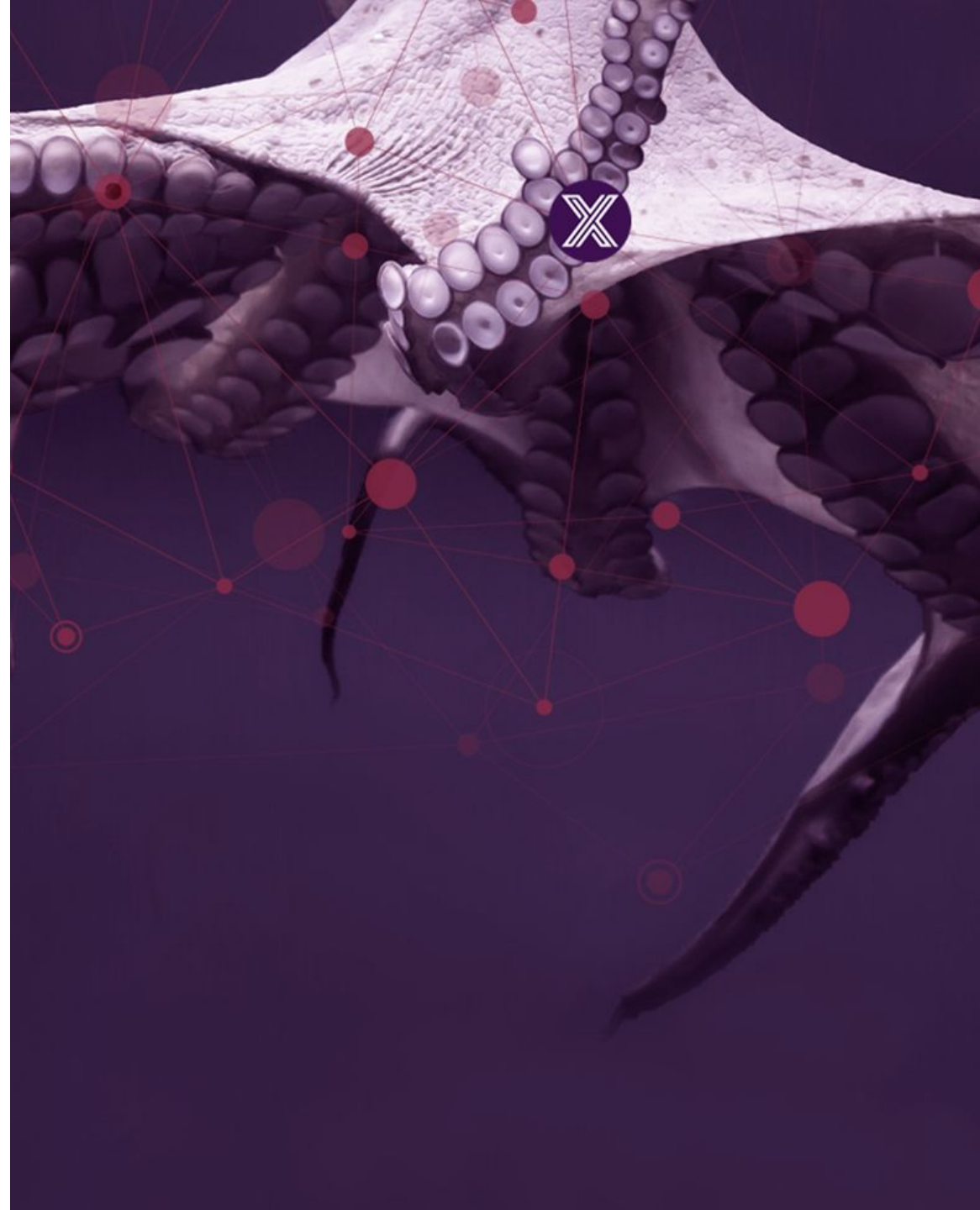# EDGE X FOUNDRY™

## TSC Meeting

September 19, 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: September 19, 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 = 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.*

edgexfoundry.org  |  @edgexfoundry

# Today's Agenda

- Welcoming New Members
- WG Updates
- Edinburgh F2F Planning
    - Agenda items and topics
    - Logistics
- EdgeX Community Demo Update
- EdgeX DevKits
- Upcoming Events
- AOB

# Welcoming New Members

Keith Steele

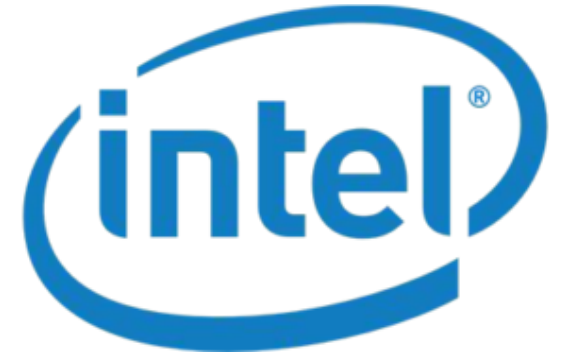# Welcoming New Members

http://www.certusnet.com.cn/en/          https://www.windmillenterprise.com/

# 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 (19-Sep-18)

- One more service left for service bootstrap resiliency
  - export-distro (Brandon)
  - Eliminate sleeps at startup, services can come up in any order.
- Config V2 underway
  - Core-command is done
  - Core-data is done (PR 561 -- not yet merged)
  - Core-metadata is next
- Logging is now standardized across all services
  - Either local or via support-logging service
- Still working on support-scheduler Go service
  - Hopefully PR available by end of week
- Thanks to Jim White for performance metrics last week.

