

sonata

agile service development and orchestration in 5G virtualized networks



The SONATA Gatekeeper

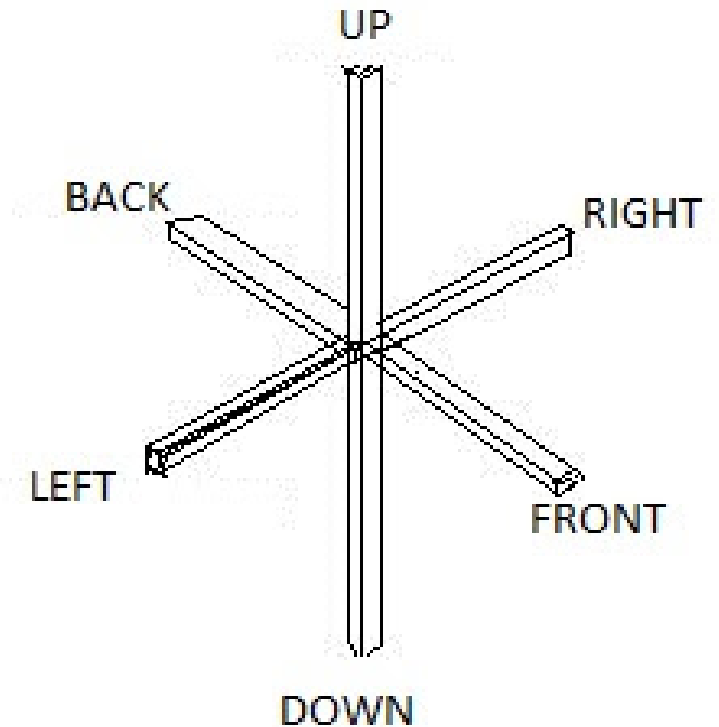
A mediated approach to vertical, horizontal and operational NFV recursion

