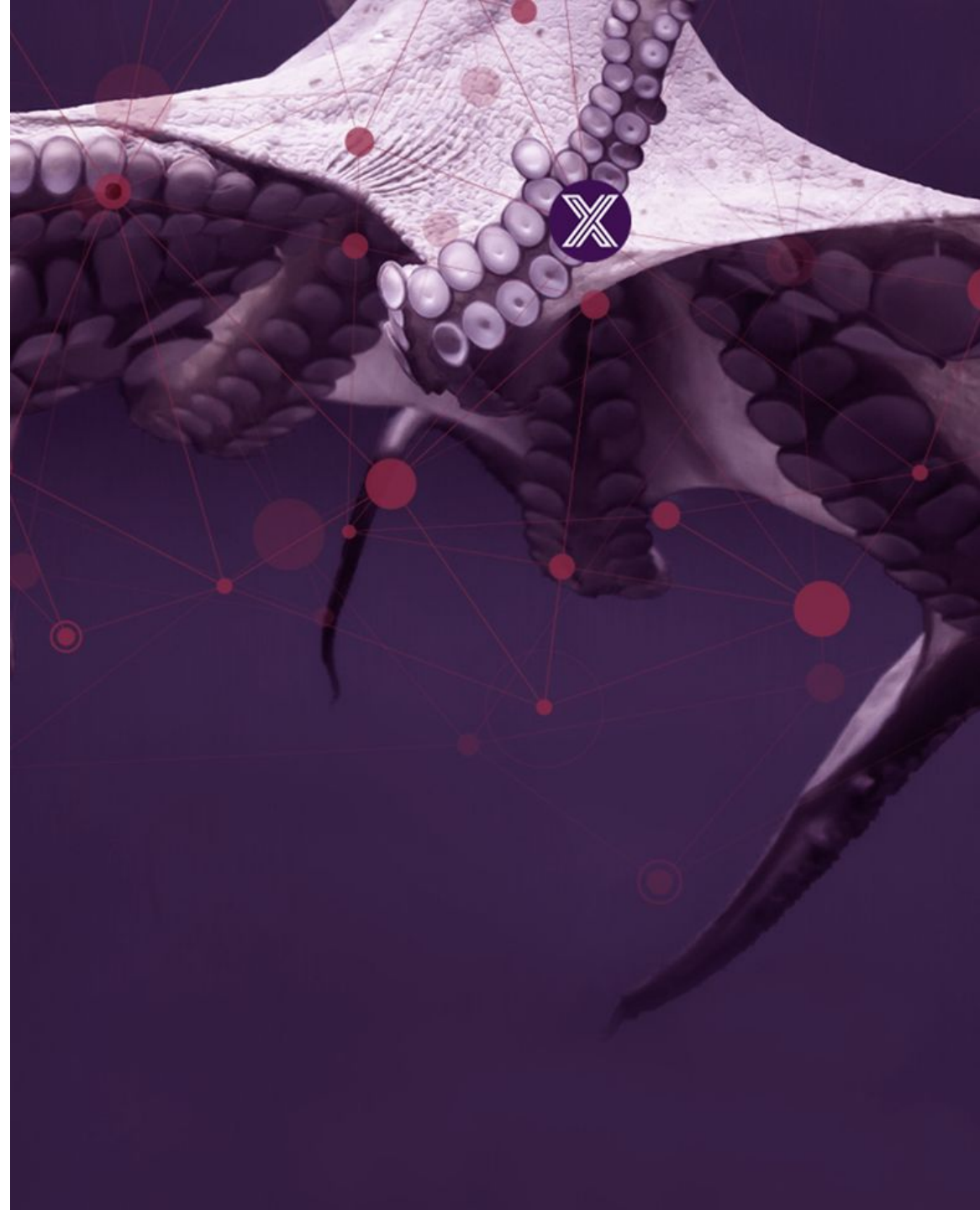




TSC Meeting

November 7, 2018



LF Antitrust Policy Notice

EdgeX Foundry meetings involve participation by industry competitors, and it is the intention of the Linux Foundation to conduct all of its activities in accordance with applicable antitrust and competition laws. It is therefore extremely important that attendees adhere to meeting agendas, and be aware of, and not participate in, any activities that are prohibited under applicable US state, federal or foreign antitrust and competition laws.

