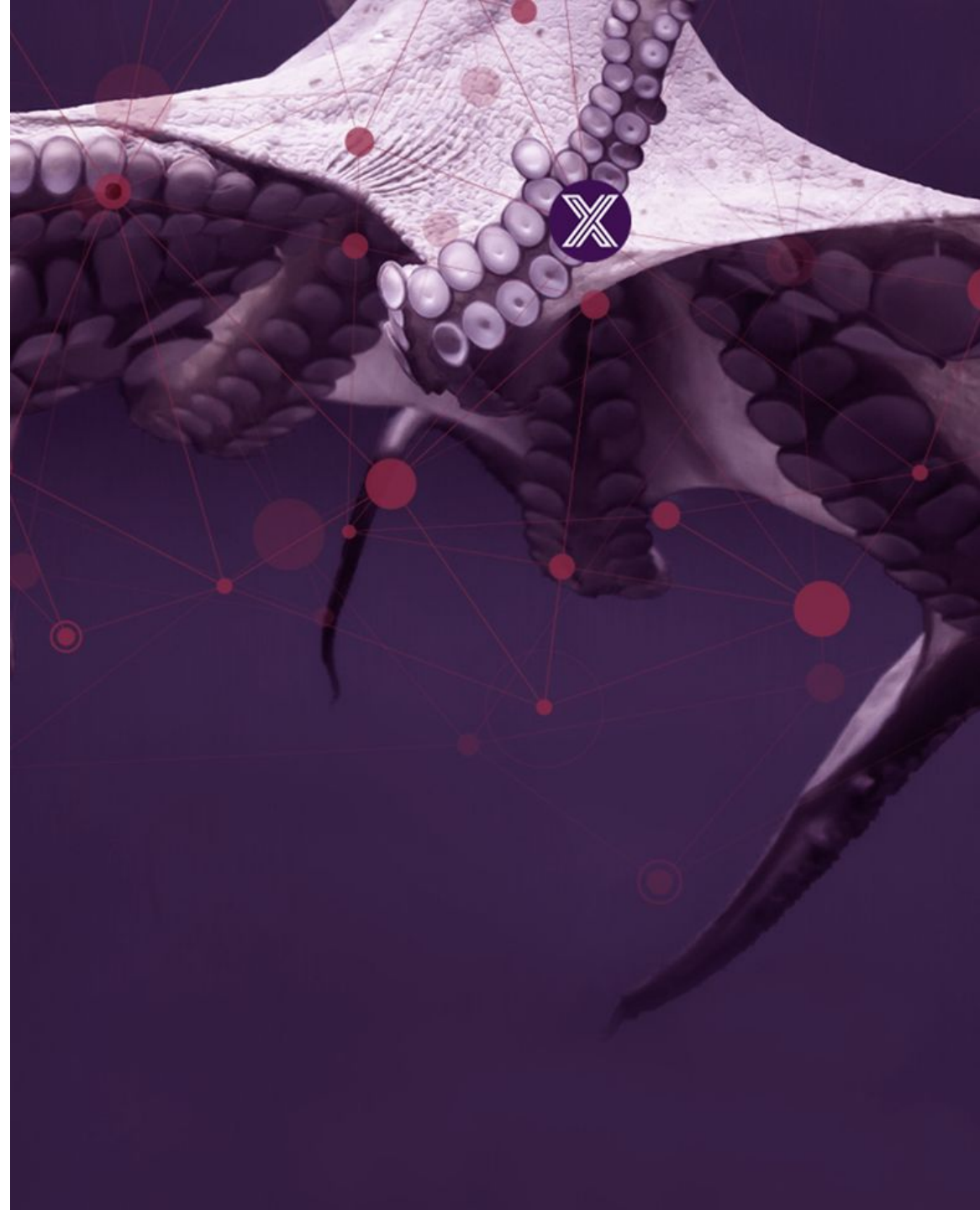# EDGE X FOUNDRY™

TSC Meeting

October 3, 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: October 3, 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

Company	Name	Email
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 (suspended)	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.*

edgexfoundry.org | @edgexfoundry

Today's Agenda

- WG Updates
- Looking for DevOps assistance
- Edinburgh F2F Planning
  - Agenda items and topics
  - Logistics
- EdgeX Community Demo Update
- EdgeX DevKits
- Upcoming Events
- AOB

Delhi Release Work Group Updates

Jim White

edgexfoundry.org | @edgexfoundry

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 (3-Oct-18)

- Config V2 progress
  - Support-logging PR (#617) pending approval
  - Export-distro, support-notifications after that
  - Lots of testing utilizing blackbox tests
    - Yielded bug tracked as issue #618, PR #619
- System Mgmt Agent
  - Newly submitted PR (#620), starting to review
  - Integrated with support-notifications
    - Config V2 dependency on review and merge of this PR. Looking to separate to avoid contention.
- Support-Scheduler
  - Newly submitted PR (#616) -- Review underway, 1st round of changes
- Thanks to Fede Claramonte and Joan Duran

Applications WG Update (03-Oct-18)