HORIZON
2020

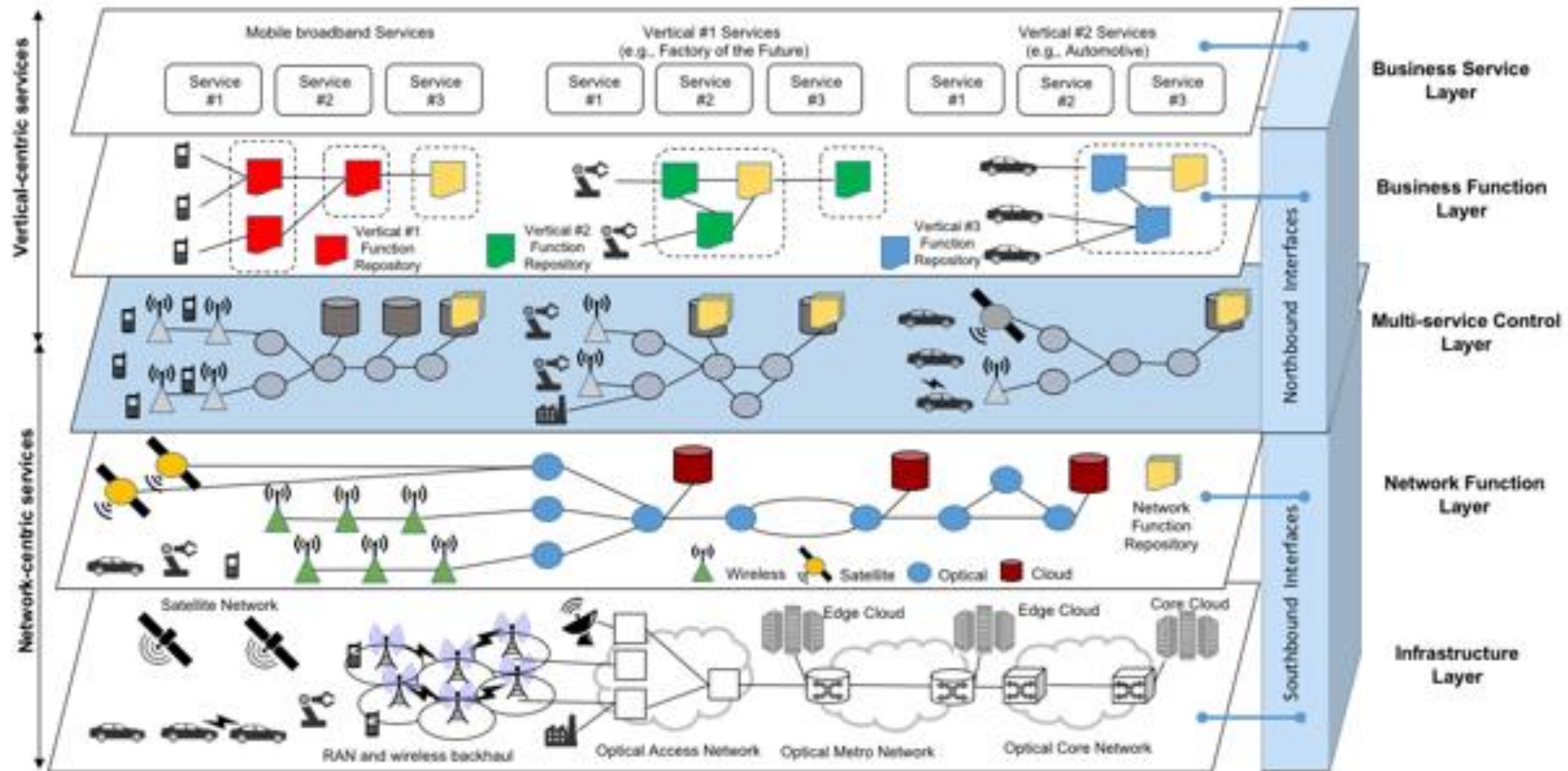


The Three Dimensions for Recursion

- Horizontal, inter-domain
 - Among network service providers, network segments, other providers
 - No central authority beyond trust links
 - Federation
- Vertical, inter-provider
 - Among operators at the different layers supporting end users
 - Abstraction and information hiding
 - Composition
- Operational, inter-concern
 - Among the organizations building functions and services
 - Strict authentication, authorization and accounting to guarantee stability
 - DevOps

