nApps: how to build 5G enabled services for the automotive sector

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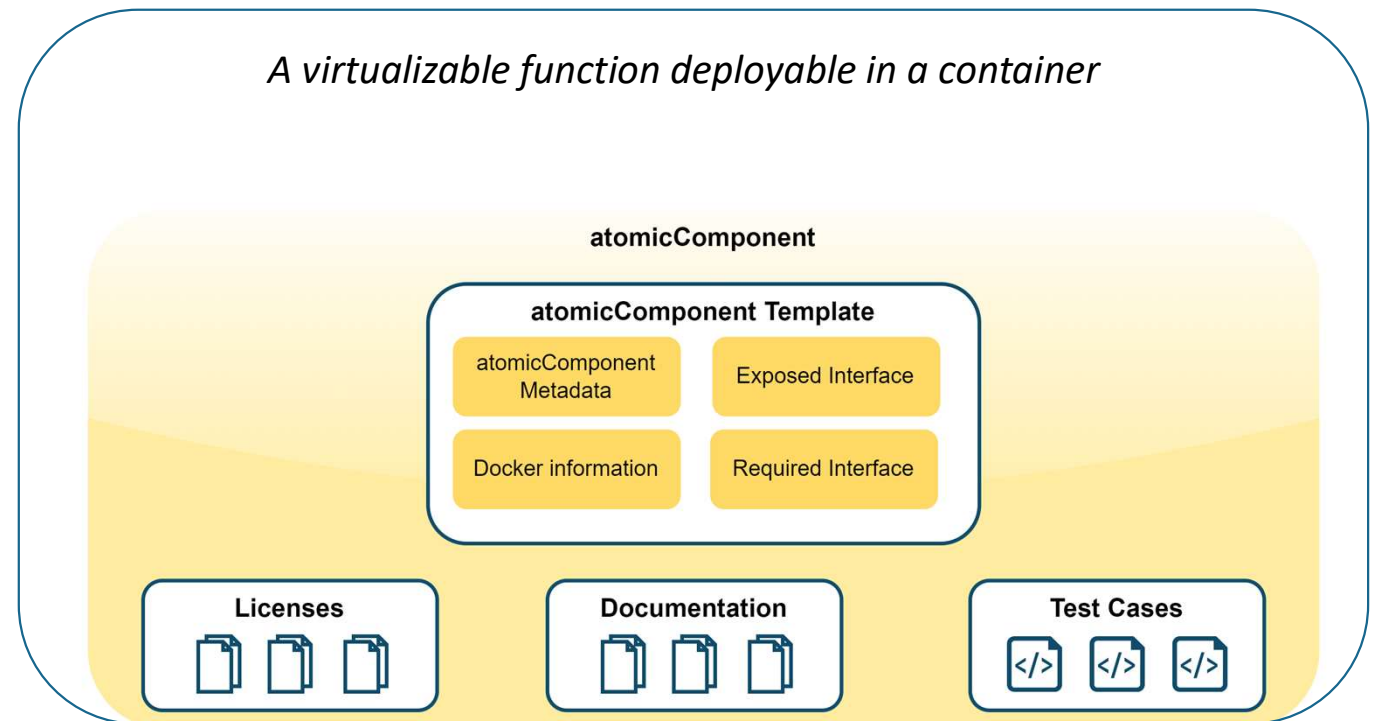
NEXTWORKS
HEADING THE FUTURE

