

5Gtango

Introducing DevOps in 5G Networks

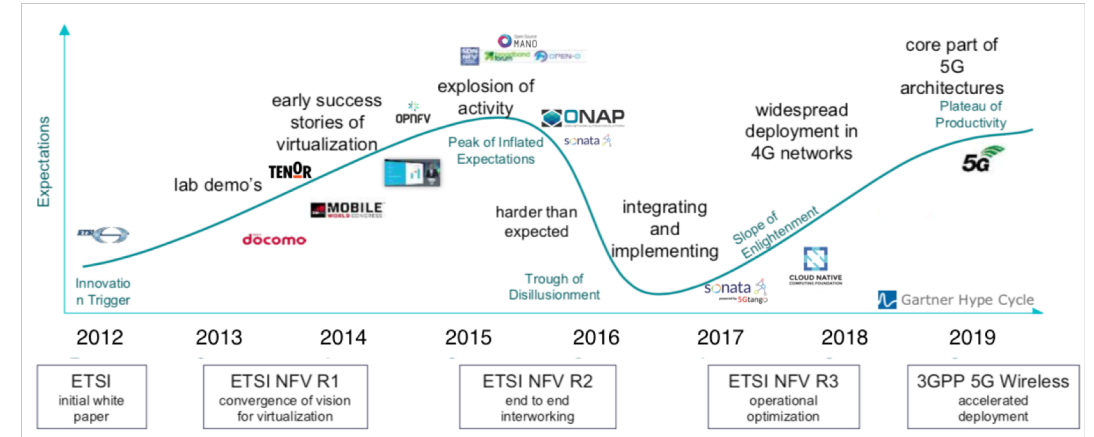
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5Gtango 

NFV in the Post-Hype Era




- The days of the foreseen radical revolution are gone
 - Caution in CSPs, vendor selling forecasts not fulfilled
 - Focus on low-hanging fruit, like v/uCPE
- Operationalizing:
 - Legacy network elements
 - OSS/BSS integration
 - Maximize agility at network edge, scale EC elements
 - NFV testing and assurance: reliability & performance
 - Heterogeneous multi-vendor VNF environment
 - E2E orchestration
 - Zero-touch automation of services and infrastructures
- Re-define the Vendor-Operator relationship
 - Create cross-functional environments for DevOps



