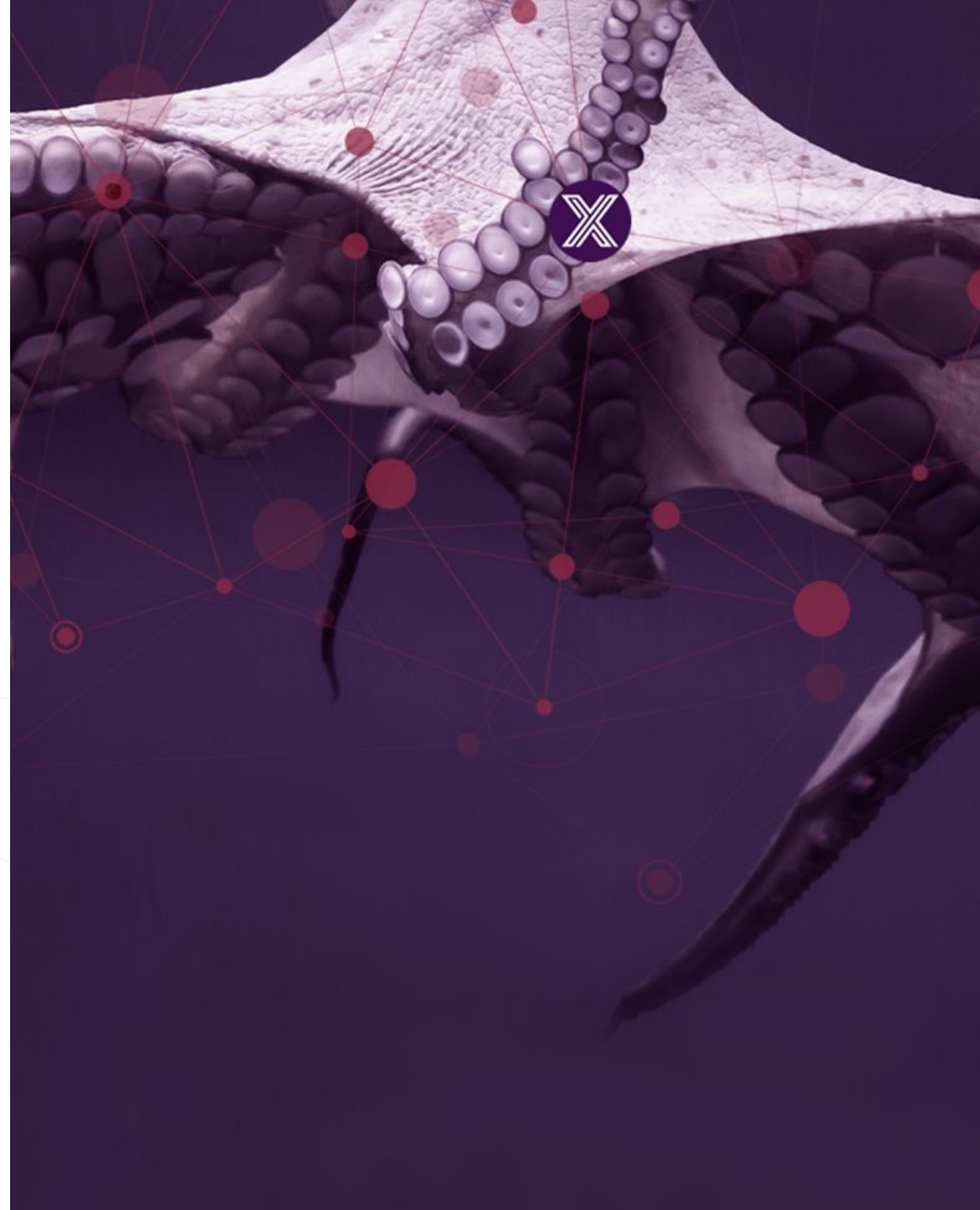


EDGE X FOUNDRY™

TSC Meeting

October 18, 2017



Meeting Logistics

Time: October 18, 2017 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/join?j=983155298>

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

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.

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	keith@iotechsys.com
Samsung	MJ Jeong	myeong.jeong@samsung.com
VMware	Salim AbiEzzi	salim@vmware.com
Canonical	Tony Espy	espy@canonical.com
Samsung	Uze Choi	uzchoi@samsung.com

Current quorum = 7 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

- TSC Face to Face - Barcelona IOT World Congress
 - TSC Takeaways
 - TSC Elections Change
 - Next TSC Face to Face Meeting
 - IIC/EdgeX Workshop Brainstorm
- Core Working Group Updates
 - Oct 20th Barcelona Release
 - California pre-release
 - Miscellaneous
- Security Service Implementation Efforts
- Meetups
- AOB



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TSC Updates from IOT Solutions World Congress Barcelona

Keith Steele

IOT Solutions World Congress Barcelona



TSC Face to Face Meeting Updates

- Full materials from Barcelona available at <https://wiki.edgexfoundry.org/display/FA/5+October+2017%3A+IOT+Solutions+World+Congress+Barcelona>
- Highlights
- Updated WG Structure
- Barcelona Update
- California Preview & California Planning
- Next TSC Meeting
- TSC Elections

