



EDGE X FOUNDRY™

EdgeX Planning Conference (virtual meeting)

Ireland Release
November 9 - 13

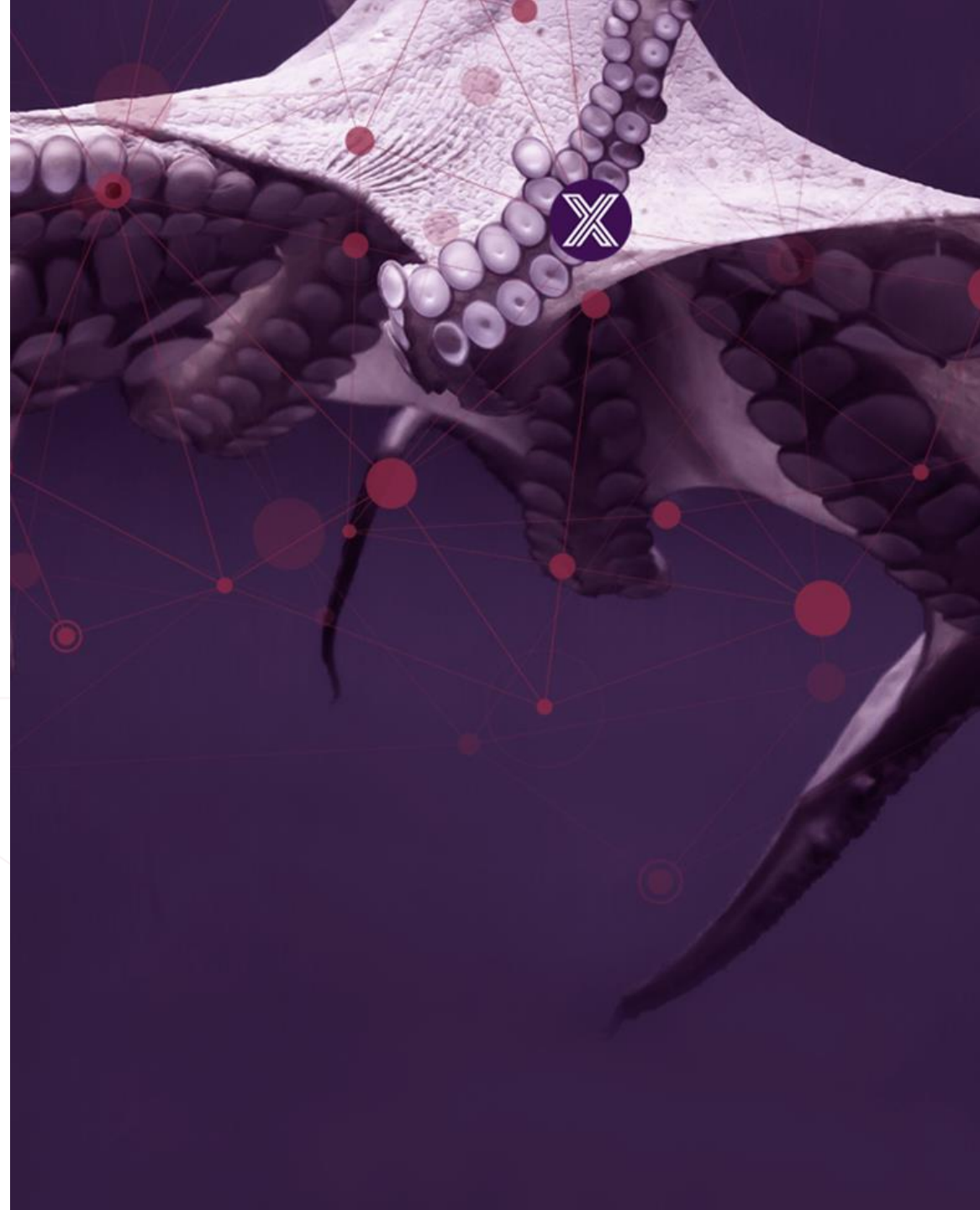
Conference Agenda – Day 1

- Nov 9, Monday (all times in PDT; all times tentative and fluid)
 - 6am Introductions & Logistics
 - 6:30am Business Topics
 - 8:30am Architecture topic tee-up
 - Not a deep dive on the architectural concerns
 - An overview of the topics to be discussed
 - Allow attendees to get up to speed and get context prior to the architectural debates
 - 10am day 1 adjourn



Intros

Name, rank, serial number please





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Business Topics

Business Topic Agenda

- All time approximate/all times shown in PDT
- 6:30 Web site (Andy/Camilo)
 - Current status
 - Website funding for 2021
 - Website revamp
- 6:45 Topcoder challenges (Camilo)
- 7:00 China Hackathon – readout on developer experience survey (Camilo and Melvin)
- 7:30 Industry Vertical Solutions Group (Keith)
- 8:00 Endorsement & Certification program (Rodney)
 - Current status of endorsement program
 - Certification program – Jiangxing Intelligence offer to help

Taking Stock – asking tough questions of ourselves

- We have much to be proud of
 - 4th year of development; 6 releases; 7 million container downloads; publicly announced adopters
- Reality check
 - Is the platform strong or does it have lots of technical deficiencies?
 - Would you use it to build a solution with a customer yet?
 - What is our real competition (Fledge? PTC? Greengrass?)
 - How well do we size up to the competition?
- If we could change tomorrow with no effort, what 2-3 things are our biggest issues that you would address?
 - Usability / ease of use (documentation, simple to understand, etc.)
 - Architecture (more messaging, security, etc.)
 - Stability (LTS, testing, etc.)
 - Other?
- What's prohibiting getting more people to join the project as contributors?
 - Complexity
 - Personnel/personalities/culture
 - Product direction
- What can the leadership of this project do to improve the product and health of the ecosystem/community
 - Get more involved
 - Stay out of the way (be less involved in day-to-day)
 - Show more leadership, direction setting, goal setting
 - Find more help



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Architecture Tee Up

Topics list

- V2 API, EdgeX 2.0, and LTS, and certification
- Upgrade path from v1 to v2 (especially around databases)
- Kubernetes direction/project
- Metrics / control plane data collection
- Timeseries database integration
- Remove value descriptor
 - Where do other elements go?
 - Need conveniences/syntax sugar around value descriptor “stuff”
 - Don't want to get device provide and week through it for VD stuff
- Message bus between DS and core
- Collapse of services
 - Example: single core
- Core data vs support data
 - Device service to appl service via message bus 1st
 - Device service to core data via message bus 2nd
 - Core data changed to support data 3rd
- What do we do with command service? Will it ever be more than a proxy?
 - Combine with Metadata?
 - Should we separate it with its own DB (separate concerns)?
 - How to provide commands North?

