

Architecture Use Cases and Requirements

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Agenda

Use Case Prioritisation - (1h 45m)

- Questionnaire results
- New Use Case proposals
- Prioritization

Break - 10m

Requirements - (1h)

- review contributions
- worksplit based on use case prioritisation

Use Cases

Use Cases

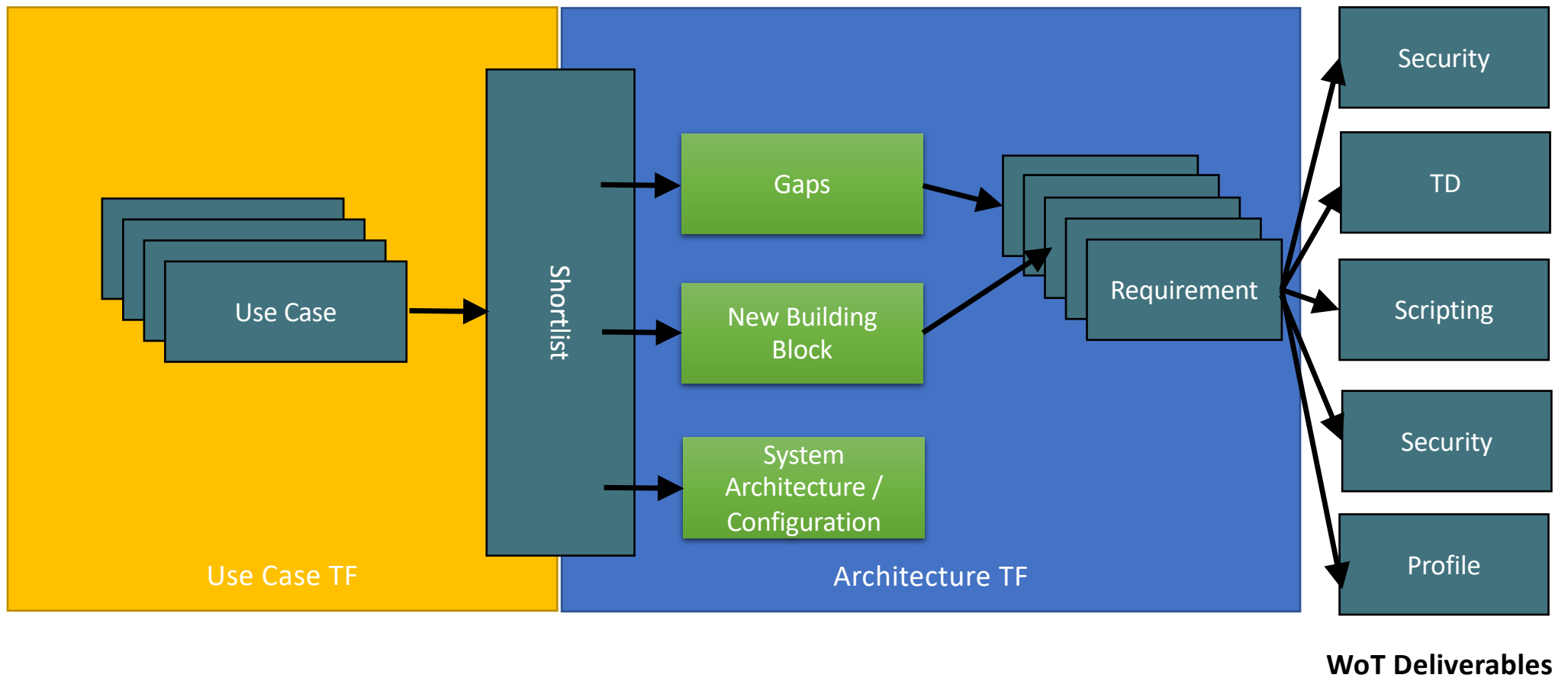
- **~20 use cases were proposed in the architecture group**
- **Active Contributors:**
 - Intel, Fujitsu, Siemens, NHK, Singapore Govtech, Conexus, TU Munich, Fraunhofer, Universidad Politécnica de Madrid, Oracle
- **Target domains:**
 - Smart Cities, Industrial, Transportation, Manufacturing, Logistics, Energy, Smart Grids, Home Automation, Healthcare and Medical, Retail, Smart Home, ...