Highlights from Barcelona (TSC Chair perspective)

- Welcomed Samsung to TSC - Formerly adopted Vertical Solutions WG
 - Samsung to head - Factory Automation first vertical
- Definite ramp up of EdgeX interest and feeling of momentum
- Barcelona on track for release scheduled for late October (Jim to update)
- Next major EdgeX Release late spring early summer 2018 - 'California'
 - California 'Preview Release' January 2018
- Broad agreement of California roadmap objectives
- Starting thread on what certifications mean to EdgeX
- EdgeX/Industrial Internet Consortium collaboration announced
- **Call to Action: Evolution of California plan contributors will be needed!!**

Barcelona Release

- Roadmap: <https://wiki.edgexfoundry.org/display/FA/Barcelona+Release>
- Release/Availability Plan 20th October
- Jim to report later



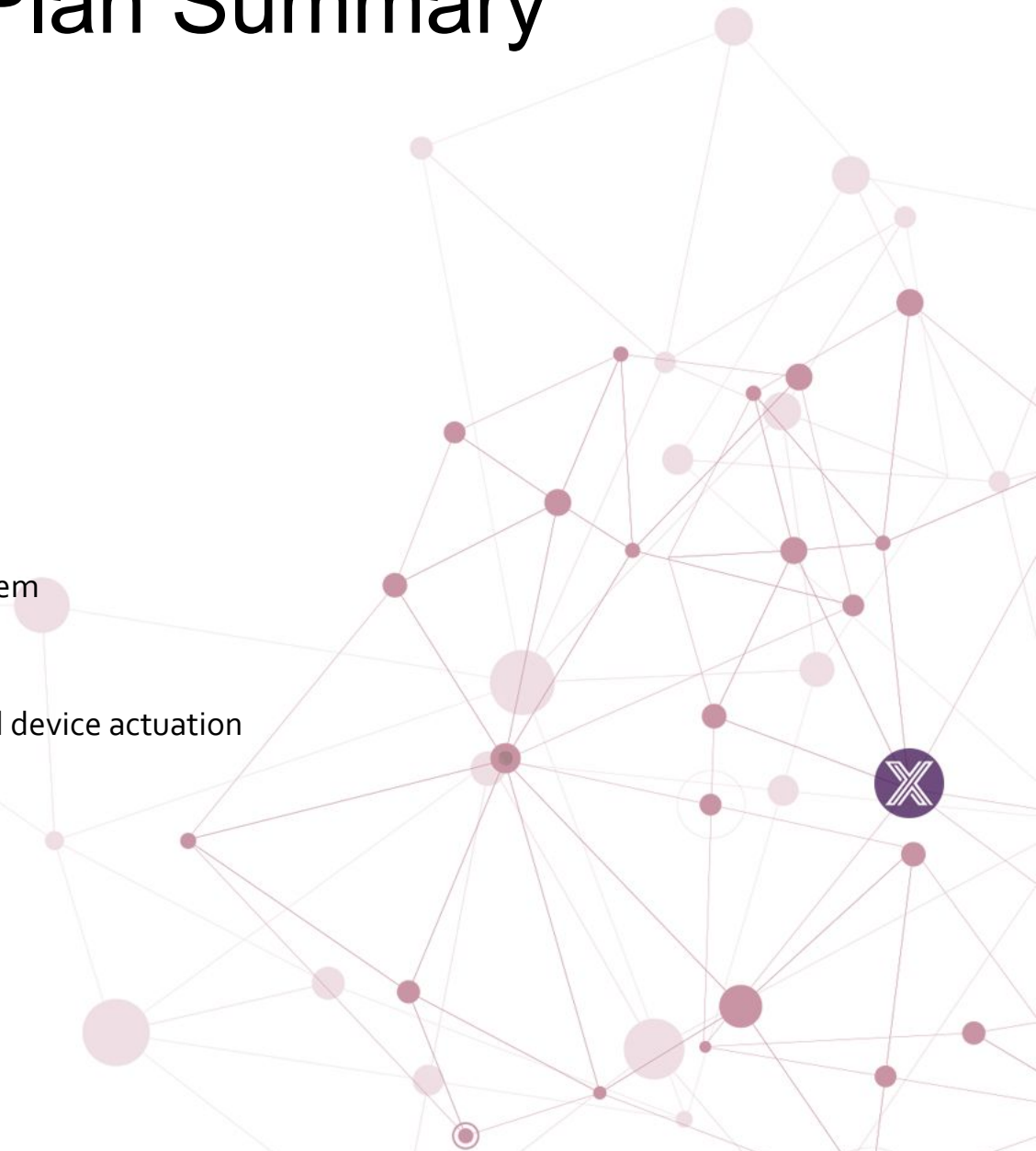
Future Roadmap Strawman

- Extend Core services in appropriate languages
- Available on multiple hardware and operating systems combinations as standard
- Extended to support security and system management API's and infrastructure
- Internal Messaging infrastructure
- Data Model Support
- Appropriate Tools (e.g. dev kits and management GUIs)
- Potential industry-specific extensions
- Popular OT and IT connectivity (e.g. OPC-UA, BACnet, Modbus, CAN bus, Zigbee, DDS, MQTT, REST/HTTP) and Clouds (e.g. Microsoft Azure, Amazon Web Services, IBM Watson IoT)
- Test and certification framework

