A view from an AllJoyn analyzer/participant

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Das Bild kann nicht angezeigt werden. Dieser Computer verfügt möglicherweise über zu wenig Arbeitsspeicher, um das Bild zu öffnen, oder das Bild ist beschädigt. Starten Sie den Computer neu, und öffnen Sie dann erneut die Datei. Wenn weiterhin das rote x angezeigt wird, müssen Sie das Bild möglicherweise löschen und dann erneut einfügen.

The industry isn't staying still

- Getting smart object engineers to become aware of research is an issue…
  - Often they only become aware of standards (IF they even do that)
  - And maybe learnings from competing ecosystems (but often not)
- Research & standards both take a while
  - but people will do stuff in the meantime
- Need research around things that have **immediate practical impact**:
  - How are things working and not working?
  - What are the limits?
  - How might issues be addressed?
  - How do you do deal with heterogeneity of competing ecosystems?
  - Economic/RFC5218 analysis of protocols & ecosystems

AllSeen Alliance is a consortium
AllJoyn is the open-source project

- AllJoyn:
  - Cross-platform (Linux/Android, Windows, iOS, etc.), multiple languages (C, C++, Java, etc.)
  - Predominantly IP-based (mostly IPv4) but non-IP lower layers allowed
    - Stack is: app/AllJoyn/D-Bus'/TCP-or-UDP/IP + app/AllJoyn/DNS-SD/mDNS'/IP
  - RPC-like communication with Properties, Methods, and Signals
    - "RPC-like" since async message based underneath
  - Has devices in market (LG TVs, Panasonic speakers, water heaters, etc.)
    - https://allseenalliance.org/showcase
  - Focuses on proximal network only, requires ALG to get out
- AllSeen Alliance:
  - has two types of technical WGs…
    - A) protocol, security model, etc. but no (yet) formal protocol specs per se, just overviews and code
      - E.g. using "application manifests"
    - B) formal device-specific schemas (in D-Bus introspection XML format)
  - Does certification
  - Discussion happens on public mailing lists and conf calls

Some practical examples

- Security & privacy:
  - Security/trust models, esp. when have heterogeneous protocols
    - Usability research would also be very useful here
  - Privacy e.g. ownership changes, watching airwaves, etc.
  - How do you secure class 0 devices effectively?
    - Physical security? Uses of asymmetric-work crypto? Etc.
  - How safe is 8-byte authentication tag length ?
- Data model taxonomy, esp. when have heterogeneous protocols
  - How can you efficiently map between them?
- Auto election of "best" router/relay to pick (based on powered-ness, version, load, internet-connected or not, L2 media type, etc.)
- What would convince consumers to want smart objects?
- How securely get a description you can trust of what a device will do?