5G IANA

Agenda

- Definitions
- nApps modeling
- nApps example

Definitions

- Atomic component (AF/NF)
- Network Application (nApp)
- Vertical Service

A virtualizable function deployable in a container

atomicComponent

atomicComponent Template

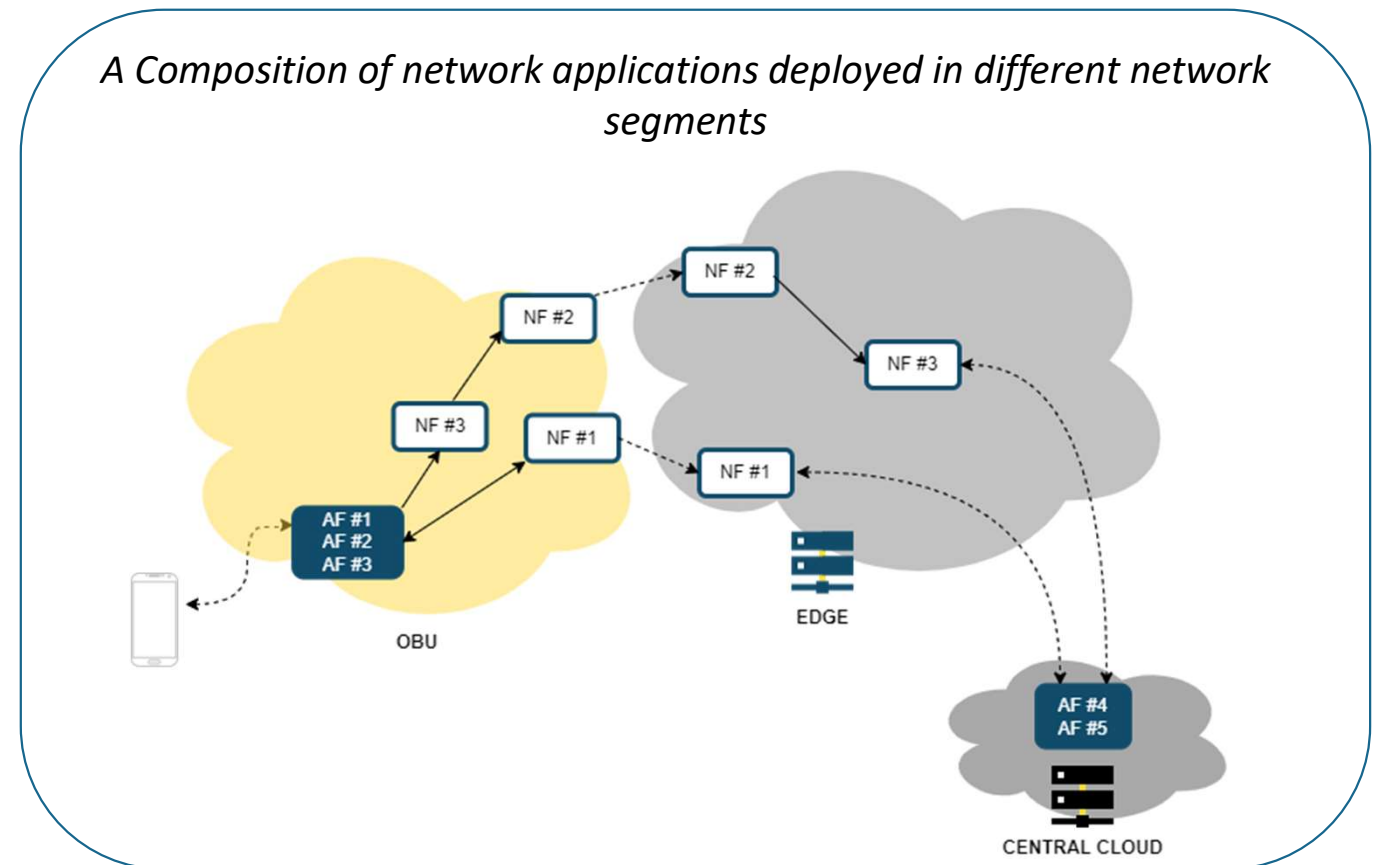| atomicComponent Metadata | Exposed Interface |
| Docker information | Required Interface |