Examples of types of actions that are prohibited at EdgeX Foundry meetings and in connection with Linux Foundation activities are described in the Linux Foundation Antitrust Policy available at <http://www.linuxfoundation.org/antitrust-policy>. If you have questions about these matters, please contact your company counsel, or if you are a member of the Linux Foundation, feel free to contact Andrew Updegrove of the firm of Gesmer Updegrove LLP, which provides legal counsel to the Linux Foundation.

Meeting Logistics

Time: November 7, 2018 7am PST – 8am PST

Join from PC, Mac, Linux, iOS or Android: <https://zoom.us/j/983155298>

Or iPhone one-tap (US Toll): +14086380968,983155298# or +16465588656,983155298#

Or Telephone:

Dial: +1 408 638 0968 (US Toll) or +1 646 558 8656 (US Toll)

+1 855 880 1246 (US Toll Free)

+1 877 369 0926 (US Toll Free)

Meeting ID: 983 155 298

International numbers available: <https://zoom.us/join?m=mkFexUxEc9HlvXHw53PqScTDRvS48PiQ>

** TSC calls are recorded and added to Wiki post-call

TSC – Members Present Today

<u>Company</u>	<u>Name</u>	<u>Email</u>
IOTech	Andy Foster	andy@iotechsys.com
ForgeRock	David Ferriera	david.ferriera@forgerock.com
Analog Devices	Doug Gardner	doug.gardner@analog.com
Mainflux	Drasko Draskovic	drasko@mainflux.com
Mainflux	Janko Isidorovic	janko@mainflux.com
The Linux Foundation	Jeremy Phelps	jphelps@linuxfoundation.org
Dell	Jim White (TSC Vice Chair)	james.white2@dell.com
IOTech	Keith Steele (TSC Chair)	keith@iotechsys.com
Samsung	Moonki Hong	moonki1.hong@samsung.com
IOTech	Steve Osselton	steve@iotechsys.com
Canonical	Tony Espy	espy@canonical.com
Dell	Trevor Conn	Trevor.Conn@dell.com

Current quorum = 8 members

*Note: TSC meetings shall require a **quorum of two-thirds of the TSC total members to take a vote or make a decision**. If a TSC meeting fails to meet the quorum requirement, discussions may proceed, however there shall be no voting or decisions. Decisions by vote at a meeting require a majority vote, provided quorum is met.*

Today's Agenda

- IoT Solutions Barcelona Recap and Feedback
- TSC Edinburgh F2F Recap & Feedback
- WG Updates (Delhi)
- “H” release name (vote needed)
- Tooling for Edinburgh (vote needed)
- Edinburgh Scope
 - Per last week's UK F2F
- Next TSC F2F
- Upcoming Events
- AOB

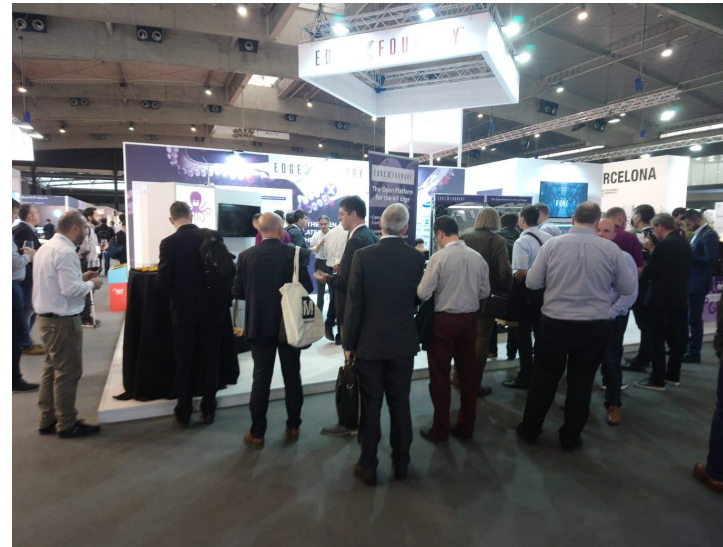


- IoT Solutions Barcelona & TSC Recap & Feedback

Keith Steele

IoT Solutions World Congress Barcelona Recap

- A great unveil of the community demo
- More than 100 scanned leads
- Booth remained busy from start of show through close
- Thank You again to CloudPlugs for sponsoring Happy Hour on Day 2!
- Thank You to the members who helped staff the booth from Basking Automation, CloudPlugs, Dell, Enigmedia, IOTech, Mainflux, Redis Labs, RSA, VMware, and ZEDEDA
- Learn From: Reconfigure the community kiosks next time for better visibility





