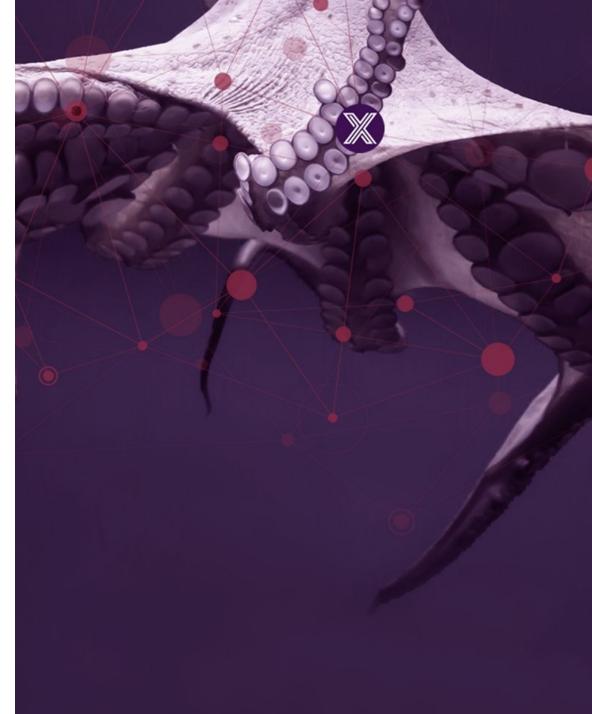


TSC Meeting

May 23, 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: May 23, 2018 7am PDT – 8am PDT

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/zoomconference?m=mkFexUxEcqHlvXHw53PqScTDRvS48PiQ

** 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
Analog Devices	Doug Gardner	doug.gardner@analog.com
Mainflux	Janko Isidorovic	janko@mainflux.com
Dell	Jason Shepherd	Jason.A.Shepherd@dell.com
The Linux Foundation	Jeremy Phelps	jphelps@linuxfoundation.org
Dell	Jim White	james.white2@dell.com
IOTech	Keith Steele (TSC Chair)	keith@iotechsys.com
Samsung	Moonki Hong	moonki1.hong@samsung.com
Samsung	MyeongGi Jeong	myeong.jeong@samsung.com
VMware	Salim AbiEzzi	salim@vmware.com
Canonical	Tony Espy	espy@canonical.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.



Today's Agenda

- Working Group Updates
- Next TSC F2F Meetings
- TSC Elections Updates
- EdgeX Developer Advocate & Project Evangelist
- China Presence / Beijing Meetup
- EdgeX Test Beds
- IIC Liaison Updates & Opportunities
- Use Case Campaign
- Upcoming Events
- AOB



Working Group Updates

- UI Project Group call scheduled for Thursday, May 24 at 6am PDT
 - Email info@edgexfoundry.org to be added directly to meeting invite
 - https://wiki.edgexfoundry.org/display/FA/UI+Project+Group
- Snappy Deployment Project Group meets bi-weekly on Tuesdays at 11am PDT
 - Email info@edgexfoundry.org to be added directly to meeting invite
 - https://wiki.edgexfoundry.org/display/FA/Snappy+Deployment+Project+Group

Other Working Group Chair Updates

- Around the horn
 - Core Jim
 - Applications Janko
 - Device Services Tony
 - Test/QA Andy
 - DevOps Jeremy
 - Security Doug
 - System Management Salim
 - Vertical Solutions Moonki
- Others

Core WG Update

- Ongoing work
 - Naming & availability work on all services including export per earlier design doc
 - Config-seed-go process TOML & update with Go configs from all services
 - Support-notifications
- Held meeting with Hashicorp
 - Consul, Vault provider
 - Points of contact for future questions/help
 - More recommendations/information forthcoming
- Stretch
 - Scheduler contribution reviewed and integrated

DS/SDK WG Update

- Requirements doc nearing completion
- Design meeting Jun 4

Application WG Update

- Looks like we will have more export connectors than planned for California Release:
 - Azure IoT export connector WIP
 - XMPP export connector WIP
 - ThingsBoard IoT export connector WIP Contribution from ThingsBoard
 - Brightics IoT export connector development to start in June 2018.
 - Google IoT export connector waiting for resources, development is expected to start in first week of June 2018.