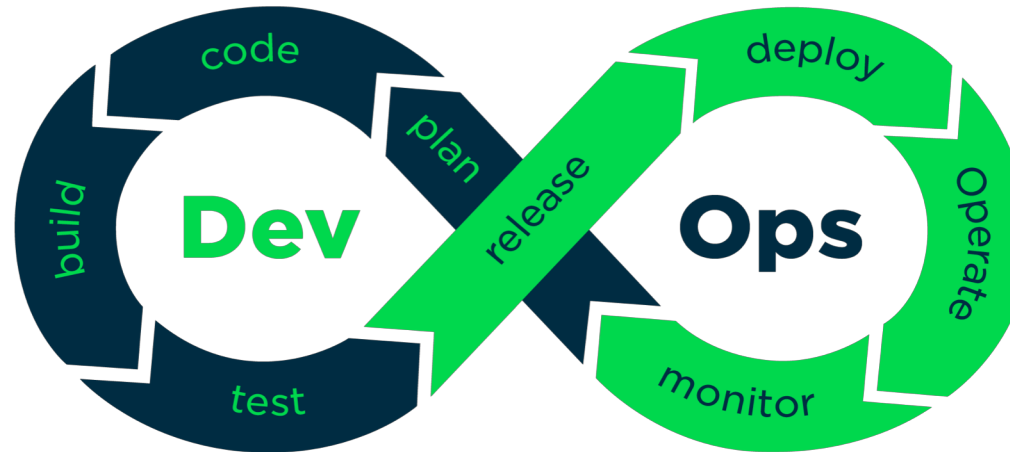
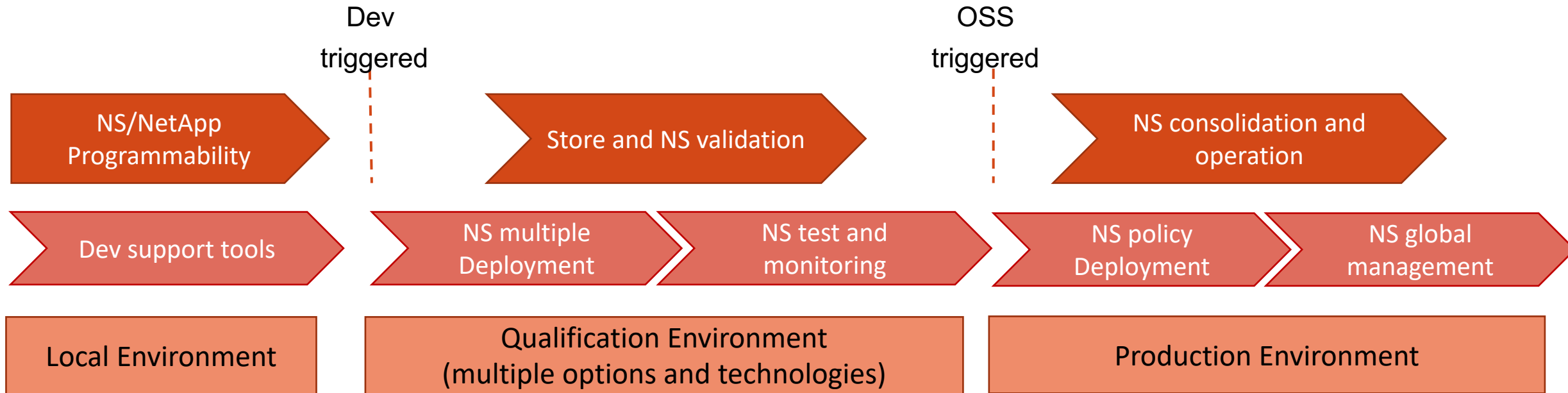
SDN/NFV Hype Cycle

source: <https://www.zenoss.com/resources/demystifying-network-function-virtualization-nfv-service-assurance>

