sonata

agile service development and orchestration in 5G virtualized networks

SONATA approach towards DevOps in 5G Networks

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October 12th, 2017, The Hague

SDN NFV WORLD CONGRESS

HORIZON 2020

5G PPP

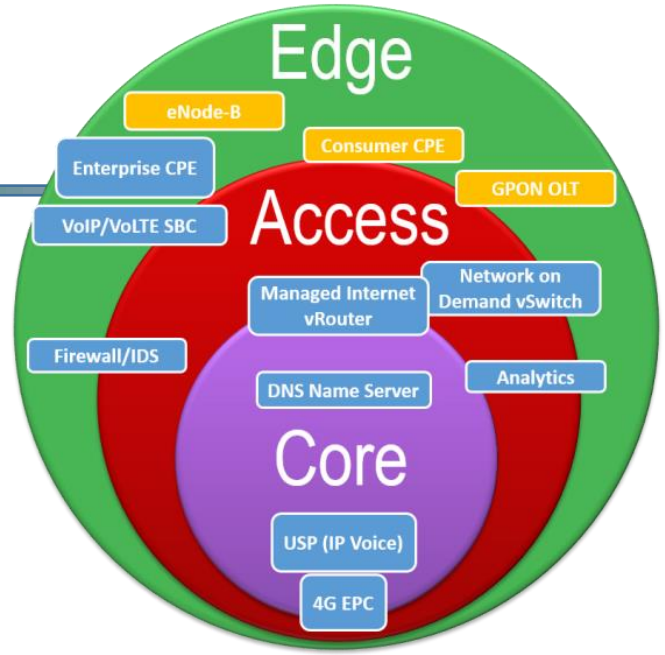
Open source developments consolidation

Gaining more acceptance and orchestrators begin to mature

- ONAP under Linux foundation
- OMS maturing (release TWO) in ETSI NFV - OS WG
- CORD (Onos) /XOS in ONF (ON.lab)
- SONATA NFV SDK+SP MANO (release v3.0)
- OPNFV consolidated mainstream

Facing the reality

Adoption difficulties vs SDN/NFV promise



- SDN/NFV infrastructure takes time to be stable
- VNFs are not interoperable with orchestrators
  - multi-vendor environments not certified
  - not ‘great many’ services to deploy (marketplaces)
- own NSD/VNFD templates/descriptors/blueprints
- SDN/NFV combination difficult - not easy E2E multi-site support
- always “additional development needed” (any OS initiative dixit)
- and still not key features like net slicing, auto VNF scalability, SP recursiveness, VNF intelligent placements, security, etc in the OS solutions at large

softnets OS community → no standards* → not certification/testing → no interoperability

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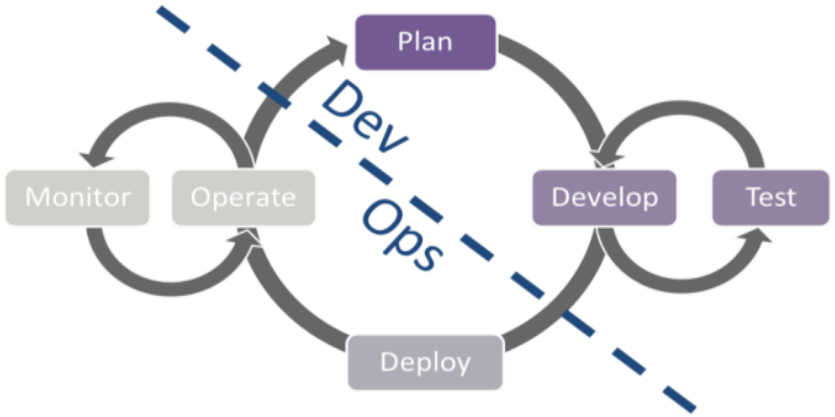
NFV in the post ‘hype’ era

(Contradicting!) NFV predictions in 2017/mid 2018

- CSP are postponing the investments, and thus vendors selling forecast not fulfilled
- DevOps culture, need to create cross functional teams in CSP
- “Operationalise” is the difficult part and also deal with the legacy net elements and OSS/BSS



NFV / NFV SPECS/OPEN SOURCE

Virtualization Confidence Takes Hit in Latest HR Survey

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2017 Predictions: NFV makes its move in 2017

By Nati Shalom, CTO, GigaSpaces on JANUARY 6, 2017

Featured, Opinion

NEWS ANALYSIS
IAIN MORRIS,
News Editor
12/8/2016

COMMENT (9)

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Telecommunication operators and enterprises are set to increase their NFV investments as the market has finally reached a maturation point.