QA/Test Working Group Updates

Blackbox Testing

- Currently running blackbox tests against both Java and Go services tests are finding bugs and differences between implementations that we are in the process of fixing
- Need to decide whether we change RAML and update Java code to be consistent for California
- Have created new blackbox tests for Logging and Rules Engine
- Still need to add tests for Notifications, Scheduling, Export Client and Device Service

Security Functionality Testing

Still need to create test plan/strategy and identify resources to implement tests for California Security functionality

Documentation

Additional updates/improvements made to new documentation and merged changes into repo



DevOps Working Group Updates

- 1. License and Copyright built into images now for distribution.
- 2. Full publishing of go bins and images from edgex-go.
- 3. Made contribution to blackbox-testing (fetch images from nexus).
- 4. Email notifications from blackbox-testing failures (subscribe).

TO DO:

- 1. Copy attribution files from edgex-go into image and bin tar.
- 2. California branch cutting and final release (are we releasing Java services?)

Security WG Update

- Kong & initialization script nearing completion
- Vault & initialization script work under way
- To Be Done
 - Kong/Vault integration
 - Merge with the rest of EdgeX (complete common docker-compose)
 - Firewall configuration
 - Documentation

EDGE X FOUNDRY Next TSC F2F Meetings Keith Steele

EdgeX TSC F2F Meeting(s)

- <u>Tuesday & Wednesday 5th/6th June</u> -- Location VMWare Palo Alto, California
 - RSVP by June 1 at https://goo.gl/forms/fzunofabMiliT5Ht1
 - Current registration count: 27 in-person; 5 dial-in
 - Hotel Options: https://wiki.edgexfoundry.org/download/attachments/12124391/vmw-pa-hotels.pdf?version=1 &modificationDate=1522861814000&api=v2
- Tuesday & Wednesday 23rd/24th October -- Location Edinburgh, UK
 - Rather than booth, target <u>CFP submissions</u> (CFP closes July 1)
 - RSVP at https://goo.gl/forms/QR3WgP4ybB5KUT3w2
 - Current registration count: 1 in-person; 0 dial-in
 - Hotel/Travel: https://events.linuxfoundation.org/events/elc-openiot-europe-2018/attend/venue-travel/
- Following meeting would be in Asia at Samsung Facilities?

F2F meeting

Proposed agenda posted:

https://wiki.edgexfoundry.org/display/FA/5-6+June+2018%3A+Palo+Alto +Technical+Meeting

Proposed Delhi Scope & Architectural issues discussed:

https://wiki.edgexfoundry.org/download/attachments/12124391/EdgeX-F 2F-PaloAlto.pdf?version=1&modificationDate=1525910749000&api=v2

Comments and suggestions welcome

We have only 2 days - we have to keep our agenda focused

Proposed 2 Day Agenda

Day 1 - Delhi planning day

- Welcome and intro by Mike McDonough
 (VMWare): 9-9:45am
- Architecture day tee-up: 10-noon
 - Review and explanation of upcoming items
- Delhi Planning what's in/out: 1-3:30pm
 - Scope definition
- Testbeds and organization liaising:
 3:30-4:30pm
- TSC & WG chair upcoming voting: 4:30-5pm
 - LF review of rules and procedures for upcoming voting

Day 2 – Architecture issues day

- Architecture discussion and decisions:
 9am-2:30pm
- Business Issues/Discussion: 2:30-3:30pm
- Wrap up and action items: 3:30-4:30pm