Service-Oriented Lifecycle

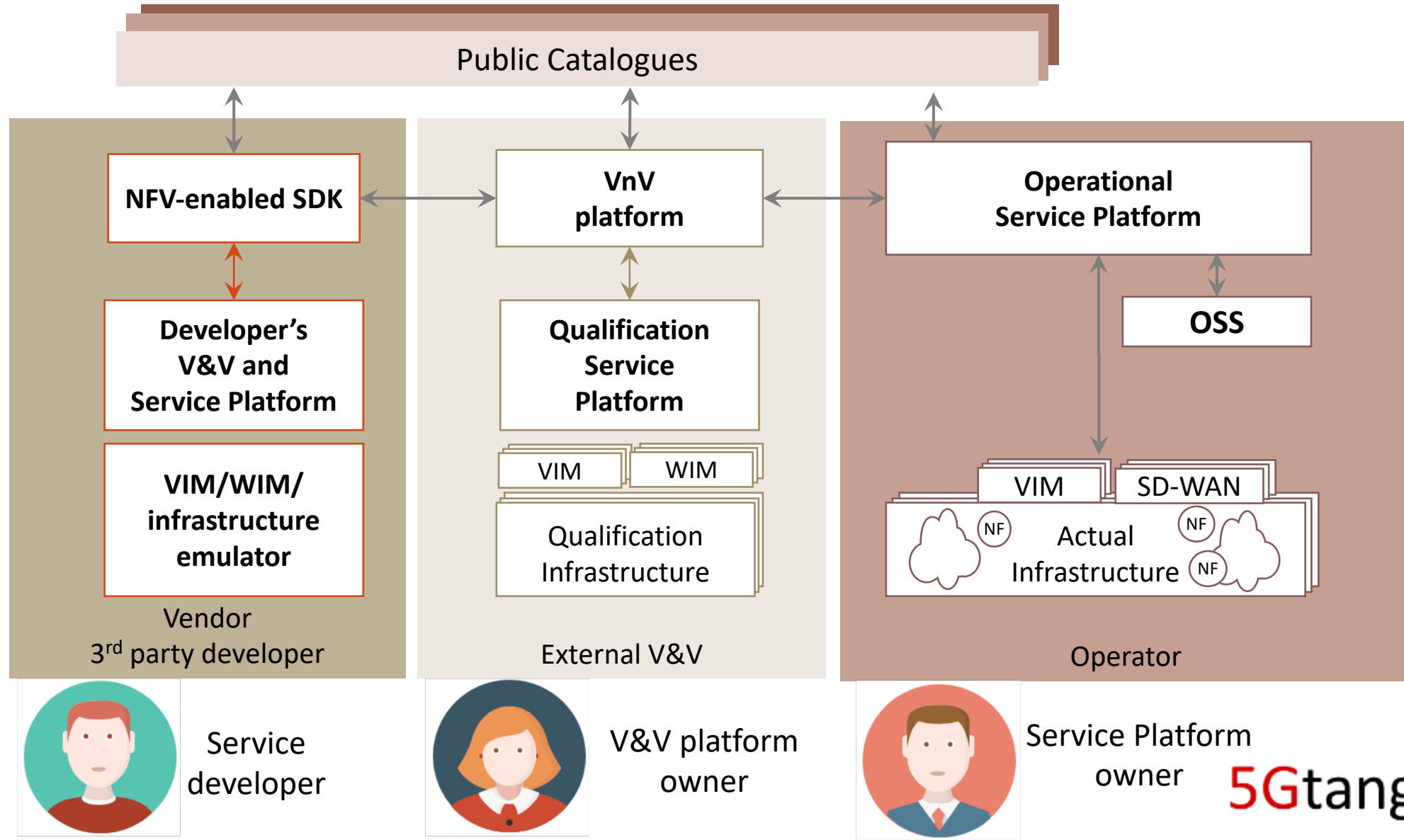
- A **holistic, E2E view** of the elements should be considered
- Three phases in the service lifecycle
 - Coordinated by a shared catalogue
- Development  Service Developer
 - Supported by an SDK
 - Service published at the catalogue
- Validation and verification  VaV Provider
 - Automated VnV platform (testing and analysis)
 - Results published on the catalogue
- Deployment and operation  Operator
 - Select from the Catalogue
 - Mediated platform
 - Policy and SLA enforcement