# Applications WG (19-SEP-18)

- New export services design work - let's schedule TSC meeting on Applications services redesign. I'll need 15-20 minutes to present the initial idea.
- AWS connector
- Working on series of blog posts on how to export data from EdgeX to service providers.
- **Requested:** 15-20 minutes on next TSC call to present proposed redesign

# Device Services WG Update (19-SEP-18)

- **Go SDK**
  - **Ongoing contributions from community**
- **C SDK**
  - **Initial code commit to foundry repository (device-sdk-c)**
- **General**
  - **Device registration scenarios and support to be discussed at Edinburgh F2F**
  - **Add explicit endpoint support for named device endpoints**
  - **Ongoing discussion on scheduling integration**
    - **Jim to present proposed solution**
  - **Design document review to be finalized by next meeting**

# QA/Test WG Update (19-SEP-18)

- Current
  - No outstanding blackbox PRs
  - Have been investigating potential memory leaks in Delhi reported by Jim (Dell) by repeating tests on California for comparison

- On-going
  - Modify blackbox tests to support any RAML changes
  - Assist DevOps to setup better testing scoreboards
  - Develop performance testing strategy based on following requirements https://wiki.edgexfoundry.org/pages/viewpage.action?pageId=18907573

# 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 (12-SEP-18)

- Roadmap presentation deck available on the Wiki
  - [On the Wiki](#)
  - Presented to IIC recently
- Delhi work continues
  - Init script improvements
  - Vault non-root tokens and namespace creation
  - Oauth Plugin for Kong
  - ACL Plugin
  - HRoT design
- **Request:** Present IIC Security presentation at an upcoming TSC call

# System Management WG (19-SEP-18)

- Implementation update
  - Demo of progress provided during the last WG meeting.
  - Also a demo of device provisioning from Jay Chetty (Intel) is well worth a watch
  - See the recording for details
- Roadmapping slide deck produced (Edinburgh, Fuji)
  - See the Wiki

# Developer Outreach (19-SEP-18)

- Complete
  - Tech Talk #2: API Walkthrough

- In Progress
  - Website refresh, phase 2
  - Devkit landing pages and backend
  - Deployment patterns documentation

- Blocked
  - Device Service creation documentation

- Coming up
  - Security Services documentation

# New Management GUI

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

# Edinburgh F2F Planning

Jim W & Brett

# 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
  - 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

- 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.

# 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: 33 in-person; 3 dial-in (3 are Tuesday only)
  - Tuesday Working Group Counts
    - Security: 7
    - Systems Mgmt: 3
    - Applications: 5
    - Device: 11
    - 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: 29


- April 2019 -- Location Seoul or Suwon (South Korea)

# Stand Design

- Demonstrator stand design has been revised based on feedback from TSC
- Single wall design has been replaced with a more modular approach
- Will make transportation and setup much easier and more costs effective
- New design will enable demonstrator to be used at a greater variety of events



1600mm

1900mm

![IOTech logo]
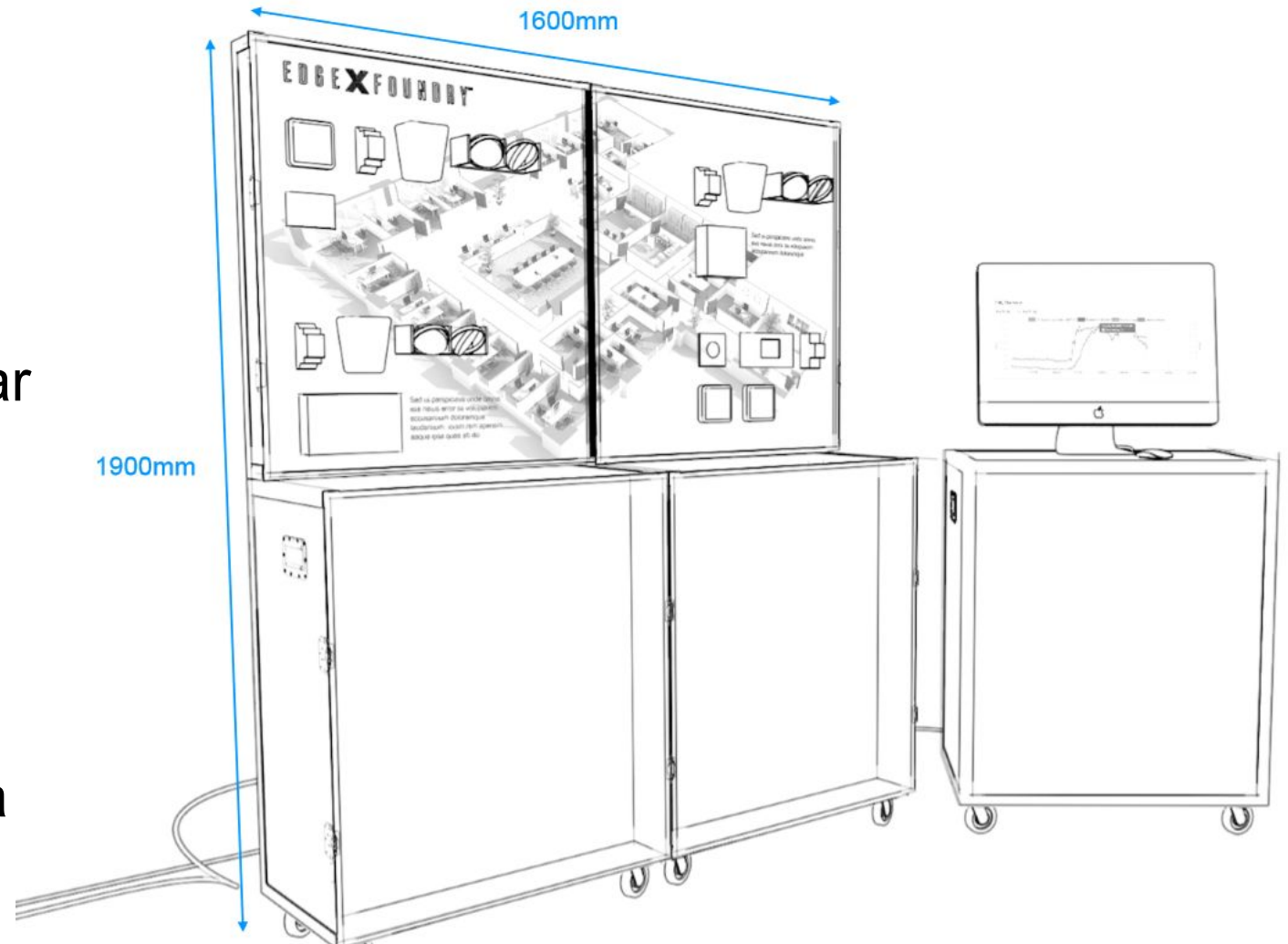
# "Magic Cube" Demonstrator