- Distributed services
 - Beyond DS distribution
- Next level of performance/scale testing
 - Operational guidance
- Sys Management list of default services (also an issue with security proxy setup)
- Better way to tag or describe what's in the binary payload
- Should we be archiving artifacts (Docker images)?
 - Other organizations do not
 - New Docker rules will likely not help here
- Message order in and out of EdgeX services is non-deterministic
 - Is this ok?
 - Would users need messages to stay in order through all the services?
- Alternate language support (Chinese)
 - Made a request of LF for documentation translation
 - Chinese teams ready to help
 - CLI? UI?

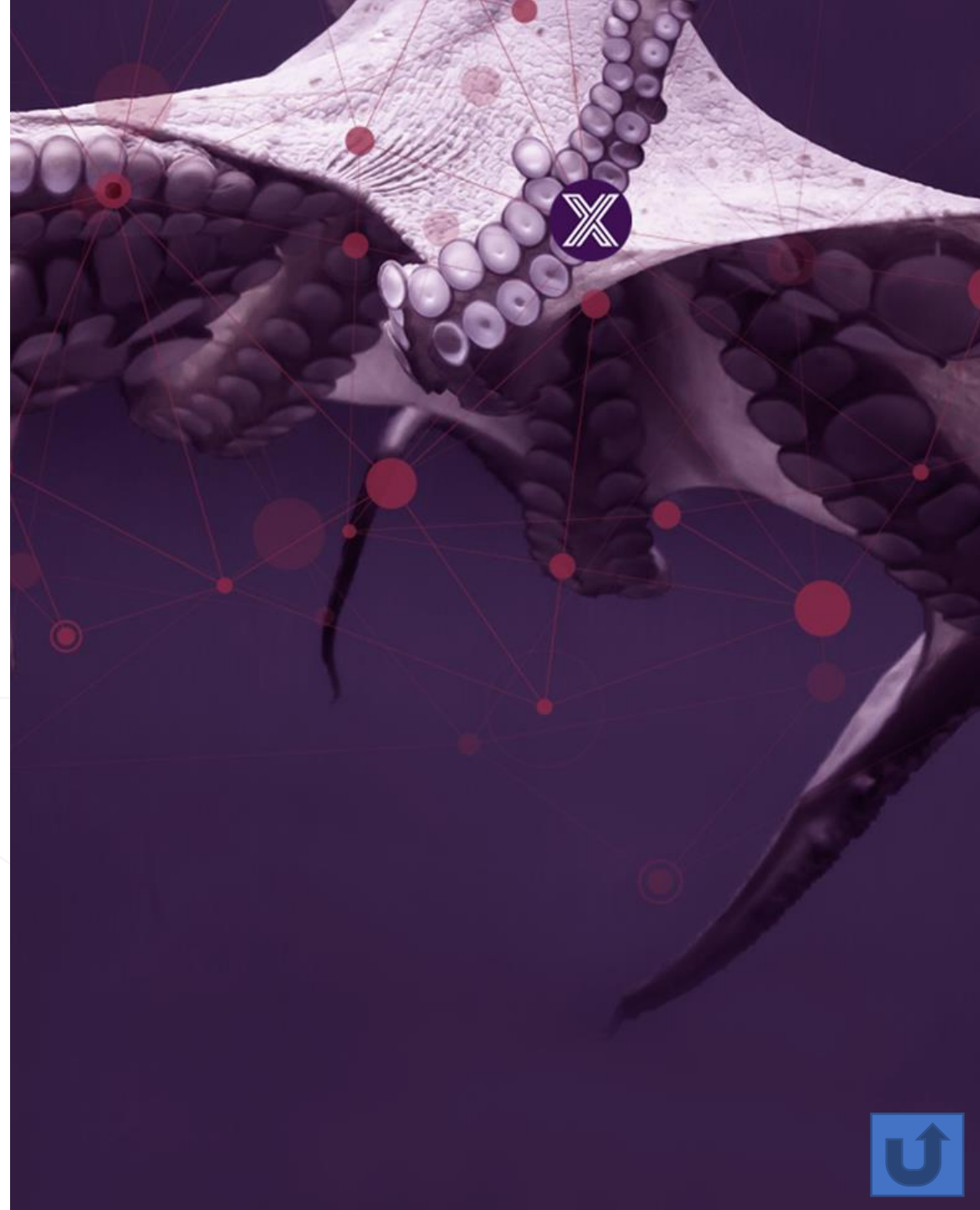


Conference Agenda – Day 2

- Nov 10th, Tuesday (all times in PDT; all times tentative and fluid)
 - 6:00am Release cadence check & release naming
 - 6:30am Architecture topics discussion and decisions
 - Topics relevant to upcoming release having priority, discussion of architectural design - with goal of making decisions that are particularly relevant and impactful to upcoming release
 - With any remaining time, we will start to explore Jakarta scope
 - 10am day 2 adjourn