TSC Edinburgh F2F Recap

Keith Steele

TSC Edinburgh F2F Recap

- Great attendance with 47 in-person plus 8 dial-in
- Keith Steele's recap blog posted today, read it [here](#)
- Full recap and notes available on the [Wiki](#)
- Next TSC F2F scheduled for April 22 - 25, 2019 in [Seoul](#)
- Following that will be October in [Chandler, AZ](#)
- Other feedback?





Delhi Release Work Group Updates

Jim White

Working Group Chair Updates

- Around the horn
 - Core/Supporting - Trevor
 - Applications - Janko
 - Device Services - Steve
 - Test/QA - Andy
 - DevOps - Jeremy
 - Security - David
 - System Management - Jim
 - Vertical Solutions - Moonki
- Developer Outreach - Michael
- Others & Misc

Core Working Group (7-Nov-18)

- Rev'd master branch edgex-go to version 1.0.0
- Two bug fixes included so far for Delhi release
 - Back-porting these fixes into master branch as well
 - Bug fixes only, no new feature development
- Question for TSC -- Use of Slack?
 - Billing-related info
 - Plans: <https://random-access.slack.com/plans>
 - Account types:
<https://get.slack.help/hc/en-us/articles/202518103-Multi-Channel-and-Single-Channel-Guests>
 - In effect the project will pay for multi-channel guest accounts who are not "inactive"
 - Multi-channel guests have to be invited
 - Example invitation page for Gopher Slack channel
 - <https://invite.slack.golangbridge.org>
 - Billing policy <https://get.slack.help/hc/en-us/articles/218915077-Fair-Billing-policy>

Applications WG Update (7-Nov-18)

- Application WG started weekly meetings - Tuesdays 11 am PDT
- Applications WG Meeting on 06-Nov-18 - Canceled
- Applications WG Meeting on 30-Oct-18:
 - Intel did a demo of Functions Nuclio Framework on top of EdgeX
 - Very good functionality
 - Need to get into details like:
 - Debugging
 - Tracing
 - Footprint
 - Performance, etc...
 - Need to do a similar test with OpenFaaS and compare.

Meeting recording with demo link:

https://zoom.us/recording/share/ce_gFxQJELoTIDIYW_0ptKZDwP2G_wR2Zr2uG2SqAjCwlumekTziMw

Device Services WG Update (7th Nov)

- New Device Service SDKs (Go and C) in EdgeX repository
- Provide sufficient functionality to develop new services - additional enhancements post Delhi release
- First new Device Services - Modbus (Go), MQTT (Go), OPC UA (C), IOTivity (C), Grove (C) will be available as part of Delhi release
- Documentation still needs to be written

QA/Test WG Update (7th Nov)

- Resolved Issue #56 “RAML Changes -- Support-Logging master branch” addressed by PRs by #84 and #85
- Blackbox tests running against Delhi code base - currently passing
- Continuing to reviewing testing tools and frameworks
 - Have been reviewing Junit + [Allure](#) for dashboarding of PASS/FAIL types tests (e.g. blackbox)
 - [Telegraf+InfluxDB+Granfana](#) or [DataDog](#) for performance monitoring/metrics
 - Telegraf provides greatest flexibility - provides integration with [JMeter](#) (for load testing) and can be used with different front (dashboarding) and backends (time series databases)
 - Have been also looking at static code analysis tools (including [Coverity](#) and [Veracode](#)) for defect and security vulnerability analysis
- Weekly combined QA/Test WG meeting as of November 8th

DevOps WG (7-NOV-18)

Delhi release risks:

- edgex-ui-go build failure (go vet)
- last minute commits to delhi branch (device-sdk-go seems most risk)
- all services need to have version rev on master branch ASAP

Security (10-Oct-18)

- Delhi work continues
 - Status of 7 proposed features: 4 green, 2 yellow, 1 red (automated testing)
- Finalize Edinburgh deliverables today
- **Request:** Present IIC Security presentation at an upcoming TSC call
 - Scheduled for 10-Oct-2018

System Management WG (7-Nov-18)

