# Ireland Pre-Wire

Oct 13-14 (virtual event)

7am-10am (PDT) – Day 1

10am – 1pm (PDT) – Day 2

Agenda

- Introductions – If needed
- Logistics, Ground rules and expectations of our pre-wire meeting
- Address any Hanoi high priority release items in advance of the freeze
- Ireland Focus
- Review of proposed architectural issues
- Review of Adopter series requirements
  - Any that impact Ireland?
- Review of proposed Scope
  - Tech debt
  - New features/enhancements

Day 1 attendance
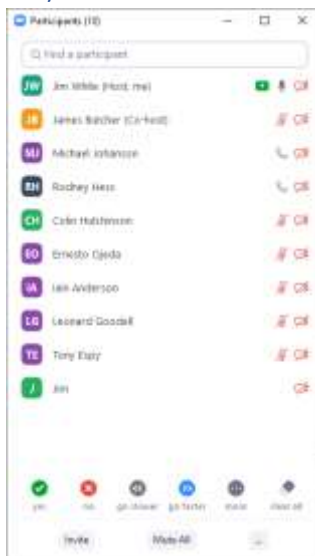
Some people may have joined the meeting after attendance was first captured.

Logistics, Ground Rules and Expectations

- Attempt to break every hour for 5 minutes (please keep me aware of the time)
- Don't be shy about interjecting your opinion/thought (we may not always call it out explicitly)
- Purpose of this 2-day meeting:
  - Not to scope (done during our planning meeting), but outline all the possible scope for this release. What's being considered vs. what is planned, tasked and coordinated
    - This is where big ideas start – but in order for them to actually take root, they must be accepted as "possible" here and coordinated/tasked as part of the planning meeting in November.
    - Allow open debate on the future of the project, key features, technical/architectural direction
    - Identify high priority work and eliminate potential work that is beyond this scope
    - Identify areas where research or design/architectural ideas are necessary in advance of the Ireland scoping. Owners will be assigned to present more details in Nov.
    - Highlight pain points/issues identified by this (Hanoi) release and attempt to offer potential solution options (for determination in the Nov meeting)
  - Outline critical topics/themes/drivers for the next release
    - Example: Hanoi release was about starting V2 API, stability, few features. What will Ireland be about?
    - Collect and share lessons learned
  - Expectations
    - Pave the way for a smooth Ireland planning meeting
      - Ireland planning becomes a refinement of the overall potential scope to the determined scope
      - Focus technical debate around the scope of the single release
      - Focus architectural/design questions to the immediate scope
    - At the conclusion of this meeting we have
      - Identified the larger "potential" release scope (if we haven't talked about it here, there would have to be a very big change to consider it for Ireland)
      - Identified technical issues we must solve (or start to solve) with this release and arranged presentation from opposing options to present at the Nov meeting.
      - Set the tone for the major theme(s) of the Ireland release

Hanoi Items

Are there any open / pressing Hanoi release items that need to be addressed in advance of freeze date of Oct 28?

Synk scanning – before release; scan artifacts before freeze

How to avoid last minute dot release this time? Better testing this time, but…?

Release candidate/alpha before the release date

Taking Stock and Ireland Focus

We have much to be proud of as this is the 4th year of development; 6 releases; 7.1 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

What should the focus(es) of Ireland be?

- EdgeX 2.0? with V2 API complete
    - With V1 API that go away?
- Stability?
    - Not with new V2 API just coming into place
- Some new feature set?
    - Keep evolving with Security – device services need to have this (secret store for all)
    - Metrics

Architectural Topics (for consideration)

What rises to the level of Ireland consideration?

We don't need to solve the issue here – only consider its conclusion to Ireland

What factors / inputs do we need to answer these questions for the planning meeting?