EdgeX Release Cadence Semi-Annual Pulse Check



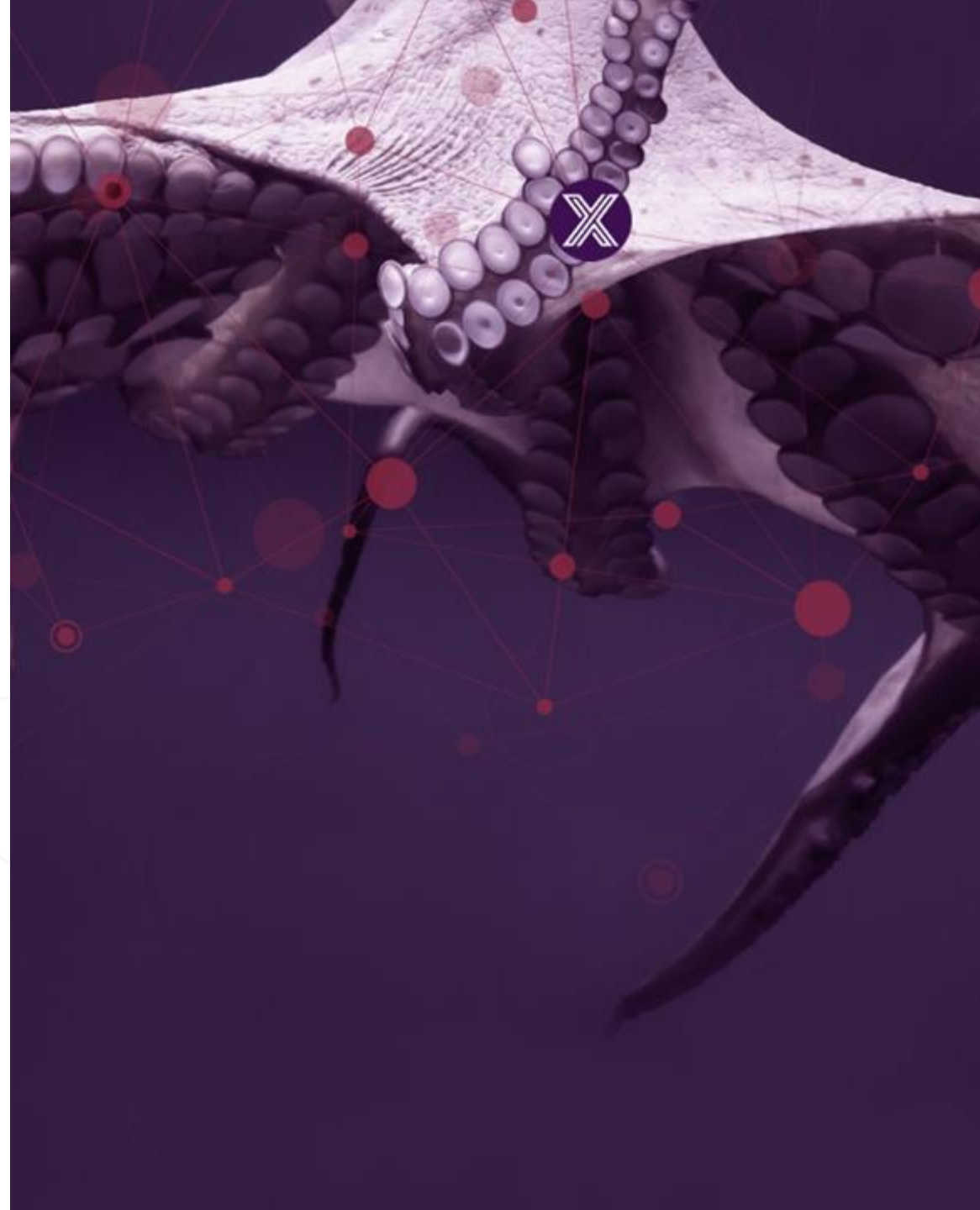
Cadence Check

- April & Oct remain target release months
 - F2F about 1 month in advance of release to allow for some community coding opportunities
 - Is this still the case? Puts next F2F meeting @ April 2021!
 - Ireland release – April 2021
 - Jakarta release – Oct 2021
 - Kamakura release – April 2022
 - ???? release – Oct 2022
- Venue for next F2F Meeting (Oct 2020)
 - Volunteers, suggestions?
- Conferences – marketing committee update; any changes?
 - At least 2 x large marketing/promotional events (Hannover Messe, IoT SWC)
 - At least 1 x developer focused event
 - Virtual events?