The Three Phases in a DevOps Cycle

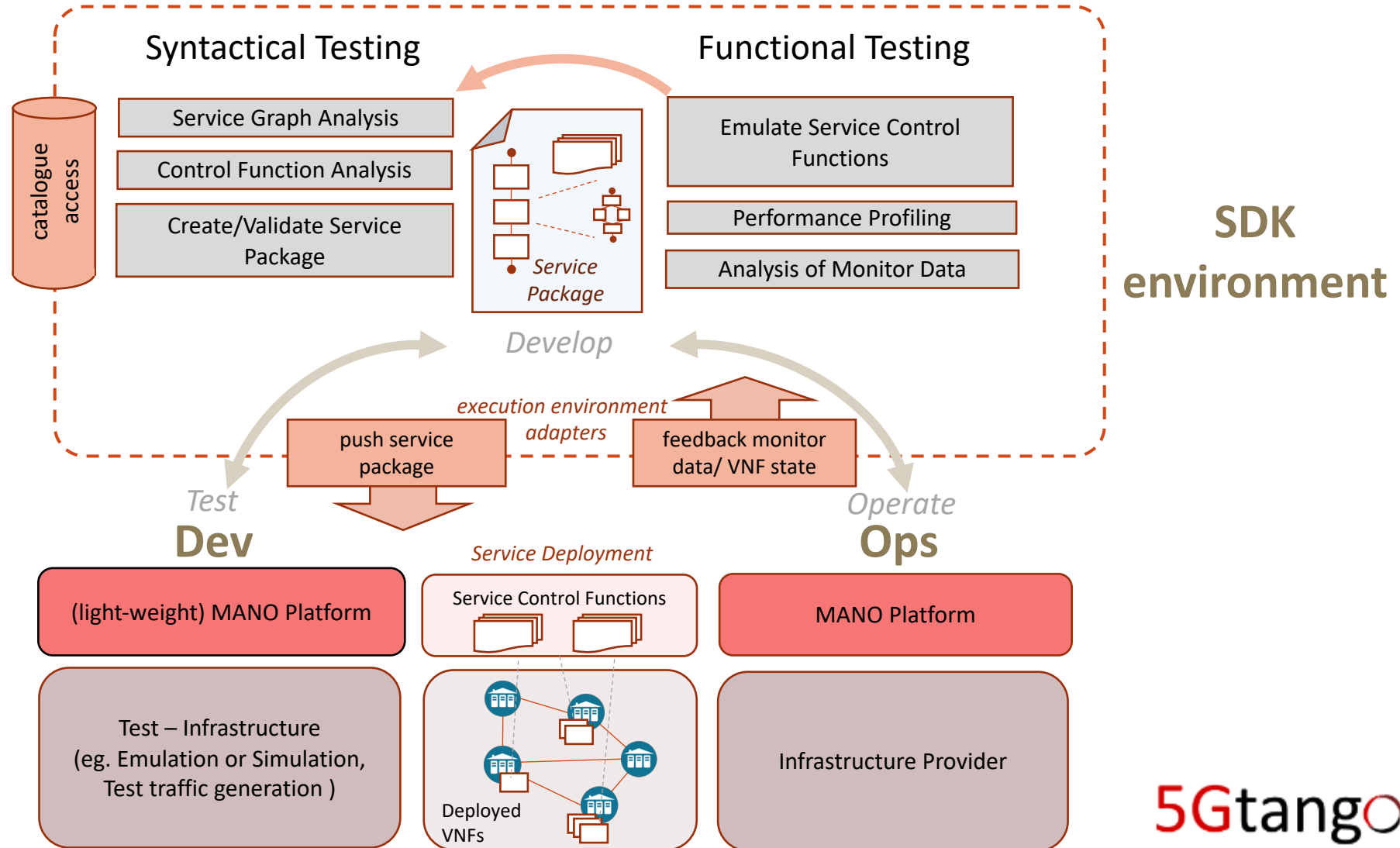


<https://medium.com/@neonrocket/devops-is-a-culture-not