

# sonata

agile service development and orchestration in 5G virtualized networks



FIC 2017

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[alberto-m-rocha@alticelabs.com](mailto:alberto-m-rocha@alticelabs.com)

HORIZON  
2020



# Quem somos

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- Projeto H2020 financiado pela União Europeia (6M€)
- Iniciativa 5G-PPP
- Duração: 30 meses (início em Junho 2015)
- 15 parceiros representando
  - Operadores de Telecomunicações
  - Fabricantes de Equipamento
  - Integradores de Sistemas
  - Fornecedores de Serviço
  - Developers (PME's)
  - Institutos de I&D
  - Universidades

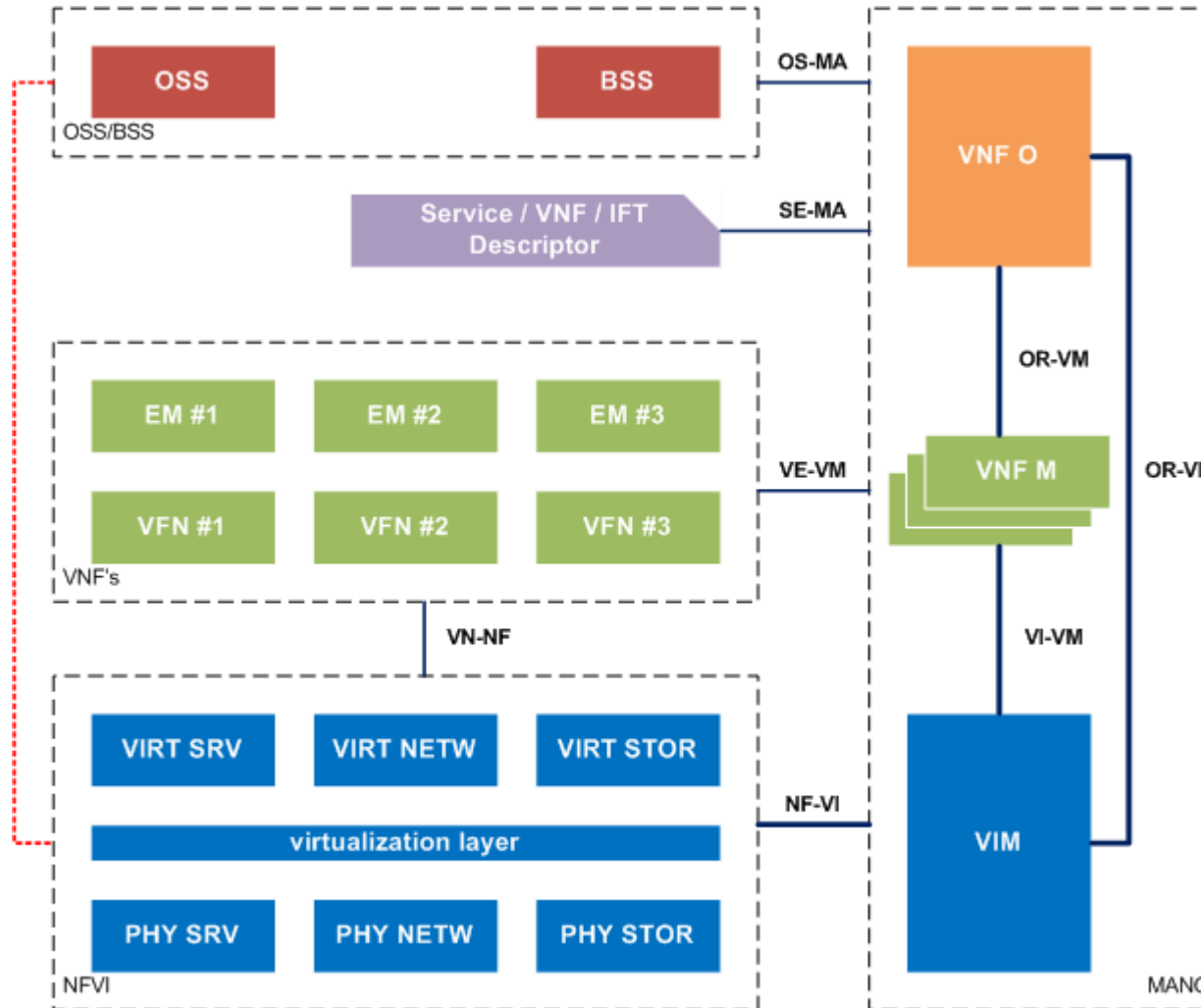


# SONATA – breve resumo

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- Implementação do modelo de referência ETSI NFV
  - <http://www.etsi.org/technologies-clusters/technologies/nfv>
- Projeto *open source*
  - <https://github.com/sonata-nfv/>
- Disponibiliza ferramentas para Criação de Serviços (**SDK**)
- Disponibiliza uma plataforma de Gestão de Serviços (**SP**)
- Disponibiliza uma plataforma de Integração e Qualificação (**CI/CD**)
- Disponibiliza uma plataforma de Entrega Contínua (**MANO**)
- Arquitetura de **Micro-Serviços** (REST & MQ)
- Abordagem **DevOps**