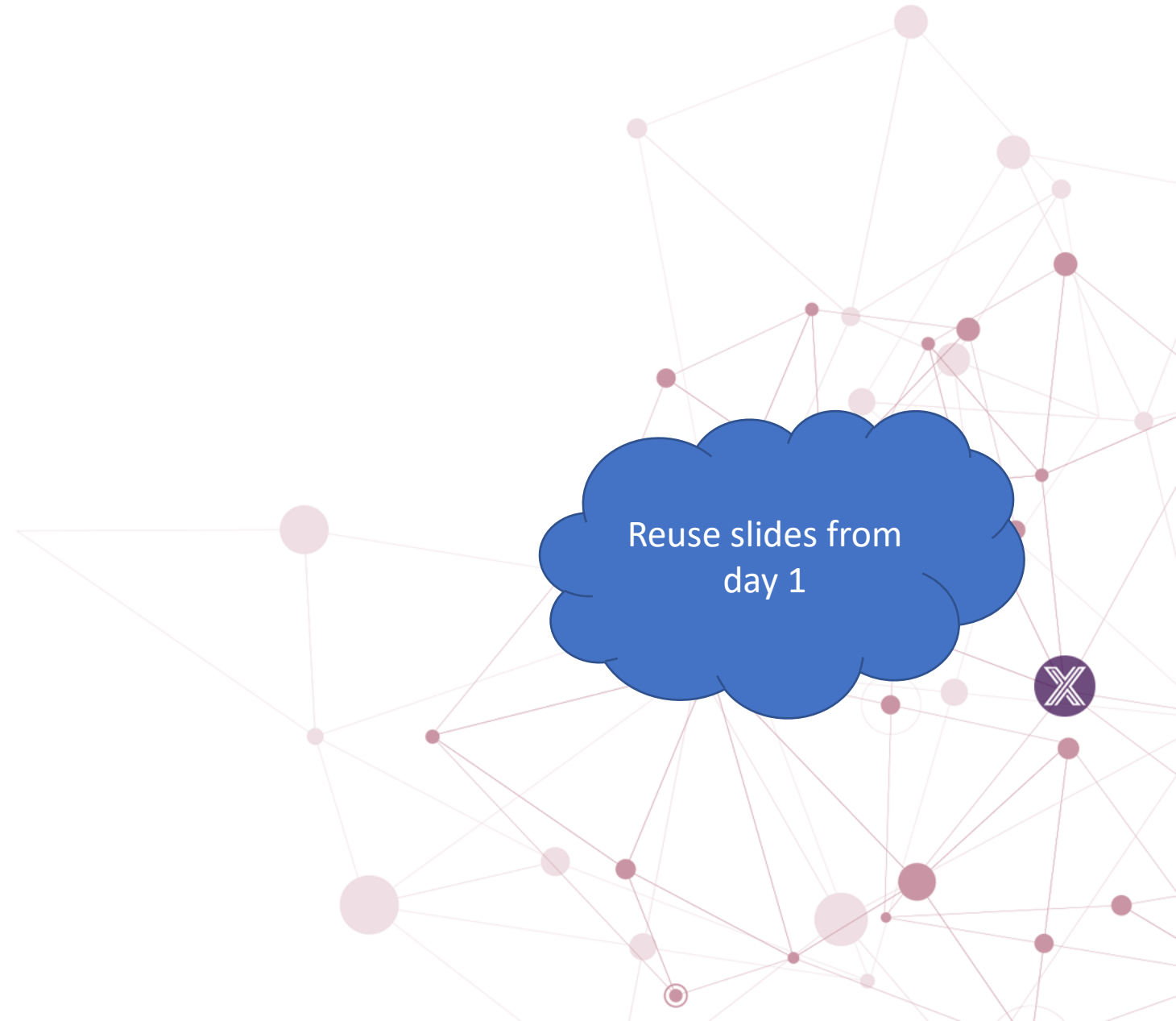
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Architectural Discussion/Decisions