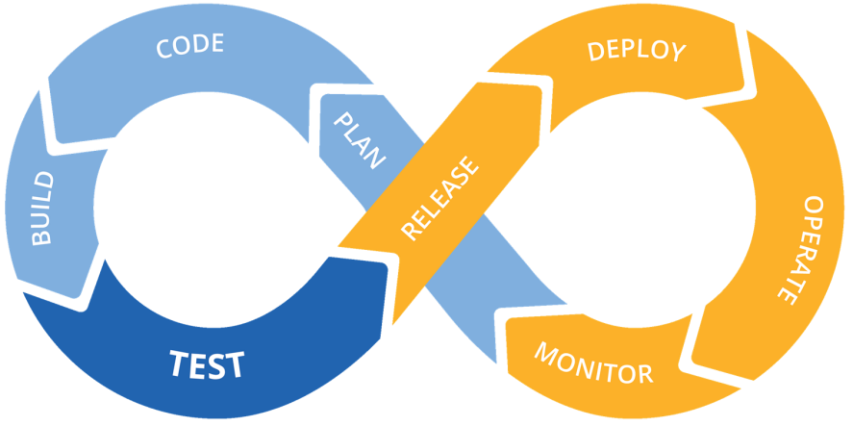
Editor’s Note: *With 2017 now upon us, RCR Wireless News has gathered predictions from across the mobile telecommunications space on what they expect to see in the new year.*

In 2016, telecommunication operators accelerated their investments in network functions virtualization platforms, driven both by the maturity of open source projects like Open Project for NFV, Cloudify, Aria, Open-O, OpenStack and Kubernetes, and by at-scale production deployments with major service providers like AT&T, Deutsche Telekom, Telefónica and China Mobile.

In 2017, we’re going to see investments in NFV spread throughout the mainstream of carrier and service

OS Communities and telecoms

- Classical network service implementations ...
  - Suffer from **long development** and deployment **times**
  - On boarding takes too much time (and clear interfaces – right level of infrastructures) and acceptance testing
  - have a **long time to market**
  - **lack** automated **testability** (manual)
  - have a **limited flexibility**
  - have a **strong vendor dependency**
- Software is reconstructed continuously (agile model), refactored! Iterate constantly and reuse!. If duplicate functions, we redo&consolidate.
- Extended DevOps model across organisations (vendors, system integrators , comm service providers)



4 Key things to move NFV forward

Operationalize NFV is the hard part in the adoption – Call for actions

1. Focus on ‘services’, not in the underlying technology
2. Implement a global orchestration (E2E)
3. Facilitate the creation and certification of services for operational environments
4. Invest on modernize the OSS/BSS to scale

Necessary increase the mass deployment number of NFV applications

SONATA Available results

1

- A highly modular and customizable **Service Platform** with a MANO orchestrator for deployment and management of network services over multiple PoPs.