- Applications WG Meeting on 02-OCt-18
  - Discussion on Applications Services High Level design
  - Main topics:
    - Message Bus architecture
    - Serverless like architecture
- Next Applications WG Meeting will be on 09-Oct-18 this will be the start of weekly meetings
- Two Issues (bug) that need to be fixed for Delhi Release

Device Services WG Update (3-OCT-18)

- Go SDK
  - Ongoing contributions from community
- C SDK
  - Adding scheduling support
  - Some minor refactoring required for API changes
  - Device/Profile management APIs not in initial release
- General
  - SDK API reviewed and agreed
  - May be minor updates

Device Services Priorities? (26-SEP-18)

Ethernet – Industrial and Building Automation:

- Modbus TCP
- BacNet/IP
- OPC DA
- OPC UA
- EtherNer/IP
- EtherCat
- Profinet
- Zigbee
- DALI
- KNX
- IOTivity

Ethernet – General Purpose

- MQTT
- GRPC

Serial Industrial

- Modbus RTU
- BACnet/MSTP
- Profibus
- DNP3
- CAN

QA/Test WG Update (26-SEP-18)

- Device Service SDK blackbox testing
- Reviewing performance testing tools and frameworks
- Develop performance testing strategy to be discussed at Edinburgh F2F
- Assist DevOps to setup better testing scoreboards

DevOps WG (19-SEP-18)

- Working through another issue on arm (ubuntu 1804)
- Tony/Ian, contact at Canonical for running 1604 on arm?
- Brandon at Dell helping out on java service CI
- Found a CI bug in security services (fixed)
- Self release is being worked on
- Need to look at docs verify job failures

Security (26-SEP-18)

- Delhi work continues - Items below all in progress
  - Init script golang replacement - 1 outstanding item before completion
  - Vault non-root tokens and namespace creation
  - Oauth Plugin for Kong
  - ACL Plugin
  - HW Secure storage abstraction design
- Began discussions with WG about Edinburgh deliverables
- **Request:** Present IIC Security presentation at an upcoming TSC call
  - Scheduled for 10-Oct-2018
- No security WG meeting on 03-Oct-2018

System Management WG (3-OCT-18)

- Implementation update
  - PR for Delhi Release code in (Great work Akram A)
  - Working through getting API spread to other services
  - Documentation/video work to do
- Next Sys Mngmt WG meeting topics
  - What is EdgeX sys management scope
  - Transformation/protocol options (for Edinburgh)
  - Additional metric collection (for Edinburgh)
- Roadmapping slide deck produced (Edinburgh, Fuji)
  - See the Wiki

Developer Outreach (03-OCT-18)

- Complete
  - [Developer Survey](#)

- In Progress
  - Get Started, phase 2 revisions
  - Coordinating Snap release announcement
  - Developer Survey report
  - Edinburgh Face-to-Face prep

- Coming up
  - Security Services documentation
  - Developer activity metrics

New Management GUI

- IOTech Contribution
- Based on Clojure
- IOTech Systems Public Github https://github.com/IOTechSystems/edgex-ui-clojure
- Feedback gratefully accepted

EDGE X FOUNDRY™

Seeking Volunteers!

DevOps WG Chairperson needed!

- Ever wanted to be a leader in an open source community?
- Wished you had a vote in the EdgeX TSC?
- Now's your chance - we are seeking nominations for DevOps WG chair
- We also need more volunteers to help with current and ongoing DevOps work
- Contact Keith, Jim, or Brett

Our eternal thanks to Jeremy Phelps who has led us through 3 public releases.

We could not have done it without him.

Edinburgh F2F Planning

Jim W & Brett

Project & Architecture Introduction Options

Thanks to Doug Gardner for the suggestion

Decision:

A. Hold a quick 1 hour tutorial at 7:30am on Tuesday, Oct 23 in Edinburgh

In future F2F, we will include room in the schedule

Edinburgh F2F

- Oct 23 - Architect's Day (tentative plan)
  - Morning Half / Half Room discussions
    - Device Services/SDK – device onboarding; DS callbacks; adding device through metadata & what's next in DS
    - Test/QA - performance testing strategy
    - Application Services Design - the export services replacement
  - Afternoon Half / Half Room discussions
    - Security – Hardware root of trust and building out an EdgeX interface to HRofTrust
    - System Management – what is in EdgeX system management long term and what is gateway or other management that may not actually fall into EdgeX. In other words what is our scope long term and how do we handle needs not in our scope.
  - 4:30-5:30pm joint session review & prep for F2F

Edinburgh F2F

- Oct 24-25: TSC meetings
- Planning Deck started
  - [See Wiki for latest](#)
- High level Agenda
  - Architecture teeup
  - Scoping for Edinburgh and Fuji releases
  - DevOps topics
  - Developer Advocate report and topics
  - Architecture Issues

Current Edinburgh F2F Architecture Topics (tentative)

- Database replacement/options
- Device services and SDK in mono repo
- Export Services (soon Application Services) – state of rework
- Move to Go 1.11
- Modules / vgo
- Tracing of request through all services to allow better debugging and support
- Performance testing (who, what, how)
- Automated security testing
- HW root of trust (HW storage abstraction) in Security
- Improved resiliency
- What do we need to do next? Services now are more resilient to timing issues
- Support for distribution
- What do we need to do to better support truly distributed EdgeX
- Release management/manager