Topics list

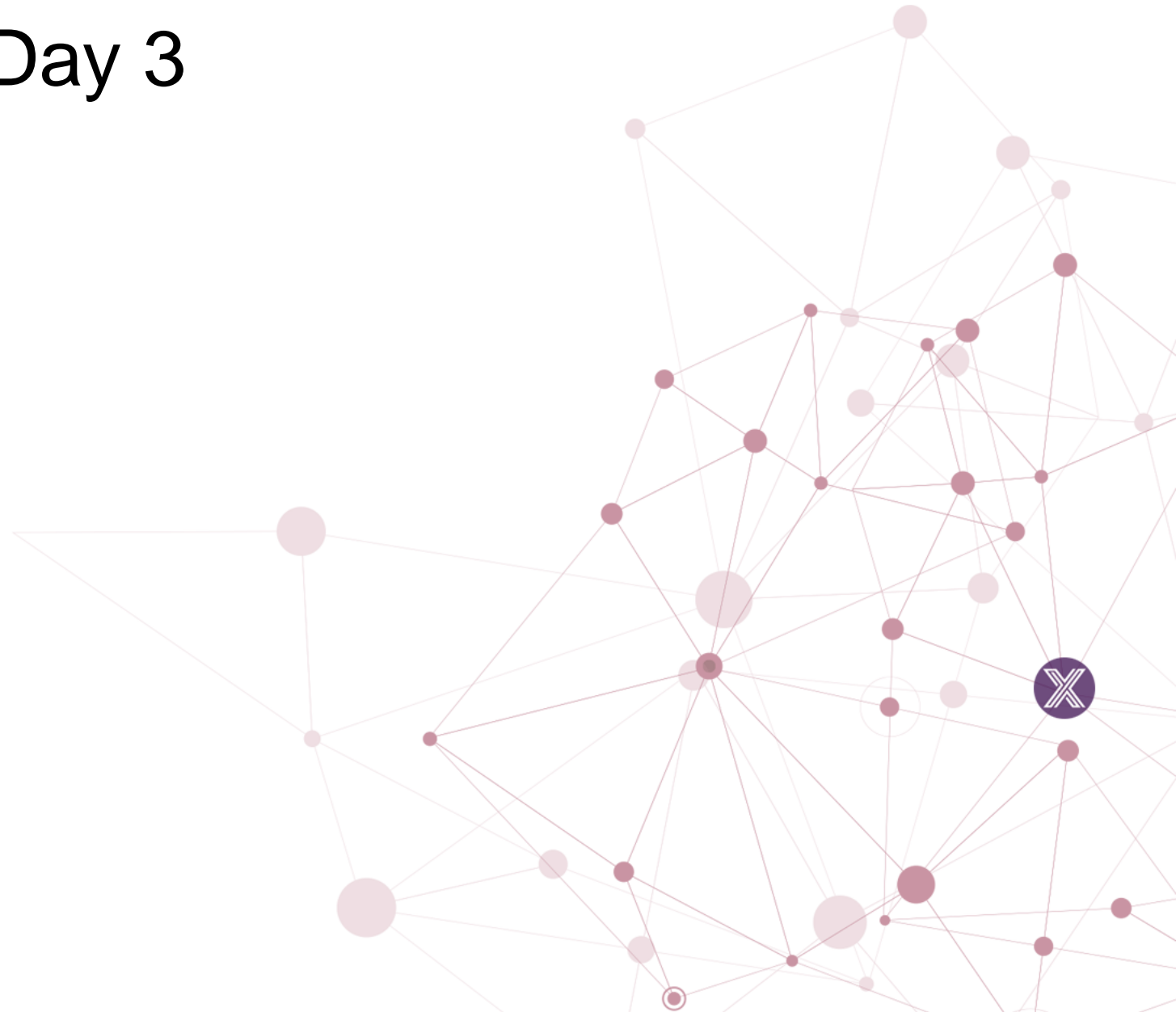
- TBD





Conference Agenda – Day 3

- Nov 11th, Wednesday (all times in PDT; all times tentative and fluid)
- 4:00pm Quick check on Hanoi release
 - Test issues
 - Bug issues
- 4:30 – 6:30pm Ireland scoping (complete on Day 4)
 - General
 - Core & Supporting
 - Client tools
 - UI
 - CLI
 - System management
 - Application and Analytics
 - Rules engine and other analytics
 - Device Services
 - Security
 - Test QA
 - DevOps
 - Outreach
 - Certification
 - Vertical Solutions
 - Marketing
- 6:30 APJ Adopter Feedback
 - Scope
 - Architectural issues
- 7:30pm day 3 adjourn



Hanio Release Issues

- TBD issues



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Ireland Scope

TBD with pre-wire and WG meetings

Considerations

- V2 complete in Ireland
- EdgeX 2.0 with Ireland (and trigger LTS? Certification?)
 - Will the work contain non-backward compatible changes
- Is there a champion / developer to drive the solution & get the work done
 - Who
 - Timeline
 - Dependencies
- What is high priority and what is a stretch goal?

General – new

- EdgeX 2.0?
 - LTS considerations?
 - Certification considerations?
 - What's the upgrade path and tools (DB, config, etc.)?
- V2 API for all services; deprecate V1
 - Get rid of V1 or just mark it deprecated?
 - We said in the last planning meeting that we should have one cycle where V2 API is beta

General – tech debt

- Remove value descriptor
 - For backward compatibility, can only be removed if in a 2.0 situation
 - Where do the other elements go?
 - We need conveniences to get VD stuff from device profiles
 - May need to add new elements like units
- Devices with embedded device profile and removing addressable from EdgeX
 - For backward compatibility, can only be removed if in a 2.0 situation
- Archive deprecated services/infrastructure
 - Mongo
 - Logging
 - Drools
- Code clean up for backwards compatibility
 - rip out stuff that is provided for backward compatibility that won't be necessary; example config vars that uppercase and lowercase

Core and Supporting – new

- Integrate with time series database
- Core data vs support data
 - Device service to appl service via message bus 1st
 - Device service to core data via message bus 2nd
 - Core data changed to support data 3rd

Core and Supporting – tech debt

- Command service – disposition
 - Combine with metadata?
 - More than a proxy?
 - Refactor to allow separation of data concerns (database)?
- Improve binary support
 - Intertwine this with VD discussion - is there a better way to tag or describe what's in the binary payload

System Management – new & tech debt

- Better facilitate Kubernetes
- Service list
 - Both the SMA and the security-proxy-setup service enumerate a set of hardcoded "default services", services which are expected to be up and running in any EdgeX installation. Currently that list of services is hardcoded in edgex-go ListDefaultServices.
 - Service names are not service keys
 - to be done with non-backward comp V2 of EdgeX
 - Static list when not using Consul; Consul list when using Consul
 - Do not pay attention to default services list from Consul; only use the default services when Consul is not being.
 - How security handles it: services that setup proxy or tokens - add to env vars
 - Metrics collection

EdgeX UI – new & tech debt

- Implement the roadmap
- #1 priority - create a device UI “wizard” that allows adding a new device much quicker.
 - Takes a user through screens to create a new device, reference or create a device profile, add addressable, provide AutoEvent schedule, etc. and associate it to a device service
- #2 priority - Add some data visualization to the UI
 - Need the ability to “click and see” the data
 - See the data in the core database
 - Perhaps peek at the messages coming from the core->app services bus
 - Integrate with something like Grafana for additional visualization
 - May require we export data to a time series database or use Redis time series database
- #3 priority - SMA integration
 - Offer metrics visualization of memory and CPU offered by SMA
 - Get the status of the services (up / down)
 - Provide ability to call on start/stop/restart of services

EdgeX CLI – new and tech debt

- Implement the roadmap (be a replacement for curl scripts)
 - #1 - V2 API support
 - #2 - TAF testing support (at least a basic start, subject to some research to know what is possible)
 - #3 - add support for device and application services
 - #4 - Additional API coverage (exact APIs to be determined - high priority commands not covered with version 1)
 - Stretch goals - subject to additional work force, availability of time, etc.
 - Address CLI working with security on - allowing CLI to work with EdgeX on a remote instance
 - Support for i18n/l10n

Test / QA - new

- TAF for V2 API
 - Deprecated blackbox tests?
- User guidance on platform needs
 - More performance statistics
 - # of devices/per recommendations
 - Providing EdgeX users guidance on platform needs, sensor data throughput and deployment based on performance metrics. Specifically, with the Geneva performance testing apparatus, the EdgeX community will be able to answer these questions for the user:
 - Will EdgeX fit on my system? - size of EdgeX services, infrastructure, etc. and hardware/platform requirements
 - What is the speed of data through the system? - from device service sensor data ingestion to the rules engine and back down through command to another device service to trigger a put command, how long does this take?
 - How many “things” can be processed at a time? – with caveats on the type of thing, type of data, etc.
 - These questions need to be answered on real hardware (both Intel and ARM)

