Briefly...

- WP 15 -> WP 21: Telenor [6pm], HiOA [8pm], Wolffia [3pm]
- Establishing the 5G4IoT lab at HiOA campus – Telenor, HiOA, Wolffia

BB24.A Remote configuration (**EyeSaas**, Wolffia, SmartIO)

Requirements	Description	Rational	Source	Contribution
Managed wireless	The remote devices shall support open standard protocols (e.g. TR-069) in order to be capable of remote configuration.	To allow broader adoption and interoperability.	WP08 Smart Infrastr.	WP8,15(withdrawn) - Wolffia will will carry out the implementation and testing of the connection between the Home bubble and the distributed cloud according to specific requirements on security, reliability, latency, mobility, roaming, etc. by making use of the Building Block 3.2.L Adaptable Network Slicing.

WP11 – no contributions |
Security	the remote devices shall establish encrypted communication to and from auto configuration server.	To improve security	WP08 Smart Infrastr., WP11 Secure Cloud, WP15 Vehicle within Infra.	
Remote configuration capabilities	Determine set of remote device parameters in which configuration server should monitor and/or configure.	To standardize remote management capabilities	WP08 Smart Infrastr., WP15 Vehicle within Infra.	
Remote device Access	The remote device shall has a routable IP address to be enable to establish TCP connection.	The remote device should be accessible by the ACS	WP08 Smart Infrastr., WP11 Secure Cloud, WP15 Vehicle within Infra.	
Remote device Access behind NAT	the remote devices behind the NAT should be capable of establishing open standard tunneling (e.g XMPP) to and from ACS.	Enable management of remote devices behind the NAT	WP08 Smart Infrastr., WP11 Secure Cloud, WP15 Vehicle within Infra.	

BB24.I S-ABAC (UiO, Wolffia, SmartIO, Tellu)

Requirements	Description	Rational	Source	Contribution
Standard-Based	SABAC should follow a well known existing standard in the applied domain such as XACML, SAML. The semantic technology part of SABAC should follow existing standard as well such as OWL or RDF.	To allow interoperability. Make the BB easy to adopt with different domains.	WP08 Smart Infrastr., WP11 Secure Cloud, WP13 In-vehicle comm., WP14 Car access, WP15 Vehicle within Infra., WP21 Assisted living	WP8, 15(withdrawn) - Wolffia will will carry out the implementation and testing of the connection between the Home bubble and the distributed cloud according to specific requirements on security, reliability, latency, mobility, roaming, etc. by making use of the Building Block 3.2.L Adaptable Network Slicing.

WP7, 9, 11, 13, 14 – no contribution

WP21 – on-going discussion: related to BB24.L |
Tool-Based	SABAC should have tool support so that it can be integrated into access control operations.	Tools exist for Semantic technologies, like ontology reasoners. Tools called Access Control Engines exist, as well as various industrial ABAC systems (mostly proprietary systems). These should be combined.	WP08 Smart Infrastr., WP11 Secure Cloud, WP13 In-vehicle comm., WP14 Car access, WP15 Vehicle within Infra., WP21 Assisted living	
Cater for contextual Auth.	SABAC should at least allow for context-based authentication. The same user in different contexts may be allowed different access rights.	e.g.: The same person located at his home or in any other area not listed in the "Existing Infrastructure Locations" may not be allowed to shut down the cooling centrifuges.	WP08 Smart Infrastr., WP09 Facilities Mgmt., WP15 Vehicle within Infra., WP18 Rail logistics/maint.	
Temporal restricted ABAC	SABAC should allow for authorizations dependent on time of day.	e.g.: The same person outside working hours may not be allowed to shut down the cooling centrifuges.	WP08 Smart Infrastr., WP09 Facilities Mgmt., WP15 Vehicle within Infra., WP18 Rail logistics/maint.	

BB24.I S-ABAC (**UiO**, Wolffia, SmartIO, Tellu)

Requirements	Description	Rational	Source	Contribution
Rule-based	SABAC should allow different systems to define different rules of access. These rules could use semantic concepts that the SABAC system can infer from basic access labels of the users, resources, etc.	Different companies and scenarios need different rules for defining how SABAC access should be decided. The SABAC tools should allow this flexibility.	WP07 Air Quality, WP08 Smart Infrastr., WP09 Facilities Mgmt., WP11 Secure Cloud, WP13 In-vehicle comm., WP14 Car access, WP15 Vehicle within Infra., WP21 Assisted living	
Ontology Private/Public	SABAC should both be based on some piblically defined and standardized Ontologies for this purpose. But should also allow the ontologies to be enriched with specific semantic concepts from specific companies and IoT systems.	The basic ontologies only give a minimum standard that a domain agreed upon. On this standard one company can build on using concepts and reminology specific to their product and application purpose. This is also good for optimizing the reasoning and decision times.	WP07 Air Quality, WP08 Smart Infrastr., WP09 Facilities Mgmt., WP11 Secure Cloud, WP13 In-vehicle comm., WP14 Car access, WP21 Assisted living	