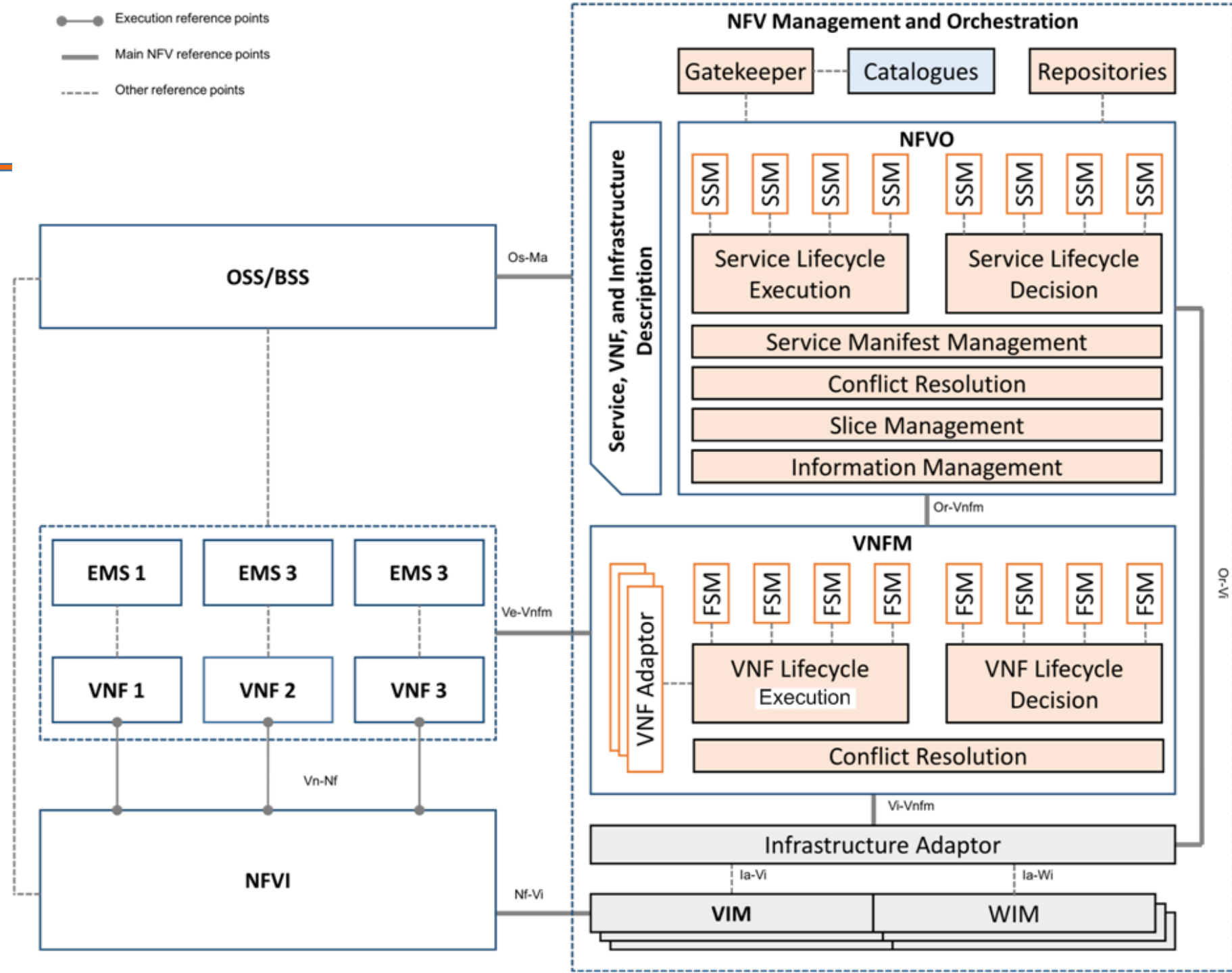
# ETSI NFV – modelo de referencia



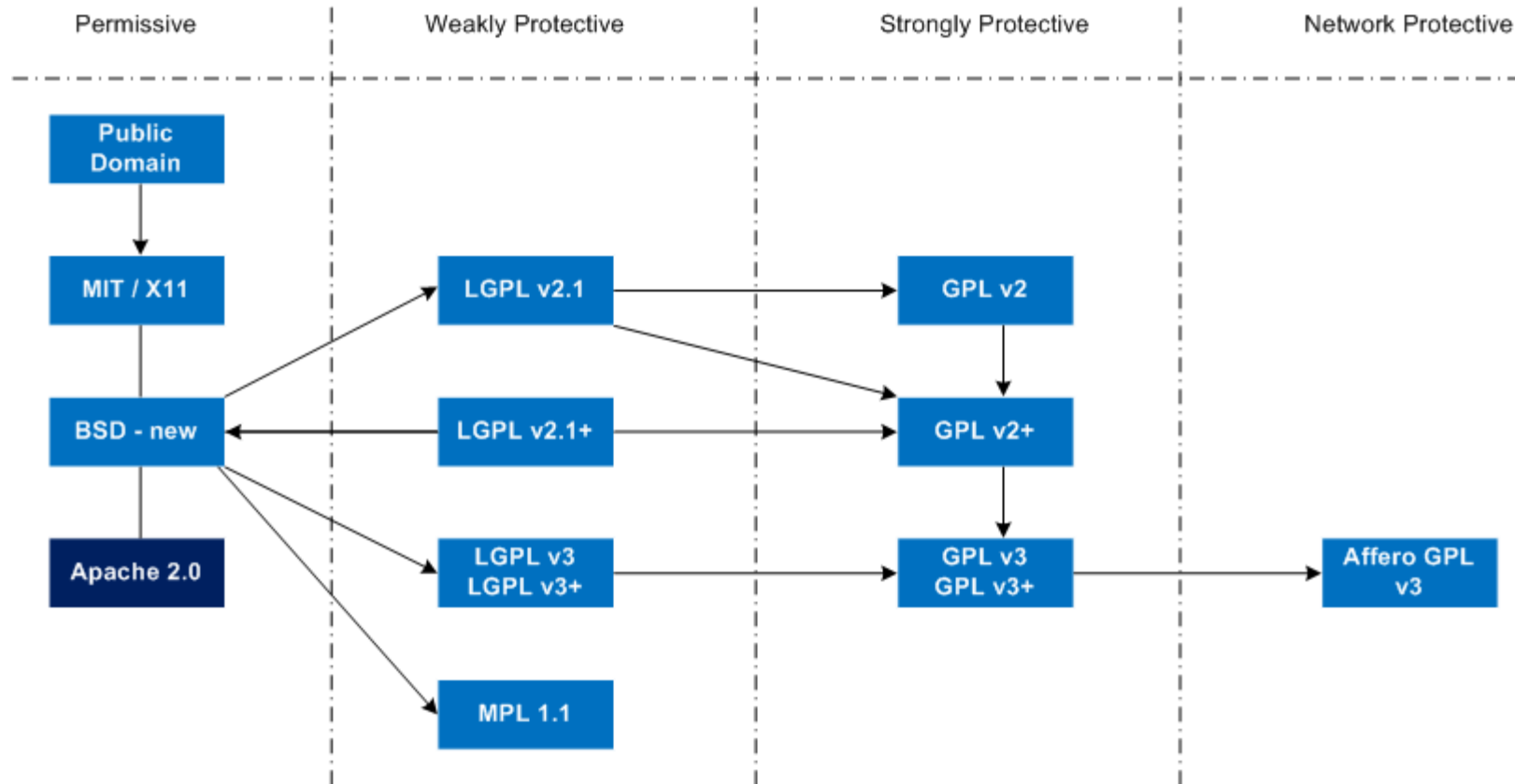
# Modelo de Referencia ETSI

vs.