- Some clean up of bugs for Delhi
 - Docker deployment
 - Documentation/video work to do
- Organizing plans / work tasks for Edinburgh

Developer Outreach (07-NOV-18)

- Completed
 - [Zephyr & EdgeX presentation at OSS/ELC](#)
- In Progress
 - Deployment Patterns docs on the website
 - New “Quick Start” guide for Delhi
- Coming up
 - Revised “Get Started” webpage
 - DevKits & Ecosystem webpages
 - Migrating chat to Slack

The background features a detailed, light-colored dinosaur skeleton, likely a Tyrannosaurus Rex, set against a dark purple background. A network of red dots connected by thin red lines is overlaid on the skeleton, suggesting a digital or technological theme. A small circular logo with a white 'X' on a purple background is positioned near the top center of the skeleton.

EDGE X FOUNDRY™

H Release

H Release

- Release schedule
 - Edinburgh (April 2019)
 - Fuji (Oct 2019)
 - Geneva (April 2020)
 - Hanoi (Oct 2020)
- We have decided to grant the naming of each +4 release to an individual that greatly impacted the current release at the code/artifact level
- We **honor Joan Duran** of Circutor for his efforts in this release
 - Joan has made almost 200 contributions in this release
- Joan has selected **“Hanoi”** as the code name for our Oct 2020 release
- Thanks Joan and we deeply appreciate your efforts



Tooling

Jim W & Brett

New Tooling

- Per the Edinburgh Face-to-Face, a number of tool needs were raised / requested for this next release.
 - Slack (to replace RocketChat)
 - Bitergia (to get/monitor contributing developer participation)
 - Static code analysis tool (to include in our CI/CD pipeline)
 - Performance monitoring tool with dashboard
- Keith would like to go to the governing board one time to get the necessary funding for these
- We would like to propose a tool funding package for TSC approval and allow Keith to take it to the board for funding approval

Move from Rocket.Chat to Slack (7-NOV-18)

- Discussed during TSC F2F
- LF recommendation is the free tier (which, yes, is subject to archive limits), as the combination of slackin to allow community sign-up and paying per-seat means there are no hard controls on cost)
- Storage limits
 - 10K of your team's most recent messages
 - 5 GB total storage
- Budget
 - \$120/year managed slack and \$15/month for the slack-in (which allows folks to self-subscribe, versus needing to be invited)

Bitergia

- Analytics Suite for Open Source Community Metrics (with dashboard) and consulting service to give us insight into developer contributions and activity.
 - Example: how many PRs by developer, how many PRs or issues are submitted over a period of time
- Initial request would be to provide monitoring and dashboard on GitHub
- Services can be expanded to watch additional sources (RocketChat, email forum, etc.) and answer additional questions in the future.
- \$5k / year to start
 - \$3K dashboard and \$2K GitHub data source
 - Add \$2k for additional data source

Static Code Analysis

- A process of analyzing a set of code against a set (or multiple sets) of coding rules.
 - Looking for weaknesses in code that might lead to security or other vulnerabilities
 - Checking that code complies with certain code guidelines
- Often done as part of CI/CD pipeline (and EdgeX would have this expectation)
- Test/QA Workgroup is exploring options
 - Leading candidates are Coverity and Veracode, but only Veracode supports Go
- Cost (based on Veracode quote) would be X\$/month
- Asking for not to exceed budget of Y\$/month
 - Decision on actual tool coming from Andy Foster and WG team

Performance Monitoring / Dashboarding

- Per the Edinburgh F2F, one of the first objectives/tasks for Test/QA for Edinburgh release is to provide monitoring of tests/performance via dashboard
- Test/QA is still looking at options and it is likely this need will be handled by multiple tool sets (some open source and some commercial)
- Some of the leading monitoring services and dashboarding tools are commercial and are offered on a monthly as-a-service basis
- Ex: DataDog is popular and has been used by several WG teams already
 - Cost \$15/month per host
- Asking for not to exceed budget of 50\$/month
 - Decision on actual tool coming from Andy Foster and WG team

Proposal to the TSC for vote

Request the board approve the following budget for EdgeX project tools:

- Bitergia: \$5K/year
- Slack (to replace RocketChat): \$120/year managed slack and \$15/month for the slack-in
- Static code analysis: not to exceed \$50/month
- Performance monitoring service/dashboard: not to exceed \$50/month

