

## PoC Datasheet

### 5G Network Slices Creation, Autonomic & Cognitive Management & E2E Orchestration, with Closed-Loop (Autonomic) Service Assurance for the IoT (Smart Insurance) Use Case

#### Problem Statement from Service Providers perspective in Digital Ecosystems space

Service Providers need innovative technologies to address increasing customer expectations and new regulation requirements such as the European GDPR and regulations in force in other regions. Customer service demands are becoming more and more challenging. The new digital services design to be created and delivered need to be smarter, more autonomous, and flexible and provide the services that the customer really wants. With this respect, customer as service Consumer will be given more active role in the dynamic design and delivery processes and more generally in the whole Service life cycle while Service Provider used to handle solely. Hence Customer becomes a key actor within the Digital Ecosystem.

These new services and new Digital Ecosystems interact and exchange personal information, and at the end, they will only prevail if Service Provider first and the other Partners/Actors of the Digital Service Ecosystem respect the customer's most important asset, which is its data. This is especially important in the "Insurance Business" that manages mainly personal information.

This Smart Insurance / IoT use case is at the heart of this ETSI NTECH AFI "5G Slice PoC". As it is expected, Insurance is also evolving from the classical Insurance into a "Smart Insurance" with a connected ecosystems (IoT) that provides a complete smart life digital services which spans the "Connected Car", the "Connected Home" to the "Digital Health" Services and other "Smart\*" Services and diverse IoT related devices.

#### What benefit expected by Service Providers as 5G Network Slice Providers from "Smart Insurance" use case

From Service Providers point of view, the "Smart Insurance" market is of high interest because it can provide high value added services for existing customers (or new customers) and can trigger technical drivers to evolve their infrastructure towards 5G arena in the way that can better monetize their assets thanks to "Slicing" concept and open up new business models, highly profitable and recurrent.

The 5G Network Slice "Factory" Service Providers are about to deploy in the coming years, is expected to deliver four Network Slice Types as described by 3GPP eMBB (SST 1), uRLLC (SST 2), mIoT (SST 3) and V2X (SST 4). Indeed, as stated in the PoC description, in the IoT world, exiting technologies e.g LoRA, NB-IoT, LTE-M can partially answer this need but in Smart Insurance and infotainment (4K /8K, Augmented and /Mixed Reality), Autonomous Cars, Smart Factories, Smart Building / Smart Home, and others , 5G is expected to meet those eMBB, uRLLC, V2X, IoT related characteristics. The ability of Service Providers (5G Slice Providers) to deliver those four key characteristics / enablers in terms of very large bandwidth and very low latency will unlock some exiting applications and pave the way for development of innovative applications we don't imagine today.

#### Business view of the PoC: Smart Insurance use case

Delivering Smart Insurance in complex digital environments while

Protecting user privacy. Smart Insurance creates a fully customer-oriented ecosystem; centered on a platform that connects every stakeholder in the insurance business – insurance companies, brokers and their customers — in order to digitize, secure and automate all transactions.





The ecosystem covers the complete 'business to business' (B2B) and 'business to business to consumer' (B2B2C) process management, from the stakeholder to the customer, including customer onboarding, contract management, claims handling and extending as far as confidential medical records management.

The 'Smart Insurance' lifecycle is further enhanced by connected devices, including the connected car, which allows to offer flexible coverage perfectly adapted to every customer.

### **Creation of an end-to-end workflow from the user to all parties**

Smart Insurance enables creation of an ecosystem specially built for the insurance stakeholders allowing the end customer to contract insurance services online and follow the complete lifecycle of their insurance policy through a secure platform, while allowing interaction with all Parties of the Ecosystem.

### **Enforcing end-user Privacy in Usage-Based Insurance (UBI) and or IoT-Based Insurance**

Usage-based insurances are migrating from "declarative" to "IoT-enabled" usage of a service/good. In the context of connected cars, Pay As You Drive (PAYD) refers to an insurance calculated dynamically according to the kilometers driven. In the near future, environmental sensors in houses and even in cities will have an impact on tariffs.

Probably, the most sensitive usage of IoT in Insurance concerns health Insurance or mortgage Insurance: even though existing processes are simple, mandating a clear separation between commercial processes and health-related communication is essential. Such separation must be driven by clearly defined rules, embedded within the Smart Insurance platform.