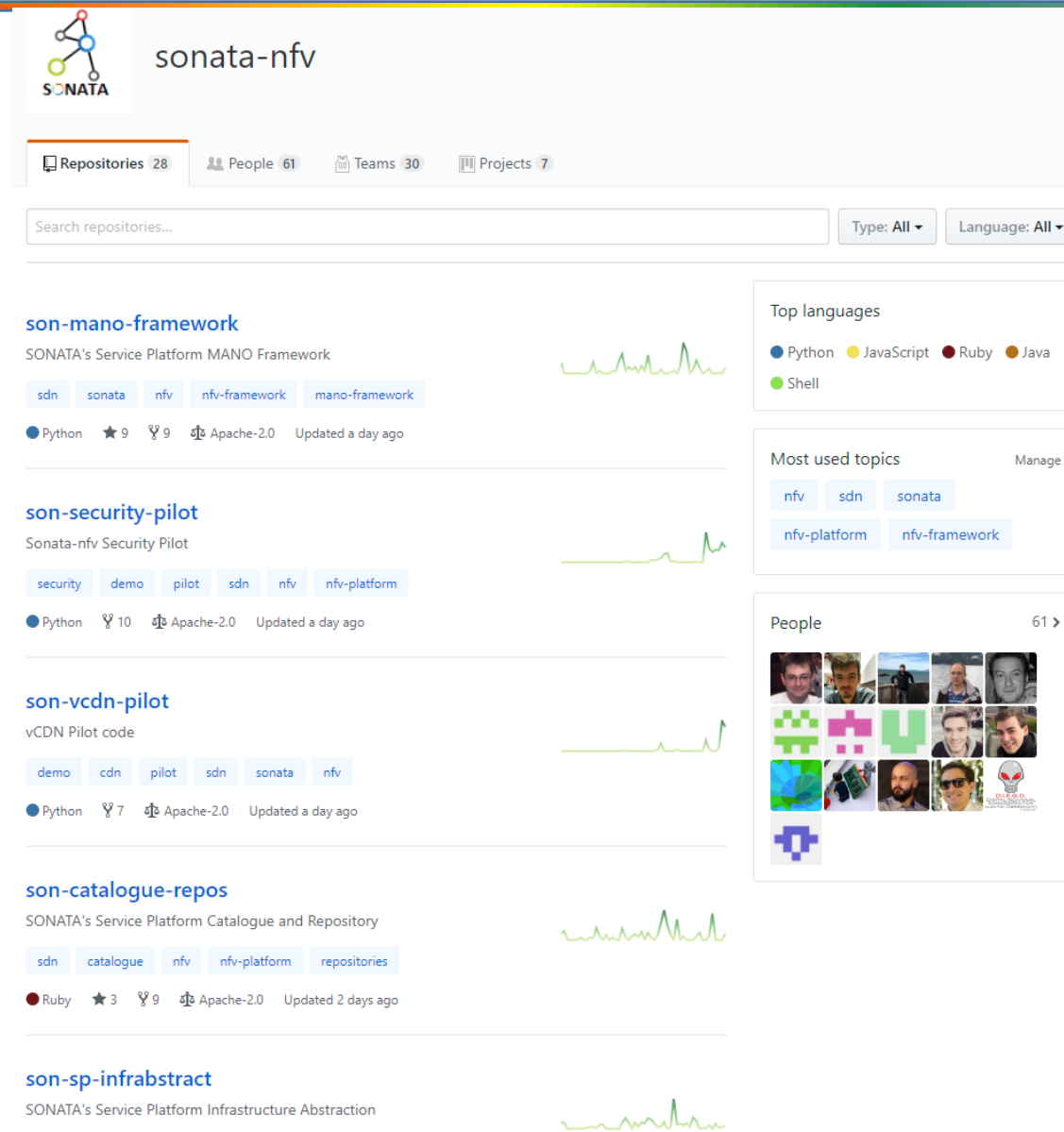
# Arquitectura SONATA 5G NFV



# SONATA 5G NFV – código aberto



# Código-fonte: <https://github.com/sonata-nfv>



The screenshot shows the GitHub repository page for sonata-nfv. At the top, the repository name 'sonata-nfv' is displayed next to the SONATA logo. Below this, statistics show 28 Repositories, 61 People, 30 Teams, and 7 Projects. A search bar and filters for Type and Language are present. The main content area lists several repositories with their descriptions, tags, and activity graphs:

- son-mano-framework**: SONATA's Service Platform MANO Framework. Tags: sdn, sonata, nfv, nfv-framework, mano-framework. Language: Python. Stars: 9. License: Apache-2.0. Updated a day ago.
- son-security-pilot**: Sonata-nfv Security Pilot. Tags: security, demo, pilot, sdn, nfv, nfv-platform. Language: Python. Stars: 10. License: Apache-2.0. Updated a day ago.
- son-vcdn-pilot**: vCDN Pilot code. Tags: demo, cdn, pilot, sdn, sonata, nfv. Language: Python. Stars: 7. License: Apache-2.0. Updated a day ago.
- son-catalogue-repos**: SONATA's Service Platform Catalogue and Repository. Tags: sdn, catalogue, nfv, nfv-platform, repositories. Language: Ruby. Stars: 3. License: Apache-2.0. Updated 2 days ago.
- son-sp-infrabstract**: SONATA's Service Platform Infrastructure Abstraction.

On the right side, there are three sections:

- Top languages**: Python, JavaScript, Ruby, Java, Shell.
- Most used topics**: nfv, sdn, sonata, nfv-platform, nfv-framework.
- People**: 61 contributors, shown as a grid of profile pictures.