Potential EdgeX Development Plan Summary

Targeting 3 major releases - Jun 2018 through Jun 2019

- Jun 2018 (“California”)
 - Multi-hardware/OS support
 - Near real-time capable and small footprint
 - Security services and APIs
 - Additional north and south side connectors
- Dec 2018 (“Delhi”)
 - EdgeX system management APIs and connectivity to cloud based control system
 - Microservice OTW/OTA upgrades
 - Multiple language device service SDKs
 - North-side services framework for customizing north side data exfiltration and device actuation
- Jun 2019 (“Tokyo”)
 - Certification program, processes and testing tools
 - Include user interfaces and data visualization
 - Start of east/west EdgeX communications (failover and device activation)

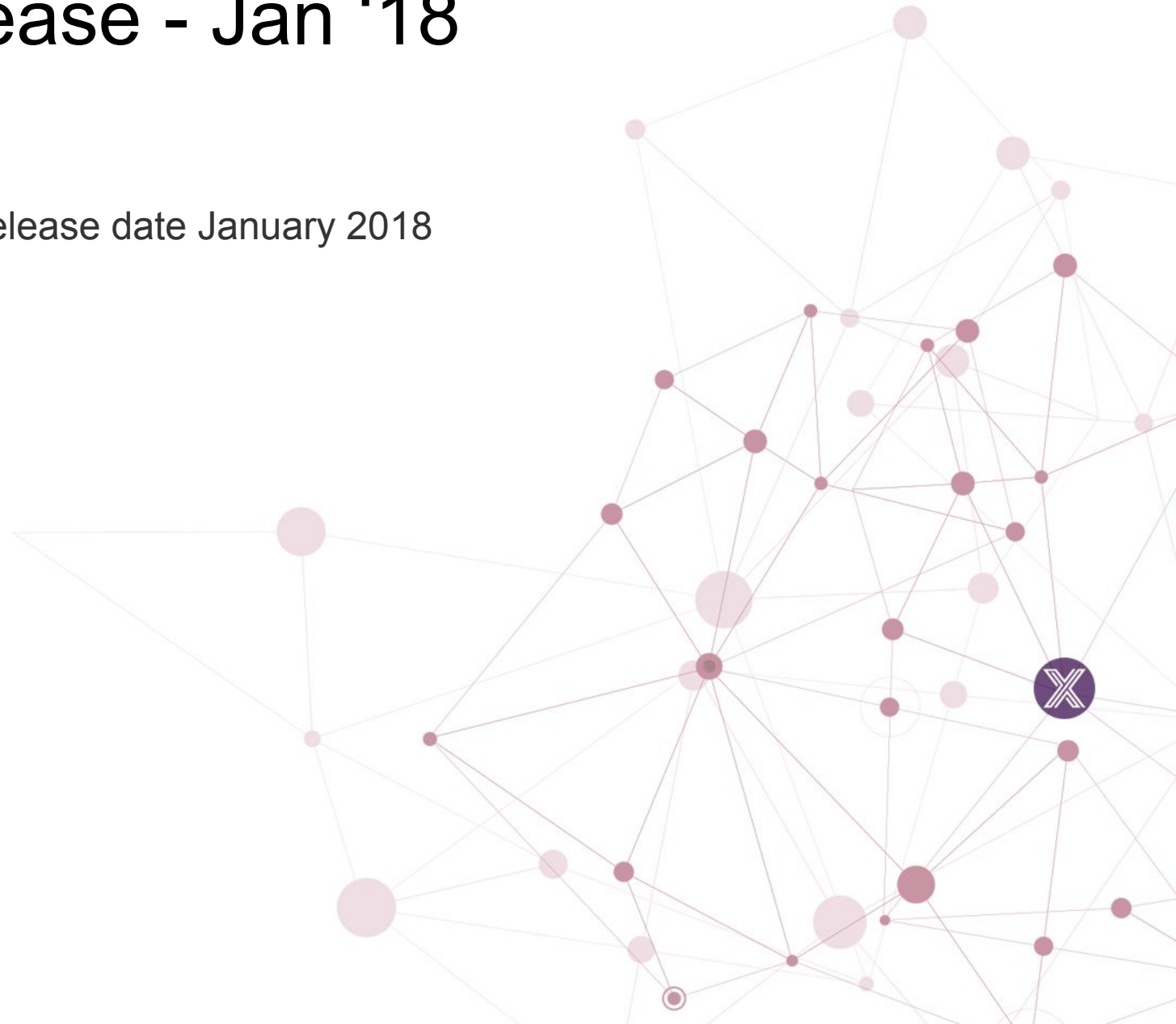


EdgeX Target Deliverables June 2018

- EdgeX security services and APIs
 - Authentication/authorization protocols surrounding all APIs
 - Protecting data at rest and motion
 - Security testing framework
 - Code signing
- Reduced footprint – EdgeX's 10 major microservices collectively running in under 1GB of memory
- Near real-time EdgeX microservices – capable of data collection and actuation at the edge in under 250ms
- EdgeX running and available on Intel and Arm-based architectures
- EdgeX running (and tested) on Windows 10/7, Windows 10 IoT, MacOS, Red Hat Enterprise Linux v7, CentOS v7.3, Ubuntu Desktop 16, and Debian v8.
- EdgeX out-of-the-box exports to Azure IoT Hub, Google IoT Cloud, AWS IoT and IBM Watson IoT
- EdgeX device services that support use of Modbus, BACnet, BLE, SNMP, MQTT, OPC-UA, CANbus, and Zigbee devices/sensors with EdgeX.