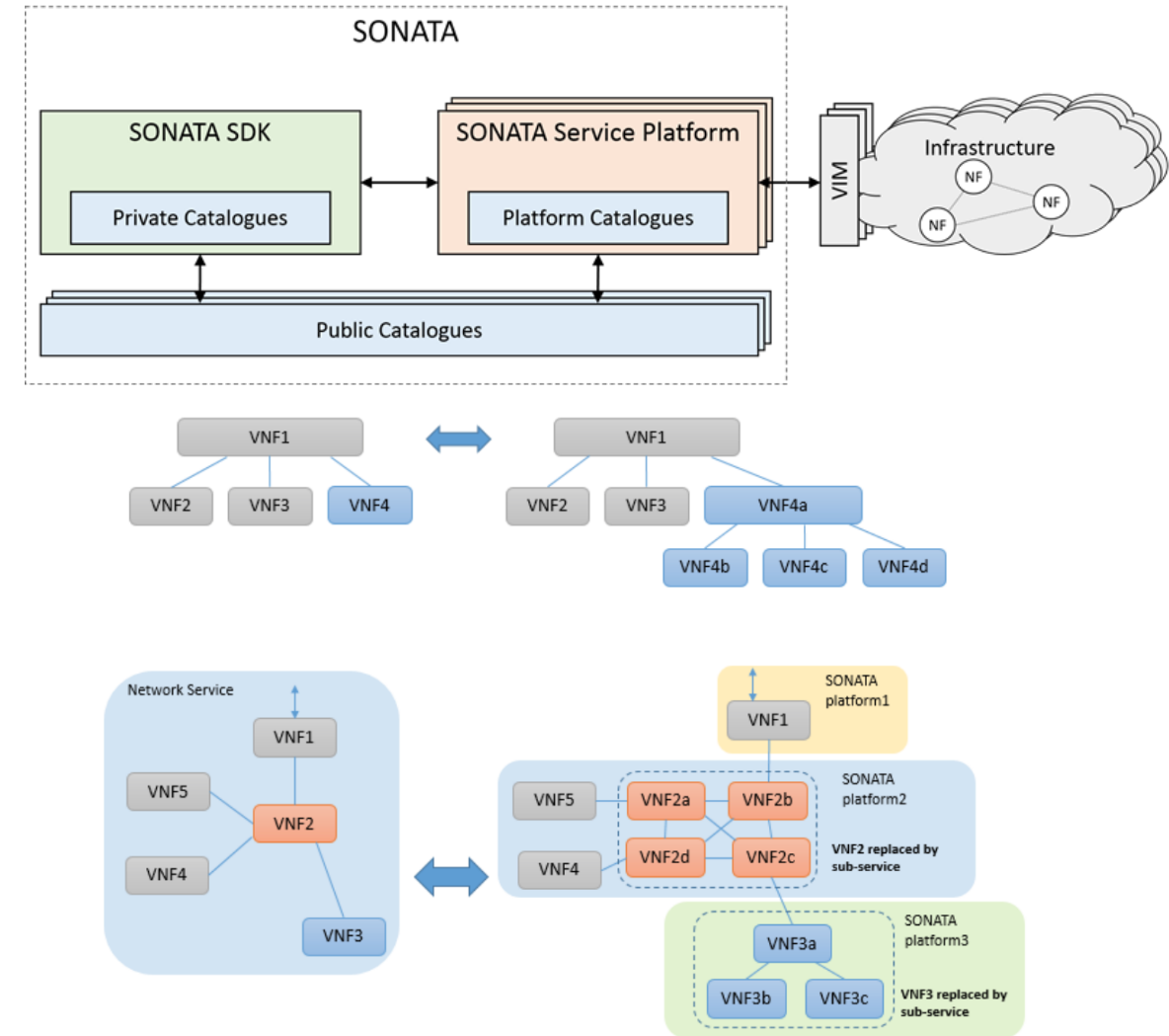


Service Orchestration at the Pivotal Plane

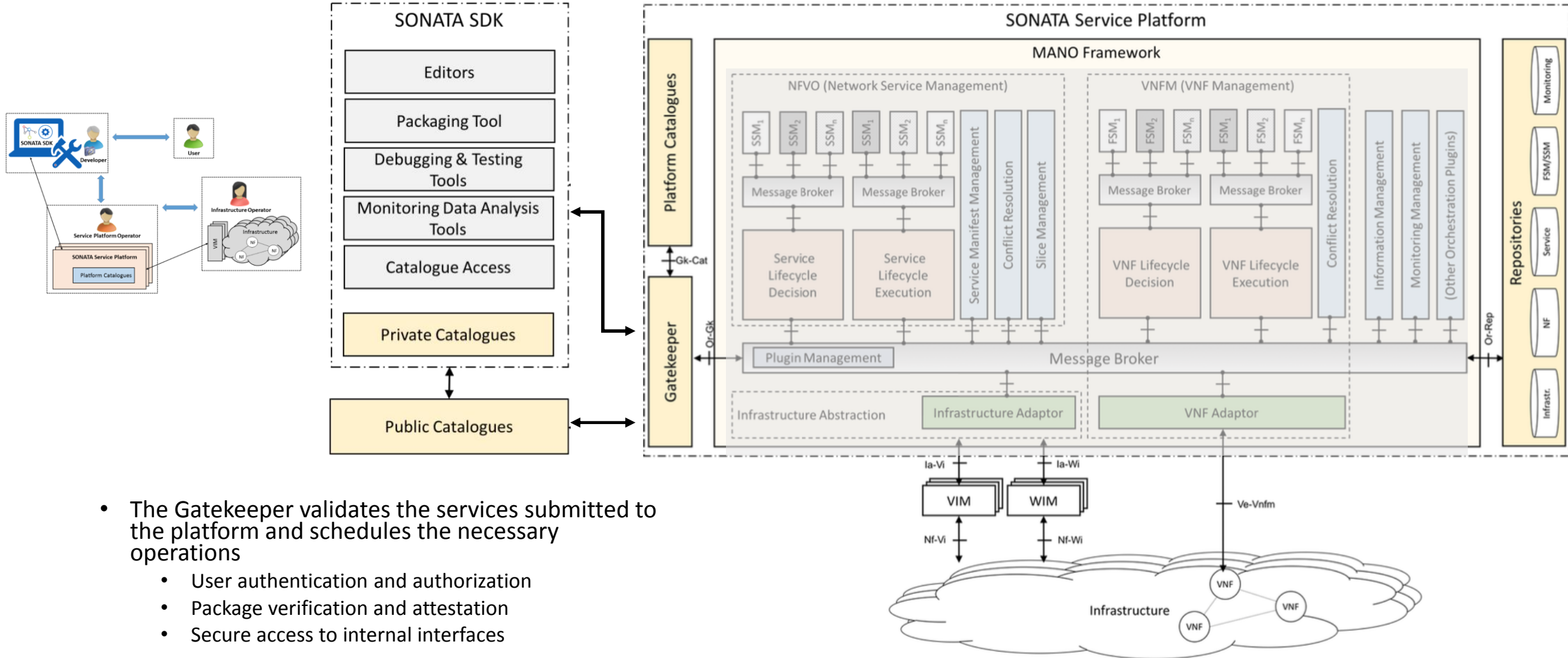


Recursion in the SONATA High-Level Architecture

- Agnostic architecture
 - Multi-VIM, multi-vendor, multi-site
 - Underlying ETSI-based architecture
 - SDN/NFV integration
 - Considering both resource and service orchestration
- The slice support plane
 - Federation and composition enabling *slicing*
 - Services and functions in a *compositional continuum*
 - Stacked tenant and wholesale deployments
 - Performance isolation and bespoke network configuration for vertical users
 - Modular MANO plug-in architecture
 - Support for third-party modules from operator and service developers (FSM/SSM)
- The DevOps dimension
 - Mediated collaboration between operators and service developers