Focus of meeting: Scope Delhi

- Suggest 4 main implementation targets
 - Initial System Management APIs and agent
 - DS SDKs (Go/C) & some replacement DSs
 - Next wave of security features
 - Suggest ACL, secure non-HTTP comms
 - Improve testing
 - Better/more unit, complete black box and performance

High level Delhi Scope

What's In

- -System management API in all services
- -Sys mgmt agent
- -Base service (started with refactor)

Service naming

Availability

Common config/reg

Service tracing (OpenTracing API)

-Service outage & notifications

Resiliency in face of non-availability of services

-ACL (for reverse proxy use)

-Secure non-Http comms
MQTT outbound/inbound
0MQ outbound

-Complete the initial SDKs (Go & C)

Complete new virtual device service

-Refactor some existing DS

Modbus

BACNet

MQTT

High level Delhi Scope (cont.)

- -Unit tests coverage of a majority of the code Core/support service refactors as examples
- -Blackbox testing for all services Integrate in CI Reporting on failed tests
- -Performance Tests

 Meeting RP3 targets

- -Replace any remaining Java services
 Scheduler
- -Configuration categorized/grouped
- -Review and incorporate all the outstanding code contributions

UI

Scheduler

Samsung code

. .

Proposed Architectural Discussions

- Focus on Delhi release work
 - Address other architecture items if time permits
- Divide the discussion into two sections
 - Technical Debt what code in the existing system needs fixed or refactored in Delhi
 - Enhancements what can we add to improve EdgeX for Delhi

Proposed Architectural Tech Debt Discussions

- Re-architect Go Export Distro
 - More modular/SDK like
 - More scalable solution
- Protecting microservice secrets with Vault (export distro, etc.)
- Upgrade Consul
 - Based on conversation with HashiCorp
- Automate API documentation
 - Replace or augment RAML with Swagger, TOML, etc.
- Mongo
 - Errors and warnings at startup
 - Mongo replacements / alternatives (no Arm32 support, Mongo Light?)
 - Use of DB Ids in objects

Proposed Architectural Enhancements Discussion

- ARM 32 support
- Device services that downsample
 - Scale back readings sent when data is pumped to fast
- Min/Max limit on accepting command
- Data transformation and/or filtering at DS level
- Additional DS connectivity
 - CANBus
 - Profinet
- Alternate deployment / orchestration
 - Kubernetes vs Composee or Snaps

Proposed Business Issues

- Marketplace for value-add microservices and its implications
 - Will we need a new EdgeX microservice acting as license server?
- Certification process
 - When do we start to outline?
 - Levels
 - What does it incorporate?
 - Security certification



Upcoming WG Chair/TSC Elections

- WG Chair terms scheduled to end June 24, 2018
- Steady State TSC composition includes:
 - Working Group Chairs
 - Three (3) TSC at-large representatives
 - Platinum member representatives (when not otherwise represented above)
- Voting members of the TSC must be Contributors or Maintainers in the Project
- Contributor definition: Anyone in the technical community that contributes code, documentation or other technical artifacts to the EdgeX Foundry Project codebase.
- Target is to have WG Chairs identified prior to the F2F meeting in Palo Alto (June 5 June 6)

Upcoming WG Chair/TSC Elections - Timeline

- Now Monday, June 4: Establish list of Contributors, WG Chair Nominations and Voting
- Friday, June 1 Friday, June 8: TSC At-large Nominations
- Monday, June 4: WG Chairs for new term named
- Tuesday, June 5 Wednesday, June 6: TSC F2F Meeting (Palo Alto)
- Friday, June 8 Friday, June 15: TSC At-large Elections
- Monday, June 18 Friday, June 22: TSC Chair Nominations
- Sunday, June 24: End of current TSC term
- Monday, June 25: 1st day of new TSC
- Monday, June 25 Friday, June 29: TSC Chair Voting