BB24.L Adaptable Network Slicing (**Telenor**, HiOA, Wolffia)

Requirements	Description	Rational	Source	Contribution
Slice-Plurality (This is the fundamental requirement of 5G network slicing)	It shall be possible to create and manage network slices that fulfil required criteria for different market scenarios	Network slices adaptable to various requirement set	WP24 TL Distr. Cloud Int.	WP24 – • Remote Configuration of Infrastructure • Semantic Attribute Based Access Control (S-ABAC) • Adaptable Network Slicing
Slice-Parallelity (This is the fundamental requirement of 5G network slicing)	It shall be possible to operate different network slices in parallel	Network slices are basically virtual networks sharing the same network infrastructure	WP24 TL Distr. Cloud Int.	
Slice-Isolation (This is the fundamental requirement of 5G)	It shall be possible to isolate and protect a network slices against illegal interferences and monitoring from other slices	Network slices are basically isolated virtual networks	WP24 TL Distr. Cloud Int	
Slice-App-Security	It shall be possible to fulfill the IoT application specific security assurance requirements by a single network slice	A Network slice should be sufficient for an IoT application	WP24 TL Distr. Cloud Int.	
Slice-Isolation-2	Adequate level of isolation and autonomy of network slices shall be provided to confine a cyber attack to a single network slice	Cyber attack on one network slice must be prevented to spread to other slices	WP24 TL Distr. Cloud Int.	
Slice-Elasticity	The network slice capacity elasticity shall be supported with no impact on the services of this slice or other slices	Any capacity/load adaptation must not have consequences on services	WP24 TL Distr. Cloud Int.	
Slice-Flexibility	It shall be able to change the slices with minimal impact on the ongoing subscriber's services served by this slices or other slices	Any configuration change on one network slice must not affect subscriber services	WP24 TL Distr. Cloud Int.	
Slice-Addition	It shall be able to establish or remove slices with minimal impact on the ongoing subscriber's services served by this slices or other slices	It should be possible to add or remove slices dynamically	WP24 TL Distr. Cloud Int.	

BB24.L Adaptable Network Slicing (**Telenor**, HiOA, Wolffia)

Requirements	Description	Rational	Source	Contribution
Slice-Resource-Mgmt	It shall be able to support end-to-end resource management for a network slice	A network slice management must be able to manage resources end-to-end	WP24 TL Distr. Cloud Int.	WP21 – on-going discussion: related to BB24.L
Slice-3rd-Party-API	It shall be able to authorize third parties to create, manage a network slice configuration (e.g., scale slices) via suitable APIs, within the limits set by the network operator	A Network Slice Management API is demanded by third parties	WP24 TL Distr. Cloud Int.	
Healthcare_requirements

This requirement is meant to enable an open discussion between Telenor/HiOA/Wolffia, PRE and other partners about this topic. Some elements of the derived requirements may or may not lead to network simulation or emulation (in the Telenor testbed). | An overview of compelling use cases in health care that are enabled by 5G technology and the associated requirements for 5G in general and adaptive network slicing in particular (security, trust, QoS) shall be elaborated. | The 3GPP will release the 5G standard only in a few years and the EU is actively looking towards the verticals (e.g. health care) to help shape the requirements of this future technology. As 5G is, much more than its predecessors, a toolbox of different technologies enabling a much wider trade-off between key requirements such as band width, coverage, battery life, reliability, security and latency it is pivotal to understand what the applications really need. | WP21 Assisted living | |

Iot data model standards

Standards	Description
SensorThingsAPI (OGC STA)	Open Geospatial Consortium (OGC) standard providing an open and unified framework to interconnect IoT sensing devices, data, and applications over the Web. It is an open standard addressing the syntactic interoperability and semantic interoperability of the Internet of Things. It complements the existing IoT networking protocols such as TR-069, MQTT, CoAP. While the IoT networking protocols mentioned are addressing the ability for different IoT systems to exchange information, OGC SensorThings API is addressing the ability for different IoT systems to use and understand the exchanged information.
Web Thing model	Unlike custom (non-Web) protocols used for machine-to-machine communications that create a "parallel universe" to the existing Web; the Web of Things is designed to be seamlessly integrated to the existing Web so it can fully leverage its infrastructure and standards to minimize integrations across applications and systems. Implementing semantic extensions (e.g., via [JSON-LD] and schema.org) turns the Extended Web Thing into a Semantic Web Thing.
The Resource Description Framework (RDF)	Family of World Wide Web Consortium (W3C) specifications originally designed as a metadata data model. It has come to be used as a general method for conceptual description or modeling of information that is implemented in web resources, using a variety of syntax notations and data serialization formats. It is also used in knowledge management applications.
Many others, … OWL, DTD/XML, JSON Schema, LWM2M, ECHONET, OMA, …	

Web Thing model