Totals: \$5120 annual, and \$115/month

CANCELED

EDGE  FOUNDRY™

Edinburgh Scope (per F2F meetings in UK)

Jim White

Release Themes and Objectives for Edinburgh

- Improve on-boarding for EdgeX Users
- Support the ingestion, use and export of binary data in CBOR format
- Refactor database-using services to be more loosely coupled to the persistence mechanism
- Implement initial Application Services for better north-side scale / flexibility (eventual Export Services replacement)
- Many more Device Services
- Outline an initial certification program

Application

- Initial Application Services
- Lightweight rules engine

Core

- Refactor database-using services - to be more loosely coupled to the persistence mechanism
- Glide to Modules
- Scheduler cleanup
- Metadata device blacklist (used by DS)
- Fix config-seed to not repopulate Consul each time (needed for SMA set config)
- Improve/simplify Device Profile (used by DS)
- Upgrade Consul to latest
- Tracing (*stretch goal*)

DS & SDKs

- Docs, tutorials, how-to-guides, sample services
- Modbus, BACnet, BLE, MQTT, SNMP DS (replacing Java DS)
- Cache readings
- Add system management APIs
- Fix issue of device ownership - deleting all associated metadata on delete and adding to a blacklist in metadata
- Improve/simplify Device Profile
- Other DS (*stretch and at discretion of contributors*)

Security

- Automated testing
- EdgeX secrets in Vault (using Vault namespaces for each service)
- Initial secrets (to start Vault/Kong) encrypted on the file system
- W/ abstraction to allow for hardware stores (based on hardware root of trust)
- Define/document service to service AuthN/AuthZ requirements
- Upgrade Kong & Vault to latest

System Management

- Add CPU metric tracking
- Provide API on health / status check of services (via registry)
- Refactor SMA to remove docker libs
- Provide initial translation layer (allow SMA to speak alternate protocol like LWM2M) (*stretch goal*)

Test/QA

- Better visualization/dashboard of test results
- Capture performance metrics
- Automated security testing
- Require contributors to provide blackbox test updates/additions with relevant PRs (whenever API changes are made)
- Use of performance / load testing tool (*stretch goal*)
- Produce Swagger documentation (*stretch goal*)

DevOps

- Move to Go 1.11
- Retain program artifacts (Go exe, Java JAR, etc.) in Nexus
- Replace WG Chair

General

- Certification process definition
- RocketChat to Slack
- Release Manager role (by volunteer orgs IoTech, Dell, Intel, Canonical)
- Define a support contract/policy
- Test/QA and DevOps to join meetings
- 12 factor apps

Edinburgh will be 1.0

- Careful not to suggest Delhi is not ready for use
- Understanding nothing is perfect
- Don't over exaggerate or highlight this yet
- Allow TSC to alter this if problems arise

CANCELED

EDGE  FOUNDRY™

EdgeX Community Demo Update

Andy Foster

(10-OCT-18)





TSC F2F Planning

Brett

EdgeX TSC F2F Meeting(s)

- **22 - 25 April, 2019** -- Location Seoul, South Korea -- [Wiki page](#)
 - Technical Business Discussions + EdgeX 101 on Monday, April 22
 - Architect's Day / WG Breakout Sessions + Social Event on Tuesday, April 23
 - Technical F2F - Day 1 + Dinner Reception on Wednesday, April 24
 - Technical F2F - Day 2 on Thursday, April 25
 - **RSVP at** <https://goo.gl/forms/oMptkNU90RRxhK5g1>
 - RSVP by EOD April 5
 - Current registration count: 1 in-person; 0 dial-in
 - Hotel/Travel: Information coming soon
-
- **October, 2019** -- Location Chandler, Arizona (USA) @ hosted by Intel

The background features a detailed illustration of a dinosaur skeleton, likely a Tyrannosaurus Rex, rendered in a light purple/pink hue. Overlaid on this is a dark purple network diagram consisting of numerous red circular nodes connected by thin, light-colored lines, creating a web-like structure across the entire image.