Licenses

Documentation

Test Cases

Definitions

- Atomic component (AF/NF)
- Network Application (nApp)
- Vertical Service

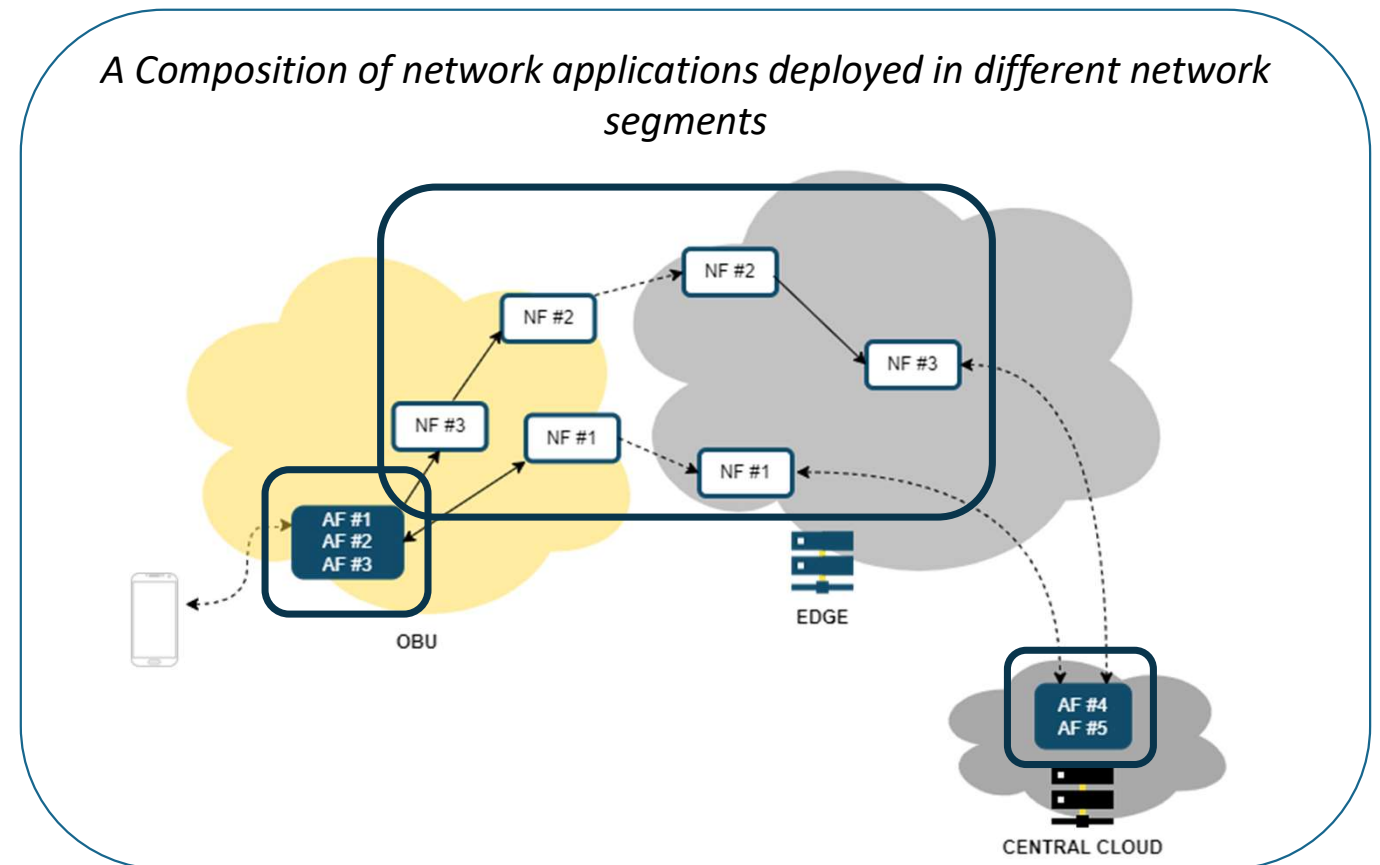*A virtualized composite network application which can be deployable on a 5G infrastructure and can use 5G services*