2

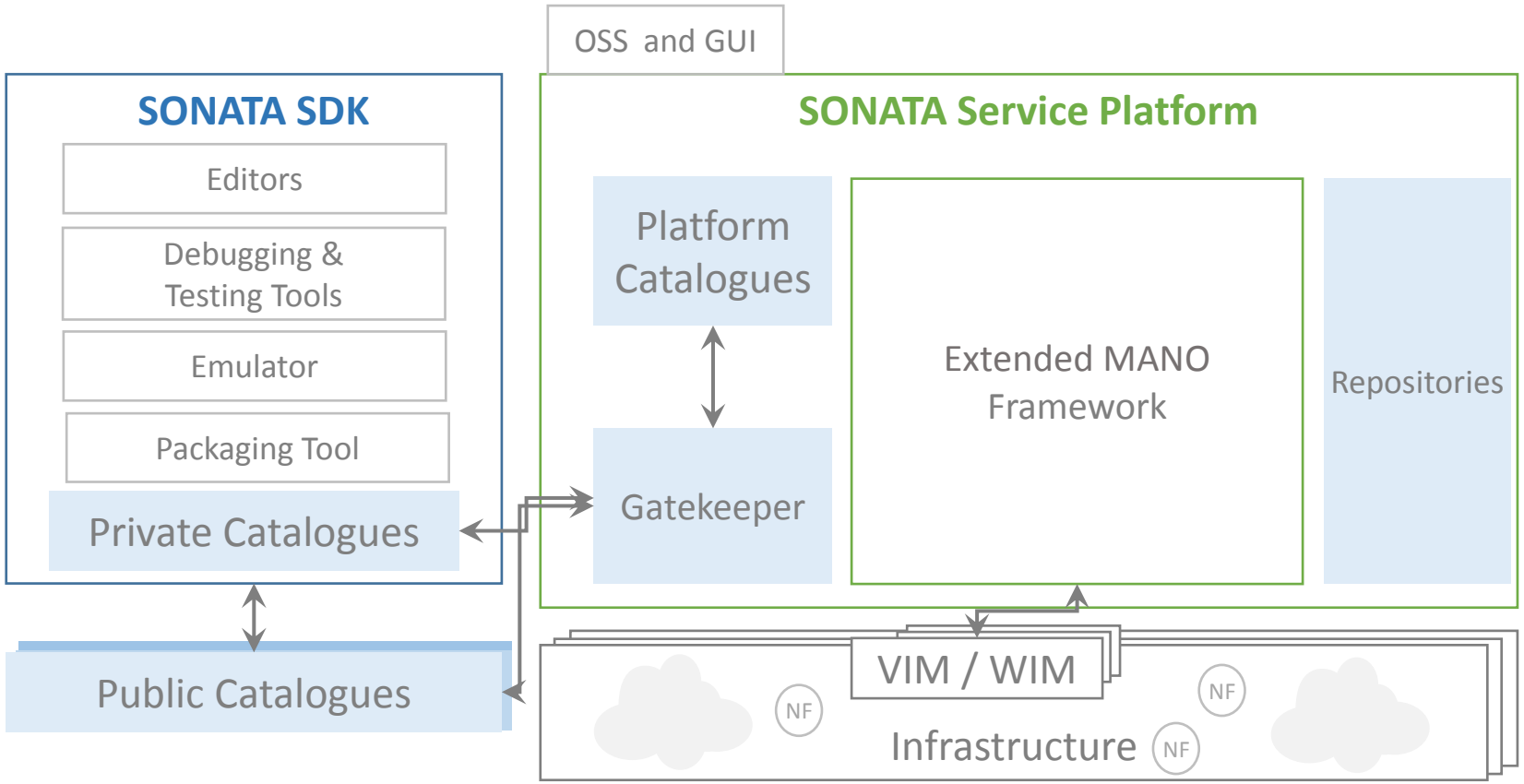
- A NFV **Network Service Development Kit (SDK)** that provides a valuable set of tools for the development and testing of complex NFV services.

3

- A extended **DevOps model** with a multi-organisational design and agile workflow that increases efficiency and collaboration, facilitates the launch of new services and accelerates the adoption of NFV.