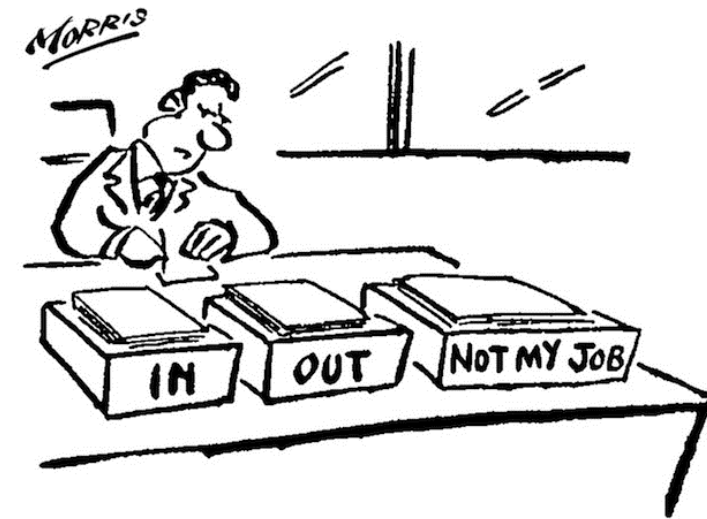


Mediated Recursion



The Role of the Gatekeeper

- The Gatekeeper validates the services submitted to the service platform
 - Mediating inter-domain, inter-provider requests
 - Mediating between development and operational tasks
- Functions related to
 - User management, so the service platform owner to control who can do what in the platform
 - Related to all kinds of recursion
 - AAA: Authentication, authorization and accounting
 - Federation, composition, operational access
 - Package management, so the service platform owner can accept and validate new or updated software
 - Accessible only to authorized users
 - Base on package descriptors and owner policies
 - Attestation, relying on external and internal trust material and links
 - Package validation: syntax, semantics, licensing, test availability, test execution
 - Package lifecycle
 - Deployment
 - Instance (re-)configuration
 - Instance (re-)start
 - Instance monitoring
 - Instance stop
 - Instance termination
 - Removal