- small size
- easy to transport
- easy to assemble/dismantle on site
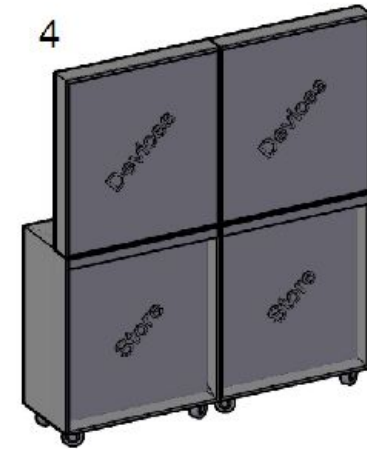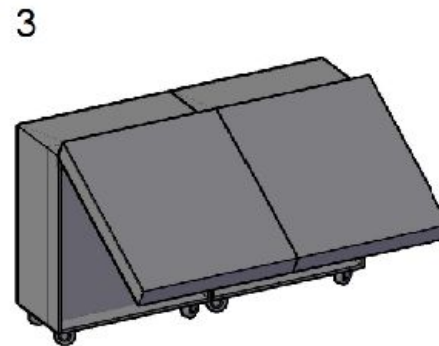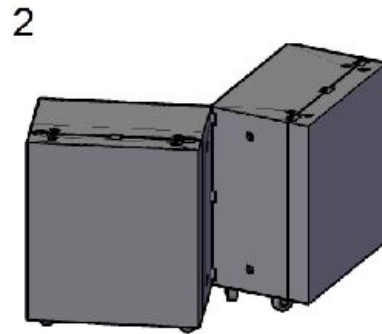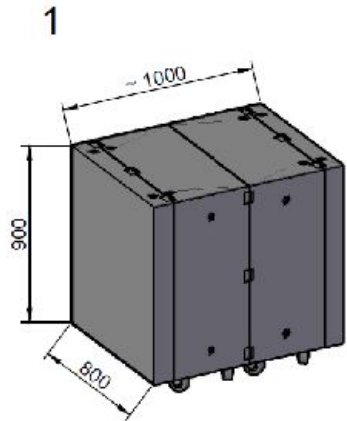
# EdgeXFoundry **Demonstrator**