California Preview Release - Jan '18

- California Preview Release Scheduled Release date January 2018
- Jim to report later



Recap Actions

- Mechanism for recording potential new roadmap items (Wiki, GitHub Projects?) **[owner: Jim]**
- Build package for ARM for California Release (eg Build Package) **[owner: Jim]**
- Test/QA Working Group to review [Target Deliverables](#) **[owner: Andy]**
 - How project can set up criteria to certify
 - What would be a reference implementation
 - What's the impact on the project to deliver that
- Performance Definitions **[Tbd]**
- Dynamic Service Discovery **[Tbd]**
- Set up Certification Task Force
 - Scope a Certification Program under Testing/QA **[owner: Jason]**
 - Reference some existing options
 - <https://github.com/opencontainers/certification>
 - <https://www.cncf.io/certification/expert/>
 - <https://www.cncf.io/certification/kcsp/>



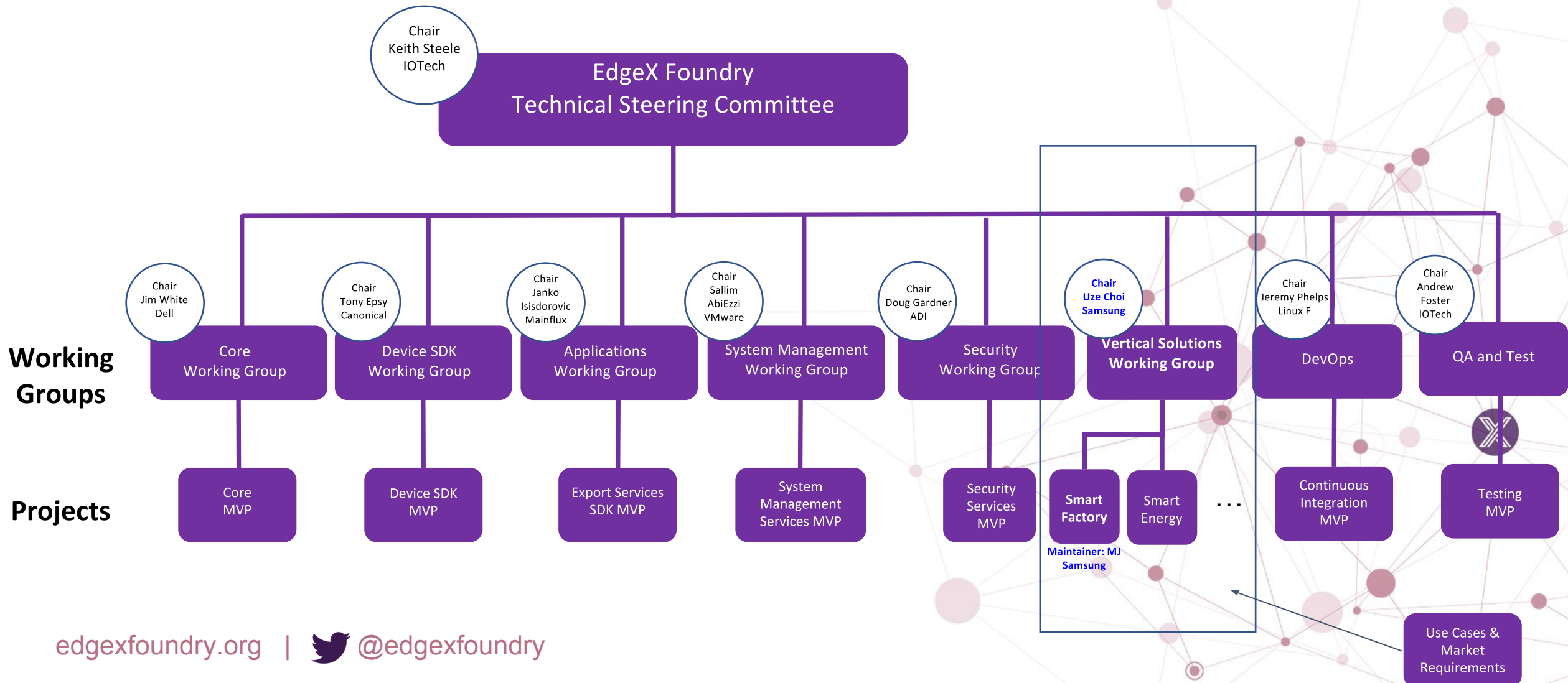
Update to TSC Composition

Keith Steele, Brett

Updates to TSC Composition

- As approved by the EdgeX Governing Board on October 16, 2017
- Startup Period extended from 9 to 14 months (placing Steady State elections in June, 2018)
- Steady State TSC composition updated to include
 - WG Chairs - voted in by the contributors/maintainers in each working group
 - 3 at-large TSC representatives - voted in by all of the project's contributors/maintainers
 - Platinum member representative (if not otherwise represented above)
- The voting members of the TSC will elect a TSC Chair annually, who will serve as a voting member of the Governing Board.
- The TSC may additionally opt to elect a TSC Vice Chair, who will serve the role of Chair, should the acting Chair be unavailable.
- The TSC Chair and Vice-Chair must be representatives of a member company.
- Project Charter available at <https://www.edgexfoundry.org/about/project-charter/>