- V2 API, EdgeX 2.0, and LTS, and certification. How much of this is accomplished with Ireland?
    - Need stability cycle for LTS – not in scope for Ireland
    - Look to 2.1 for LTS; and therefore, certification pushes out to then
    - 2.1 would be a "bug only" release for the most part
    - With help from adopters – what are they looking for in cert process
    - Can we have a roadmap/pipeline to be ready with early certification with 2.1 (or there abouts)
- Upgrade path from v1 to v2 (especially around databases)

- o We said that is upon users/providers for dot releases
- o If we are at V2, must we provide upgrade tools/documentation, etc?
- o What would those look like?
- o At a minimum – we need to document; where are the migration needs
- o Adopter feedback needed
- o Possibly explore "tools" or "scripts" to flop over config and databases and profiles from V1 to V2
- o A topic for release planning decides between just docs or addition of tools
- Configuration changes
  - o Make them all dynamic (even port) and get rid of Writable?
    - ▪ Not trivial
    - ▪ Do we have ambitions for everything config dynamic in the future
    - ▪ Probably the way to do this would be by re-do on bootstrapping (read all the config again); not through reaction to individual callbacks
    - ▪ Almost the same as restart of the service – why not restart the service?
    - ▪ Add to the distant backlog for relook for next major release
      - • Configuration dependencies may be part of that same work
      - • Example: change five things for the one to take place (chain set)
      - • Transaction of changes not just individual config change
    - ▪ Can we at least improve the structure?
      - • Recreate the structure under writable like it is for non-writable
      - • Mirror writable and non-writable
      - • But only the sections that are need under writable or non-writable
      - • Ireland target
  - o Discussion came out of issue 589
- Kubernetes direction/project
  - o Outline the use case/requirements for high availability better
  - o What services should be replicated to address scale?
  - o What other K8s services would EdgeX look to leverage in a full K8s/HA environment?
  - o What services or infrastructure need to be researched as to HA concerns?

- Metrics / control plane data collection
 - Lots of questions about existing infrastructure and what we do with those
    - Callbacks
    - Notify service
    - 0MQ
  - Include it in discussion at planning meeting. Design vs impl – all part of planning scoping
  - Prototyping considerations
  - We have a list of potential metrics to be collected / made available by each service
  - Per Hanoi planning:
    - All services will use/integrate go-mod-messaging to facilitate sending metrics object messages to a configurable topic
    - A message structure will have to be created for this metric data (different from event/reading)
    - All services will have configuration (which goes in Consul) to say which metrics they provide and the option to turn those metric collections on/off as well as define how often they get collected
      - Make this dynamic (in writable)
      - Probably the end of 0MQ?
    - Application services will be constructed to optionally receive these messages and act on them (the reference implementation receiver in EdgeX) but users can attach their own receiver to the topic
    - Control plane event handling
      - All services will use/integrate go-mod-messaging to facilitate sending control plane events to a configurable topic
      - A structure will have to be created for this control data event (different from event/reading)
      - All services will have configuration (which goes in Consul) to say which metrics they provide and the option to turn those metric collections on/off as well as define how often they get collected
      - Application services will be constructed to optionally receive these messages and act on them (the reference implementation receiver in EdgeX) but users can attach their own receiver to the topic
- Do we offer timeseries database integration
  - In place of Reds?
  - In addition to Redis?
  - Which one? Why? Need justification before including this consideration
  - Get experts to give us some background on timeseries databases prior to planning meeting
- Remove value descriptor
  - This was decided with the last release
  - Where do other elements go? In the device profile already except uomlabel – which in units
  - Need conveniences/syntax sugar around value descriptor "stuff"
    - Need an endpoint in metadata that pulls that inform from a profile

- To be added with V2 API
- Need to consider scoping on device resource names – should they be unique?
  - How about device name and device resource name as uniqueness indicator?
  - Planning meeting to finalize
- Don't want to get device provide and week through it for VD stuff
- Message bus between DS and core
  - Include it in design for Hanoi; yes to include in planning discussion
  - Other point to point message bus implementations
- Collapse of services
  - Example: single core
  - Why – not urgency – HA needs
- Core data vs support data
  - Device service to appl service via message bus 1st
  - Device service to core data via message bus 2nd
    - Planning meeting
      - Do we remove core APIs for POSTs if we have message bus in place
      - Do we require going to core or default not to go to core
      - Which determines if core data is optional
  - Core data changed to support data 3rd - post Ireland; but a major release item if a name change was involved
    - But do you need to rename to support; just leave it core but with option to do persistence
- What do we do with command service? Will it ever be more than a proxy?
  - Combine with Metadata? NO
  - Should we separate it with its own DB (separate concerns)?
  - How to provide commands North?
  - Database is at the heart of the concern – shouldn't share the database
  - Additional REST requests to hit metadata but should we go back so that we don't have another database
  - Planning meeting : debate – separate DB vs REST requests
  - Need some background on how this is handled today in some detail
  - Not just about command – also about device service mapping
- Have Kong in place for secure and not-secure
  - Allow the path to be consistent
  - Adopter feedback sought
  - Requires proxy setup – that's going to required secure and non-secure forms
  - Declarative Kong (non-secure) – as default to setup the paths; proxy setup for secure part
    - Colin to provide background Declarative Kong pre planning
    - YAML configuration based
- Device Profile/Device Service
  - CommandResource – allow get/set
  - Other needs per LLRP