Test / QA – tech debt

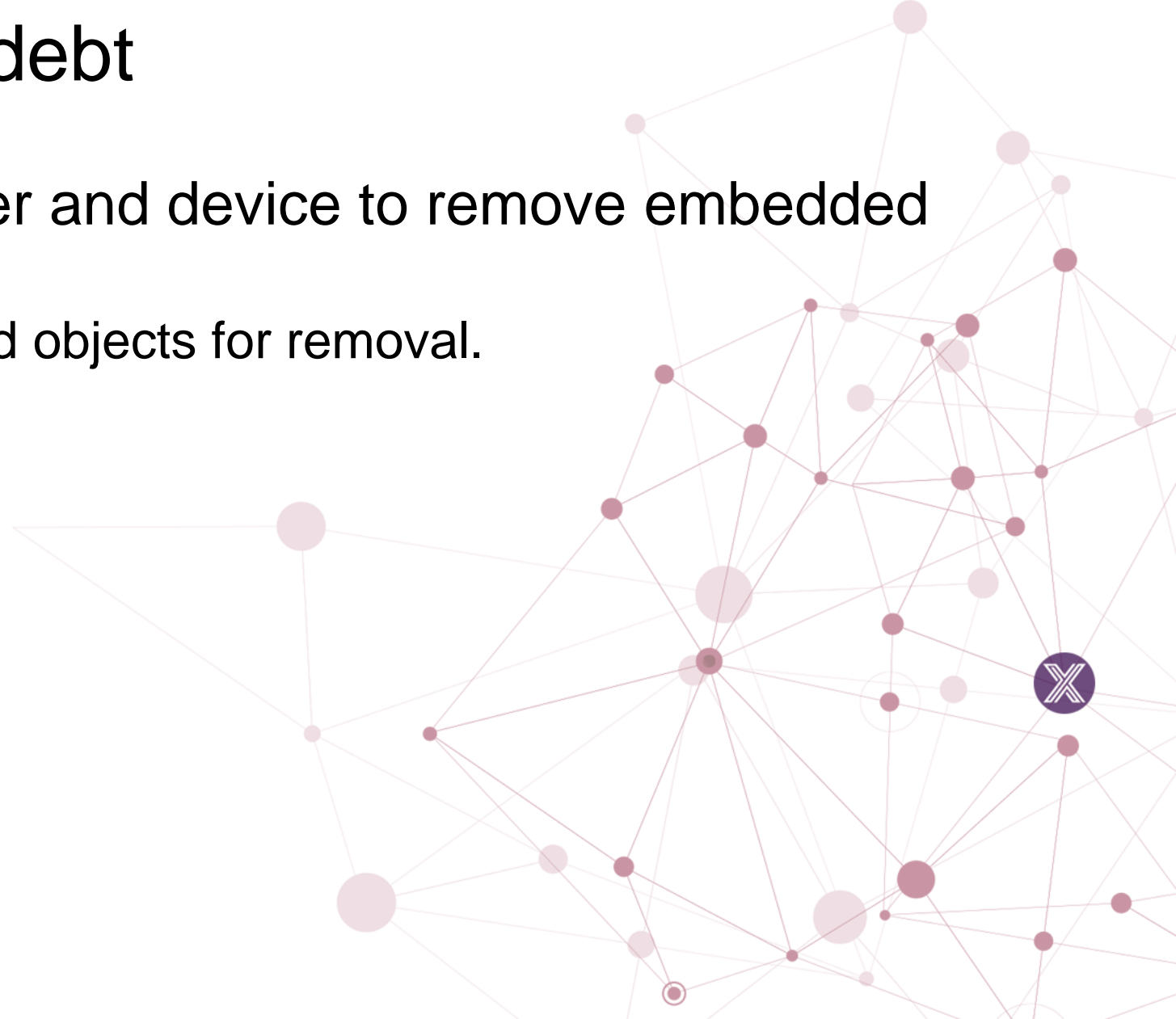
- Additional **Integration**/Functional test cases
- Configuration testing – testing non-default and dynamic config changes
- Add unit tests/testing for global libraries.
- Blackbox tests against snaps

Device Service – new

- Message bus (DS to appl service)
- Protect the device from harmful commands, there should be the possibility to set a Min and Max limit (or other profile checks to protect the device).
 - There is a preexisting issue for this
- Data filter between DS and Core Data
 - Provide a design about how to implement this before implementing.
 - If possible, can the filter functions be shared across App Services and D.S. (w/ App WG)
- Bound checking
 - Number of operations that can be done
 - Max request size (that lends to DoS, etc.)
 - Could be more globally applied – a REST QoS
 - Each WG should explore implications and design
 - Articulate the problem better; limit scope a bit; design target for Hanoi

Device Service – tech debt

- Refactor of provision watcher and device to remove embedded device profile
 - Explore other such embedded objects for removal.
 - Postponed until EdgeX 2.0

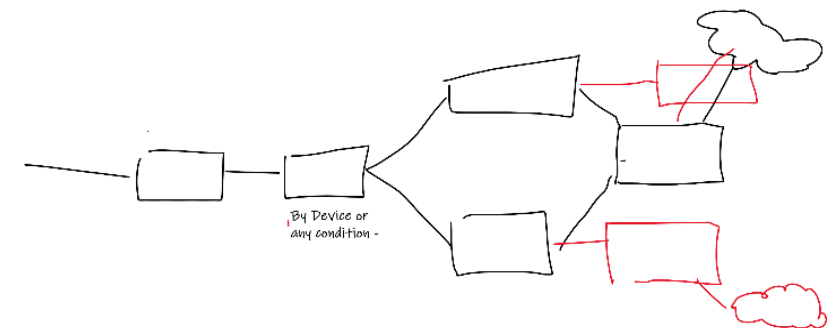


Application Services – new

- Integrate additional analytics frameworks
 - Tensor Flow
 - OpenVino
 - Relook at TensorFlow (or others) Example
 - Predictive Analysis (Temp, Vibration Data, Combination)
 - Data Streaming support?
- Media Streaming (Audio/Video) Support
 - Recommend for Device Service integration to retrieve inference data (media streaming outside of edgex)
 - Transform to monitor object in stream (Object Recognition inference data)
 - Send commands to control device for streaming
 - Plugin for App Services to integrate/leverage Accelerators?
 - OpenVINO can handle this directly
- Output aggregator/multiplexor? Something to think about ---
- Fork the pipeline & have a pipeline per topic
 - Support multiple topics in SDK - go mod messaging
 - Allow various paths for different sensors for example
 - Can be done with code internal to a function - but a bit kludgy; could be useful and nice
- V2 API Consumption
 - New Event DTO on the bus
- App Service leverage notification/alert service (Reference Design for Intel Loss Prevention)
 - Subscription added to client APIs
- Implementation of DS to App Services via Message Bus