WG Organization and where Vertical Solutions Fits





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Next TSC Face to Face

Keith Steele, Brett

January 16-18, 2018 - Orlando, FL

- Wiki page:
<https://wiki.edgexfoundry.org/display/FA/16-18+January+2018%3A+Orlando+Technical+Meeting>
- Venue search underway
- Invite will be forwarded to full TSC mail list following this call
- RSVP by emailing info@edgexfoundry.org



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EdgeX/Industrial Internet Consortium (IIC) Collaboration

Keith Steele

EdgeX/IIC Workshop Brainstorm

Agenda item next TSC meeting: IIC/EdgeX Joint Workshop Coordination **[Owner: Keith]**

- For IIC / EdgeX Joint 'Workshop'
 - IIC Chair Richard Soley wants to increase activity in IIC Edge track
 - Proposal: Up-level to a general Edge computing track (Edge Symposium?) with several sub-topics Half Day event? Sponsored? Involve OpenFog?
 - Timing: First available meet Feb in Europe, suggest we repeat event at both their US and Europe events.
 - EdgeX organising committee (volunteers)? Urgent need for coordination meetings with IIC if Feb target to meet
 - Possible areas for collaboration/Workshop: Vertical Domain Edge Testbeds, Quantifying IIOT ROI, Security collaboration, Edge Platform variants, Leveraging Open Source, standardization/certification etc



EDGE X FOUNDRY™

Core Working Group Updates

Jim White & WG Leads

Barcelona Release

- On track for Oct 20th release date
- Code freeze now in effect
- Jim/Andy working on release notes
 - Wiki will contain general release notes
 - Page per micro service will contain release notes for that service (with link in Wiki)
- Jeremy working last of the release artifact creation process
 - Example: signing of Docker containers

Barcelona Release Highlights

- API review and 60+ company onboarding
- Code hardening and increased tests (more than doubled the tests)
- Bug fixes and unused code clean up (ex: removed device manager)
- Google IoT Core export service connector
- MQTTS export service connector
- 6 new device services (BACNet, Modbus, BLE, MQTT, SNMP, serial)
- Blackbox testing
- CI and release processes and facilities
 - Checkstyles in place
- Additional elements that were not officially part of the MVP
 - first Go micro service & performance numbers
 - ARM builds

Not in the Barcelona Release

- Export service hardening (improved Azure IoT Hub connector)
- Export service HTTPS connector
- Blackbox testing of all services / automation of blackbox testing
- SDK and DS improvements/cleanup

California Preview Release

- Delivery - Jan 2018
- Focus: Go Service replacements/performance demonstration
 - Core Data, Metadata, Command (Dell)
 - Export Client (Mainflux)
 - SDK elements (Canonical)
 - Potentially Config/Registry (Samsung)
 - Potentially Export Distro (Cavium)

California Preview Release

- Java SDK refactor/simplification
- Improvements of Test Framework
 - Full Blackbox testing (all APIs)
 - Go services be “certified” as drop in replacements by our test framework(s)
 - Integration of Blackbox testing to CI process
- Potentially documentation additions/changes
- Complete/refine CI/Release processes and systems (ex: dev release containers)
 - ARM build process and ARM versions of services
- Firm up Azure IoT Hub connector - as stretch goal
- C based Device SDK
- Web oriented demos
- Strategy doc for Security and System Management API's
- California Release Target Functionality List

Miscellaneous Items & Updates

- ARM Build/CI - who/what/how systems and infrastructure; meeting being organized
- Go Project Work - how to get the code to open source faster
- PM / Task Tracking tool
- Hackathons support



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Security Implementation

Doug Gardner

Security Work

- RSA (Riaz) Key Management APIs
- ForgeRock (David) API Manager selection

Key Manager API

Discussion topics

Riaz Zolfonoon (RSA)