Work split:

Architecture and Use Case TF

- Decision to fork a dedicated Use Case IG Task force
 - Objectives: Capture new use cases
 - Open to all IG members, community task force members and guests
- All use cases were handed over to new repo: <https://github.com/w3c/wot-usecases>
- All use case related issues have been moved over to new repo
- Requirements work will remain in the Architecture Task Force

Architecture Discussion Process



Use Case Shortlisting

Shortlist Use cases to:

- Make sure the use cases address real market needs
- Make best use of limited resources
- Prioritize use cases that grow the IoT market

Primary question:

What advantage does the use of WoT bring to spec adopters?

Questionnaire results

Results as of 25.6. @ noon

Category	business critical	business relevant	useful	not interested	Weighted results	Comments
Retail	3	4	5	1		
Audio/Video	2	5	6	0		
Agriculture	2	3	7	1		
Smart City	3	6	4	0		
Health	3	5	2	3		
Manufacturing	4	5	3	1		
Multi Vendor System Integration	2	9	1	1		
Multimodal System Integration	2	2	7	2		
Accessibility	3	2	6	2		
Automotive	2	4	5	2		
Energy / Smart Grid	3	6	3	1		
Transportation	3	3	6	1		
Smart Building	4	6	2	1		
Shared Devices and Resources	4	1	6	2		
Oauth2 Flows	2	6	4	1		Technical Feature, not a use case
Device lifecycle	3	4	4	3		

Weighted Results

Business critical = 6
Business relevant = 3
Useful = 1

Category	business critical	business relevant	useful	not interested	Weighted results	Comments
Retail	3	4	5	1	35	
Audio/Video	2	5	6	0	33	
Agriculture	2	3	7	1	28	
Smart City	3	6	4	0	40	
Health	3	5	2	3	35	
Manufacturing	4	5	3	1	42	
Multi Vendor System Integration	2	9	1	1	40	
Multimodal System Integration	2	2	7	2	25	
Accessibility	3	2	6	2	30	
Automotive	2	4	5	2	29	
Energy / Smart Grid	3	6	3	1	39	
Transportation	3	3	6	1	33	
Smart Building	4	6	2	1	44	
Shared Devices and Resources	4	1	6	2	33	
Oauth2 Flows	2	6	4	1	34	Technical Feature, not a use case
Device lifecycle	3	4	4	3	34	

Prioritisation

Category	business critical	business relevant	useful	not interested	Priority	Timeline	Owner	Comments
Retail	3	4	5	1	1	2-4 weeks	McCool (+ David ?)	Will be discussed in POC meeting.
Audio/Video	2	5	6	0	1	?	NHK + Kaz (+Chris Needham?)	
Agriculture	2	3	7	1	1	2 weeks (greenhouse) 4 week	Matsukura-san + Cristiano	Requirement for greenhouse horticulture exists
Smart City	3	6	4	0	1	2-4 weeks	McCool + Jennifer	Will be discussed in POC meeting.
Health	3	5	2	3	2 *			Need expertise -
Manufacturing	4	5	3	1	1	?	Siemens ?	
Multi Vendor System Integration	2	9	1	1	1	4 weeks	Lagally	horizontal
Multimodal System Integration	2	2	7	2	2	3-4 weeks	McCool + Kaz + Josh	horizontal
Accessibility	3	2	6	2	1			Josh Horizontal Josh: Accessibility is underrepresented, this is a horizontal requirement cross other use cases. We should work together to support accessibility
Automotive	2	4	5	2	2 *		Kaz + (Urata-san?)	Regulated, Access might be interested, .e.g Urata-san
Energy / Smart Grid	3	6	3	1	1	?	Siemens ?	regulated
Transportation	3	3	6	1	2 *	?	Zoltan ?	Use case is very high level Need industry domain experience
Smart Building	4	6	2	1	1	3-4 weeks	Farshid (+ Andrea? + Sebastian?)	regulated
Shared Devices and Resources	4	1	6	2	1	2 weeks	Ege (+ McCool)	Horizontal
	2	6	4	1	1	4 weeks	McCool	Horizontal: Technical Feature, not a use case --> Security TF to create a requirement doc