- Windows developer support (0MQ issue)
- ARM 32 support (are we directly supporting or not??) Support for device hierarchy in metadata (and elsewhere)
- Automate generation of API documentation (RAML)
- Replacement of RAML or alternate to RAML (Swagger)
- Config changes and callback/watcher
- Alternate deployment / orchestration (ex: adding Kubernetes support)
- How to supply command information to the north side systems (ex: how to give Azure IoT the ability to command devices)?
- Code signing Exe/JAR/etc. artifacts, Docker containers
- Downsampling @ device service level
- Min/Max values (or other checks) on command parameters
- Message bus intercommunications between more micro services.
- Configuration versioning

Edinburgh F2F

- Business Topics (covered 3-5pm on Thursday)
  - **Tentative** topics list
    - Demonstrator

      Dev kits

      IIC and other liaison efforts

      Which events we use to show case and announce

      Certification/Marketplace offerings

      Marketing and messaging efforts (like those raised by Moonki at the last meeting)

      Developer Advocate and other role

EdgeX TSC F2F Meeting(s)

- Wednesday & Thursday 24th/25th October -- Location Edinburgh, UK -- [Wiki page](#)
  - Working Group technical meetups on Tuesday, October 23
- **RSVP at https://goo.gl/forms/QR3WgP4ybB5KUT3w2**
  - Current registration count: 36 in-person; 6 dial-in (3 are Tuesday only)
  - Tuesday Working Group Counts
    - Security: 7
    - Systems Mgmt: 3
    - Applications: 6
    - Device: 12
    - QA/Test: 2
- Hotel/Travel: https://events.linuxfoundation.org/events/elc-openiot-europe-2018/attend/venue-travel/
- For Wednesday night dinner/activity, Scotch whisky tasting!!
  - RSVP is required. RSVP as part of TSC registration above.
  - Current dinner count: 32

- April 22-25, 2019 -- Location Seoul (South Korea) @ Samsung offices

EdgeX Community Demo Update

Andy Foster

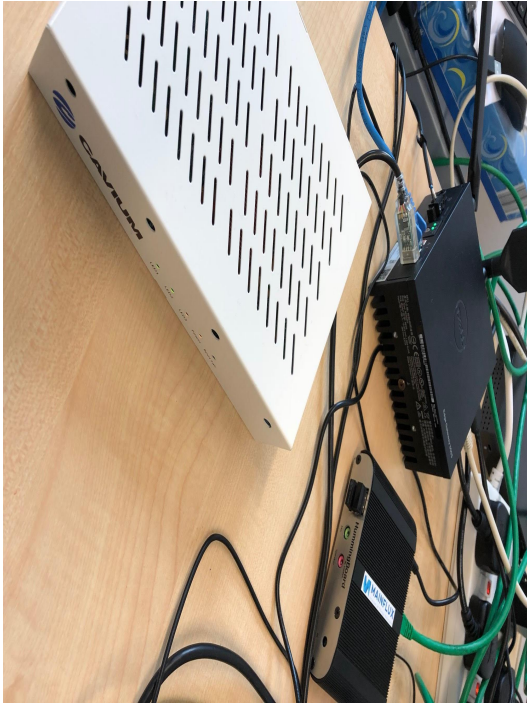# EdgeX Demonstrator Building Automation - Zone Design
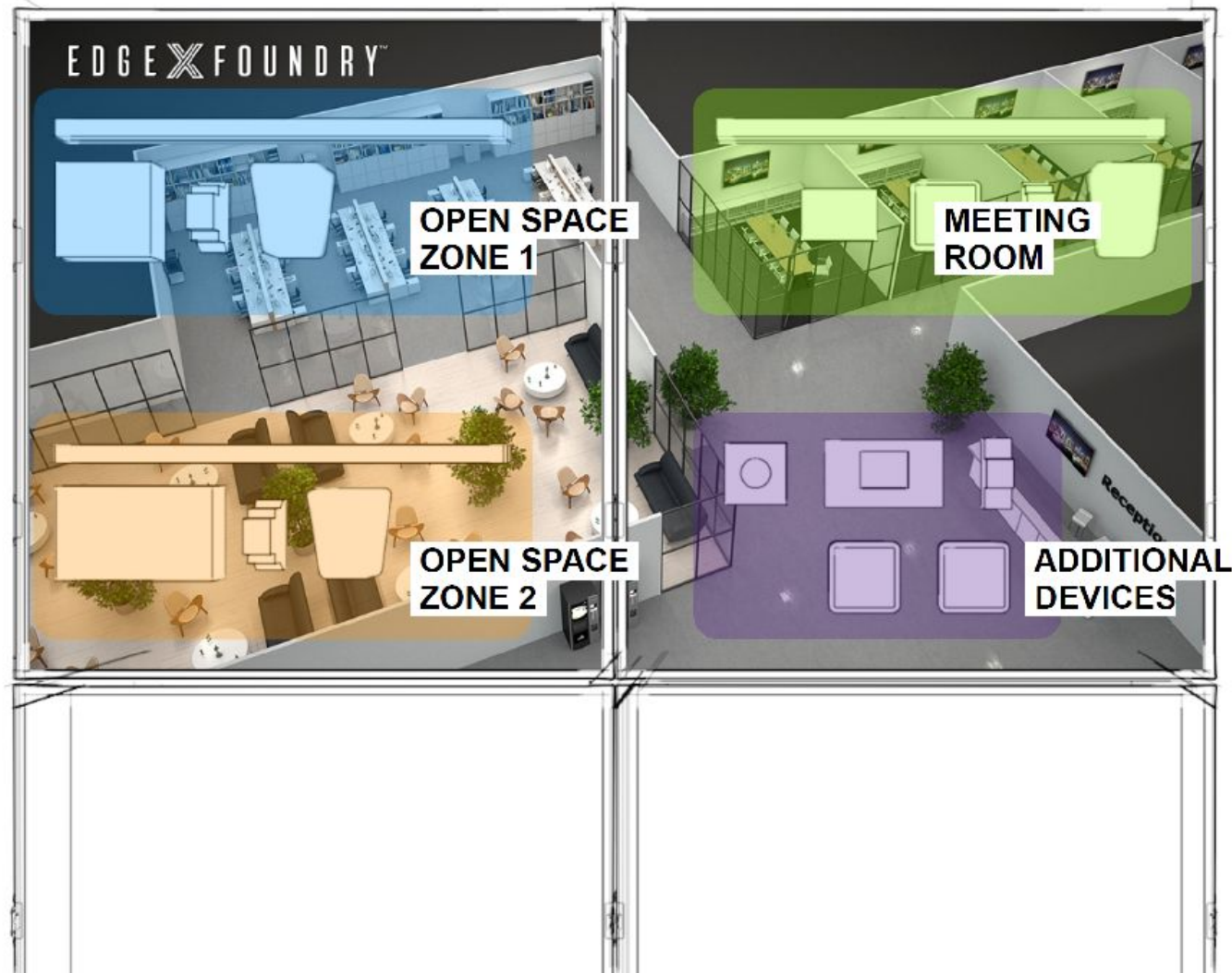
EdgeX Demonstrator "Flight Case" Design

