards consumable by developers
- Make open source consumable by industry



Join DevNet

- Become a Member

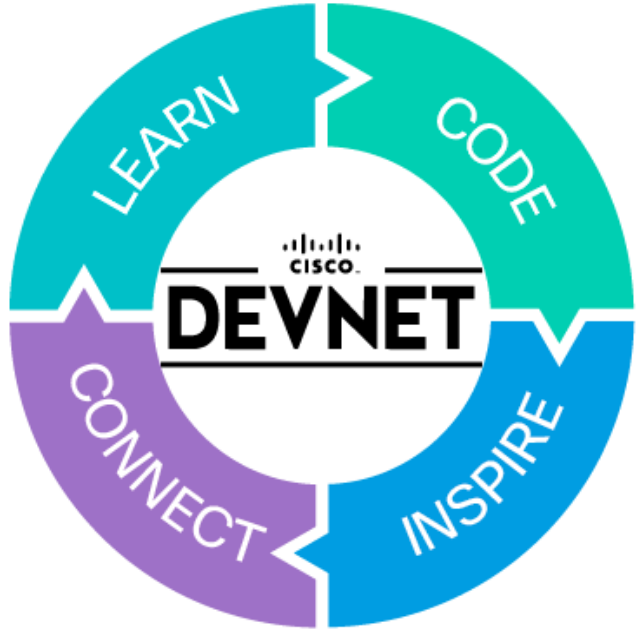
  https://developer.cisco.com/join/os-syd17

- Visit our Open Source Dev Center:

  https://developer.cisco.com/site/opensource

- Browse the OpenStack Microsite:

  https://developer.cisco.com/site/openstack/



Thank you!