With a "privacy-enabled" workflow, providing sealing between parties and their roles, end-to-end privacy can be enforced.

### **Smart Insurance, privacy and the new General Data Protection Regulation**

After four years of work, the European parliament has finally voted the new General Data Protection Regulation, re-enforcing the principles of Privacy by Design, consent, the right to be forgotten and data portability. In that context, 5G ecosystem we create to support the PoC use cases must ensure the law (GDPR) will be applicable in 2018.

## **DEMONSTRATION USE CASES**

This PoC illustrates the dynamic onboarding of new Parties to an existing digital ecosystem for Insurance. It can be generalized for any kind of digital ecosystem involving Parties with different roles and responsibilities, and consequently different access rights to users' data.

The use cases demonstrated are:

- create a new party and onboard it to an existing digital ecosystem to benefit from 5G capabilities
- manage a workflow with separation of roles and data only exchanged between the right authorized Parties
- manage claims and trouble tickets more generally by tacking advantages from Autonomic and Cognitive Service Assurance Closed Control Loop implanting ETSI GANA Framework in 5G Network

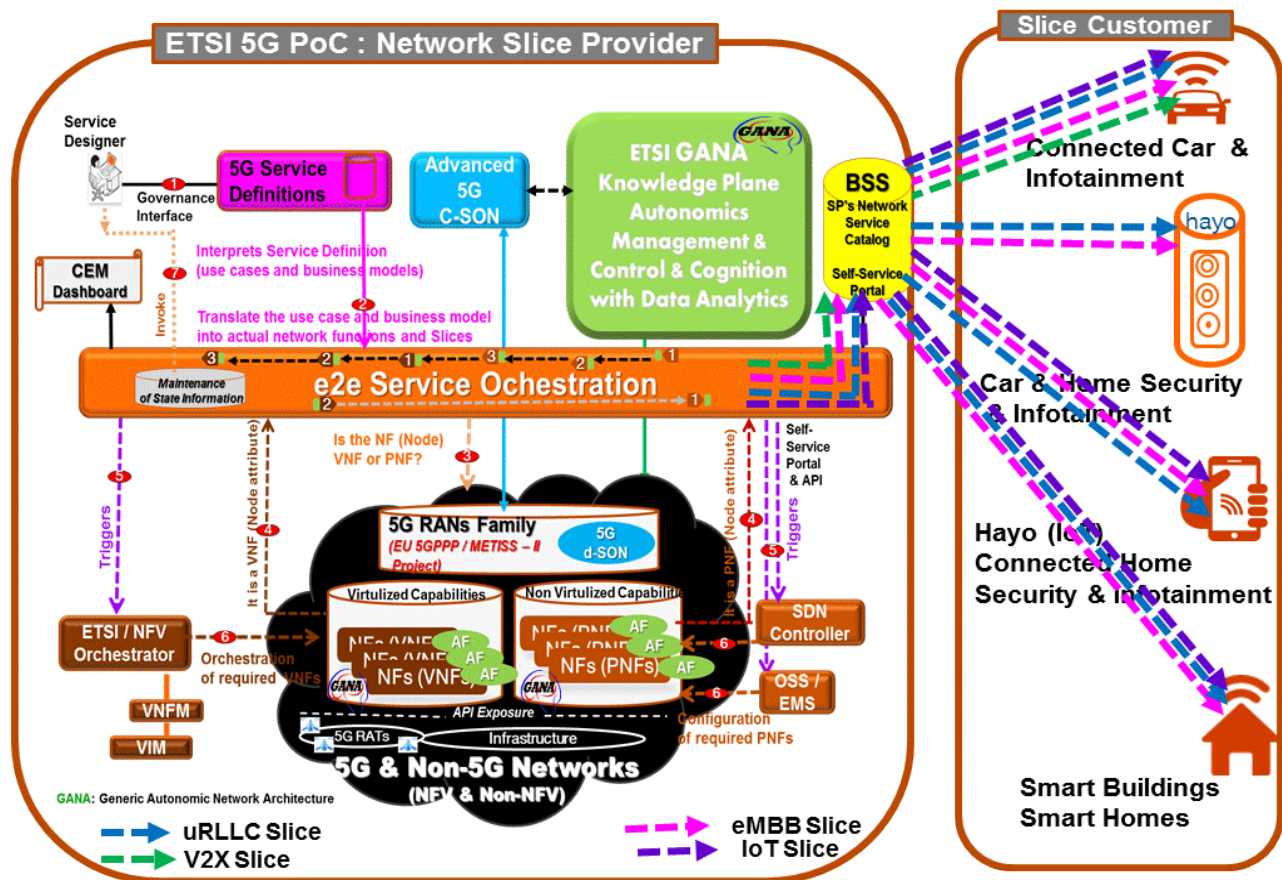
Four Applications are considered in those use cases. Each application is ordering the required Network slices via an order API interacting with Network Slice Provider's BSS. The table below depicts the mapping between PoC Applications to required Network Slice Types.