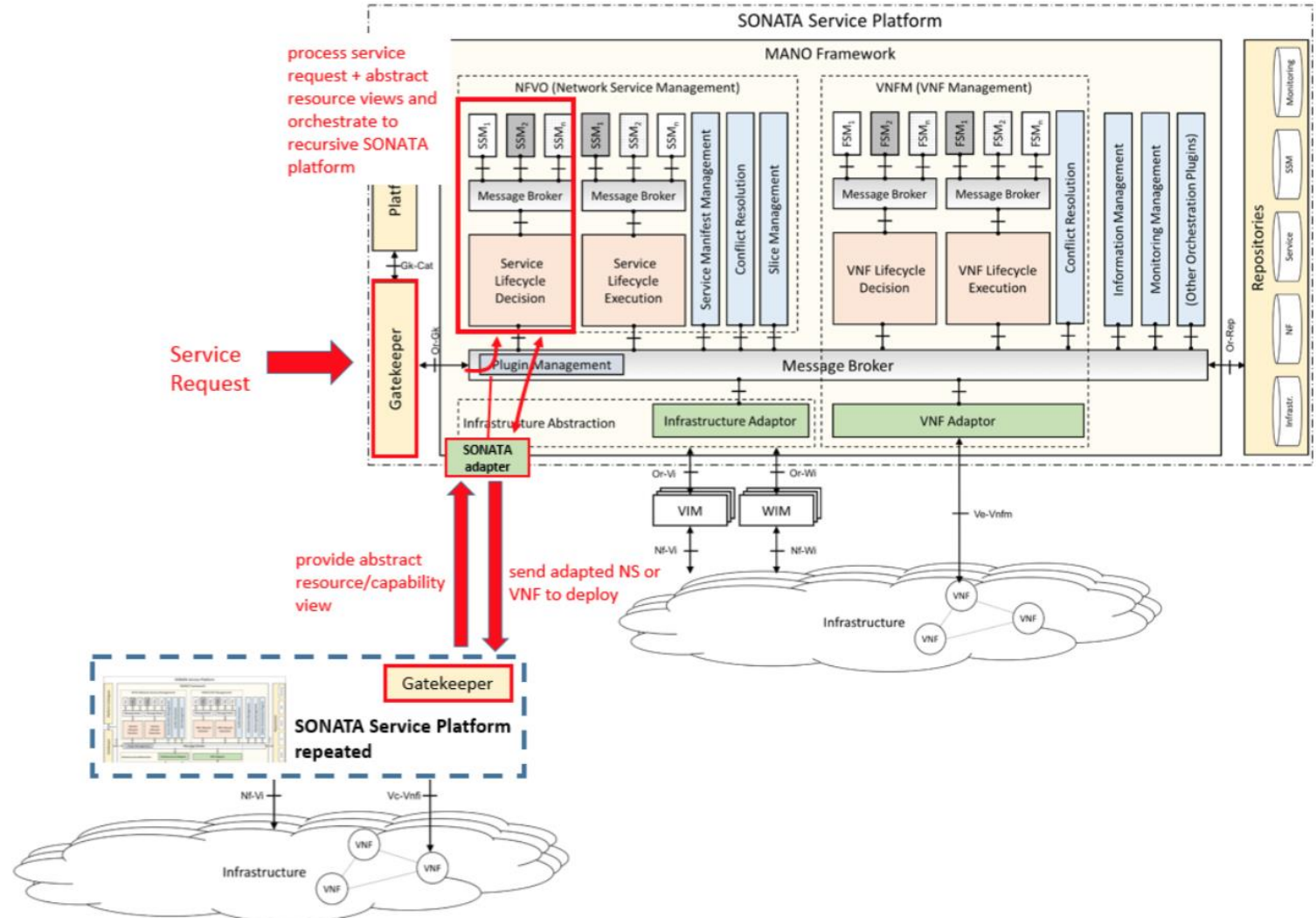
Securing the Gatekeeper

- The gatekeeper acts as the security enforcement point for all interactions
 - Across the slicing plane: federated domains, stacked instances
 - Between the development and operational tasks
- The gatekeeper APIs have to be secured