Application Services – tech debt

- Address array of types in rules engines/analytics engines
 - Kuiper, JSONLogic
- Better handle (gracefully) binary data in analytics engines
- Remove/Archive Drools Rules Engine associated artifacts
- Filter based on value type (such as int)
 - Within the same app service
- “Conditionalizing/Branch” the pipeline
 - Pipeline per topic or device
 - Multiple Export Destinations



Security – new

- TBD



Security – tech debt

- TBD



DevOps – new & tech debt

- Continue Performance Optimizations
 - Jenkins Pipeline optimizations for edgex-go
 - Explore options from LF for supporting Jenkins on K8s
- Caching Dependencies - speed it up (upstream dependencies)
- Repo badges for EdgeX repos. See <https://github.com/dwyl/repo-badges>, Also version badges to show latest semver version (would need infra to support this).
- Potentially discuss automated release notes creation now that conventional commits is being adopted (stretch).

Outreach

- Certification
 - Endorsement
 - Accelerate certification?
- Vertical Solutions
 - Adopter series
- Marketing
 - TBD





Adopter Feedback

TBD with pre-wire and WG meetings

APJ Adopter reaction to:

- V2 API
 - Importance
 - Implications
- Architecture issues
 - Right Priority
- Ireland Scope
 - Right features
 - Right priority
- Community Support
 - Help channels (slack, email, etc.)
 - Ability to share opinions



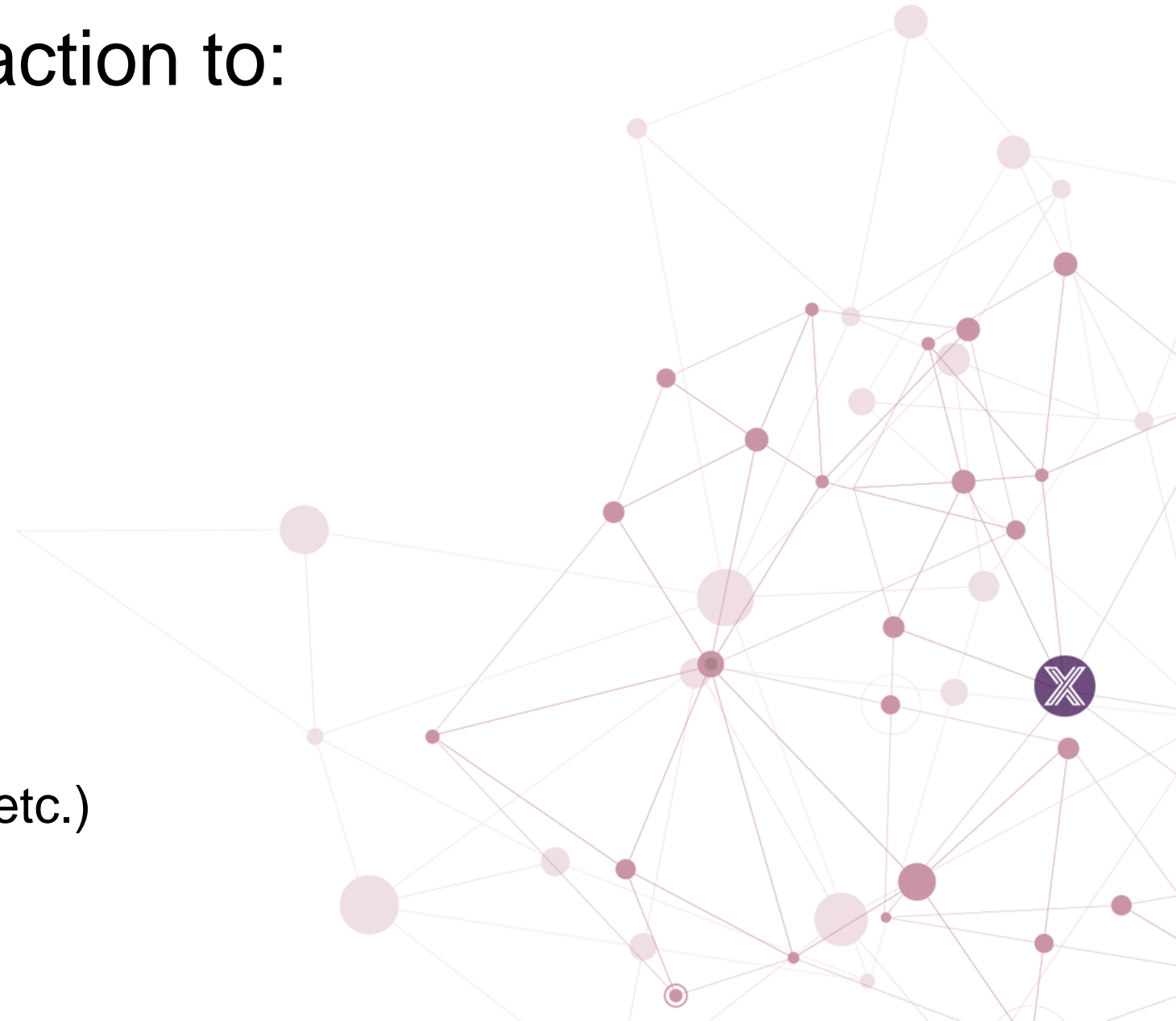


Conference Agenda – Day 4

- Nov 12, Thursday (all times in PDT; all times tentative and fluid)
- 6am – US/Europe Adopter reaction
- 7am – cover Architecture Topics missed
- 7am or ASAP – Ireland scoping completed
- 9 am - Jakarta (and beyond) early scoping
- 10am day 4 adjourn