Outer Dimensions are fixed.
Inner Dimensions are approximate indications showing minimum or maximum space at position.
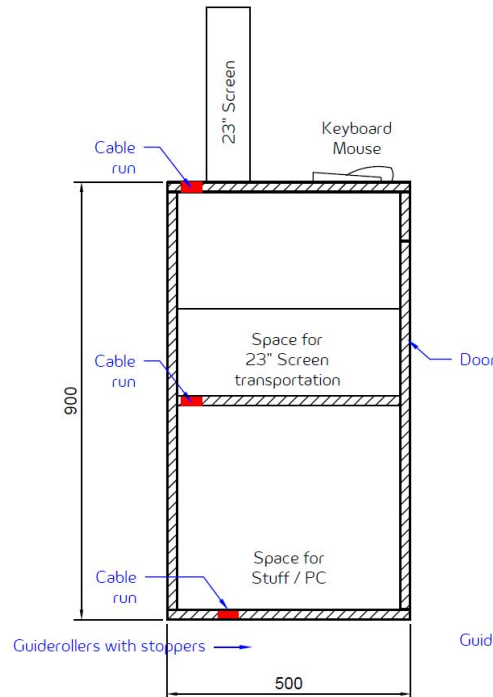
All panels 9mm thick, plain in phenolic brown (ready for self adhesive graphics)
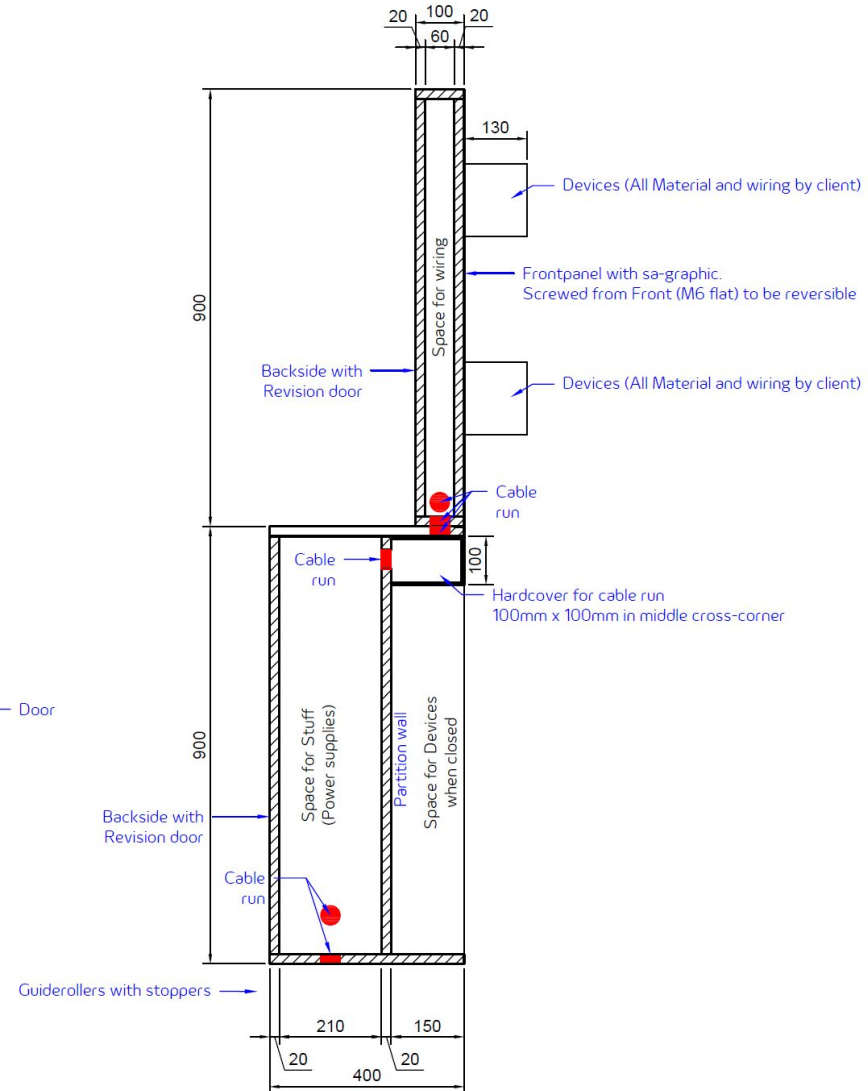Aluminium profiles 30/30mm all around, fixed by rivets.
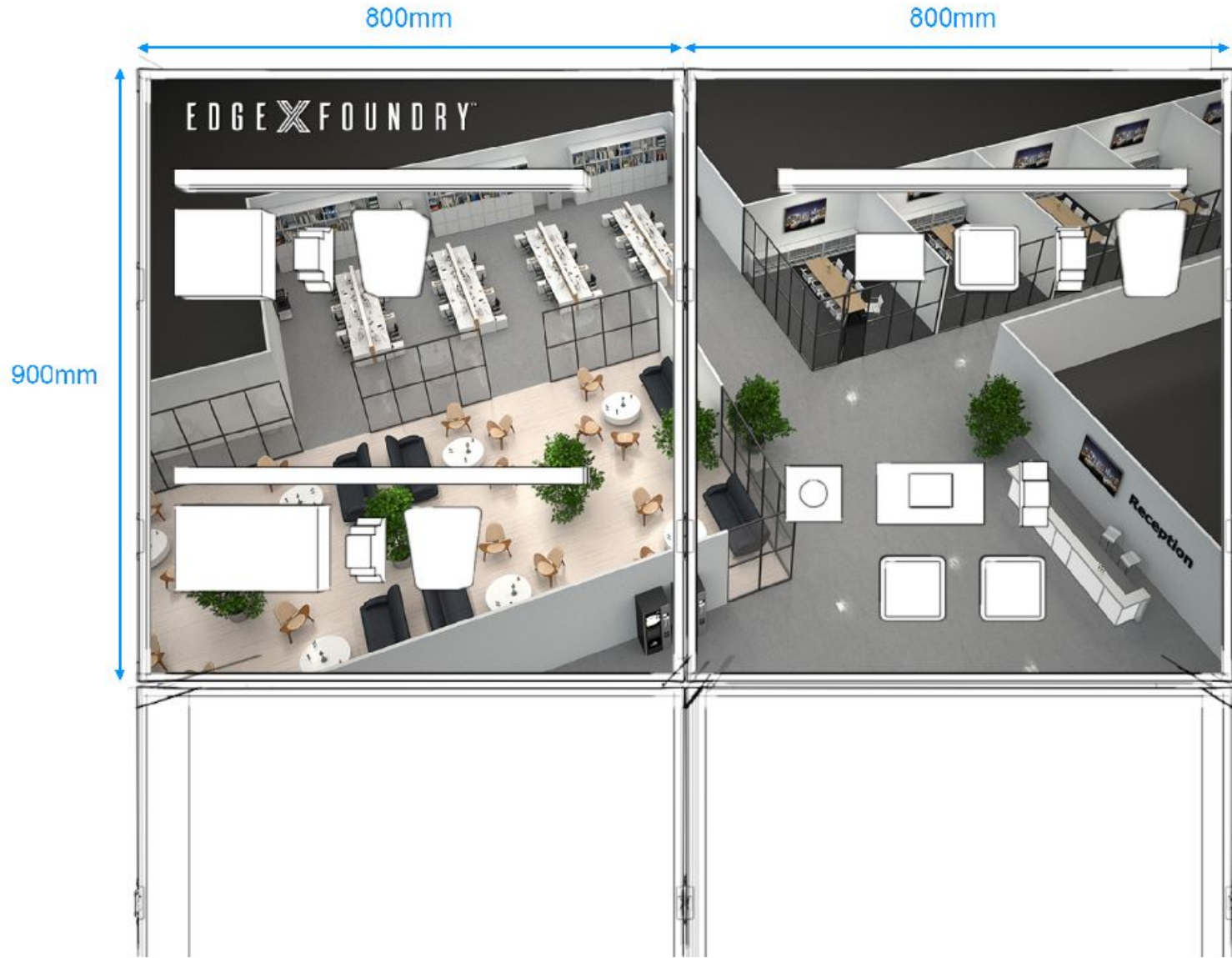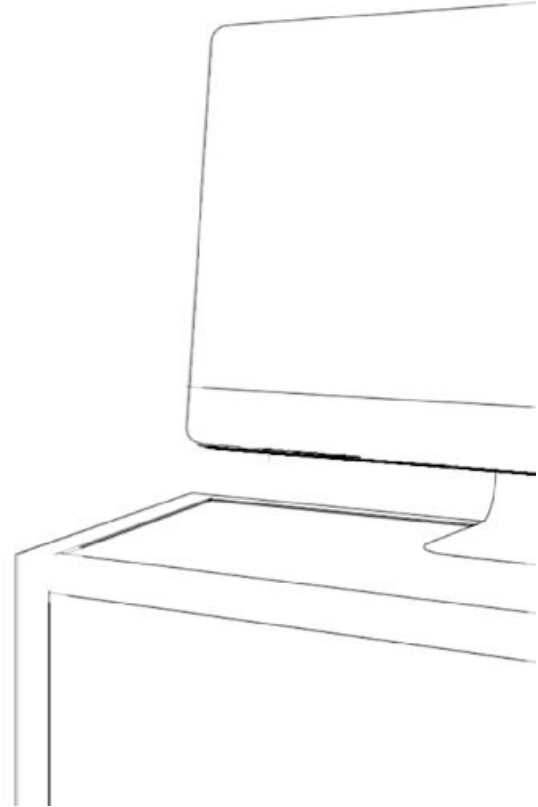Ballcorners, Guiderollers with stoppers.
All cable runs ● Ø40mm with protected edges.