-a-role-be1bed149b0>

High Level Architecture

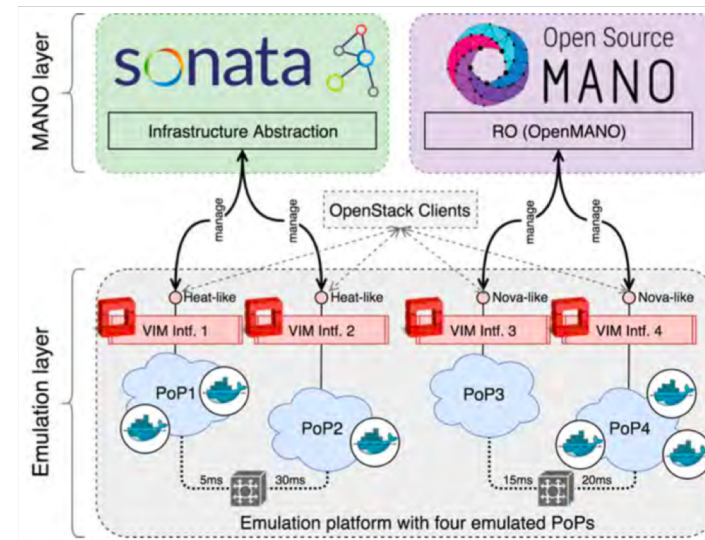
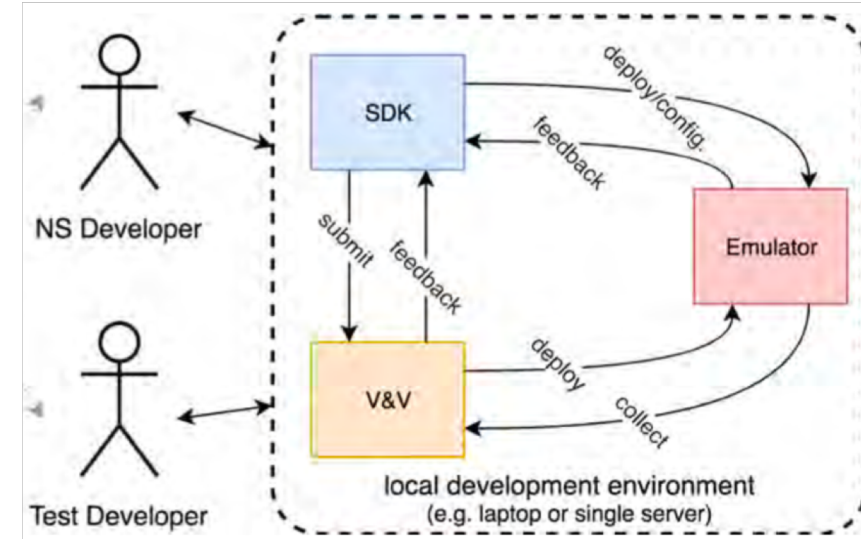