US/Europe Adopter reaction to:

- V2 API
 - Importance
 - Implications
- Architecture issues
 - Right Priority
- Ireland Scope
 - Right features
 - Right priority
- Community Support
 - Help channels (slack, email, etc.)
 - Ability to share opinions



Jakarta Release – Future Roadmap

- List of possible; which are more likely and should be targeted?
 - Event detection
 - Example: collection of data exceeds level of expectation and then send commands
 - Increase interop/collab with AI/ML packages
 - Additional Messaging between services
 - Improved service resiliency
 - Core data to support data
 - Actuate a group of devices (command a group of devices)
 - Allow the same app function twice in a custom app service
 - In app service configurable (configure it) - (stretch for Hanoi)
 - Improve binary data support
 - Downsampling (aka throttling, back pressure, ...) – control the data flow into Core
 - Role based security (identity management)
 - Sys Management improvements
 - Storing metrics locally
 - Actuation based on metric change
 - Sys management alerts and notifications



Conference Agenda – Day 5

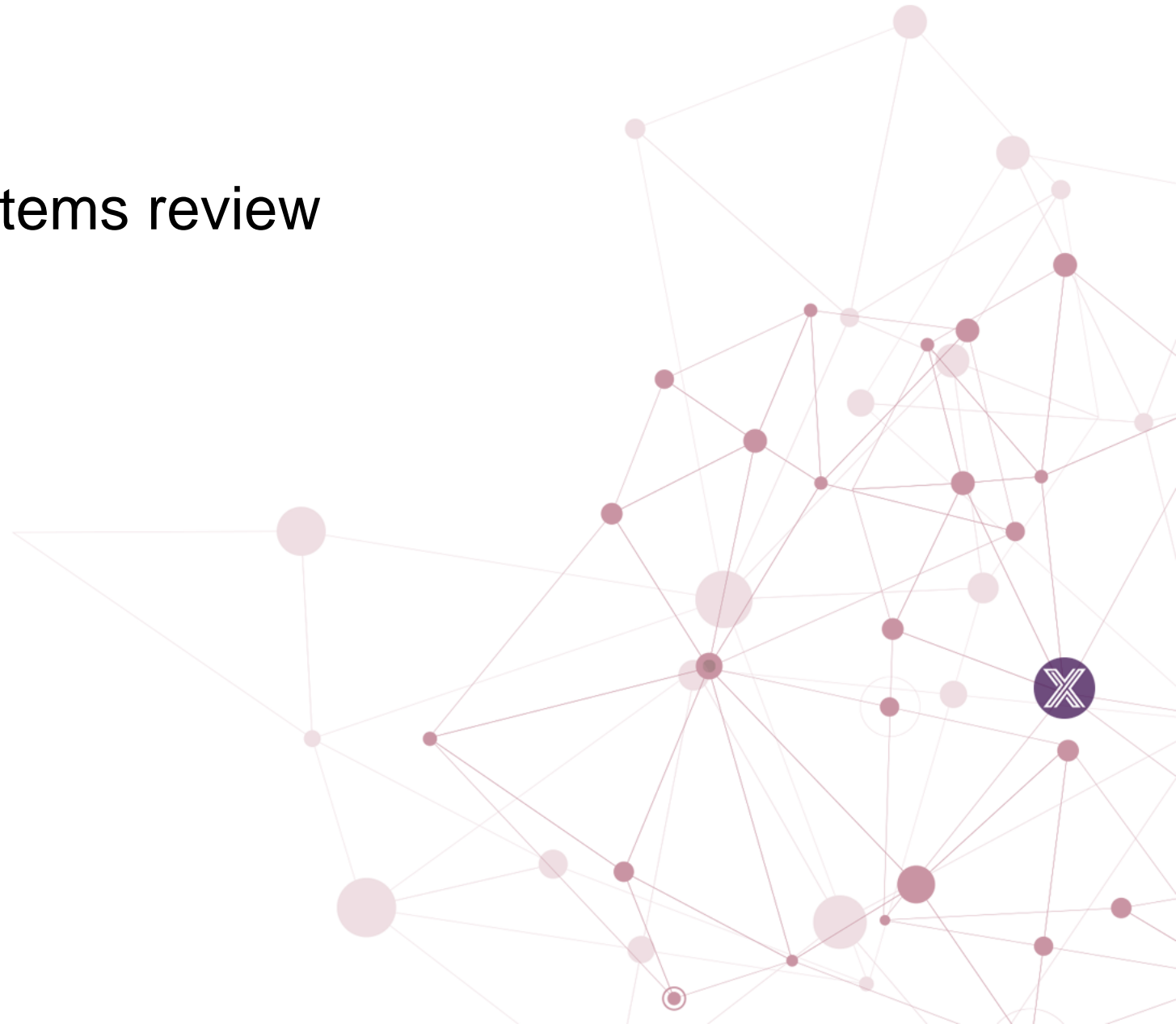
- Nov 13, Friday (all times in PDT; all times tentative and fluid)
- Unconference (10-15 minute presentations from community at-large)
 - Mini presentations, demos, feature suggestions, feature requests, etc.
 - Topics and times TBD
 - Requestors:
 - Tibco
- Adjourn at 10am or sooner depending on unconference

Unconference Topics

- edgex-global-pipelines deep dive/training session. 15-30 minutes
- Edgex release process demo 15-30 minutes.

Action Items

- Meeting decisions & action items review



Lessons Learned

- Hanoi Release
 - Any lessons learned?
 - Any thing that could be done better?
 - Start doing, continue doing, stop doing
- Planning meeting: what worked well and what did not?



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Thank you