# SONATA SDK – um pacote de ferramentas



## CLI – ferramentas de linha-de-comando

- **son-workspace**
- **son-package**
- **son-validate**
- **son-access**
- **son-monitor**
- **son-profile**

## Editor

- Validação dos Descritores

## Emulator

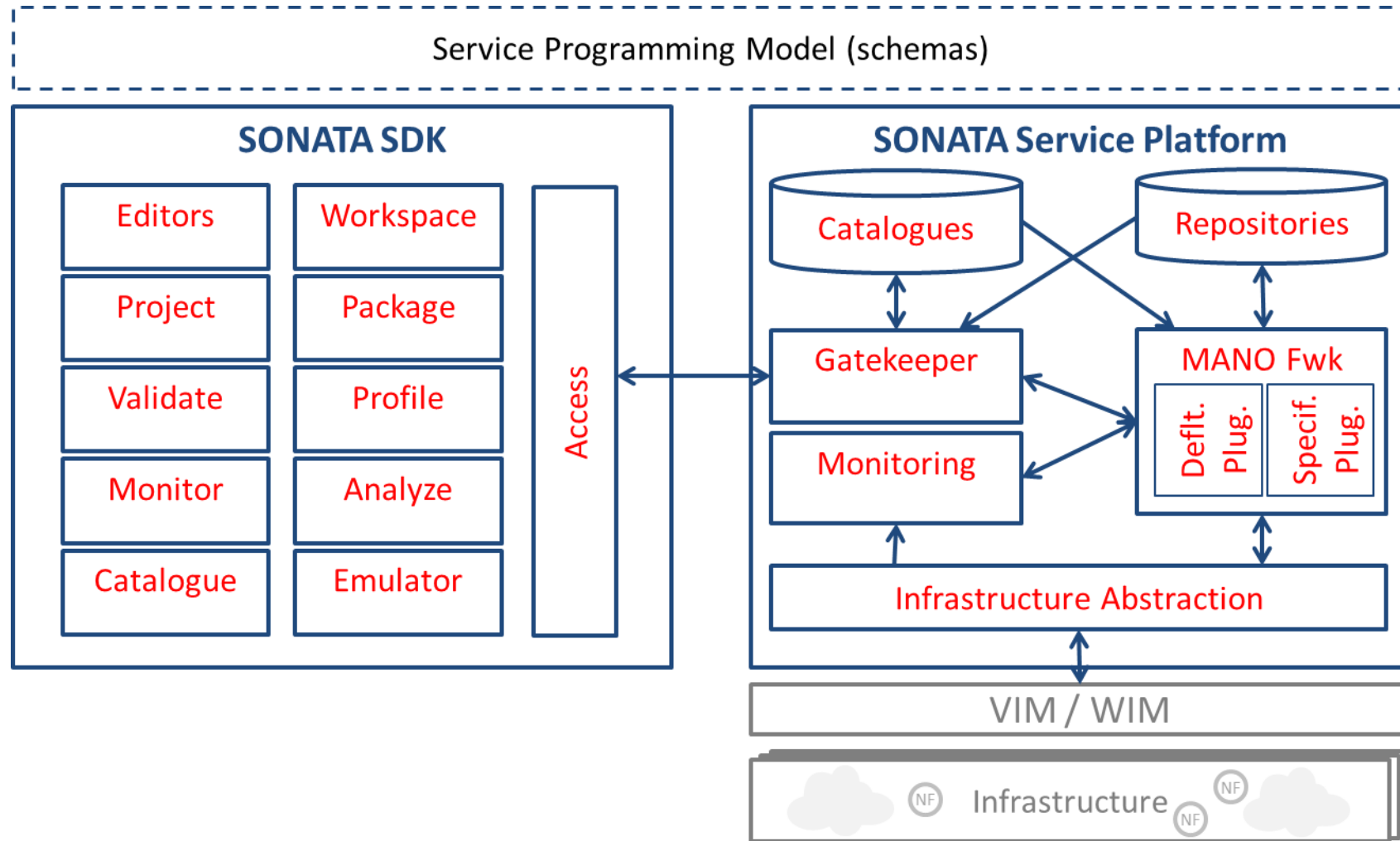
- Plataforma de Emulação para suporte ao desenvolvimento
- Prototipagem de NS e SFC
- Teste *end-to-end* em cenário multi-PoP

## Analyzer

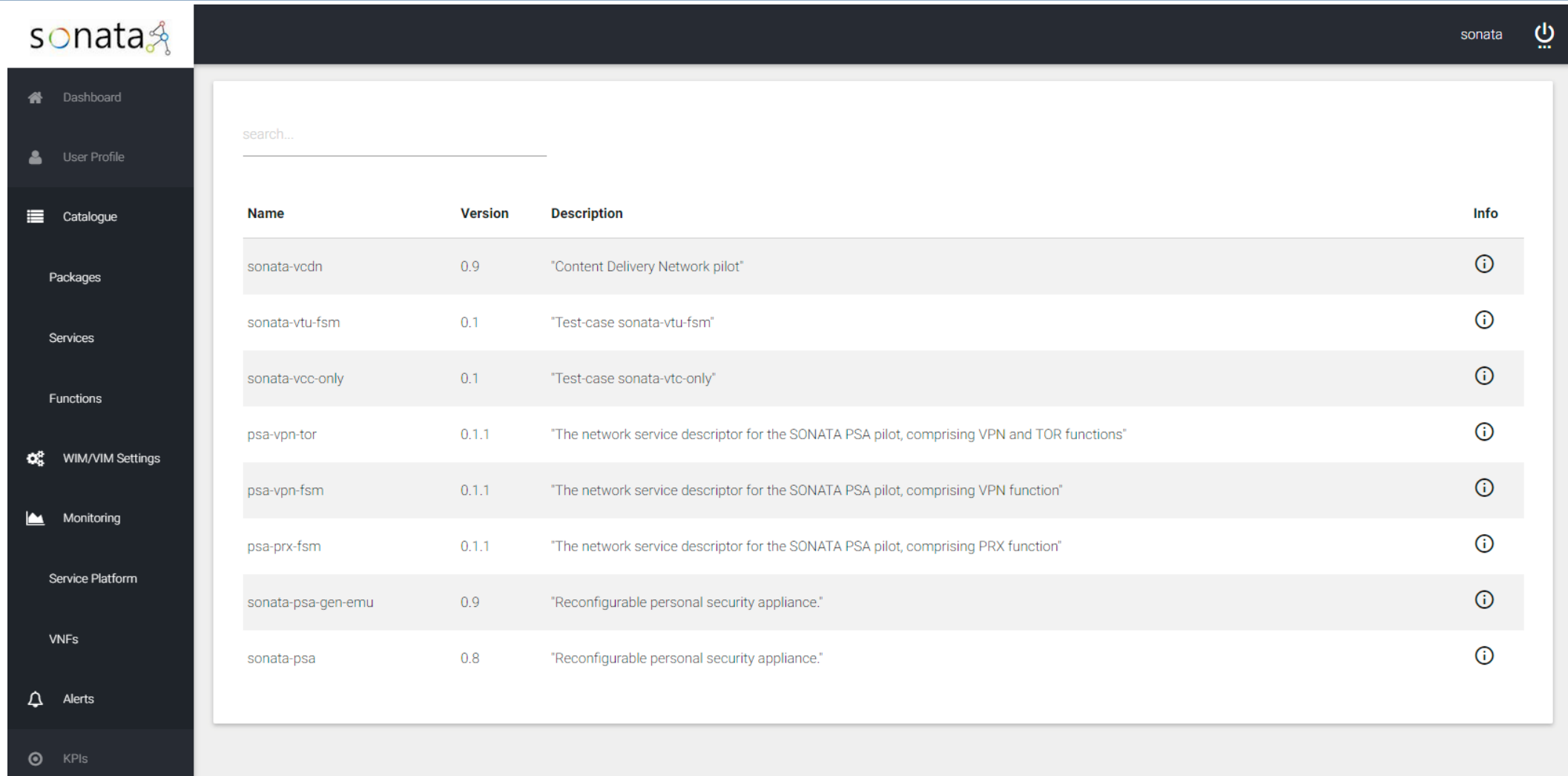
- Cria uma sessão para analisar o comportamento do NS