## Devise cases (2 pcs) section view

20  100  20
60

900

130
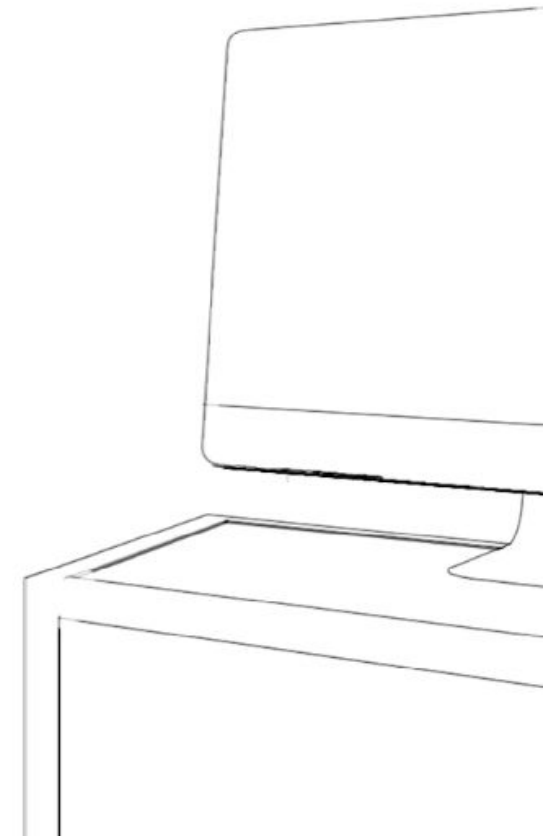
Devices (All Material and wiring by client)

Space for wiring

Frontpanel with sa-graphic.
Screwed from Front (M6 flat) to be reversible

Backside with Revision door

Devices (All Material and wiring by client)

Cable run

Cable run

100

Hardcover for cable run
100mm x 100mm in middle cross-corner

## Monitor case section view

23" Screen

Keyboard Mouse

Cable run

Space for 23" Screen transportation

Door

900

Cable run

Space for Stuff / PC

Cable run

Guiderollers with stoppers

500

900

Space for Stuff (Power supplies)