Definitions

- Atomic component (AF/NF)
- Network Application (nApp)
- Vertical Service

A Composition of network applications deployed in different network segments

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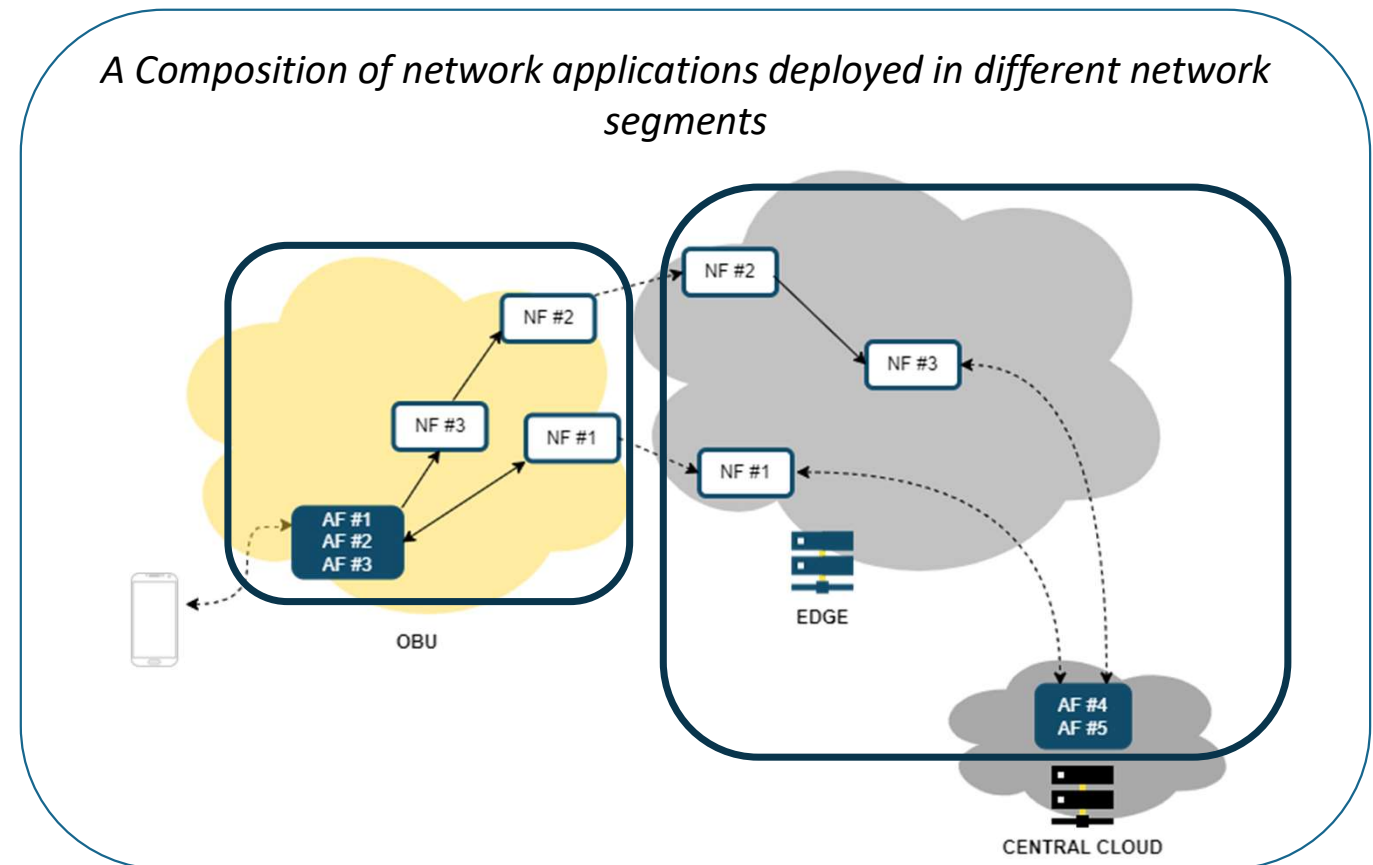
A Composition of network applications deployed in different network segments

nApp composing process. Adding Components (1/4)

Add Atomic Component: General information

Components > Create

Components | Create

| General | Distribution Parameters | Minimum Execution Requirements | Health Check | Container Execution | Environment variables | Exposed Interfaces | Required Interfaces | Plugins | Volumes | Devices | Labels | Advanced Options |

General

Name *

Type your preferred name

Architecture *

– Select –

Elasticity Controller *

– Select –

☐ (Public) If this option is checked, anyone could see this component

Save

nApp composing process. Adding Components (2/4)

Add Atomic Component: Docker image parameters

nApp composing process. Adding Components (3/4)

Add Atomic Component: Minimum Execution Requirements

nApp composing process. Adding Components (4/4)