EDGE X FOUNDRY™

Upcoming Events

Upcoming Events

- [IoT Build Europe](#), November 13-14, London
 - Keith Steele - November 13 - [Defining Edge and its role in the Internet of Things](#)
- [FIWARE Global Summit](#), November 27-28, Malaga
 - Janko Isidorovic (Mainflux) - Keynote on November 27 - Enabling a Cloud-Native Edge for IoT Scale
- [International Congress on Management and Technologies](#), December 8-13, Brazil
 - Dalton C G. Valadares (Federal University of Campina Grande) - Edgex Foundry: plataforma baseada em serviços para aplicações IoT
- [Emerging Computing Technology Conference](#), January 29-30, 2019, Houston
 - Keith Steele (IOTech) and Jim White (Dell) - January 29 at 4:15 pm
- [IoT Evolution Expo](#), January 29 - February 1, Fort Lauderdale
 - Jim White (Dell) - TBD - Edge Computing: Remotely acting on mission-critical decisions in the field

Upcoming Event - Need Volunteer

- The [Internet of Manufacturing Southwest](#), December 4-5, Dallas, TX
 - Need an EdgeX Foundry spokesperson to chair an Edge track and participate in a panel discussion.
 - PANEL DISCUSSION: Cloud vs. Edge Data Management & Analytics
 - How is edge computing being used by manufacturers in real-life scenarios
 - From cloud to fog to edge: understanding the differences and crossovers
 - Gaining insights into key applications and data analytics capabilities of the different technologies?
 - Discussing when to manage data in the cloud, and at the edge
 - Conference coordinators are willing to pay travel up to \$350 and the hotel cost. Please let Maemalynn know if you are interested by EOD November 8, otherwise we'll decline the opportunity.

Full list of LF events available at
<https://events.linuxfoundation.org/upcoming-events/>

Additional EdgeX events available at
<https://www.edgexfoundry.org/events/>

Upcoming CFPs

CFP Upcoming Deadlines:

- [Internet of Things World](#), May 13-16, Santa Clara, CA (USA)
 - Deadline - **November 16**, 2018
 - https://get.knect365.com/iot-world/speaking-submission-2019/?_ga=2.218061782.1372769890.1536769581-2081958547.1534262136
- [Open Source Leadership Summit](#), March 12-14, 2019, Half Moon Bay, CA
 - CFP Status: Closes January 28, 2019
 - <https://events.linuxfoundation.org/events/open-source-leadership-summit-2019/program/cfp/>
- Open Source Summit China, June 24-25, 2019 | Shanghai, China
 - CFP Status: Opens December 1, 2018 – March 10, 2019
- Members interested in joining the EdgeX [Speakers Bureau](#), please email pr@edgexfoundry.org

