W3C WoT IG
Sunnyvale face to face meeting

TF-AP breakout results
&
consensus proposals

Breakout results of
Task force on API and protocol mapping
Discussion outcomes of TF-AP

• Architecture Model
  – Merged architecture model

• Technology Landscape
  – Relevant IoT resp. Web protocols and technologies

• Lifecycle states
  – State transitions for a Thing

• Abstract Resource Model
  – Protocol-agnostic typed resources for web things: Properties, Actions and Events/Subscriptions
Architecture Model

consensus proposal
Needs further iteration
Points to address

• Orange vs. Blue – when is a protocol considered a web protocol
• Add constrained device: One protocol, fixed resources, no APIs
• What is the minimal servient?
• Add one servient hosting several virtual instances
• Add services in the cloud
• One physical device can be represented by several virtual instances
Tech landscape

Structure proposal
Technology landscape of TF-AP

• Protocols
  – Protocols that allow to map the abstract model
  – Protocols that can be generically adapted
  – Legacy protocols

• Resource Models
  – Common resource models
  – Models from consortia or domains

• API patterns
  – Patterns used in scripting APIs that interface the web
Lifecycle states of a WoT Servient

What are the states and transitions we face?
States

• Offline / Standalone
  – Not in a network

• Online
  – In a network, but not in the WoT

• Registered / Paired
  – Paired with a backend / a WoT device

• Activated / Connected
  – Active connection and control
Abstract Resource Model

Consensus proposal
Discussion outcome of AP and TD
Protocol-agnostic thing model for web things
Protocol-agnostic thing model for web things

- Defines “Elements” and Interactions
  - Abstract level, e.g. to be mapped to protocols
  - Protocol for interaction can be determined at runtime
  - Architecturally ensure: scalability, security, robustness

- Properties
  - Runtime properties of the Thing
  - Static properties are declared in the TD

- Actions
  - Invocable actions on a thing
  - May or may not result in state change

- Subscriptions/Event Sources
  - Intention to be notified on a certain condition
Runtime Properties

- **Read-only**
  - Operations: read
  - scalar or lists/structured types

- **Read/Writable**
  - Operations: Read, Write

- **Configurations etc.**
  - Operations: CRUD

- **Dynamic**
  - Operations: Read, Write, Subscribe/Observe
  - Spontaneous nature (Events)
  - continuous timeline of value changes (Streams)
    - Higher interactions: Filtered reads etc.
Actions

• Invocable action on the physical thing.
• Retrieve a description, invoke execution
• Possibly manage running execution
• Can or cannot issue a state change
• Enables:
  – atomic change of multiple resources
  – Long-running executions
  – Semaphores (restrict executions)
Next steps

Next steps / Goals for TPAC
Next steps

• Complete and transfer Tech landscape:
  – [http://w3c.github.io/wot/landscape.html](http://w3c.github.io/wot/landscape.html)
  – [https://www.w3.org/WoT/IG/wiki/APIs_and_Protocols_TF#Technology_Landscape](https://www.w3.org/WoT/IG/wiki/APIs_and_Protocols_TF#Technology_Landscape)

• Evaluation of Models
  – Outreach to protocols and platforms
  – Modelling of/for use cases
  – Exploratory implementations