Partition wall

Space for Devices when closed

Backside with Revision door

Cable run

Guiderollers with stoppers

210    150

20    20

400

IOTech

800mm

800mm

900mm

EDGE X FOUNDRY™

Reception

IOTech

EDGE X FOUNDRY
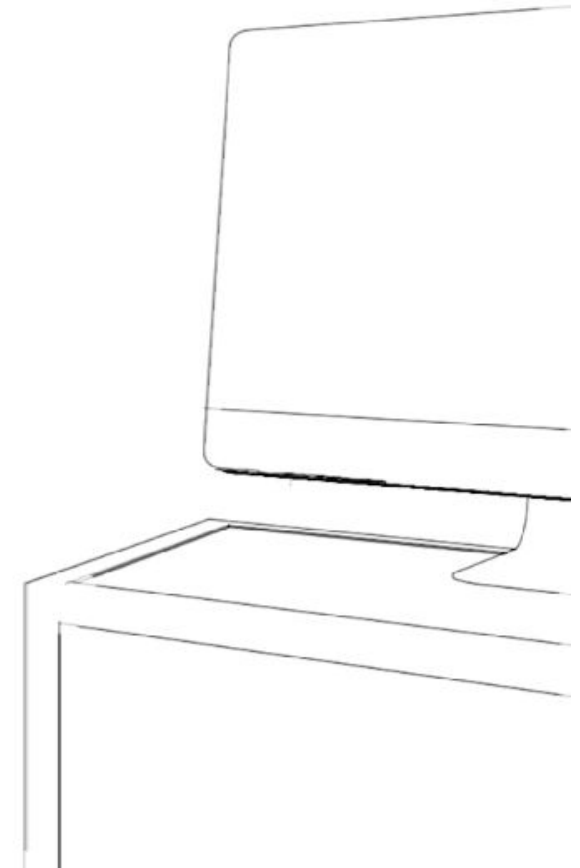
OPEN SPACE ZONE 1

MEETING ROOM

OPEN SPACE ZONE 2

ADDITIONAL DEVICES
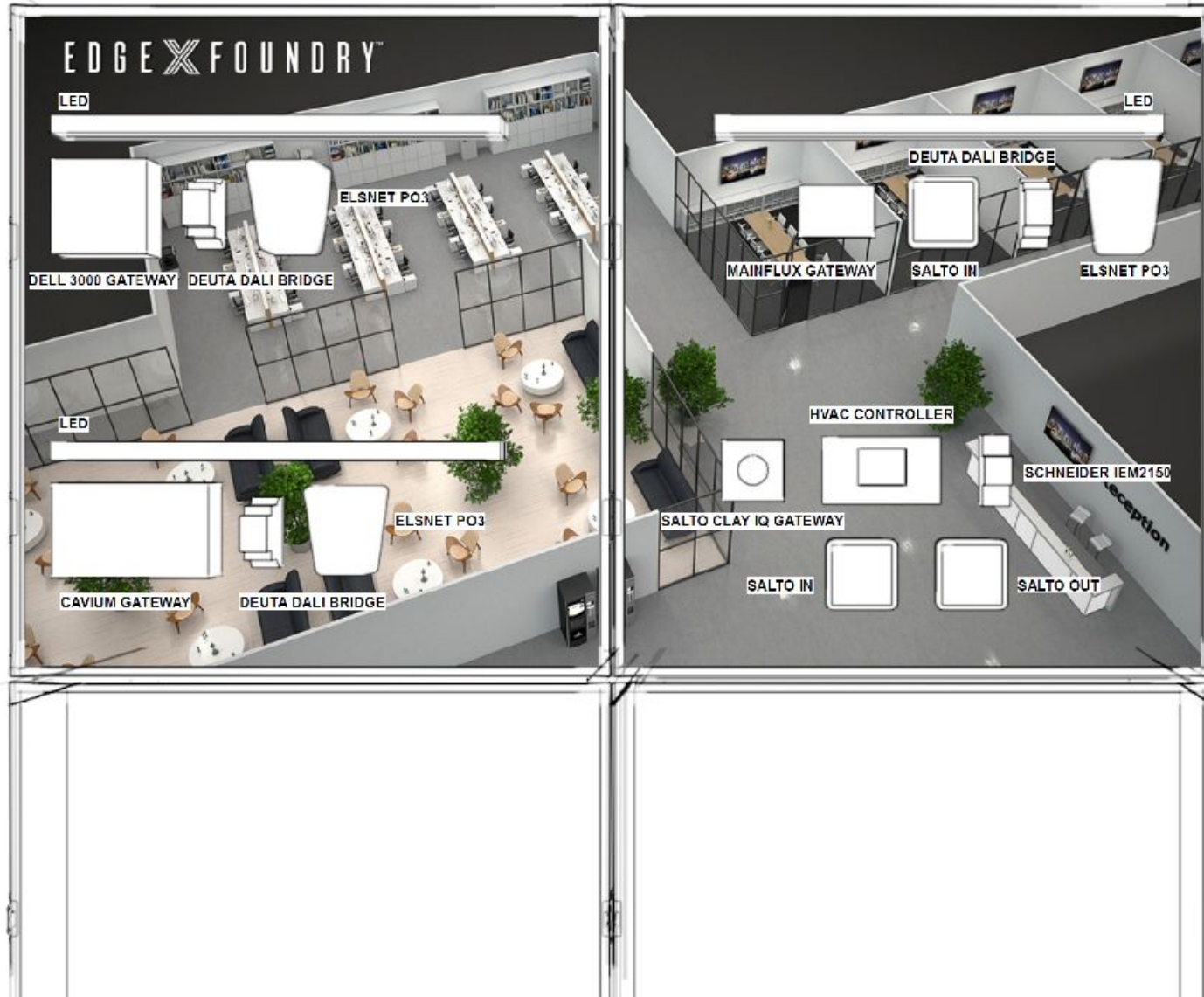
PROPOSAL

IOTech

# EdgeX DevKits

Keith Steele / Andy Foster
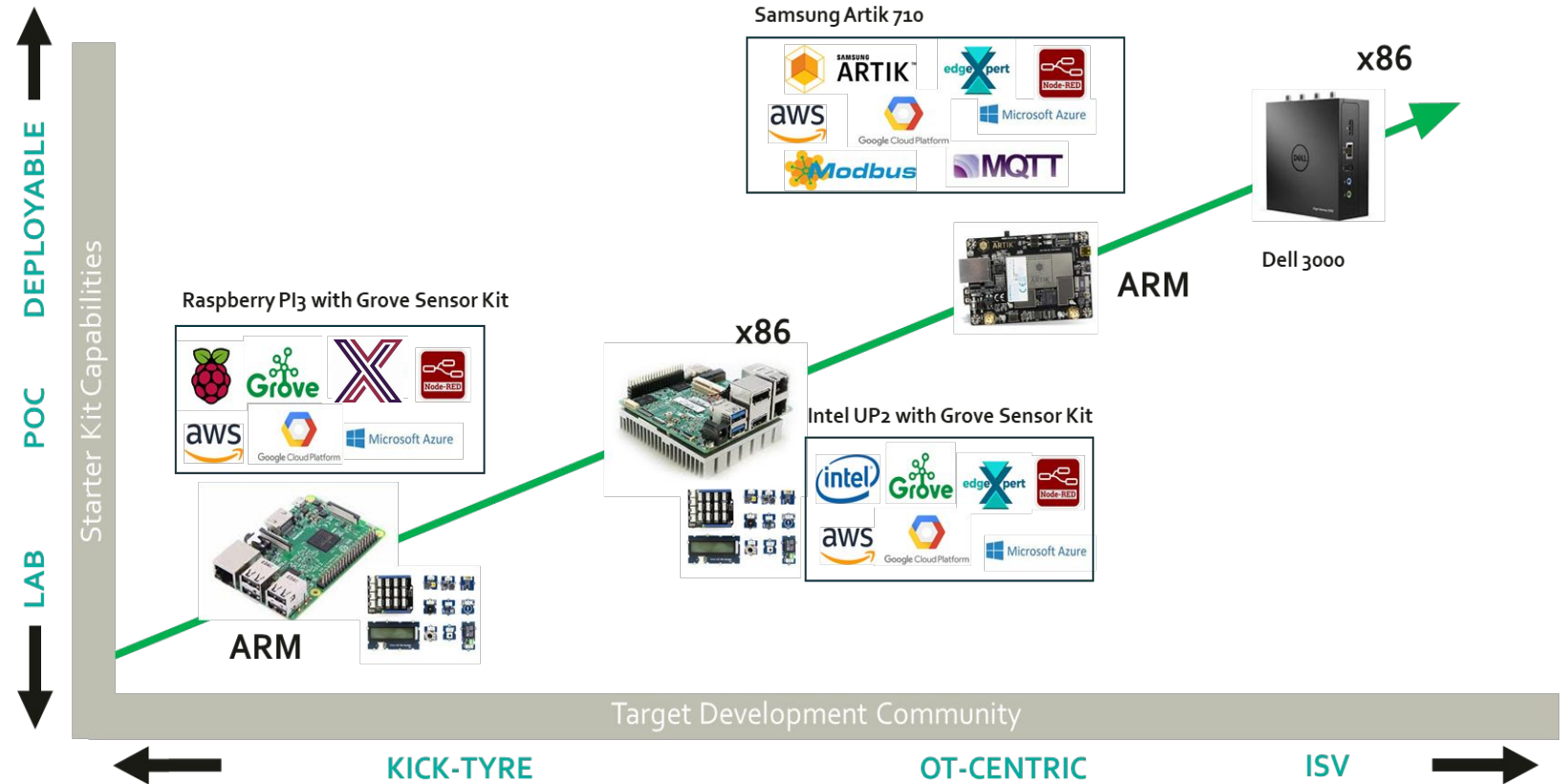
# IoT Developer Kits