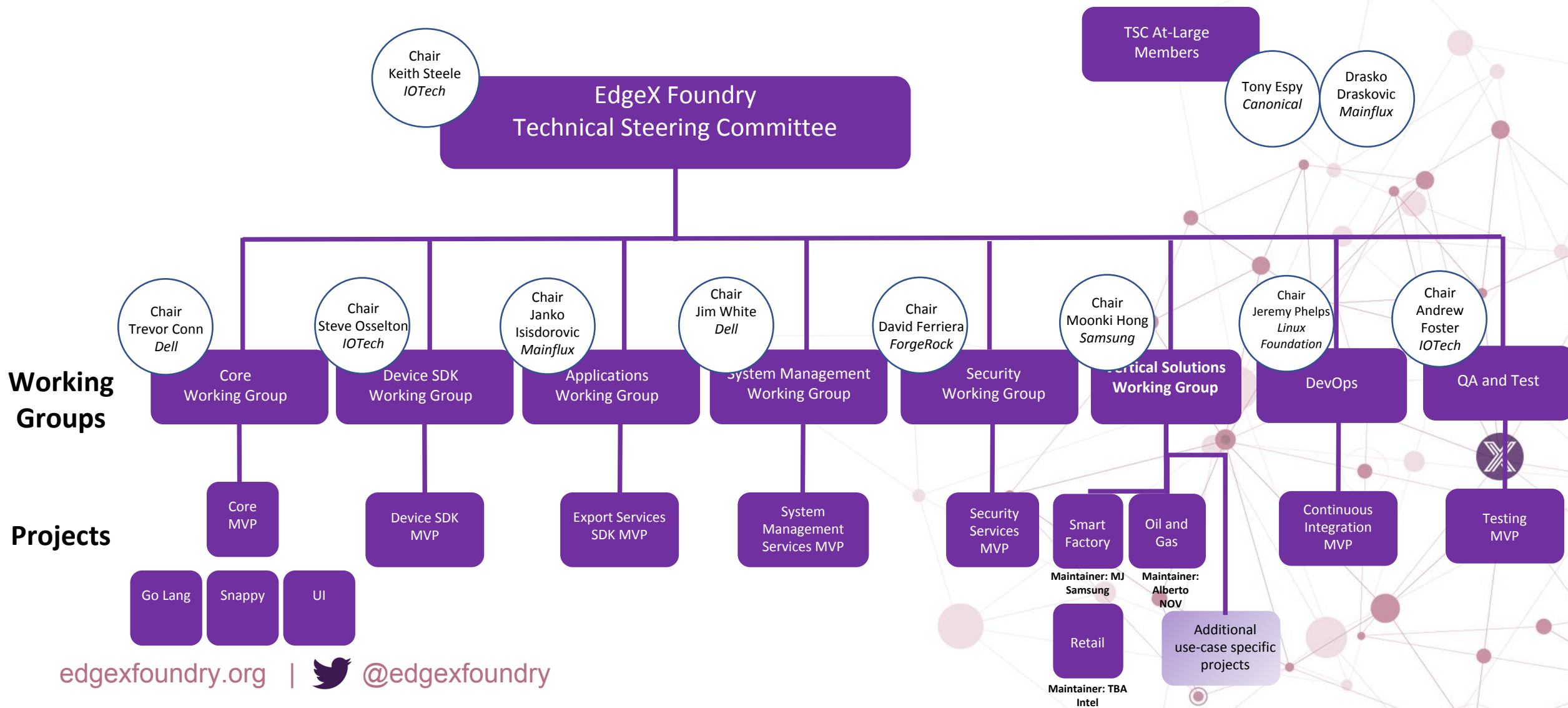


AOB / Reminders

AOB/Cadence

- Meeting Cadence Reminder
 - Currently held weekly at 7am PST on Wednesday's
 - Calls without TSC quorum will still be used to review issues
- **Next Meeting: November 14, 2018**

EdgeX Project Organization



Marketing

- **CTA:** If your company will be presenting EdgeX at an upcoming event/webinar/other, please email pr@edgexfoundry.org so that we can help promote

EdgeX in Market

- Page showcases momentum in the project, including solutions already available
- <https://www.edgexfoundry.org/edgex-in-market/>
- Email info@edgexfoundry.org if you have any additions

Project Contributions Welcome!

- Our objective is to make EdgeX use & deployment pervasive!
- EdgeX success is 100% dependent on the vibrancy of a proactive community
- Getting Involved
 - Project membership growing - want to join contact Brett Preston at LF (bpreston@linuxfoundation.org)
 - First Priority is the MVP - potential contributors please contact keith@iotechsys.com (people, equipment, technology)
 - If interested in adding new projects please contact the relevant working group chair

Project Resources

Quick links to most commonly used Community Resources

- Code: <https://github.com/edgexfoundry>
- Documentation: <https://wiki.edgexfoundry.org/>
- Discussion: <https://chat.edgexfoundry.org/>
- Mail Lists: <https://lists.edgexfoundry.org/mailman/listinfo>
- Twitter: <https://twitter.com/EdgeXFoundry>
- LinkedIn: <https://www.linkedin.com/company/22298339/>
- YouTube: <https://www.youtube.com/c/EdgeXFoundry>

EdgeX - Where to learn more

- EdgeX Foundry Wiki

<https://wiki.edgexfoundry.org/display/FA/EdgeX+Foundry+Project+Wiki>

- EdgeX Foundry Rocket Chat

<https://chat.edgexfoundry.org/home>

- [Weekly EXF Technical Spin up calls](#)

30 minute deep-dive topics followed by 30 minute open Q&A

Call recordings are available on the [Wiki](#)