Proposed Approach

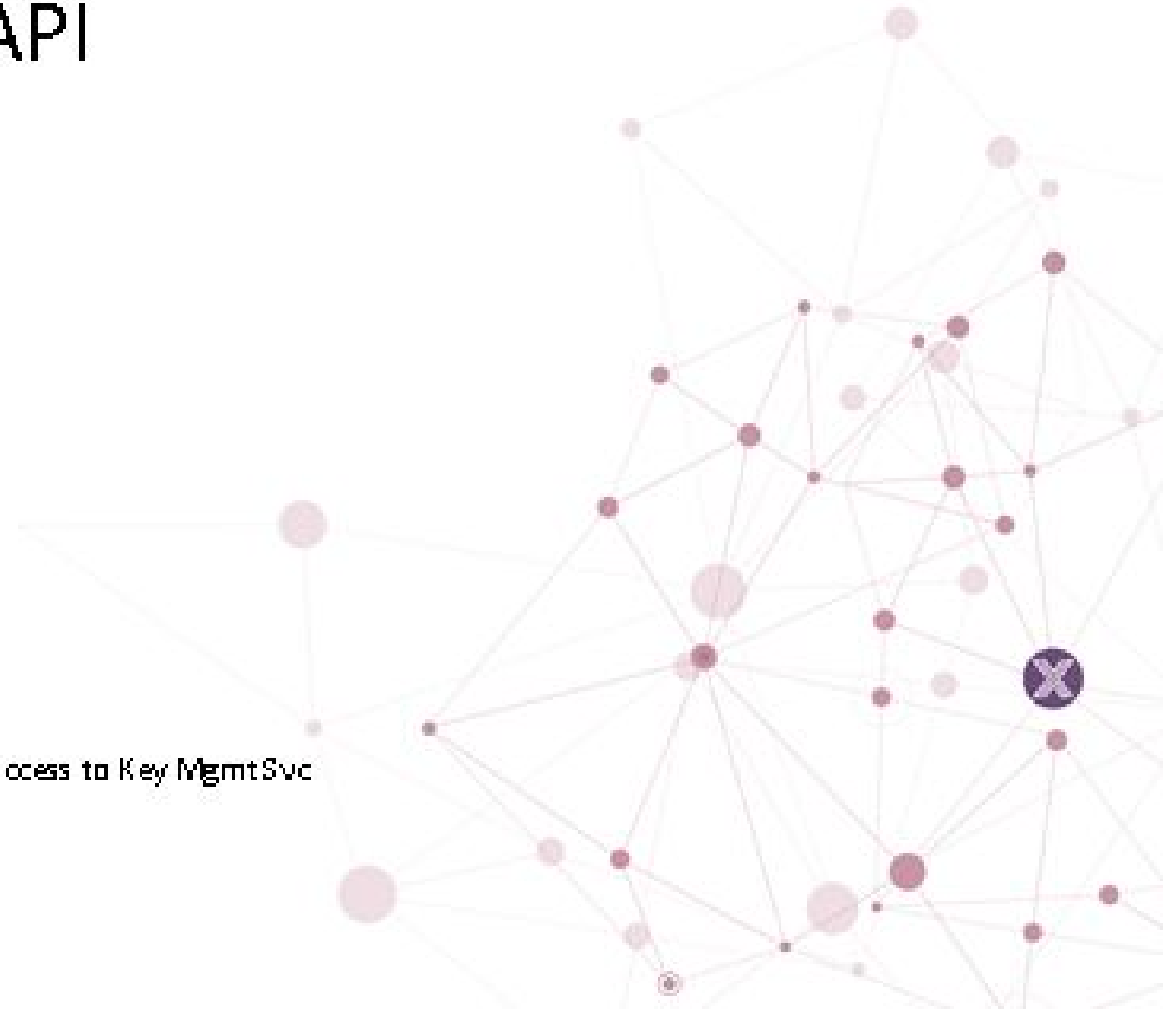
- Closely follow KMIP*
 - Key management microservice
 - Simple REST api for common services (subset of KMIP interface)
 - Optionally, KMIP interface will be available for advanced apps (as value-add)
- REST API
 - Keep it simple
 - Core key management API
 - Basic key generation and retrieval
 - Encryption/Signing API
 - Encrypt, Decrypt, MAC, Sign, Verify