- Concept - Edge X & Xpert IoT developer (dev) kits will  providing a cost effective way to for customers to validate architectural and business considerations through early POC development with a streamlined path to scalable deployment

- A range of dev kits to support different target development communities (kick-tyre, OT-centric, ISV) and needs (LAB, POC, Deployable)

- Kits include a fully integrated bundle of hardware, pre-integrated sensors and an IoT platform software stack based on Edge X Open Source software & IOTech's Edge Xpert commercial implementation of EdgeX Foundry

- Open Source implementation based on Delhi Release

- Available from November 2018

# IoT Developer Kits

- Dev kits available in low cost, middle range and high end configurations:
  - Low cost
    - Raspberry PI 3 with Grove PI Sensor kit
  - Mid range
    - Samsung Artik and Intel UP2 with Grove PI Sensor kit
  - High end
    - Dell 3000 etc.

Samsung Artik 710

x86

Dell 3000

ARM

Raspberry PI3 with Grove Sensor Kit

x86

Intel UP2 with Grove Sensor Kit

ARM

DEPLOYABLE

POC

LAB

Starter Kit Capabilities

Target Development Community

KICK-TYRE          OT-CENTRIC          ISV

# EdgeX Open Source Developer Kit

- GrovePi Dev Kit
  - Raspberry PI 3 + Grove PI Sensor Kit  (with PI from $150 -230), see https://www.dexterindustries.com/shop/grovepi-starter-kit-2/
  - Linux operating system

- IoT Platform Software (bundled for FREE without support)
  - Edge X (Delhi Release)
    - 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

**IOTech**

# Open Source Developer Kit – Fulfilment

- Raspberry PI and Grove Sensor Kit for PI can be purchased from users preferred supplier e.g. Dexter Industries (Grove Sensors) or Cool Components(Grove Sensors), PI can be purchased for many different sources

- EdgeX Foundry GitHub
  - New Grove Device Service will be developed in C with supporting Grove Device Profile and code held in GitHub
  - New DockerCompose file specific to the Dev Kit configuration will be created and held in GitHub

- New EdgeX Dev Kit Web Page
  - Will provide a description of the project and links to Dev Kit resources:
    - GitHub repo
    - Latest Dev Kit DockerCompose file
    - Developer Forum
    - Projects, examples, tutorials
    - Subscription to Dev Kit mailing list
    - References to members providing commercial services around the Dev Kit

- Developer Forum (Rocket Chat)
  - Create Dev Kit channel on Rocket Chat – suggest starting with Rocket Chat but as/if interest picks up then perhaps deploy more dedicated Forum software (that can provide a catalogue of conversations and discussions and not just a chat stream)

IOTech

Upcoming Events

# Upcoming Events

- Edge Computing Congress, September 18 - 20, 2018, Berlin
  - September 20 - 12:20 pm: Janko Isidorovic - Panel (Open Source & how EdgeX works with Akraino)
  - September 20 - 12:50 pm: Janko Isidorovic - Overview of EdgeX Foundry
- Open Networking Summit Europe, September 25 - 27, 2018, Amsterdam, Netherlands
  - Community Partner: Save 15% on Attendee Registration with discount code ONSEU18COM15
- IoT Scotland Meetup, September 27, 2018, Scotland
  - 6:30pm: Keith Steele - EdgeX Foundry overview
- Redis Labs IoT Meetup, October 1, San Francisco
  - Dave Nielson - EdgeX Foundry lightning talk
- Fog World Congress, October 1-3, San Francisco
  - Dr. May Wang - EdgeX Foundry overview (TBD)
  - Rob Schauble - Edge computing panel
- Newcastle IoT Meetup - October 2, Newcastle
  - Keith Steele - EdgeX Foundry overview

# Upcoming Events (continued)

- **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
  - Who is planning to be on-site?
    - Andy Foster (IOTech), Brett Preston (LF), Eldar Gizzatov (Basking), James Butcher (IOTech), Janko Isidorovic (Mainflux), Keith Steele (IOTech), Martina Ronca (IOTech), Michael Hall (LF), Mo Chehab (Basking) ...others?
- **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

# Upcoming Events (continued)/CFPs

- Open Source Summit Europe / ELC / OpenIoT Summit Europe, October 22 - 24, 2018, Edinburgh, UK (Continued)
  - 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.
- 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

# Upcoming Events (continued)/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=2.218061782.1372769890.153676958 1-2081958547.1534262136