Current WG Chair Nominees

- Core Working Group Chair :Trevor Conn (Dell)
- Test/QA WG Chair: Andy Foster (IoTech)
- Applications WG Chair: Janko Isidorovic (Mainflux)
- DevOps WG Chair: Jeremy Phelps (LF)
- DS/SDK WG Chair: Steve Osselton (IoTech)
- Security WG Chair: Rodney Hess (Beechwoods)



EdgeX Developer Advocate & Project Evangelist

- The EdgeX Foundry Project (EdgeX) is seeking a project evangelist and developer advocate to help grow and support the global EdgeX community
- Technical skills include: You are hands-on with EdgeX and Embedded technologies
- If you know of anyone, send them our way (link below)
- Full information available at https://www.edgexfoundry.org/jobs/

EDGE X FOUNDRY

China Presence / Beijing Meetup

Brett Preston

China Presence / Beijing Meetup

WeChat:

Email <u>info@edgexfoundry.org</u> for invite to EdgeX WeChat group

Beijing Meetup:

- June 26, 6PM 9PM
- Hosted by VMware
- In collaboration with Zephyr Project
- RSVP/Registration: https://www.bagevent.com/event/1491965

Agenda (tentative)

- Opening Address (Alan Ren VMware, Kate Stewart Linux Foundation, Gavin Lu VMware)
- Keynote: Introducing Zephyr (Wei Ren Synopsys, Jianghao Qiao NXP)
- Keynote: Introduction to EdgeX (Jim White Dell, Tiejun Chen VMware)
- Keynote: BUPT Presentations and demos on both EdgeX and Zephyr (Professor Li BUPT)
- Keynote: VMware EdgeX Explorations (Tiejun Chen VMware, Huaqiao Zhang VMware)
- Keynote: Using EdgeX in optimization of manufacturing processes (Jijun Ma Wanxiang)
- Keynote: A fast way to deploy IoT application based on EdgeX (Xiao Shen Quarkdata)
- Roundtable Discussion + Q&A





EdgeX Test Beds

- Discussion on EdgeX Test Beds
- Test Bed Collaboration
- Wanxiang submitted a testbed in IIC, using EdgeX as edge computing platform - OMPAI



IIC Liaison Updates and Opportunities

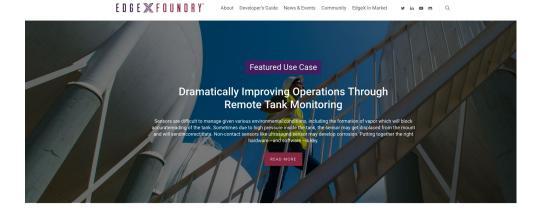
- Chicago F2F September 12, 2018
 - Hosted by IIC Security WG (Email sven.schrecker@intel.com, wael.william.diab@huawei.com)
 - EdgeX Liaison: James Clardy
 - If you'd like to contribute, please email info@edgexfoundry.org to be added to EdgeX-IIC liaison mail list
 - Need to propose Agenda Topics/Speakers
 - Example: http://www.iiconsortium.org/liaison-workshop.htm
 - Primary goal: Educate people about EdgeX, align to IIC Member goals / needs
 - Potential Agenda Items:
 - 1. Introductory presentation EdgeX (including architecture overview)
 - 2. IIC Reference Architecture
 - 3. System Management, Security How does this align to IISF and IIC Endpoint Security Best Practices?
 - 4. Overview of Vertical Activities alignment to IIC testbeds?
 - 5. Presentations from IIC what's desired by EdgeX Members?
 - 6. Representatives from member companies to present use cases; how they fit in, what they are contributing (examples: Samsung, RSA)
 - 7. Map EdgeX to IIC
 - Session length? TBD (IIC/oneM2M workshop was 3.15 hours)
 - Indicated interest in participating (as of May 20): Keith Steele, Doug Gardner, Riaz Zolfonoon, Salim AbiEzzi
 - Email info@edgexfoundry.org to register interest