EdgeX Demonstrator "Flight Case" almost complete
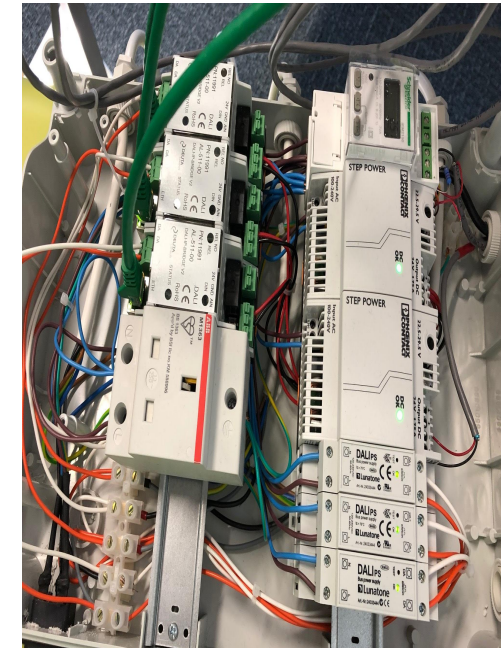
Devices – IOTech Lab

Edge Gateways

Door Swipes

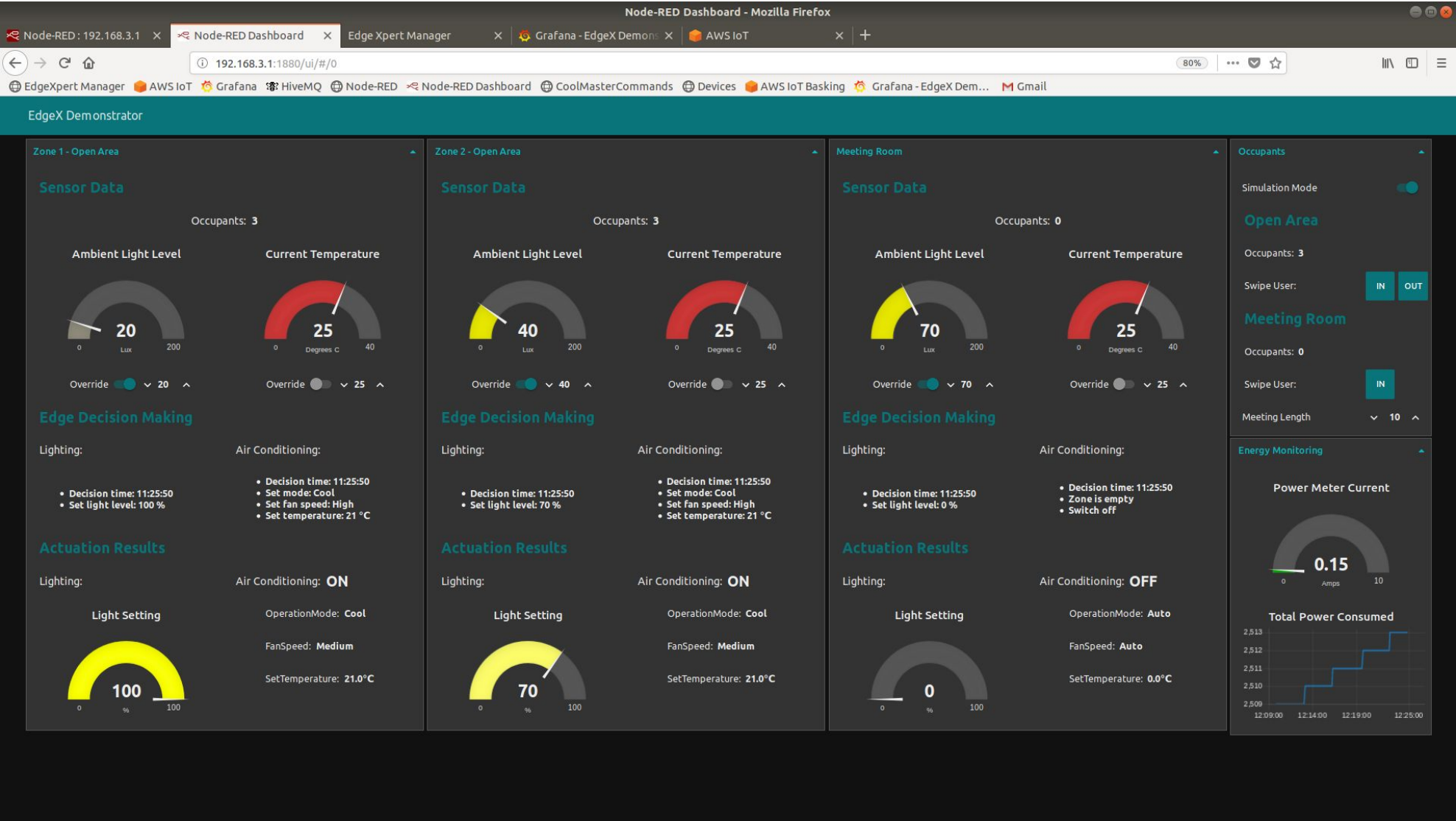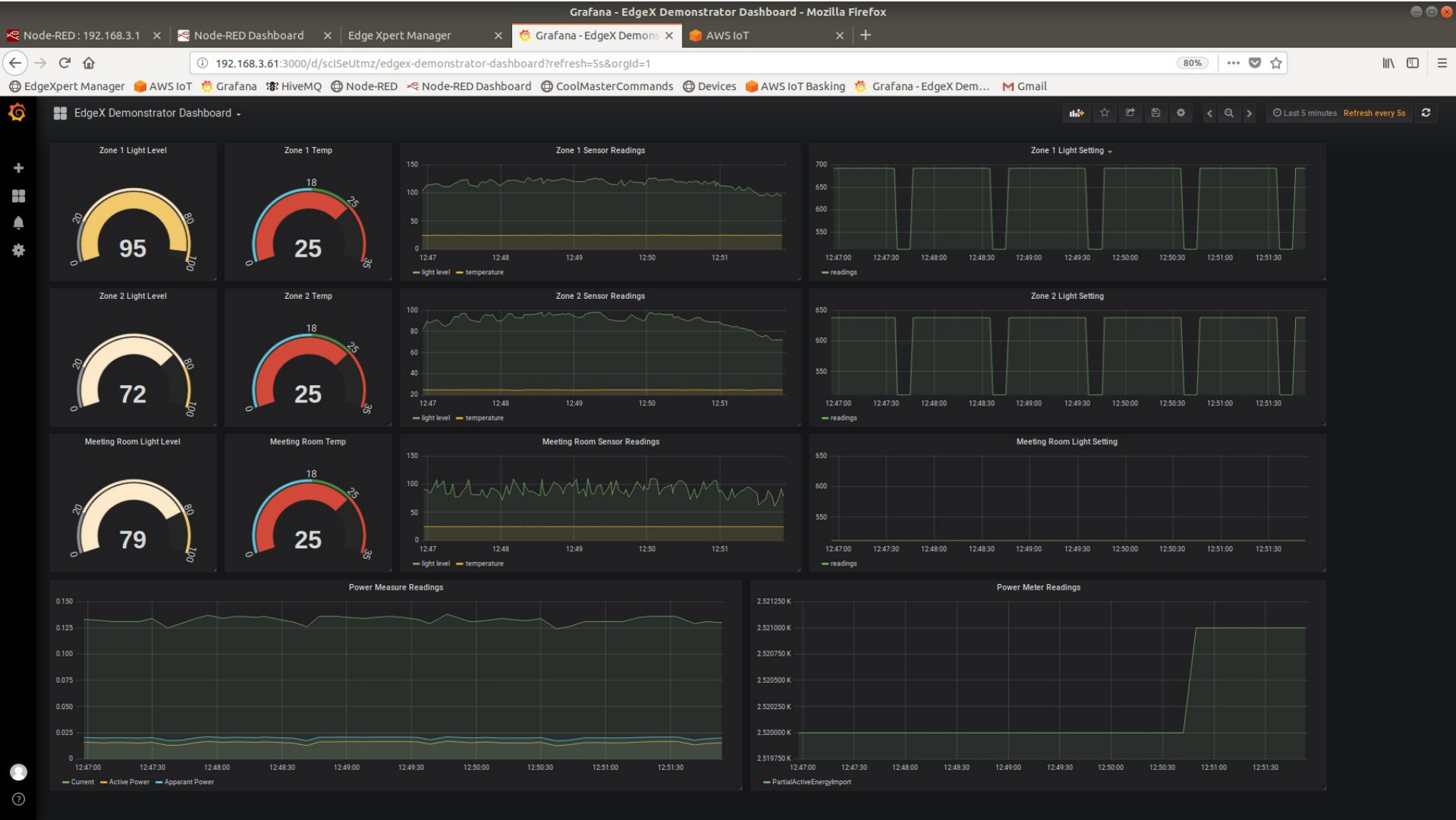
Temp and Light Sensors

