IOT WEEK 2018 OPENING PLENARY SESSION

Resource-constrained devices in the Web of Things

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Interoperability in IoT

- There is a general interoperability issue between IoT technologies
  - interoperability clashes turn IoT networks into isolated networks → fragmented IoT
  - the connection and integration of services, interfaces and data from several Things is very costly and complex
Web of Things

• Integration of Internet mature technologies on the Things to remove the interoperability gap
  • (re-)use and leverage already available Web protocols and standards and apply them on top of IoT
  • discovery, identification, orchestration, management, composition, extensions

• … direct integration is not always possible due to the capability and resource limitations of many typical IoT devices
Direct Connectivity

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Gateway-Based Connectivity

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Cloud-Based Connectivity

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Thing Description → where the interoperability magic happens

Metadata about...
- interaction model
- data model
- communication
- security

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WoT Architecture

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The device is a Web Thing ... not always possible

WoT Architecture

WoT Client (Browser)
- Application Script
- WoT Scripting API
- Browser + Library
- Protocol Bindings
  - HTTP(S)
  - (S)RTP
  - FTP

Servient (Device)
- Application Script
- Security Metadata
- WoT Scripting API
- WoT Runtime
- Protocol Bindings
  - HTTP(S)
  - CoAP(S)
  - ... (MQTT)

Thing Description

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The device is a WoT Thing

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Legacy Systems/Resource-constrained Devices → Gateway

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Conclusions

• **Flexible architecture** to accommodate use cases for resource-constrained devices

• **Application-independent** standard description and interoperability mechanisms
  • separation between description and implementation
  • update the Thing(s) Description not the client/GW firmware