 - Identification, confidentiality, integrity and non-repudiation
- Threats related to denial-of-service
 - An overloaded gatekeeper makes the whole NFV environment unusable
 - Mechanisms for overload detection and mitigation

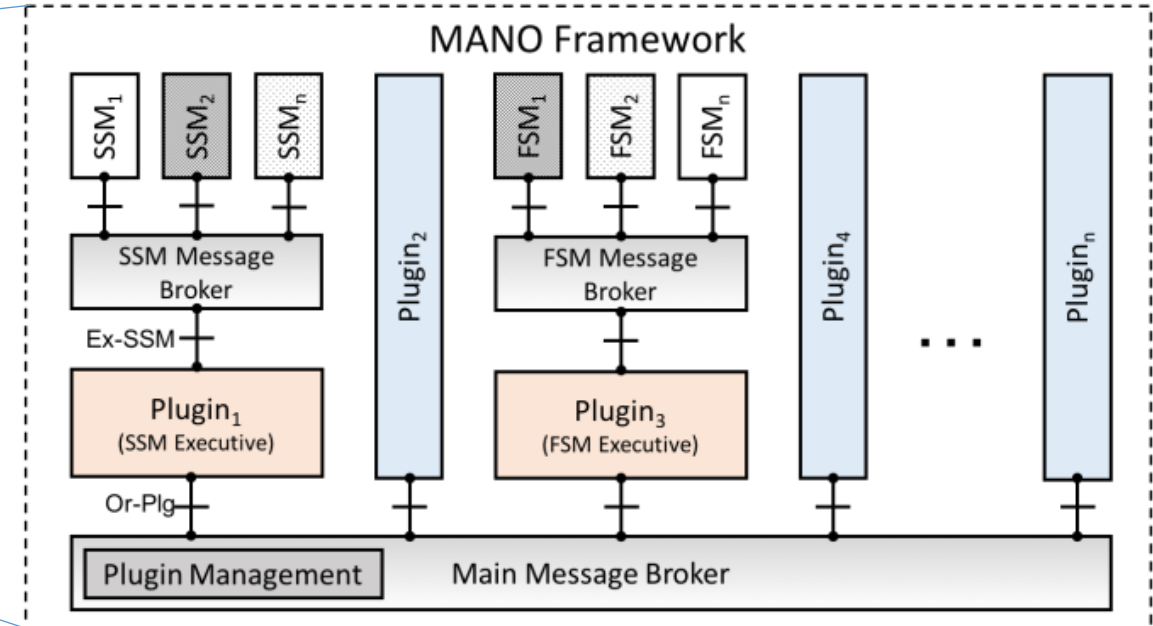
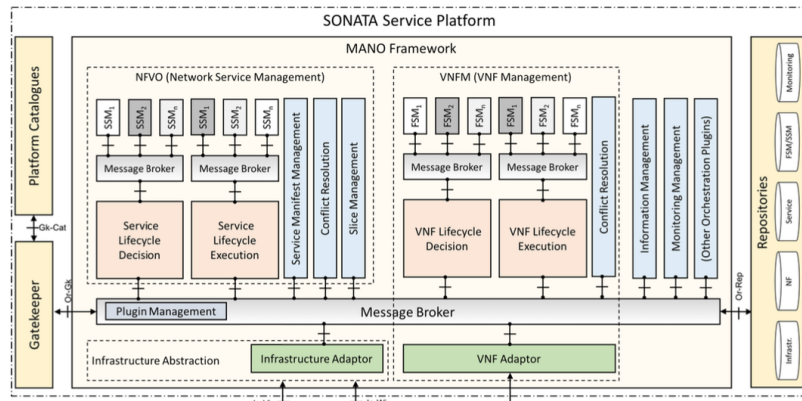