DALI LEDs

HVAC unit

DALI Controllers, Power Units and Power Meter

IOTech

Software – Edge Analytics and Dashboard

Software – Statistics and Graphs

Software – EdgeX Device Monitoring & Management

Software – Integration to AWS and beyond

Things > EdgeX-Demo-Power-Meter

THING
EdgeX-Demo-Power-Meter
NO TYPE

Actions ▼

Details
Security
Groups
Shadow
Interact
Activity
Jobs
Violations

Shadow ARN

A shadow ARN uniquely identifies the shadow for this thing. **Learn more**

```
arn:aws:iot:us-east-2:135757373350:thing/EdgeX-Demo-Power-Meter
```

Shadow Document

Delete   Edit

Last update: Oct 2, 2018 12:53:35 PM +0100

Shadow state:

```
1  {
2    "reported": {
3      "ActivePower": 0.016817,
4      "ApparentPower": 0.020971,
5      "Current": 0.135,
6      "Frequency": 50.037003,
7      "ReactivePower": -0.01253,
8      "TotalPowerFactor": 1.1981001,
9      "Voltage": 236.83,
10     "PartialActiveEnergyImport": 2521,
11     "PartialReactiveEnergyImport": 0,
12     "TotalActiveEnergyExport": 0,
13     "TotalActiveEnergyImport": 2521,
14     "TotalReactiveEnergyExport": 1342,
15     "TotalReactiveEnergyImport": 0
16   }
17  }
```

IOTech

EdgeX DevKits

Keith Steele

EdgeX Open Source Developer Kit (03-October)

- IoT Platform Software (bundled for FREE without support)
  - Edge X (Delhi Release)
    - Linux operating system
    - Core Services (Data, Metadata, Command)
    - OT Connectivity
      - Grove Device Service, MQTT Device Service
    - Edge Analytics
      - Node Red Service
      - Supporting Services (Logging, Notifications, Scheduler)
    - Cloud Connectivity
      - Export Services (REST, AWS, Azure) – cloud subscriptions must be purchased separately
    - Management GUI

EdgeX Dev Kit based on the Samsung Eagleye 530 (03 October-18)

- The Samsung Eagleye 530 Dev Kit Project provides an EdgeX solution for developers who want to get started quickly using a high-performance, pre-tested, cost-effective and production-ready development kit that incorporates the Samsung ARTIK™ 530s and a set of integrated sensors based on the GrovePI+ Stater Kit.
- The ARTIK 530s 1GB SoM is a Quad Core Cortex® A9 running @ 1.2 GHz with 4 MB Flash memory, hardware-based security features, and Linux OS (Ubuntu). Eagleye 530s includes a 40 pin GPIO and an accessory interface to provide support for Micro SD, Ethernet 10/100/1000, Wi-Fi 802.11 b/g/n, Bluetooth BLE 4.2 802.1g5.4, and ZigBee/Thread. It also supports HDMI, MIPI camera interface, video, and audio media.
- The GrovePi+ starter kit integrates easily with the Eagleye 530s. The starter kit includes a GrovePi+ board and the following 12 sensors/accessories:
    - Temperature & Humidity Sensor
    - Rotary Angle Sensor
    - Light Sensor
    - Sound Sensor
    - LCD RGB Backlight
    - Blue LED
    - Red LED
    - Green LED
    - Buzzer
    - Relay
    - Button
    - Ultrasonic Ranger

Figure 1 - Samsung ARTIK 530

EdgeX Samsung Eagleye 530 Dev Kit (03-Oct 18)

- The Samsung Eagleye 530 Dev Kit Project includes an EdgeX Grove Device Service based on the C Device Service SDK that provides read/write connectivity to the GrovePI+ suite of sensors.