DevOps on the Architecture

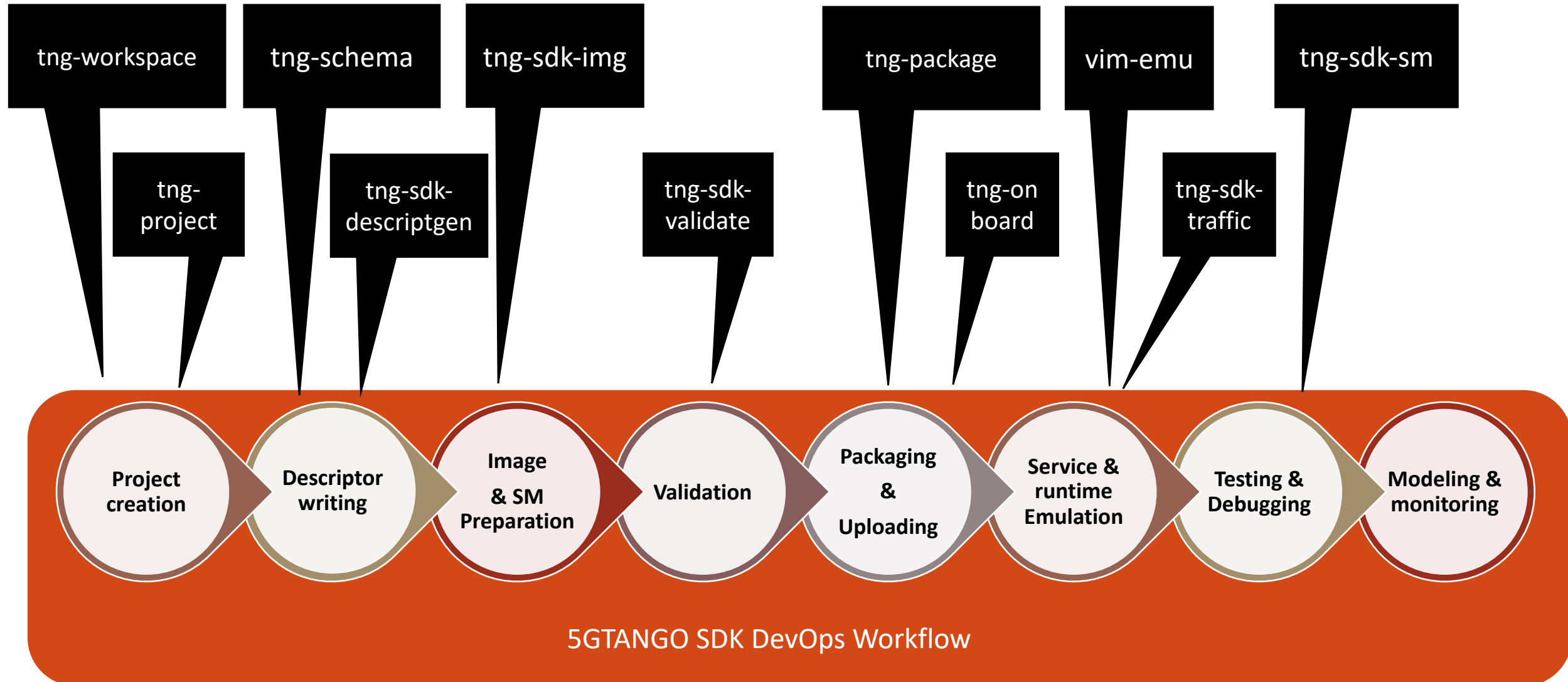


The SDK and the Emulator

- Automate as much as possible service description
 - References, composition...
 - Plus policies and monitoring
- Packaging
 - And catalogue access
- Initial validation
 - Through emulation
 - Connected with the VaV process
- Shaping a DevOps loop suitable for critical infrastructures

