

# T2TRG: Thing-to-Thing Research Group

IETF 98

March 27, 2017, Chicago, IL, USA

Chairs: Carsten Bormann & Ari Keränen

# Note Well

- You may be recorded
- The IPR guidelines of the IETF apply: see [\*\*http://irtf.org/ipr\*\*](http://irtf.org/ipr) for details.

# Administrivia (I)

- Pink Sheet
  - Note-Takers
  - Off-site (Jabber, Hangout?)
    - **<xmpp:t2trg@jabber.ietf.org?join>**
  - Mailing List: **[t2trg@irtf.org](mailto:t2trg@irtf.org)** — subscribe at:  
**<https://www.ietf.org/mailman/listinfo/t2trg>**
- Repo: **<https://github.com/t2trg/2017-ietf98>**

# Agenda

13:00: Intro, RG status

13:10: Intro to breakout #1

13:15: Breakout #1

13:50: Intro to breakout #2

13:55: Roll call of breakout #1 results

14:05: Breakout #2

14:40: Meeting planning

14:50: Roll call of breakout #2 results

15:00: Beverage Break

# T2TRG scope & goals

- Open research issues in turning a true "Internet of Things" into reality
  - Internet where low-resource nodes ("things", "constrained nodes") can communicate among themselves and with the wider Internet
- Focus on issues with opportunities for IETF standardization
  - Start at the IP adaptation layer
  - End at the application layer with architectures and APIs for communicating and making data and management functions, including security

# Done so far

- Chartered in December 2015. Multiple meetings before official chartering co-located with IETF meetings and with W3C Web of Things (WoT) group
- 2016: RG meetings at Nice and Lisbon co-located with W3C WoT, at San Jose co-located with IAB IoT**SI** WS, at Buenos Aires and Berlin with the IETF meetings; participated in Dublin IAB IoT**SU** WS; RIOT summit in Berlin; Implementers' meeting in Ludwigsburg (Stuttgart); joint meeting with ICNRG in Seoul
- 2017: work meeting in Amsterdam and joint meeting with OCF
- Three RG deliverable documents in progress on REST and security; multiple new documents on REST interaction
- Outreach (e.g., organizations like OCF and Bluetooth SIG)

# Where are we going

- Work on RG deliverables and outreach continues
- Future meetings co-located with good research venues (2017)
- Meetings co-located with open source activity
  - RIOT summit in Berlin (July)
  - Eclipse IoT meeting (October)
- Benchmark/reference scenarios
  - Initial discussion in various drafts and slides
  - More elaborate documentation (planned) by end of 2017

# Amsterdam Work Meeting

- Info sharing: W3C WoT TD, IETF MUD, ...
- Manufacturer Usage Descriptions (MUD):  
describing what things are (supposed to be) doing
  - Integration to whole IoT security stack?
- End points and end-to-end security
- Materials: <https://github.com/t2trg/2017-03-ocf>

# Joint meeting with OCF

- Information sharing and alignment
  - OCF & IETF status & direction
  - Object security
  - REST at T2TRG and OCF
  - Connectivity, terminology, ...
- Barriers of communication (and how to reduce them)

# Continuing collaboration with OCF

- OCF data model review: <http://www.oneiota.org/>
- Discovery guidance:  
Resource Directory & multicast
- CoAP over Bluetooth Low Energy
- More coordination on document reviews (WGLC notifications to OCF etc.)

# Discovery sessions

- Not reporting old work but discussing new work
- What are research questions that should guide us?
  - Most pressing ones
- Two rounds of four break-outs (~35 min) each
  - Four corners of the room
  - Facilitator in each; need also note takers

# Topics (session #1)

- Matthias: “What needs to be done to make systems interoperate that employ different **kinds** of data models in their components”
- Ralph: “What are the problems that need to be solved before I can reasonably **transfer authority** to access a bunch of IoT devices to a new owner when I sell my house”
- Elliot: What if Alice is evil and Bob doesn't get a chance to scream?
- Mohit: **Converging** network on-boarding with application layer setup? How can I use application credentials to join the network or v.v. Can we reduce TCO in the process?

# Breakout #1

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# Topics (session #2)

- Dirk: **Edge** computing issues
- Erik: “What would it mean to configure some remote certificates on a device which then sits in a drawer for **2 years** and will then be expected to be deployed for 10 years, when the lifetime of that certificate is 1 year?”
- Dave: **Early** discovery: DHCP, Multicast, Anycast, ND, ... What is the preferred tool (for any particular space) and why? (Does it have the properties we need)
- Allison: What problems are we running into by running **different** kinds of systems on the same networks? What could be done to increase coexistence?

# Breakout #2

# Next meetings

- 2017 planning ongoing
  - W3C Web of Things Düsseldorf likely before Prague
  - Joint meeting with OCF in Krakow in September???
  - Something co-located to RIOT and ACM ICN W39
  - Joint meeting with OCF in Singapore before IETF
  - More academia?