EDGE X FOUNDRY

Use Case Campaign

Brett Preston

EdgeX Use Case Campaign



Use Cases

- 1 Draft site is available for review.
 - https://www.edgexfoundry.org/use-cases/
 - all passwords set to UseCase!
- 2. Seeking volunteers to help work in EdgeX connection
 - EdgeX specific use cases
 - examples of how EdgeX helps with a use case; which can include how a third party applies their commercial value add
 - email <u>usecases@edgexfoundry.org</u> to sign up

Use Cases

Enterprises, government agencies and service providers are starting to experience the benefits of implementing large-scale IoT and Industrial IoT projects. Whether they are reducing the cost of operations, improving safety on work sites and in factories, or building their own connected products to remain closer to their customers, bringing value to them, decision makers need solid business cases to attract

EdgeX Foundry's technology ecosystem makes it easier to roll out robust enterprise IoT and Industrial IoT systems with less risk, given more predictable, proven integration of multiple elements at the very edge of the network, from silicon to sensors, from connectivity to cloud, with security and reliability ensured along the entire system.

EdgeX Foundry's members are working across vertical industries on exciting projects we will share here, along with use cases to stimulate thinking and support creativity and innovation, with practical use cases that stand to save busnesses money, while making them more competitive and profitable in an increasingly hyper-connected, digital world.





Agriculture: Precision Irrigation

DECREASING WATER USAGE, IMPROVING CROP YIELD, AND **ENSURING FOOD SECURITY**



Oil & Gas: Tank Monitoring

DRAMATICALLY IMPROVING **OPERATIONS THROUGH REMOTE** TANK MONITORING



Retail: Inventory Optimization & Theft Detection

MAJOR GAINS IN RETAIL SHELF INVENTORY OPTIMIZATION AND



Upcoming Events - Confirmed

- Connectivity Expo, May 21-24, 2018, Charlotte, North Carolina
 - Galeal Zino, NetFoundry
- <u>LinuxCon + ContainerCon + CloudOpen China</u>, June 25 27, 2018, Beijing
 - Community Partner: Save 15% on Attendee Registration with discount code LC318COM15
 - New: Meetup being planned. RSVP at: https://www.bagevent.com/event/1491965
- Open Source Summit North America, August 29 31, 2018, Vancouver, Canada
 - Community Partner: Save 15% on Attendee Registration with discount code OSSNA18COM15
- <u>EdgeX / IIC Workshop</u>, September 12, 2018, Chicago, IL
 - Hosted jointly by:
 - IIC Security (Chair: Sven Schrecker, Intel)
 - Liaison Working Group (Chair: Wael William Diab, Huawei)
 - EdgeX Liaisons: James Clardy, NetFoundry, Riaz, Salim AbiEzzi VMware
- Open Networking Summit Europe, September 25 27, 2018, Amsterdam, Netherlands
 - Community Partner: Save 15% on Attendee Registration with discount code ONSEU18COM15
 - CFP open through June 24 / Submit your EdgeX talk <u>here</u>

Upcoming Events - Confirmed (continued)

- Open Source Summit Europe, October 22 24, 2018, Edinburgh, UK
 - Community Partner: Save 15% on Attendee Registration with discount code OSSEU18COM15
 - CFP open through July 1 / Submit your EdgeX talk <u>here</u>
- ELC / OpenIoT Summit Europe, October 22 24, 2018, Edinburgh, UK
 - CFP open through July 1 / Submit your EdgeX talk <u>here</u>



Event Participation Opportunities

IOT Solutions World Congress

- http://www.iotsworldcongress.com/
- October 16-18, 2018
- Barcelona
- <u>Call For Papers</u> (CFP closed April 30)
 - EdgeX Submitted:
 - Security issues and practices in the IoT Edge Computing Era
 - How to build open source IoT ecosystems
 - Jim White submitted a response
- Call For Testbeds (Call for Testbeds closes June 11)
 - Submitted: ---
- Email <u>info@edgexfoundry.org</u> if you submit for CFP or Testbeds so that we can track