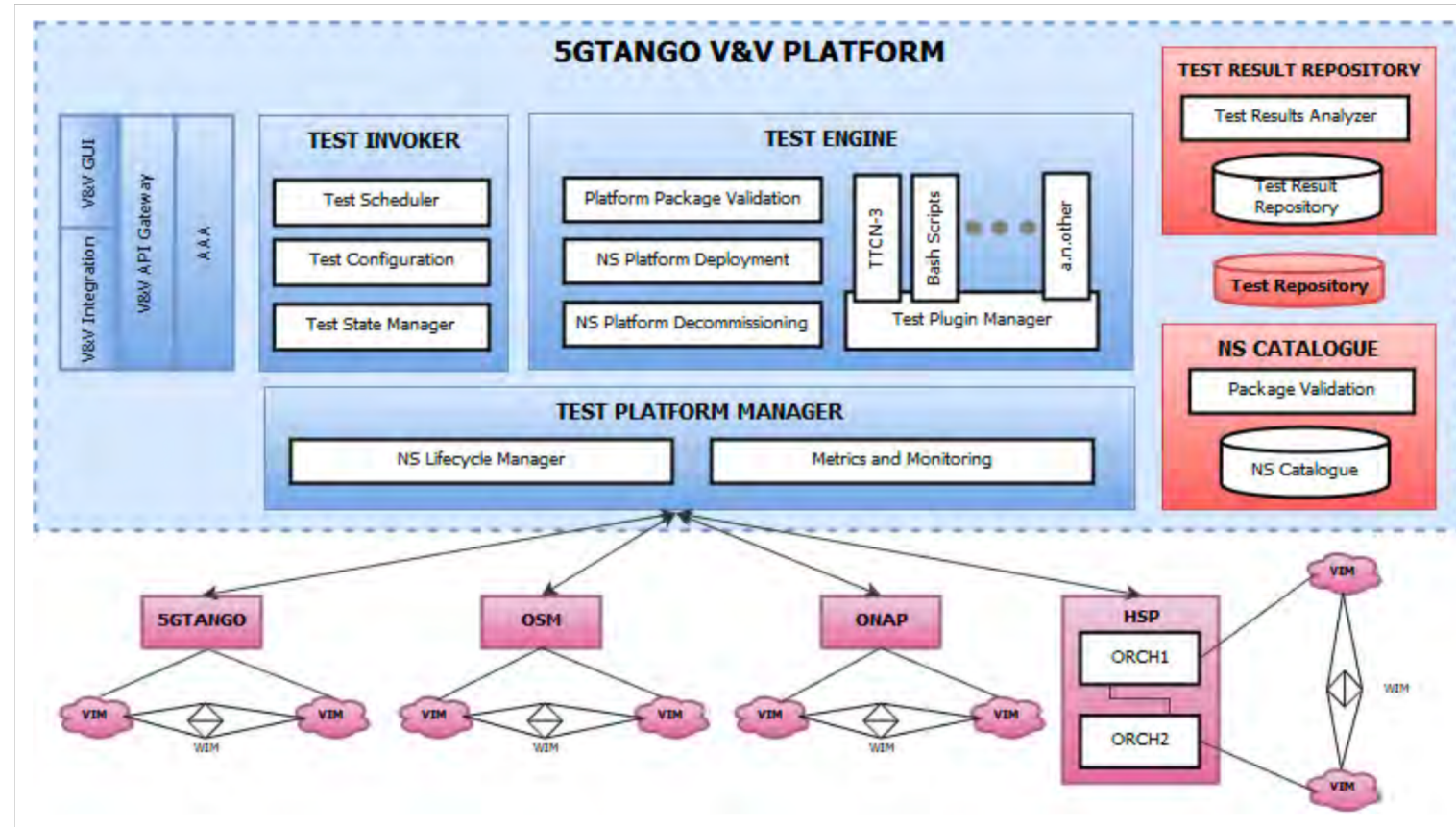


The Eleven SDK Tools - Working in Concert



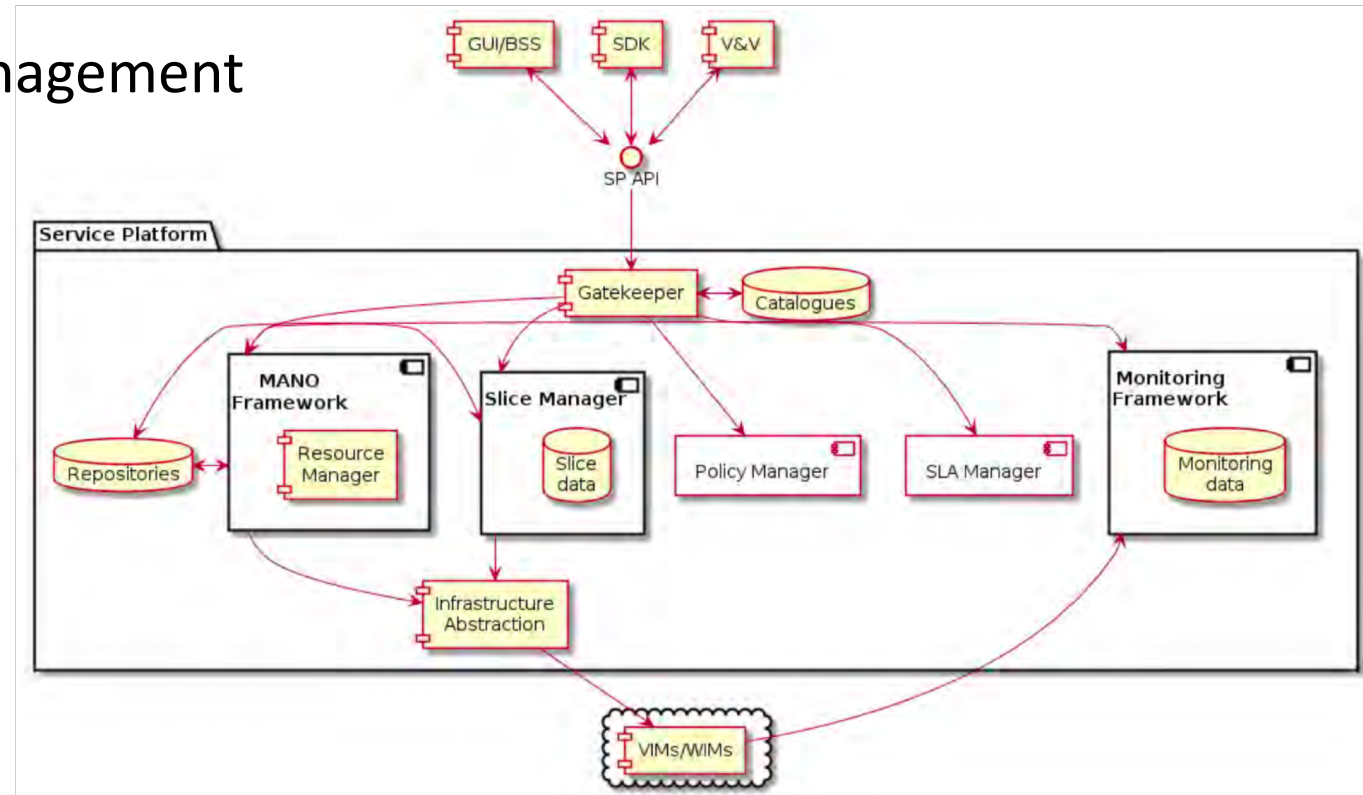
Verifying and Validating

- Support for
 - Different test specification sources
 - Automated test execution
 - Linked test results
- Enabling Continuous Testing
 - Model-based
 - As an essential part of the automation loop



Closing the Loop

- The service platform addresses operational support
 - MANO
 - Policy enforcement and SLA management
 - Monitoring
 - And, for sure, slice support
- Usable in two *flavors*
 - Test platform for VaV
 - Production service
- Mediated by the Gatekeeper
 - Access enforcement
 - Sanity checks
 - Service platform orchestration



SONATA v4.0 – July 2018

- **Upgraded release** - a product-like code that can be easily adopted (apache v2.0).
 - ✓ **New functionalities (i.e multi-PoP support, improved on-boarding)**
 - ✓ **Enhanced network service creation** and check. Multi-MANO support. Developer tools extended to **interoperate with other platforms** for example OSM packages.
 - ✓ Automatic testing of network services. Innovative DevOps **workflow & toolset**
 - ✓ Instantiation with business features
 - ✓ Service Level Agreements (SLA Management)
 - ✓ Zero-touch/Autonomic Policy-driven Management
 - ✓ **Self-monitoring capability** allowing critical operational information to be shared with the platform owner.
 - ✓ Multi-layer operational Monitoring
 - ✓ First Network Slicing grouping ids.
 - ✓ **Reduced usage learning-curve**, thanks to its easy and automated installation process, compelling and complete documentation tutorial videos provided



<http://www.sonata-nfv.eu/>

The 5GTANGO Basic Facts