# SONATA – arquitectura de alto nivel



# SONATA Service Platform (SP)



The screenshot displays the SONATA Service Platform (SP) interface. On the left is a dark sidebar with navigation links: Dashboard, User Profile, Catalogue, Packages, Services, Functions, WIM/VIM Settings, Monitoring, Service Platform, VNFs, Alerts, and KPIs. The main content area has a dark header with the 'sonata' logo and a power icon. Below the header is a search bar labeled 'search...'. A table lists various services with columns for Name, Version, Description, and Info. The services listed are sonata-vcdn, sonata-vtu-fsm, sonata-vcc-only, psa-vpn-tor, psa-vpn-fsm, psa-prx-fsm, sonata-psa-gen-emu, and sonata-psa.

Name	Version	Description	Info
sonata-vcdn	0.9	"Content Delivery Network pilot"	<a href="#">i</a>
sonata-vtu-fsm	0.1	"Test-case sonata-vtu-fsm"	<a href="#">i</a>
sonata-vcc-only	0.1	"Test-case sonata-vtc-only"	<a href="#">i</a>
psa-vpn-tor	0.1.1	"The network service descriptor for the SONATA PSA pilot, comprising VPN and TOR functions"	<a href="#">i</a>
psa-vpn-fsm	0.1.1	"The network service descriptor for the SONATA PSA pilot, comprising VPN function"	<a href="#">i</a>
psa-prx-fsm	0.1.1	"The network service descriptor for the SONATA PSA pilot, comprising PRX function"	<a href="#">i</a>
sonata-psa-gen-emu	0.9	"Reconfigurable personal security appliance."	<a href="#">i</a>
sonata-psa	0.8	"Reconfigurable personal security appliance."	<a href="#">i</a>

# SONATA Business Support System (BSS)

SonataBSS Available Network Services Requests Network Services Instances Licence Store

sonata | Logout




## Available Network Services

Name	Description	Vendor	Version	Service Id	Licence Type	Actions
sonata-psa	"Reconfigurable personal security appliance."	eu.sonata-nfv.service-descriptor	0.8	3e82f9fc-7d02-4bd5-9ea2-eea38a20d900	Public	
sonata-psa-gen-emu	"Reconfigurable personal security appliance."	eu.sonata-nfv.service-descriptor	0.9	7d8371d7-e323-4988-8778-f0e305f07094	Public	
psa-prx-fsm	"The network service descriptor for the SONATA PSA pilot, comprising PRX function"	eu.sonata-nfv.service-descriptor	0.1.1	2e0ae8b0-66ec-4f3d-a0ca-ae635b14dc4	Public	
psa-vpn-fsm	"The network service descriptor for the SONATA PSA pilot, comprising VPN function"	eu.sonata-nfv.service-descriptor	0.1.1	5d4cbec4-2292-447c-9db6-e9c20645ce8f	Public	
psa-vpn-tor	"The network service descriptor for the SONATA PSA pilot, comprising VPN and TOR functions"	eu.sonata-nfv.service-descriptor	0.1.1	28a89143-ea5c-45ab-9d8c-a51f5292c967	Public	
sonata-vcc-only	"Test-case sonata-rtc-only"	eu.sonata-nfv.service-descriptor	0.1	c1454443-4410-40aa-840c-31b6a676a471	Public	
sonata-vtu-fsm	"Test-case sonata-vtu-fsm"	eu.sonata-nfv.service-descriptor	0.1	b65823e9-f057-4f68-9303-17a9d8e2313c	Public	
sonata-vcdn	"Content Delivery Network pilot"	eu.sonata-nfv.service-descriptor	0.9	3d1f2464-393c-46e3-977a-ca213fa7e8fa	Public	

# SONATA 5G NFV – CI/CD

## Continuous Integration / Continuous Delivery

 **Jenkins**

3

search

?