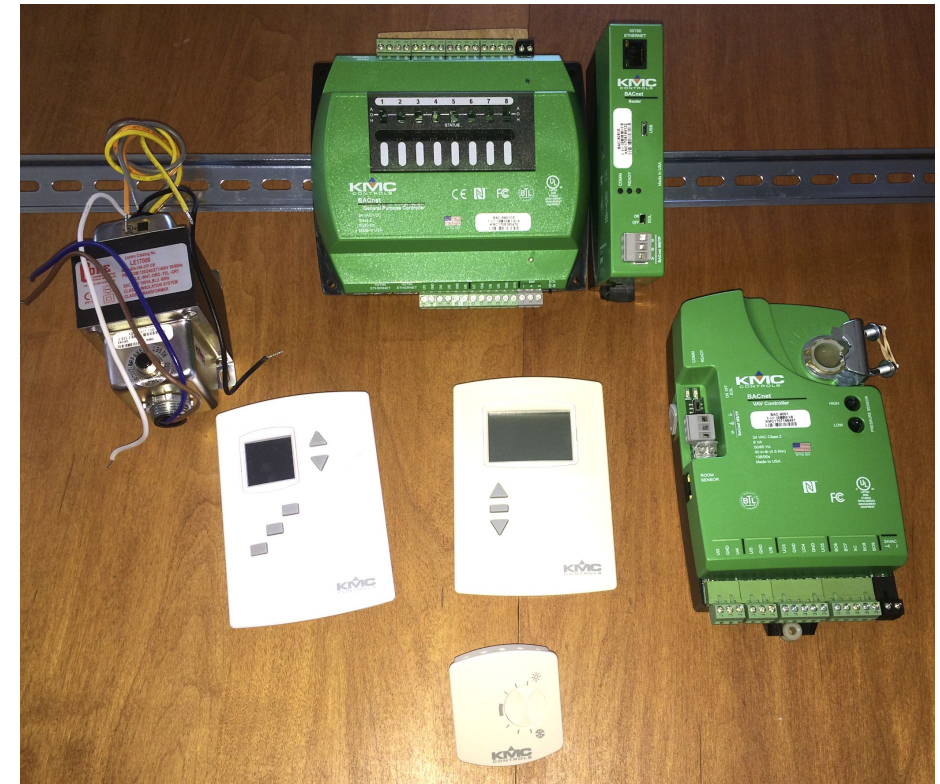
What is the Device Exchange?

- A great way to put your products in the hands of other members so they can help build a better EdgeX!

• <https://wiki.edgexfoundry.org/display/FA/Device+Exchange>



Special thanks to [Dave Bohlman](#) and [KMC Controls](#) for making this awesome kit and how-to guide available to members!!



Meetups

- Help us grow awareness!
- Present, and Tag, EdgeX in your local IoT Meetups
- <https://www.meetup.com/topics/edgex/>
- Email info@edgexfoundry.org for assistance

Related topics

New Technology

Open Source

Interoperability

Smart Home

Internet of Things

Open Standards

Mobile Development

Internet of Everything

EdgeX

EdgeX

Find out what's happening in EdgeX Meetup groups around the world and start meeting up with the ones near you.

Related topics:



Meetups: Reimbursement Program

- <https://wiki.edgexfoundry.org/pages/viewpage.action?pageId=7602724>
- Wiki page built for the community to leverage
- Encourage community to begin introducing EdgeX in your local Meetup groups
- EdgeX Foundry will fund/sponsor the talk in which EdgeX is scheduled to be presented
 - Up to \$250 for F&B, once per Meetup group, per quarter
- Let us help drive traffic to your event! Email pr@edgexfoundry.org once Meetup has been scheduled
- Post-event, please consider doing a blog about the event

Hackathons: How can you help?

- <https://wiki.edgexfoundry.org/display/FA/Hackathons>
- Provide any local volunteers onsite to help with technical work, potentially help judge, etc. (see list below of known hackathons coming up and locations)
- Sponsor breakfast/lunch/dinner for the participants (usually things like donuts/coffee, pizza lunch or cater sandwiches)
- Sponsor \$ rewards (incentives) for teams that successfully implement projects (these could even be projects that particular sponsors want to see accomplished - we just need them scoped appropriately so as to be something that can be accomplished in a 2 day period)
- Help provide or resource hackathon winner prizes
- Sponsor or provide any swag (t-shirts, mugs, etc.)
- Provide marketing assistance

The background of the slide features a detailed, light-colored dinosaur skeleton, likely a Tyrannosaurus Rex, set against a dark purple background. A network of thin red lines connects various red circular nodes, some of which are placed on the dinosaur's bones, creating a digital or technological overlay. The logo for EdgeX Foundry is centered in a white rectangular box.

EDGE X FOUNDRY™

Thank You