* OASIS Key Management Interoperability Protocol



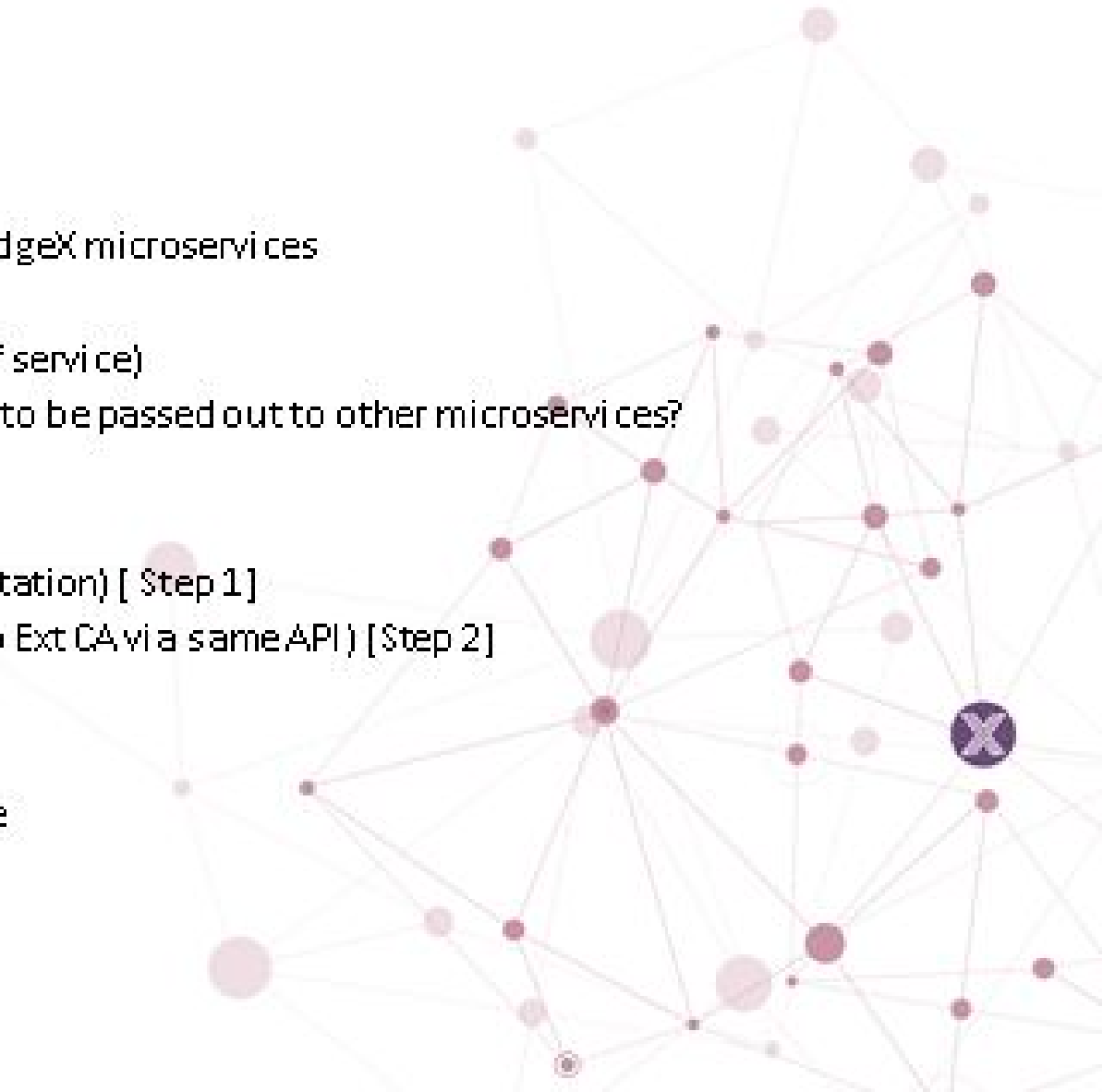
Key Management API

- Core API
 - Keys
 - Create Symmetric Key
 - Create Asymmetric Key
 - Get Key
 - Delete/Shred Key
 - Secrets
 - Register Secret
 - Get Secret
 - Certificates
 - Register Certificate
 - Get Certificate
- Secure Channel
 - TLS with mutual auth is required for all access to Key Mgmt Svc



Open Questions

- Keys
 - Key Store and Retrieval is needed by other EdgeX microservices
 - Create and update key attributes
 - Register keys (import keys created outside of service)
 - Should we allow all keys or only certain keys to be passed out to other microservices?
 - How and what are the use cases?
- CA
 - Internal CA (simple out of the box implementation) [Step 1]
 - External CA (provide the ability to connect to Ext CA via a same API) [Step 2]
 - Certificate status queries via OCSP
- Encrypt/Signing Services
 - As part of key mgmt svc or a separate service
 - Encrypt/Decrypt
 - MAC
 - Sign/Verify





EDGE X FOUNDRY™

Meetups

Brett Preston

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:



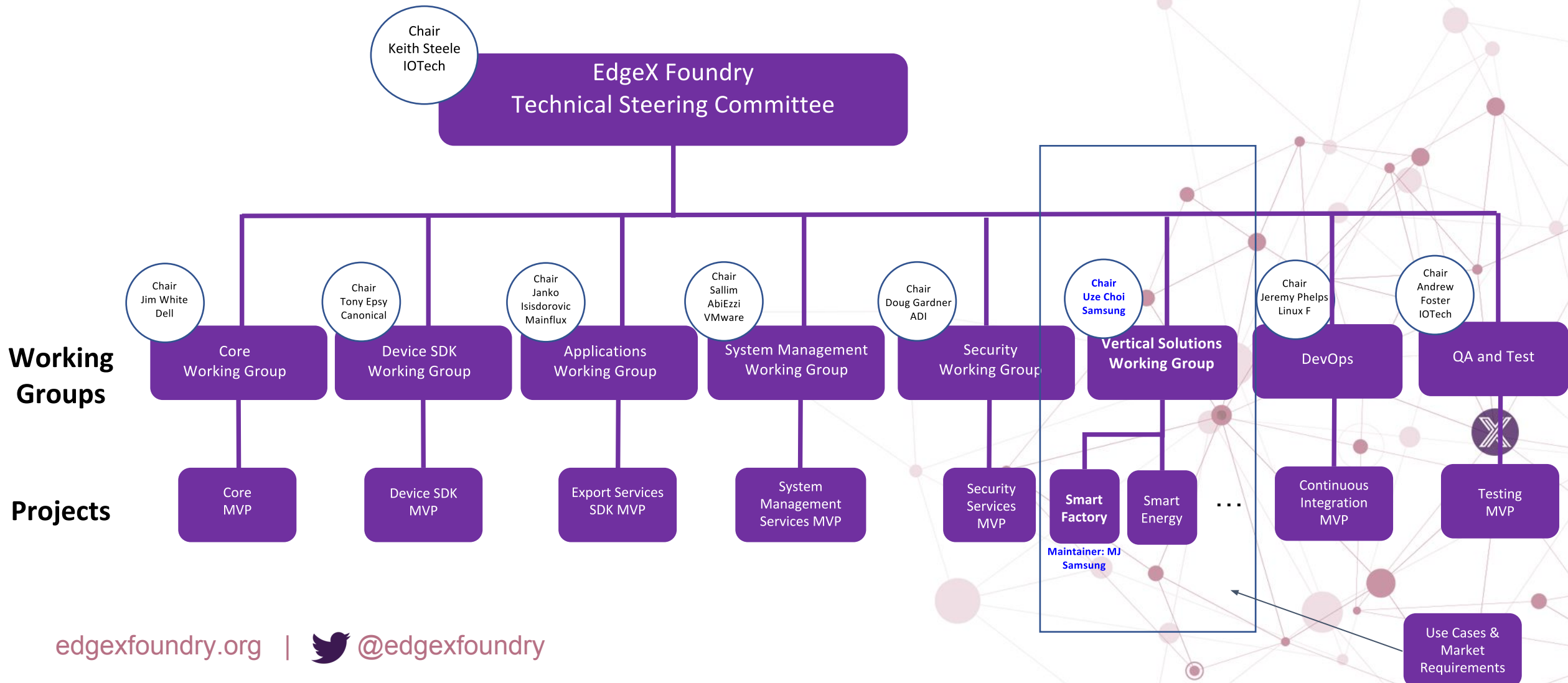


EDGE X FOUNDRY™

AOB / Reminders

Brett Preston

TSC Organization



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

Thursdays @ alternating times (6pm & 9am EDT)

Calls resuming post-Barcelona release

Email info@edgexfoundry.org to request to be added directly to meeting invite

Previous call recordings are available on the [Wiki](#)

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 Philip DesAutels at LF (pdesautels@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

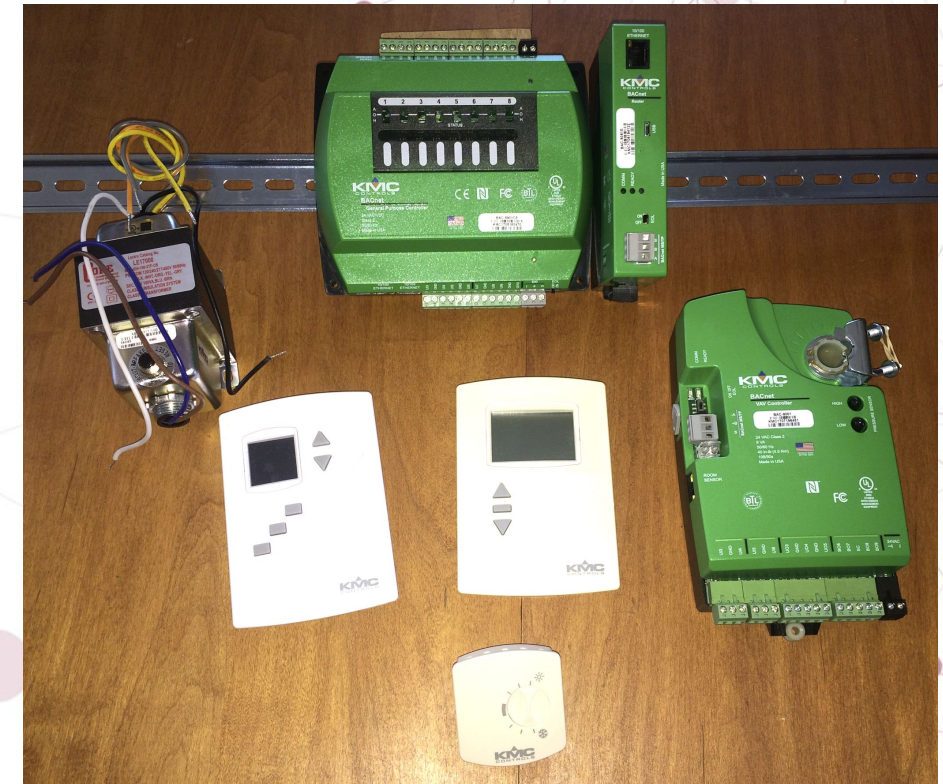
- Code: <https://github.com/edgexfoundry>
- Documentation: <https://wiki.edgexfoundry.org/>
- Discussion: <https://chat.edgexfoundry.org/>
- Mail Lists: <https://lists.edgexfoundry.org/mailman/listinfo>
- Twitter: <https://twitter.com/EdgeXFoundry>
- LinkedIn: <https://www.linkedin.com/company-beta/22298339/>
- YouTube:
<https://www.youtube.com/channel/UC30DbbsoqbkGJYJ5omJJsng>

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!!



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: October 25, 2017**



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Thank You