Mediated Slicing

- The Gatekeeper can act as an Infrastructure Endpoint
 - Able to send an abstract resource view of the available infrastructure in its own SONATA platform
- A SONATA adapter can serve as interface to a recursively deployed SONATA platform by a different infrastructure provider
 - Infrastructure management plugins can send a partial NS or VNF to the gatekeeper of the underlying SONATA platform
- Build recursive SONATA hierarchies
 - Able to support consistent slicing mechanisms



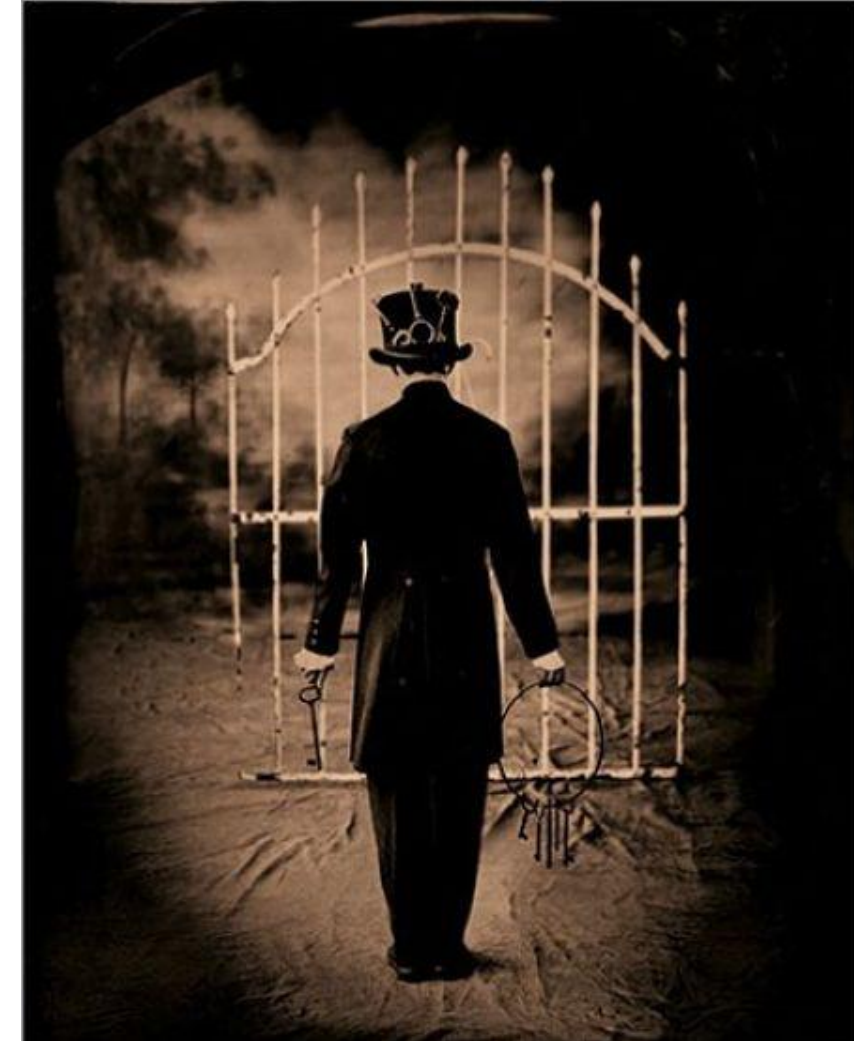
Pluggable MANO



- The SONATA MANO framework consists of a set of loosely coupled components that use a message broker to communicate
 - The operator can customize platform functionality or add new features by installing additional plugins
- The framework supports the onboarding of FSMs and SSMs
 - Specific modules bundled into packages, integrated and activated when a service package is deployed on the platform
 - Supporting specific management actions within a general framework
- Extensibility makes the mediation role of the gatekeeper even more essential
 - Security
 - Stability
 - Management consistency

Concluding (so Far)

- An NFV DevOps approach need a trustworthy cycle
 - Accountability in all its aspects
- A mediation element enforcing policies set by the NSP is a feasible approach
 - In any collaboration scenario
- The gatekeeper can be applied not only to VNF and NS management
 - Slice support via horizontal and vertical recursion
 - Integrated through extensible management
- Standardizing the approach
 - ETSI NFV ISG
 - Starting to look at slicing concepts
 - IRTF NFVRG
 - The gatekeeper concept
 - Integration with intent-based approaches



Who We Are

SONATA is an EU-funded project (Horizon 2020) and part of the 5G-PPP initiative

30 month work plan, started in July 2015

15 partners representing telecom operators, manufacturers, system integrators, service providers, SME developers, research and academic institutes

The logo for Atos, featuring the word "Atos" in a bold, blue, sans-serif font.The logo for NEC, featuring the letters "NEC" in a bold, blue, sans-serif font.The logo for PT INOVAÇÃO, featuring a blue square with two white circles and the letters "PT" inside, followed by the word "INOVAÇÃO" in a bold, black, sans-serif font.The logo for THALES, featuring the word "THALES" in a bold, blue, sans-serif font.The logo for Telefonica, featuring the word "Telefonica" in a stylized, cursive, blue font.The logo for NOKIA, featuring the word "NOKIA" in a bold, blue, sans-serif font.The logo for UNIVERSITÄT PADERBORN, featuring a blue stylized building icon and the text "UNIVERSITÄT PADERBORN" and "Die Universität der Informationsgesellschaft" in a black, sans-serif font.The logo for Demokritos, featuring a small icon of a classical building and the text "Demokritos" and "National Centre for Scientific Research" in a black, sans-serif font.The logo for UCL, featuring a small icon of a classical building and the letters "UCL" in a bold, black, sans-serif font.The logo for iMinds, featuring a pink and red stylized brain icon and the word "iMinds" in a bold, black, sans-serif font.The logo for Optare Solutions, featuring a blue stylized head icon and the word "Optare" in a bold, blue, sans-serif font, with "Solutions" in a smaller, blue, sans-serif font below it.The logo for i2cat FUNDACIÓ, featuring a stylized orange and white circular pattern and the text "i2cat" in a bold, orange, sans-serif font, with "FUNDACIÓ" in a smaller, orange, sans-serif font below it.The logo for SYNELIXIS, featuring the word "SYNELIXIS" in a bold, green, sans-serif font.The logo for BT, featuring the letters "BT" in a bold, blue, sans-serif font, followed by a colorful, abstract globe icon.The logo for ubiwhere, featuring the word "ubiwhere" in a bold, blue, sans-serif font, with "SUITING THE FUTURE" in a smaller, blue, sans-serif font below it.

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The logo for sonata, featuring the word "sonata" in a bold, blue, sans-serif font, followed by a colorful, abstract globe icon.

SONATA on the net...



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