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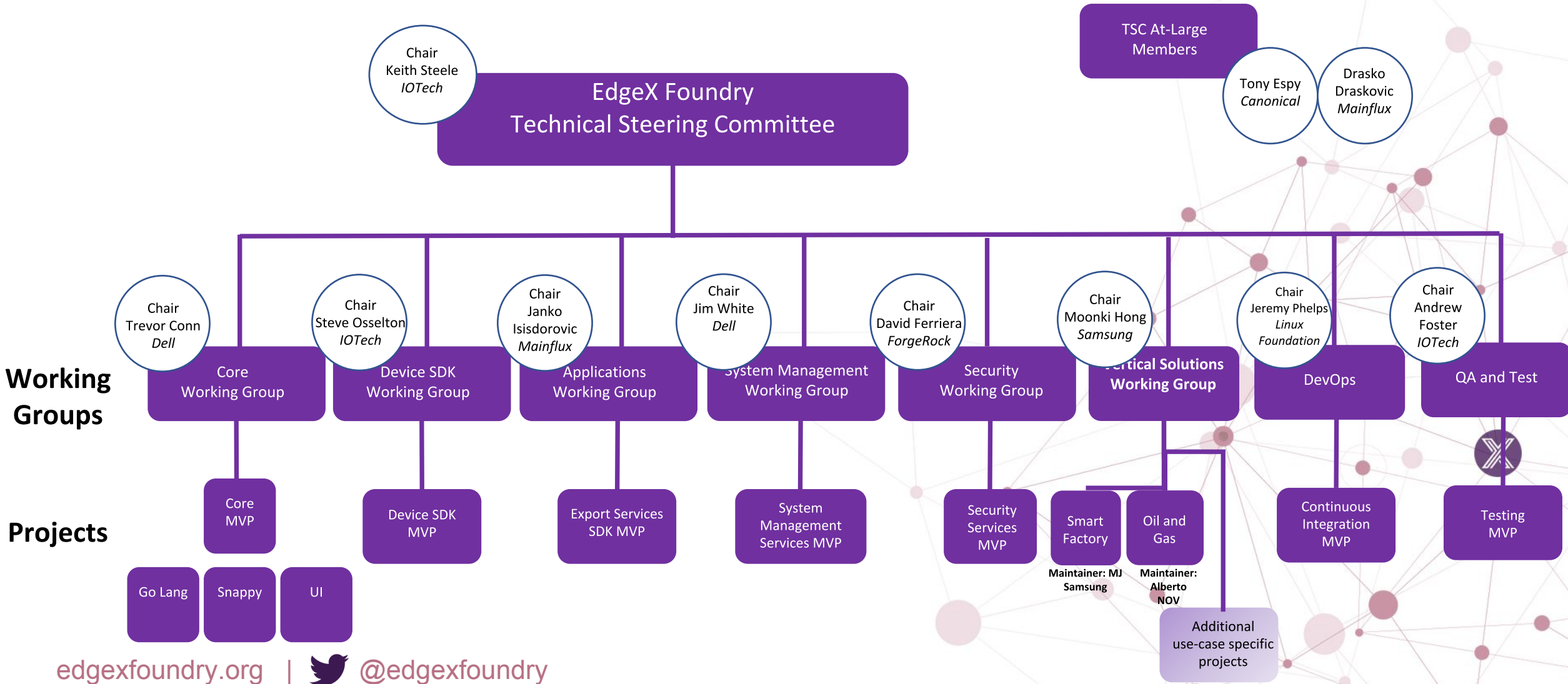
# AOB / Reminders

# 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: September 26, 2018**

# EdgeX Project Organization

# Marketing

- **CTA:** If your company will be presenting EdgeX at an upcoming event/webinar/other, please email [pr@edgexfoundry.org](mailto: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
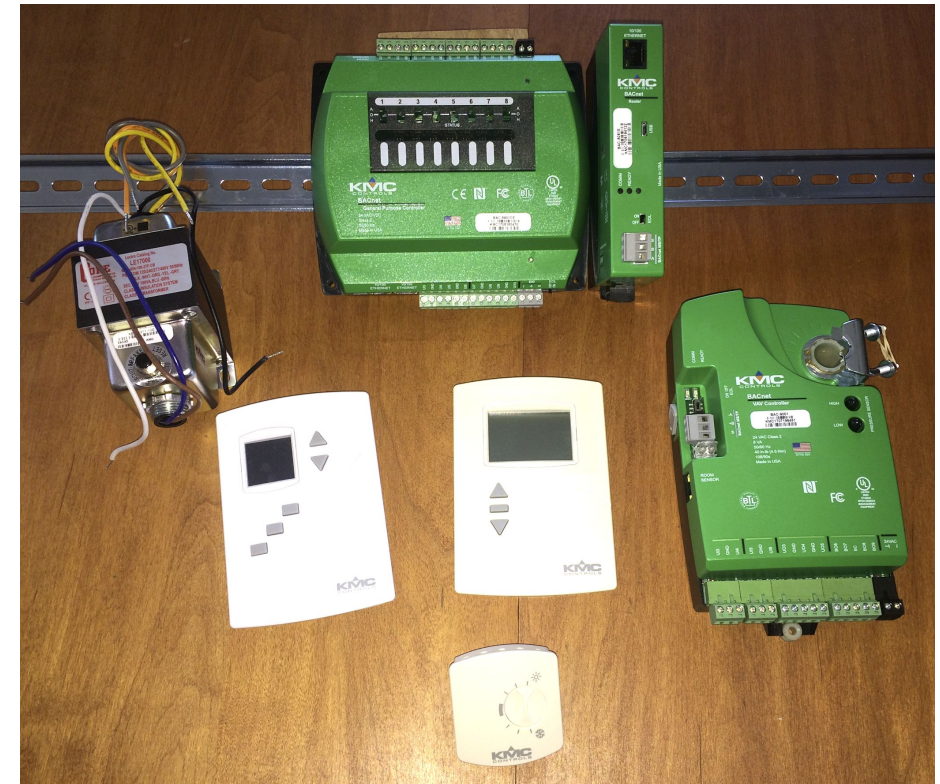
    Call recordings are available on the Wiki

# 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](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