Add Atomic Component: Exposed and Required Interfaces

nApp composing process. Linking components (1/3)

nApp composing process. Linking components (2/3)

nApp composing process. nApp package

- Build of nApp package
- Commit of the nApp package to 5G-IANA Gitlab
- Execution of CI/CD pipeline to onboard the nApp package
- Onboard the nApp package on the nApp catalogue

nApp provisioning

Applications

Create new

Name

Search by Name

Filter   Reset

Identifier	Name ⌄	Organization	Visibility	Date Created		
qmepvg98xp	CMSApp	Admin_Organization	Public	12/11/2022 - 19:09	Create Instance Delete	⋮

Application Instances

Name   Status   Application

Search by Name   -- Select --   -- Select --

Filter   Reset

| Identifier	Name ⌄	Application Name (Hex ID)	Status	Date Created		
ebhqrr7a4q	billy	mbtrst (mt33au5i55)			View Graph Profiling Elasticity Policies Security Dashboard Soc-Policies Analytics SLO Un-deploy	⋮
exfy8mivab	DS	DBMS (atnwnbjjj6)	DEPLOYED	17/11/2022 - 16:45		⋮
c58826jsjt	ubitest	UWSv2 (p0sg4x1gqn)	DEPLOYED	29/09/2022 - 12:03		⋮

nApp for automotive vertical service (1/2)
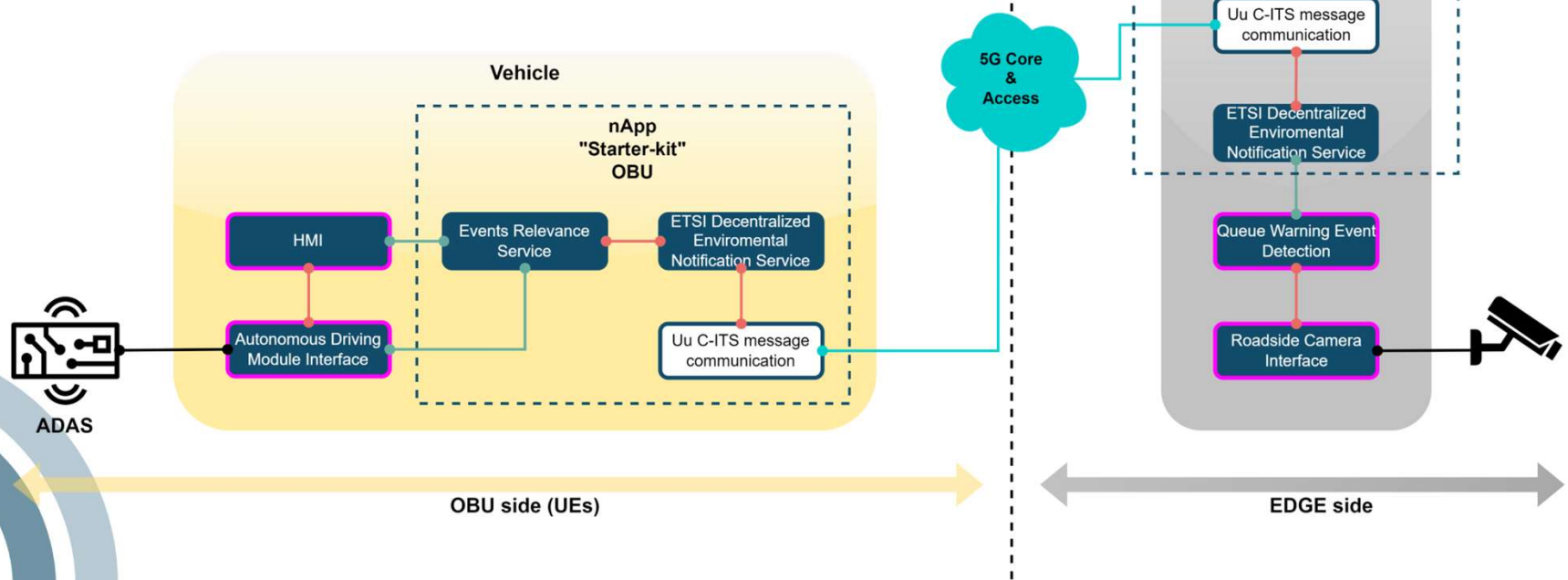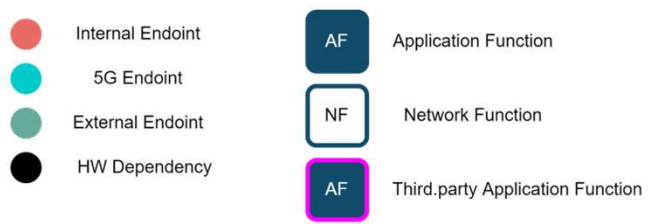
nApp for automotive vertical service (2/2)