- - - o Modify profiles on the fly – dynamically add resources – yes consider
- Distributed services
    - o Beyond DS distribution
    - o May not be a use case/requirement high enough to address this yet
    - o Can sort of do it already with right deployment/orchestration tool
    - o Consider as more a HA concern in future
- Should we be archiving artifacts (Docker images)?
    - o Other organizations do not
    - o New Docker rules will likely not help here
    - o Problems to resolve if you start removing them
    - o Instead should release "official images" – under vetting process of Docker
        - ▪ This process could be lengthy
        - ▪ Adopter feedback – is this important?
        - ▪ Ernesto can start to look at in the working group for size of lift
        - ▪ 2 different certifications – look at the differences
- Message order in and out of EdgeX services is non-deterministic
    - o Is this ok?
    - o Would users need messages to stay in order through all the services?
    - o Callout with Adopters; get feedback
    - o Do we document this? Document that order is not guaranteed. Action item for documenters
    - o Potential backlog for longer term to preserve order with threads off – but not for Ireland
- Alternate language support (Chinese)
    - o Made a request of LF for documentation translation
    - o Chinese teams ready to help
    - o CLI? UI?
    - o Is it preventing the to use it – doesn't seem so
    - o Maybe start with documentation?
    - o Ask Chinese adopters?
    - o We need leader to take this

End of Day 1

Day 2 attendance
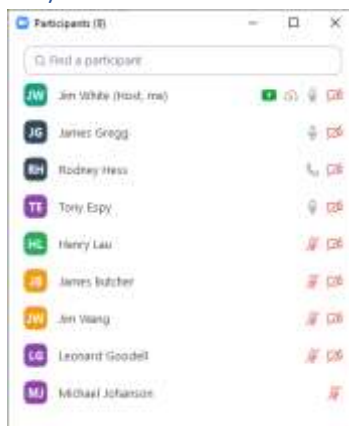
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Adopter Series Requirements (for consideration)

Review
https://wiki.edgexfoundry.org/display/FA/Monthly+Architects%27+Meeting?preview=/37912817/5233
0565/Adopter%20Series%20Requirements.pdf for potential topics.

Scope Consideration

Review scoping deck:
https://wiki.edgexfoundry.org/pages/viewpage.action?pageId=52330532&preview=/52330532/542638
12/Ireland%20Planning%20Conference%20-%20Detailed%20Agenda-v6.pdf

Miscellaneous

- 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?
    - Multimedia/streaming support: what does competition do?
        - Messaging issue?
    - Do we need outreach committee to start doing competitive products/solutions
- 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?
    - Device profiles are too complicated and may not address all the potential needs
        - Things don't map well to actual device command needs
        - Troubleshooting and error capture may be short term help
            - Validation in V2 might help a little here
        - Semantic checking is not there (commandResource references non-existent deviceResource)
    - Security – using the proxy; setup is really manual; not scalable
- What's prohibiting getting more people to join the project as contributors?
    - Complexity
    - Personnel/personalities/culture
    - Product direction
    - Maybe more outreach events
    - Usability; videos; user experience; focus on the flow
    - Developer presentations for conferences -> more about how to get involved and make it look easy (especially around the contribution points)
    - Go to where the developers (dev centric not adopter)
    - Developer advocate needed
- 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
- More collab from business side may be necessary – Outreach to lead a discussion quarterly or more often
- Adopter series
- Keep adjusting the process to adapt to new circumstances/improvements