New Release v3.0 in Sept'17

SONATA Architecture: a high-level look



Innovations

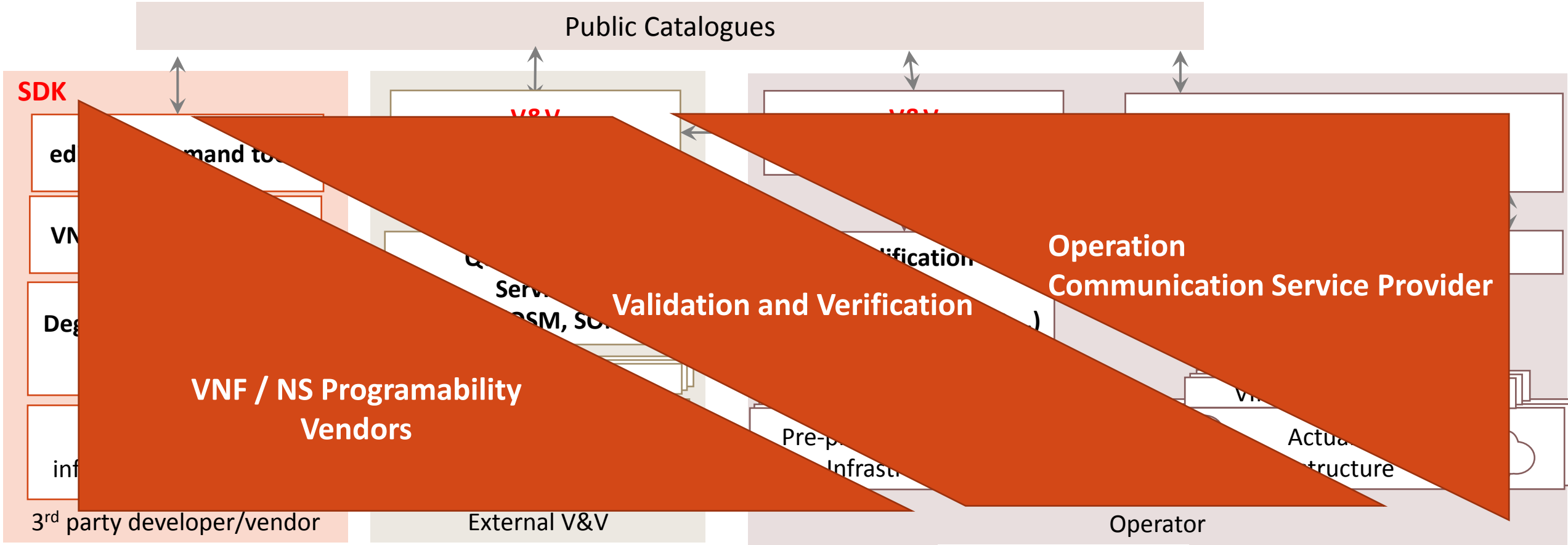
- **Modular plug-in architecture:** third-party logic support for operator and service developers (FSM/SSM)
- **Interoperable and Vendor agnostic:** support for multiple VIMs, VNFs, underlying ETSI-based architecture
- Built for **NFV DevOps** between operator and service developers of network services
- **"Recursion" support**: allowing stacked tenant and wholesale deployments in software networks models (e.g. MVNO)

SONATA v3.0 – *September 2017*

- **Upgraded release** which includes all the software components developed, integrated, tested and qualified within the time horizon of the project.
- Main improvements:
  - ✓**New functionalities (i.e multi-PoP support)** that makes SONATA more attractive with a product-like code that can be easily adopted.
  - ✓Additional interfaces for ensuring **interoperability with OSS and SLA management systems** and other building blocks and components such as **self-monitoring facilities** allowing critical operational information to be shared with the platform owner.
  - ✓**Lower usage entry-barrier,** thanks to its easy and automated installation process, compelling and complete documentation tutorial videos provided.
  - ✓**Higher reliability and stability,** due to the final stage of validation and qualification included in the SONATA development pipeline.
  - ✓ Many SDK tools extended to **interoperate with other platforms** beyond SONATA scope, for example OSM.
- ***SONATA in a VM*** *- easy installation to play with it*

SONATA Future evolution guaranteed (5GTANGO)

- Secured +**2 years** investment for advance functionalities in our roadmap
  - Validation&Verification testing platform, full SP recursivity, network slicing, etc