AROCHA7


LOG OUT


Jenkins > PILOTS >


ENABLE AUTO REFRESH


[+ New Item](#)


 People

 Build History


 Edit View


 Delete View


 Project Relationship


 Check File Fingerprint

Manage Jenkins


 My Views


 Disk Usage

 Job Config History

 Credentials

**Cloud Statistics** ^

 jclouds-ubuntu-qual 100%




 jclouds-qual 100%


**Build Queue** ^

All DEVELOPMENT INTEGRATION **PILOTS** QUALIFICATION test u\_ADMIN TASKS +

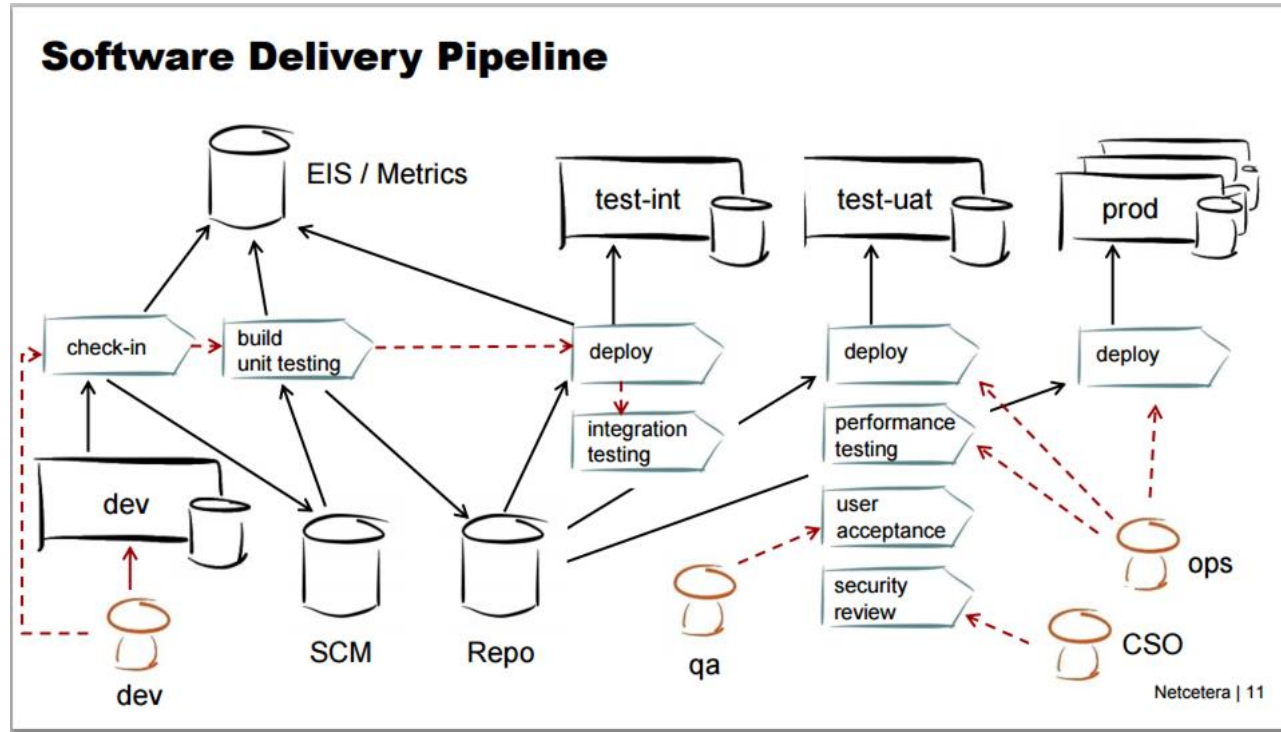
S	W	Name ↓	Last Success	Last Failure	Last Duration	Built On
✓	⚙	pilots-clean-packages	50 min - #34	N/A	85 ms	jenkins
✓	👤	pilots-package-population	50 min - #108	4 hr 3 min - #104	35 sec	jenkins
✓	⚙	pilots-psa-packages	5 hr 10 min - #96	6 hr 30 min - #86	48 sec	jenkins
✓	⚙	pilots-psa-ssm-fsm	5 hr 10 min - #38	6 hr 30 min - #28	21 sec	jenkins
✓	⚙	pilots-push-ssms-fsms	2 days 3 hr - #18	N/A	2 min 28 sec	jenkins
✓	⚙	pilots-vcdn-package	3 min 4 sec - #100	3 hr 36 min - #90	1 min 8 sec	jenkins
✓	⚙	pilots-vcdn-ssm-fsm	2 min 25 sec - #28	N/A	29 sec	jenkins

Icon: S M L

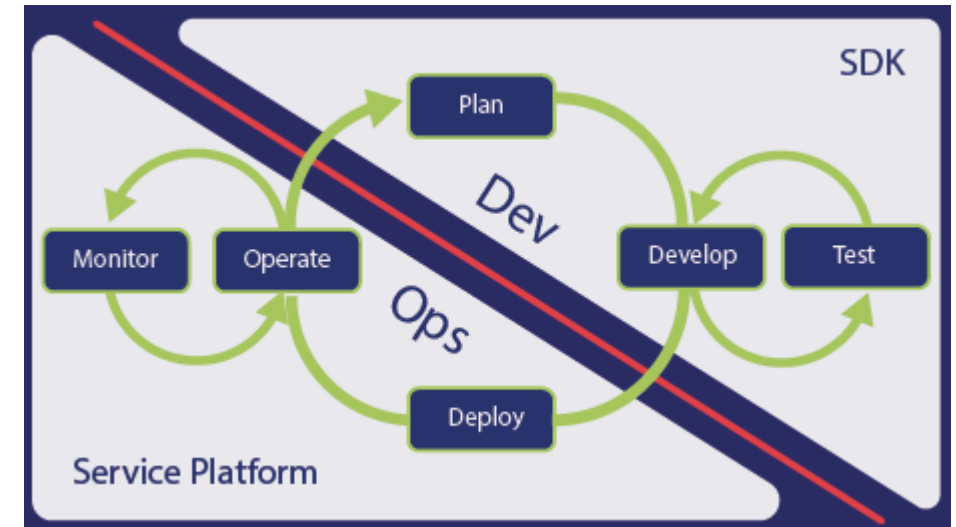
Legend  RSS for all  RSS for failures  RSS for just latest builds