Figure 2 - GrovePI+ Starter Kit

Upcoming Events

Upcoming Events

- Fog World Congress, October 1-3, San Francisco
  - Dr. May Wang - EdgeX Foundry overview (TBD)
  - Rob Schauble - Edge computing panel
  - Salim AbiEzzi - System Management
- IOT Solutions World Congress, October 16-18, 2018, Barcelona
  - Exhibiting: Booth location - Gran Via, Hall 2, Level 0, Street B, Stand 271
  - Community Demo debut (built by IOTech, Basking Automation)
  - Member kiosks: CloudPlugs, Redis Labs, ZEDEDA, Community kiosk (RSA, VMware)

Upcoming Events (continued)

- Open Source Summit Europe / ELC / OpenIoT Summit Europe, October 22 - 24, 2018, Edinburgh, UK
  - Community Partner: Save 15% on Attendee Registration with discount code OSSEU18COM15
  - Schedule announced
    - EdgeX Sessions:
      - Getting Started with EdgeX Foundry Workshop, Sunday October 21 at 1:30-5:15 pm, Jim White, Dell
      - Extending Cloud-Native Principles to the Edge to Enable Scalable IoT Solutions, October 23 at 9-9:40 am, Jason Shepherd, Dell
      - Building an Open IoT Solution with EdgeX Foundry and the Zephyr Project, October 23 at 12:20-1pm, Michael Hall, EdgeX Foundry and Thea Aldrich, Zephyr Project
      - Getting Lean and Distributed at the Edge, October 24 at 5:05-5:45 pm, Jim White, Dell
      - Lunch and Learn, led by Jeroen Mackenbach (Dell), integrating EdgeX
  - Member sessions (for amplification)
    - Can we Build a Safety Integrity Level System with Linux? October 22 at 11:15-11:55 am, Tiejun Chen, VMware
    - A Hybrid Solution to Address Real Time Virtualization, October 22 at 5:05-5:45 pm, Tiejun Chen, VMware
    - Any other member presentations?
- EdgeX Edinburgh Technical Meetings, October 23 - 25, 2018, Edinburgh, UK
- Internet of Things Congress, October 24, 2018, Nuremberg, Germany
  - 2pm: Matthias Schorer - EdgeX presented in session on how to use microservice approach to IoT edge computing.

Upcoming Events (continued)/CFPs

- [Symposium on Securing the IoT](#), October 29-31, Boston
  - Brad Kemp - EdgeX Foundry Overview (TBD)
- [Advantech IoT Co-Creation Summit](#), November 1-2, Suzhou, China
  - Jijun Ma - Nov 2: Workshop ""智联网趋势解读" held by物聯網智庫彭昭

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=2.218061782.1372769890.153676958 1-2081958547.1534262136

- Members interested in joining the EdgeX [Speakers Bureau](#), please email [pr@edgexfoundry.org](#)
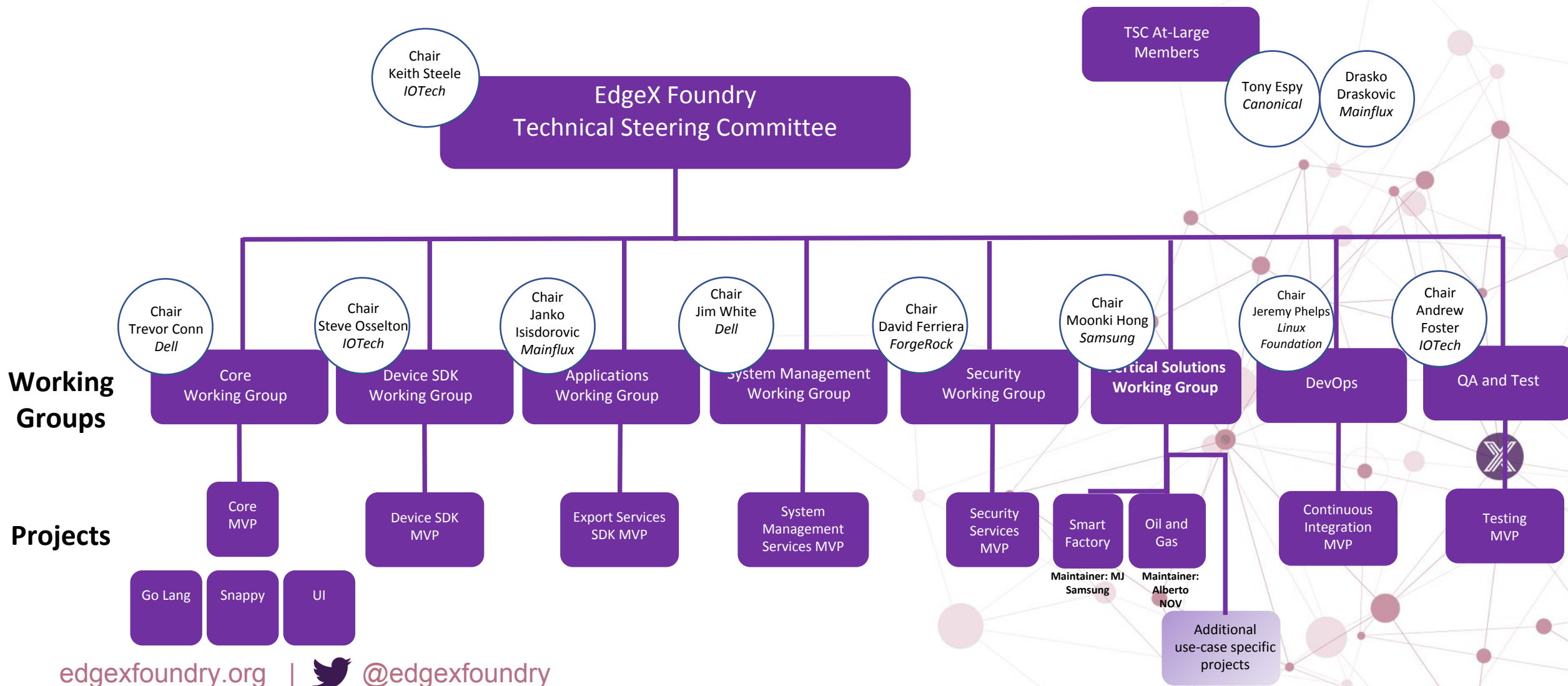
AOB / Reminders