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 <u>keith@iotechsys.com</u> (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 by Jim White, Dell (james white2@dell.com)

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

Call recordings are available on the Wiki

Targeting to resume bi-weekly talks in mid-June

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 <u>pr@edgexfoundry.org</u> once Meetup has been scheduled
- Post-event, please consider doing a blog about the event

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





EdgeX in Market

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

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 <u>Dave Bohlman</u> and <u>KMC Controls</u> for making this awesome kit and how-to guide available to members!!



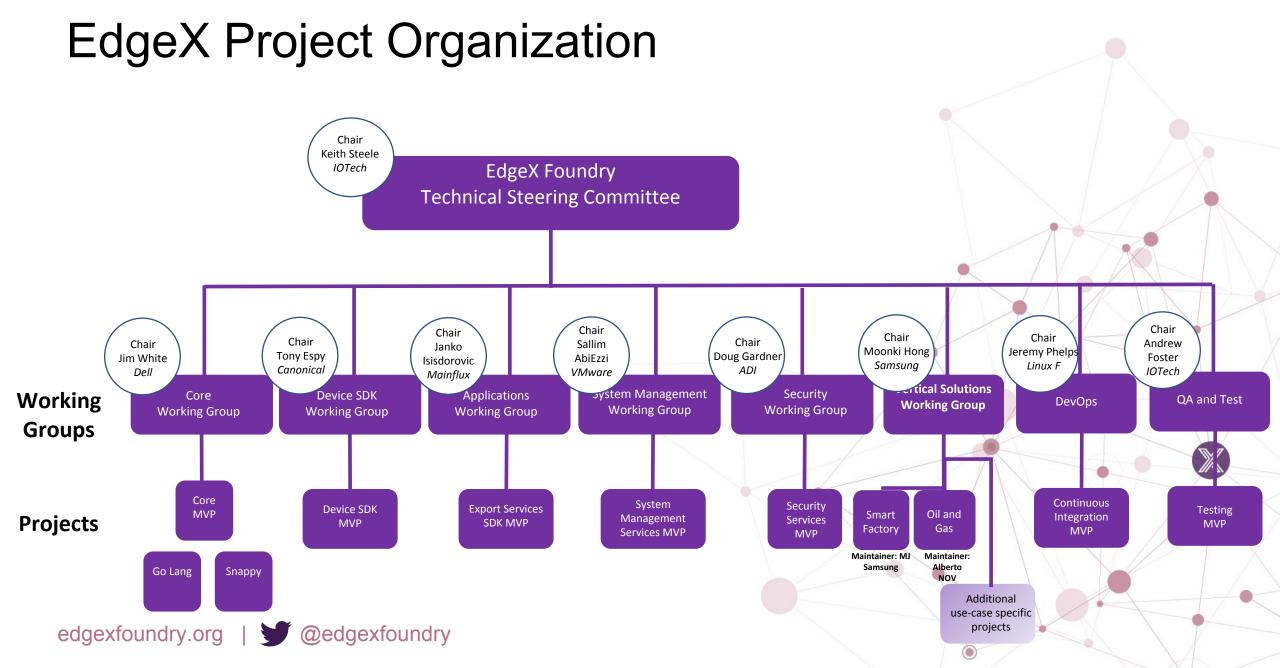
Hackathon Events

- Jim White and Tyler Cox putting together hackathon starter kit.
- More coming

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





Marketing

 CTA: If your company will be demoing technologies that utilize the EdgeX framework, please email events@edgexfoundry.org so that we can add to https://www.edgexfoundry.org/events/

 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

AOB/Cadence

- Meeting Cadence Reminder
 - Currently held weekly at 7am PDT on Wednesday's
 - Calls without TSC quorum will still be used to review issues

Next Meeting: May 30, 2018