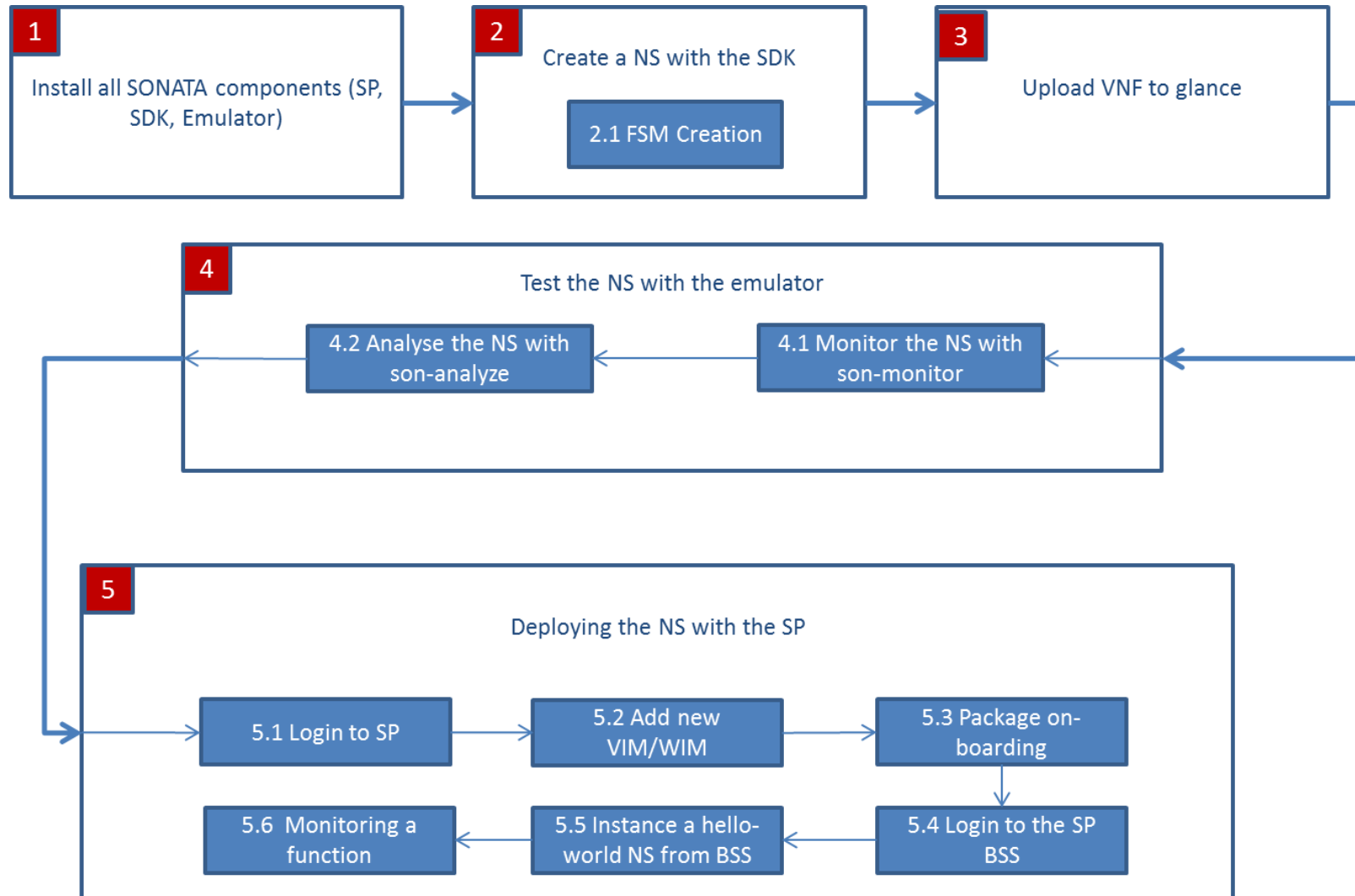
# SONATA 5G NFV – abordagem DevOps



Source: Martin Fowler, ThoughtWorks



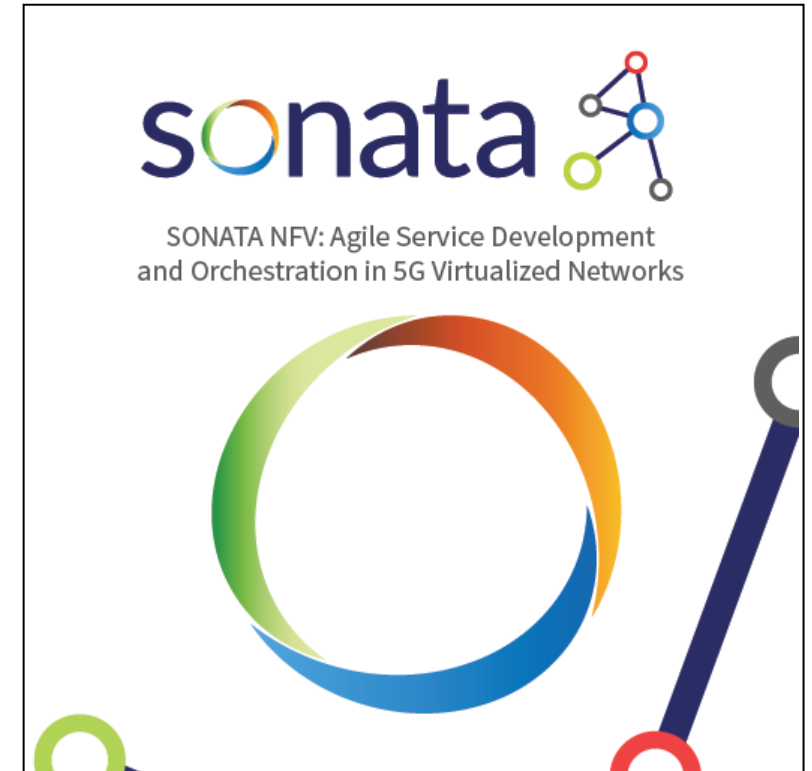
# SONATA v3.0 – começar a usar



# SONATA v3.0 – outros recursos

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- [Quick Guide](#): How to install and use SONATA 3.0
- [SONATA 3.0 Service Platform installation video](#)
- [SONATA 3.0 SDK and Emulator installation videos](#)
- [SONATA 3.0 Network Service Deployment video](#)
- Technical support: [support@sonata-nfv.eu](mailto:support@sonata-nfv.eu)