About us

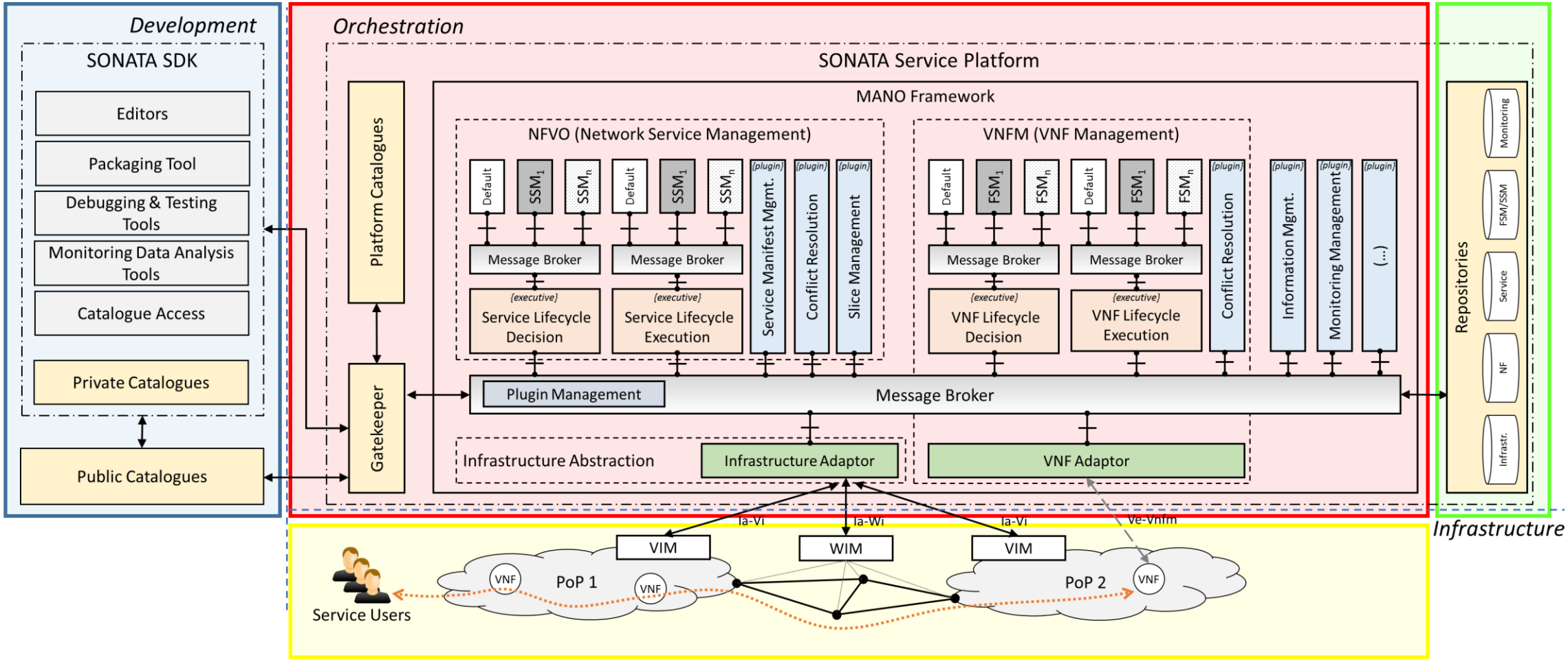
- SONATA is an EU-funded project (Horizon 2020) and part of the 5G-PPP initiative.
- 30 month work plan, started in Jun'15-Dec'17. (+30 months - new project 5GTANGO to continue expanding functionalities Jul'17-Dec'19)
- 15 partners representing telecom operators, manufacturers, system integrators, service providers, SME developers, research and academic institutes.

Thank you!

Project website: http://www.sonata-nfv.eu/
Start at http://sonata-nfv.github.io

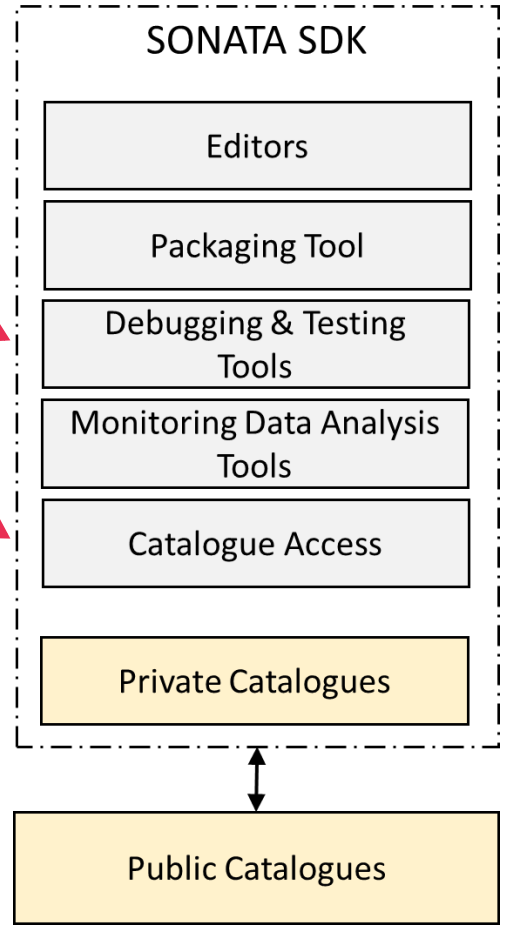
HORIZON 2020

SONATA Architecture



SONATA Architecture (SDK)