AOB/Cadence

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

- **Next Meeting: October 10, 2018**
  - Cancel TSC call for October 17? (IOT SWC)
  - **WG Chairs:** Please let Brett know any meetings to cancel the week of October 15 (IOT SWC) and/or October 22 (ELC EU)

EdgeX Project Organization

EDGE**X**FOUNDRY™

EdgeX Foundry Technical Steering Committee

Chair
Keith Steele
IOTech

TSC At-Large Members

Tony Espy
Canonical

Drasko Draskovic
Mainflux

Working Groups

Chair
Trevor Conn
Dell

Chair
Steve Osselton
IOTech

Chair
Janko Isisdorovic
Mainflux

Chair
Jim White
Dell

Chair
David Ferriera
ForgeRock

Chair
Moonki Hong
Samsung

Chair
Jeremy Phelps
Linux Foundation

Chair
Andrew Foster
IOTech

Core Working Group

Device SDK Working Group

Applications Working Group

System Management Working Group

Security Working Group

Vertical Solutions Working Group

DevOps

QA and Test

Projects

Core MVP

Device SDK MVP

Export Services SDK MVP

System Management Services MVP

Security Services MVP

Smart Factory

Oil and Gas

Continuous Integration MVP

Testing MVP

Maintainer: MJ Samsung

Maintainer: Alberto NOV

Go Lang

Snappy

UI

Additional use-case specific projects

edgexfoundry.org | @edgexfoundry

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!!
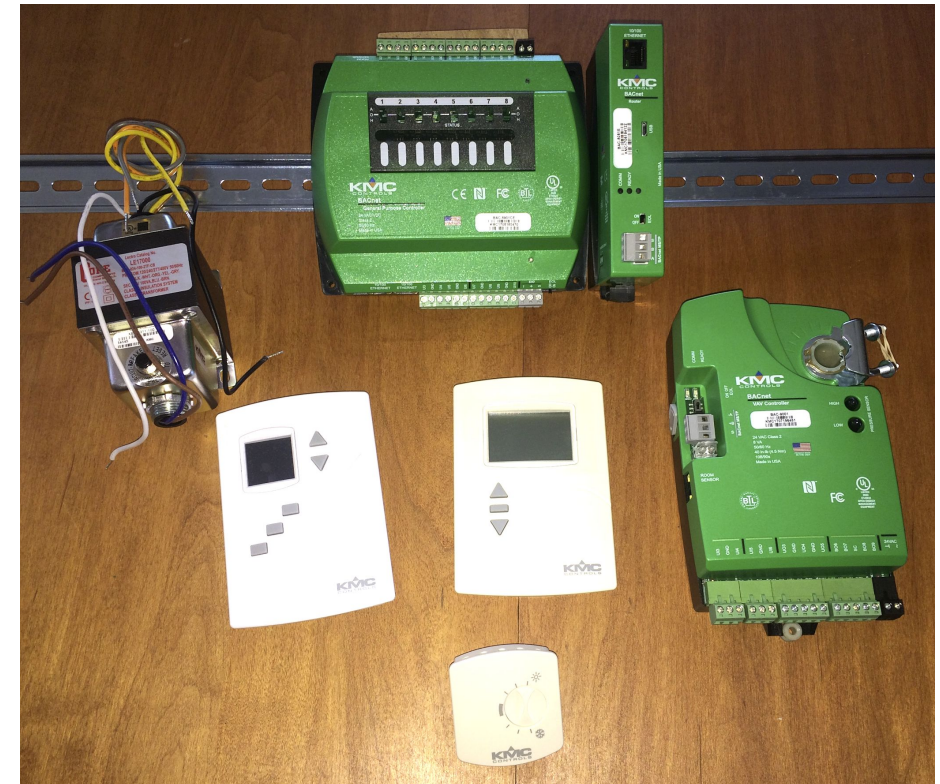
Meetups

- 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

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

Thank You