New Use Case Proposals

Cristiano Aguzzi

- Open field smart agriculture
 - Motivated by smart agriculture european project. Evaluate platform for water management, Fiware as open platform, WoT would help a lot. Devices can sleep, this is a new use case.
- Smart water management
 - Manage a network of channels in Italy, control the flow of water. Monitor open field crops, soil sensors, weather station. This is a european and Brazilian projects, there are different requirements (e.g. LoRa in Brazil, different crops)
- Building structural health monitoring
 - Italian project : Create a platform for building, brige, railway monitoring. Building a WoT based platform with multiple sensors, high frequency data acquisition, preprocessing, heterogeneous devices.
- Dynamic service migration betwen different service components
 - Virtual things, edge devices

New Use Case Proposals

Ben Francis

- Interactive Digital Signage
 - Needs more input from Ben. There's a (now dormant) business group on digital signage, Intel has interest in this.

Michael McCool

- AI Services
 - Predefined AI service, e.g. face detection that is discoverable and can be used as a thing. One motivation is support for virtual things.
- Edge Computing
 - Edge workers: There's a presentation leveraging WoT discovery, making compute services available
- IoT Orchestration
 - IoT devices orchestrated to provide new services, presenting results of a mashup as a new thing. One motivation is support for virtual things.

Horizontal Use Cases / Vertical Use cases

- Need to include other W3C horizontal groups:
 - Accessibility
 - Privacy
 - Security (no group)
 - I18n (=Internationalisation)
- We should also get review from other vertical groups:
 - Device and Sensor wrt Geolocation
 - Automotive
 - Media and Entertainment
- What to do?
 - Waiting to the last minute and asking for feedback is not the right way
 - Ask for review of the first version of the use case document
- Do we need a 3rd category, e.g. „Middleware“?
 - Perhaps for system components, this seems to be in the horizontal area.

Discussion

Accessibility:

- Accessibility group will help with reviews (Accessible Platform Architectures (APA))
<https://www.w3.org/WAI/APA/>
- Mandate is to make sure that W3C specifications are conformant to accessibility requirements
- Josh acts as a point of contact, There's a Wiki being putting together
https://www.w3.org/WAI/APA/wiki/Wot_usecases

Health use cases:

- Need to define what a medical device is considered, is it accurate, classified for medical use.
- Certified / classified devices: Who is certifying?
- We many need an expert on knowing regulations / requirements

Regulated industries:

- We many need an expert on knowing regulations / requirements
- Do we need additional certifications for WoT to get adoption in certain industries?
- Certain Industries may have archive / storage requirements

Requirements

Requirement Analysis

For each shortlisted use case we need a (one page) requirement document at:

<https://github.com/w3c/wot-architecture/tree/master/REQUIREMENTS>

Template: <https://github.com/w3c/wot-architecture/blob/master/REQUIREMENTS/requirements-template.md>

Examples are available

Requirements

- OAuth2 UC is actually a requirement, should be moved
- Some Ucs have a 1:1 mapping to a requirement, others may have multiple requirements.
- We have to evaluate each use case and identify the requirements, need to see if existing requirements already cover them.
- Target is to have atomic requirements, i.e. non-overlapping.
- Precise and acceptance criteria.
- When we single out a technology it maps to a requirement.

References

- WoT Architecture
 - <https://github.com/w3c/wot-architecture>
- WoT Use Cases
 - <https://github.com/w3c/wot-usecases>
- WoT Requirements Document
 - <https://github.com/w3c/wot-architecture/tree/master/REQUIREMENTS>