- 5Gtango is an EU-funded project (Horizon 2020) and part of the 5G-PPP initiative
- 30 month work plan, started in June 2017
- 17 partners representing telecom operators, manufacturers, system integrators, service providers, SME developers, research and academic institutes



Reduce the time-to-market for networked services by shortening the service development cycle and by qualifying those network services to be adopted.



Reduce the entry barrier to 3rd party developers and support the creation and composition of Virtual Network Functions (VNFs) and application elements as "Network Services".



Enable new business opportunities with the customisation and adaptation of the network to vertical application's requirements.



Accelerate the NFV uptake in industry via an 'extended' DevOps model and the validation at scale of Network Service capabilities of the 5GTANGO platform in vertical show cases.

5GTANGO Key Contributions

1

- An NFV-enabled Service Development Kit (SDK) with enriched functionalities for NS developers.

2

- A Validation and Verification (VnV) Platform with advanced mechanisms for VNFs/Network Services qualification (including 3rd party contributions).

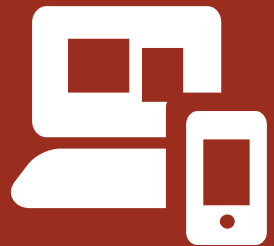
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- A modular Service Platform with an innovative orchestrator with control and slicing capabilities in order to bridge the gap between business needs and network operational management systems.

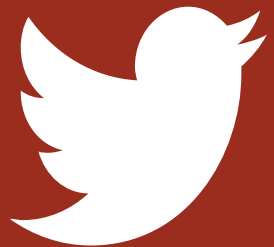
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- Methodology and tools to implement an extended DevOps workflow with a multi-organizational design.

If You Want More...



www.5gtango.eu



@5Gtango