<b>Application</b>	<b>Network Slice Type required</b>
Connected Car & Infotainment	<ul style="list-style-type: none"><li>• eMBB (SST 1)</li><li>• uRLLC (SST 2)</li><li>• IoT (SST 3)</li><li>• V2X (SST 4)</li></ul>

Car & Home Security & Infotainment	<ul style="list-style-type: none"><li>• eMBB (SST 1)</li><li>• uRLLC (SST 2)</li></ul>
Hayo (IoT) Connected Home Security & Infotainment	<ul style="list-style-type: none"><li>• eMBB (SST 1)</li><li>• uRLLC (SST 2)</li><li>• IoT (SST 3)</li></ul>
Smart Buildings & Smart Homes	<ul style="list-style-type: none"><li>• eMBB (SST 1)</li><li>• uRLLC (SST 2)</li><li>• IoT (SST 3)</li></ul>

### *Technical view of the PoC*

The plan is use this 5G Network Slicing PoC as an instrument for the following aims: (1) enabling the telecom operators to provide a clear holistic picture to solution suppliers as to how their 5G networks would look like and the roles to be played by ETSI GANA components, SDN, NFV, E2E Orchestrators, Big-Data Analytics for AMC, SON, specialized interfaces (including the network governance interfaces), network automation, and GANA intelligence software for autonomic/ Cognitive management and control of networks and services; (2) Breaking from silos on standards and R&D efforts linked to the complementary paradigms, by promoting and progressing the unifying and harmonizing architecture for ETSI GANA, SDN, NFV, E2E Orchestration, and specialized Big Data Analytics for AMC; (3) Enabling solution providers of SON, SDN, NFV, GANA Knowledge Plane (with the Autonomics/Analytics Algorithms and Knowledge Synthesis and Representation from raw monitoring data), Probing and Service Assurance platforms, Data Analytics, Infrastructure Suppliers, RAN elements cloudification vendors, and other players, to use the PoC instrument to identify gaps in standards and initiate activities (e.g. in ETSI NTECH) to close the gaps in standards.



### ETSI-GANA Model: key principles and high level design principle (Diagram)

- Instrumentation of NEs with collaborative, autonomic Decision-making-Elements (DEs)
- Hierarchy of DEs in 4 basic levels: protocol, function, node, and network levels monitoring information or other type of knowledge
- Over control loops, a DE sends commands, objectives, policies to its lower-level DEs and receives feedback as
- Protocol Level DEs represent protocols, services, and other fundamental mechanisms running in the target nodes/network **considered** as Managed Entities (MEs) **and exhibiting control-loops. However, some MEs at protocol level may need no intrinsic control-loops.**
- GANA KP = Network Level DEs + distributed, scalable Overlay Network system of information servers
- for Information eXchange (ONIX) + Model-Based-Translation Service (MBTS) for translating information
- and commands/responses towards/from NEs.
- Governance is implemented through the Network Governance Interface
- The Complex Cognitive Algorithm for AI (e.g. Machine Learning, Deep Learning) decreases from level for to level 1

## PoC Partners

- Altran & IPv6 Forum
- Asocs Networks
- Cellwize
- Huawei
- Incelligent



- NTT
- Orange
- QualyCloud
- Verizon

## Contact

ETSI NTECH 5G PoC wiki: <http://ntechwiki.etsi.org/>

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