UC5 Real-time Road network risk assessment
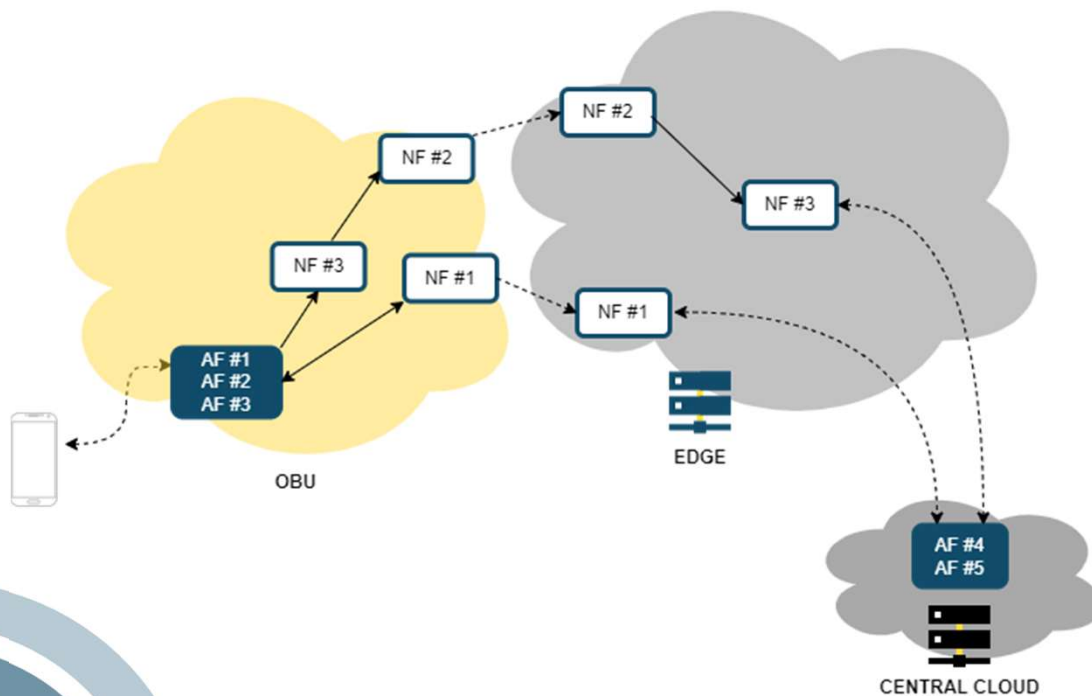
Atomic Component	Interfaces
AF#1 Position and time service	AF#2, AF#3, mobile phone
AF#2 Hazardous event receiver and display	AF#1, AF#3, mobile phone
AF#3 Hazardous driving behaviour detection	AF#1, A#2, mobile phone
AF#4 Elastic Search Service	AF#5
AF#5 Log Reporting Service	AF#4
NF#1 Uu data communication	AF#1, AF#2, AF#3
NF#2 C-ITS messages communication	NF#3
NF#3 ETSI Decentralized Environmental Notification Service	NF#2, AF#1, AF#2, AF#3, AF#4, AF#5

Conclusion

- Atomic Components and nApps are building blocks to create Vertical Services

- The building blocks can be easily chained together in a graphical way

- In 5G-IANA we provide a set of nApps, called «starter kits» available to use for integrating them into third-party vertical services

www.5g-iana.eu

Thank you for your attention!

Any questions?

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