# NFV – outras iniciativas *Open Source*

## OSM

**OPNFV** (a Linux Foundation project)



## OpenBaton

**ONAP** (Open-O + ECOMP)

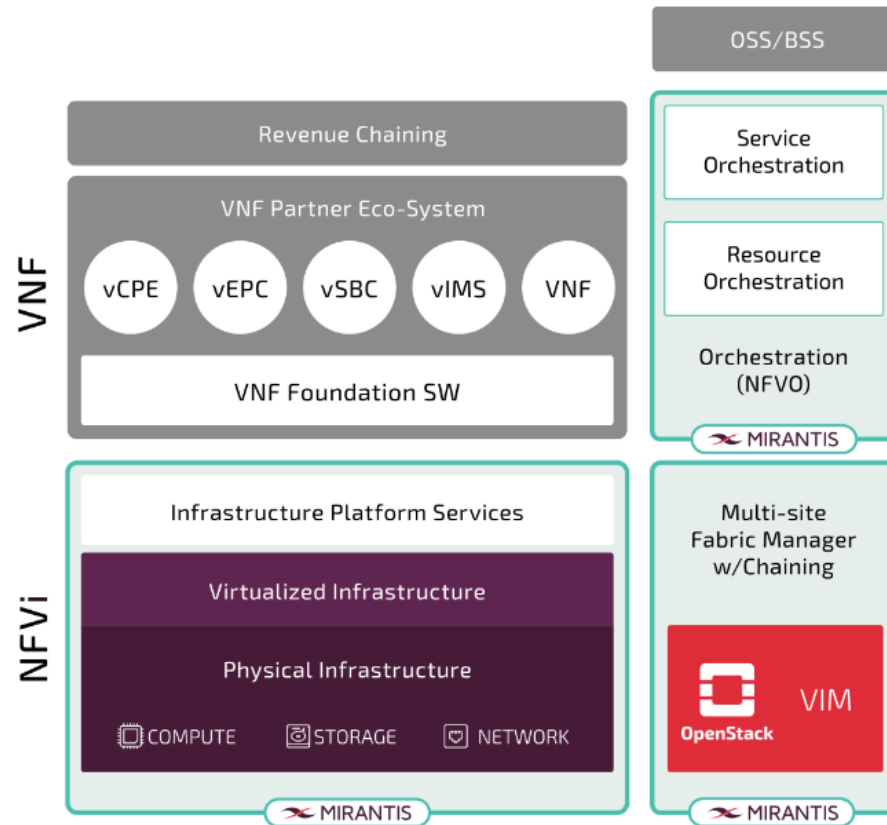


## Openstack Tacker + Murano



# NFV – soluções comerciais

## Mirantis NFV



## Cisco/Redhat

<b>SP Mobility</b>	Available MME vPC	Available Home Agent vPC	Available SaMOG vPC	Available ANDSF vPC	Available PCF vPC	Available Enhanced Charging Service vPC	Available FW, NAT vPC	Available DPI vPC
<b>Voice and Video</b>	Available Unified Border Element CSR1Kv	Available vCDN CSR1Kv	Available Cloud DVR Cloud DVR	Available Call Control (PBX) Presence CUCM, CUPS	Available Unified Messaging Unified Unity	Available Contact Center Unified CCX Exp	Available Cloud Hosted Conference Webex	Available Video Conferencing MCE9000
<b>Management and Orchestration</b>	Available SDN Controller XNC	Available Enterprise SDN Policy Controller APIC-EM	Available Open SDN Controller DDL	Available WAN Orchestration WAE	Available NFV Orchestration Config Automation NSO	Available VNF Manager Business NSO-ESC	Available Application Control Policy & Automation APIC	Available Service Catalog PSC
<b>Network Infrastructure</b>	Available Network VIM SDN Controller VTC	Available CPE / Routing (ISP, BGP, mCast) CSR1Kv	Available Route Reflector CSR1Kv	Available Provider Edge CSR1Kv	Available Radio Aware Routing CSR1Kv	Available AVC (DPF) AppNav CSR1Kv	Available AAA, DHCP CSR1Kv	Available WCCPv2 CSR1Kv
	Available Private Cloud Controller vPC	Available IPA SLA CSR1Kv	Available LISP, OTV CSR1Kv	Available L2TPv3, VXLAN CSR1Kv	Roadmap Routing, VPN, FW, IPS, Content Filtering, WAN Acc. vPC (Meraki)	Available WAAS vPC	Available vSwitch (N1Kv) vPC	Roadmap Network Analysis Module vPC
	Available AAA Server PAM	Available vPE / VRR9000 XRv	Available Load Balancer Cisco / FS Third Party	Available VTF / vPE-F (VPP Based) VTF	Roadmap BNG Control Plane vPC	Available DDOS RAD / Arbor Third Party	Roadmap Load Balancer, 4-to-6 SW Conc. vPC	Available Wireless LAN Controller vPC
<b>Gateways</b>	Available vBRAS / ISG CSR1Kv	Available WPA Access Gateway CSR1Kv	Roadmap BNG Gateway vPC	Roadmap HNBGW vPC	Available PGW, GGSN vPC	Available SGW, ePDG vPC	Available eWAG, ePDG vPC	Available PDSN vPC
<b>Security</b>	Available Firewall / Zone Based Firewall CSR1Kv	Available NAT CSR1Kv	Available (EOL) CG-NAT CSR1Kv	Available IPSec, SSL, VPN CSR1Kv	Available IPS CSR1Kv	Available Firewall / Zone Based, FW, NAT ASA vPC	Available IPSec, SSL, VPN ASA vPC	Available NG-IPS SourceFire
	Available Email Security vESA	Available Web Security vWSA	Available DPI vSCE	Available Identity Services Engine vISE	Available EZVPN CSR1Kv	Available DMVPN CSR1Kv	Available FlexVPN CSR1Kv	Available GETVPN CSR1Kv

# Saiba mais sobre o SONATA

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- **Project website:** <http://www.sonata-nfv.eu/>
- **GitHub landing Page:** <https://sonata-nfv.github.io/>
- **Twitter:** <https://twitter.com/sonataNFV>
- **LinkedIn:** [www.linkedin.com/in/sonata-nfv](http://www.linkedin.com/in/sonata-nfv)
- **YouTube:** [https://www.youtube.com/channel/UC\\_vQQq7mjvHt4JzEkp4kppQ](https://www.youtube.com/channel/UC_vQQq7mjvHt4JzEkp4kppQ)
- **ResearchGate:** <https://www.researchgate.net/project/H2020-SONATA>
- **Newsletter:** <http://www.sonata-nfv.eu/newsletter/30>

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