- Collection of command line tools
  - Workspace management
  - Emulation, testing, and and debugging
  - Packaging
  - Integration with the SONATA Service Platform
- Command line tools became popular (again)
  - Easy to script and integrate in a CI/CD pipeline
  - Prominent examples
    - Docker
    - Web development, e.g. NodeJS, grunt, and gulp



SONATA Architecture (Service Platform)

- Micro-service based architecture based on Docker
  - Each component runs in its own Docker container
  - Components communicate via a shared message bus

- Immediate benefits
  - Allows **independent development** of individual components
  - Easy to deploy, update, and manage
  - Easy to scale out
  - Easy to **test** as each **component** can be tested **individually**
  - Flexible as **components** can be **exchanged** easily
  - Extensible as **new components** can be added **without major changes**
  - Easy to integrate in test-platforms, like Jenkins

SONATA Relations to ETSI Interfaces

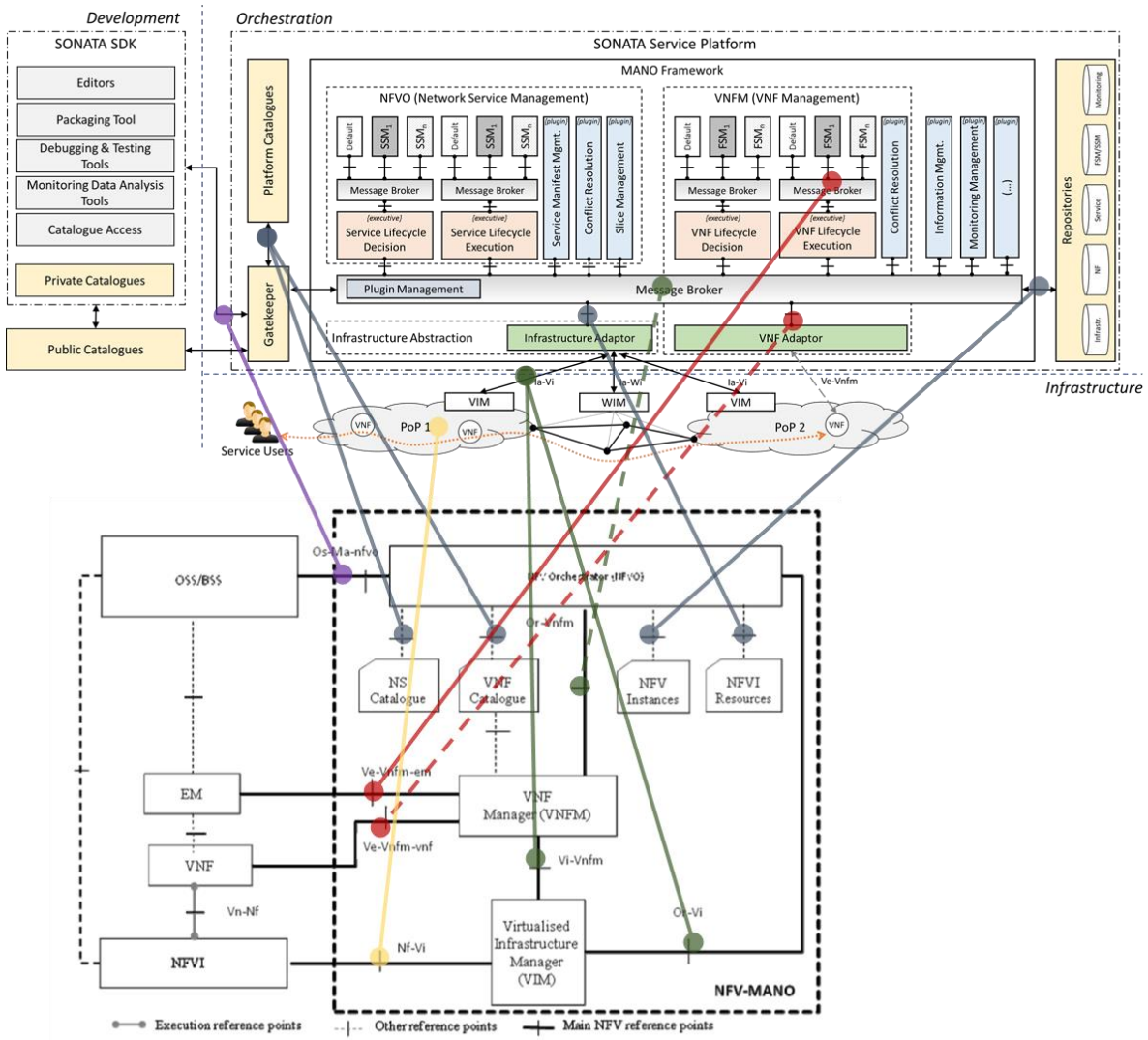
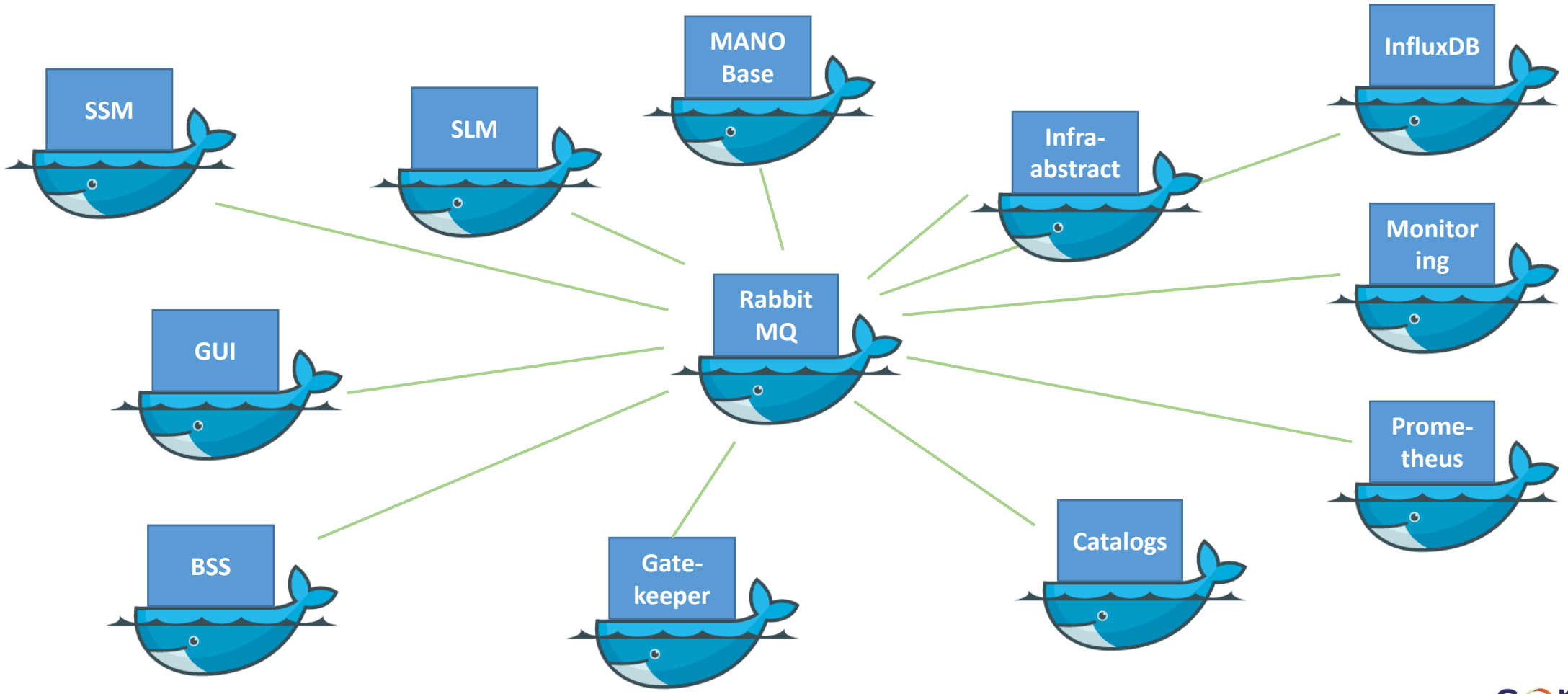


Figure 5.1: The NFV-MANO architectural framework with reference points

SONATA Architecture (Service Platform)

- Micro-service based architecture based on Docker



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