

# A GLANCE AT OUR AUTOMATION JOURNEY

NSO Developer days, 18-20 June 2019  
Stockholm, Sweden

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**EVO WORK TEAM** | Network Area

# Outline

1. A brief history of configuration at TIWS
2. Automation is the Key. Adopting Cisco NSO
3. Extending Cisco NSO. Integrations
4. Beyond Cisco NSO. Welcome HADeS!
5. Demo time

# Who are we?



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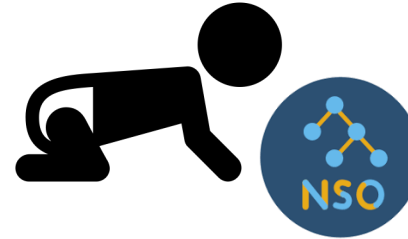
# A brief history of configurations at TIWS

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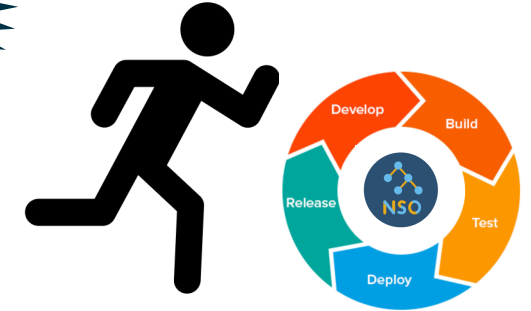
# 1. A brief history of configurations at TIWS



2016



2018



## Manual Ops

- NetOps at the device or system UI
- Heterogeneous network deployments
- Difficult handling and scalation

## Automated Workflows

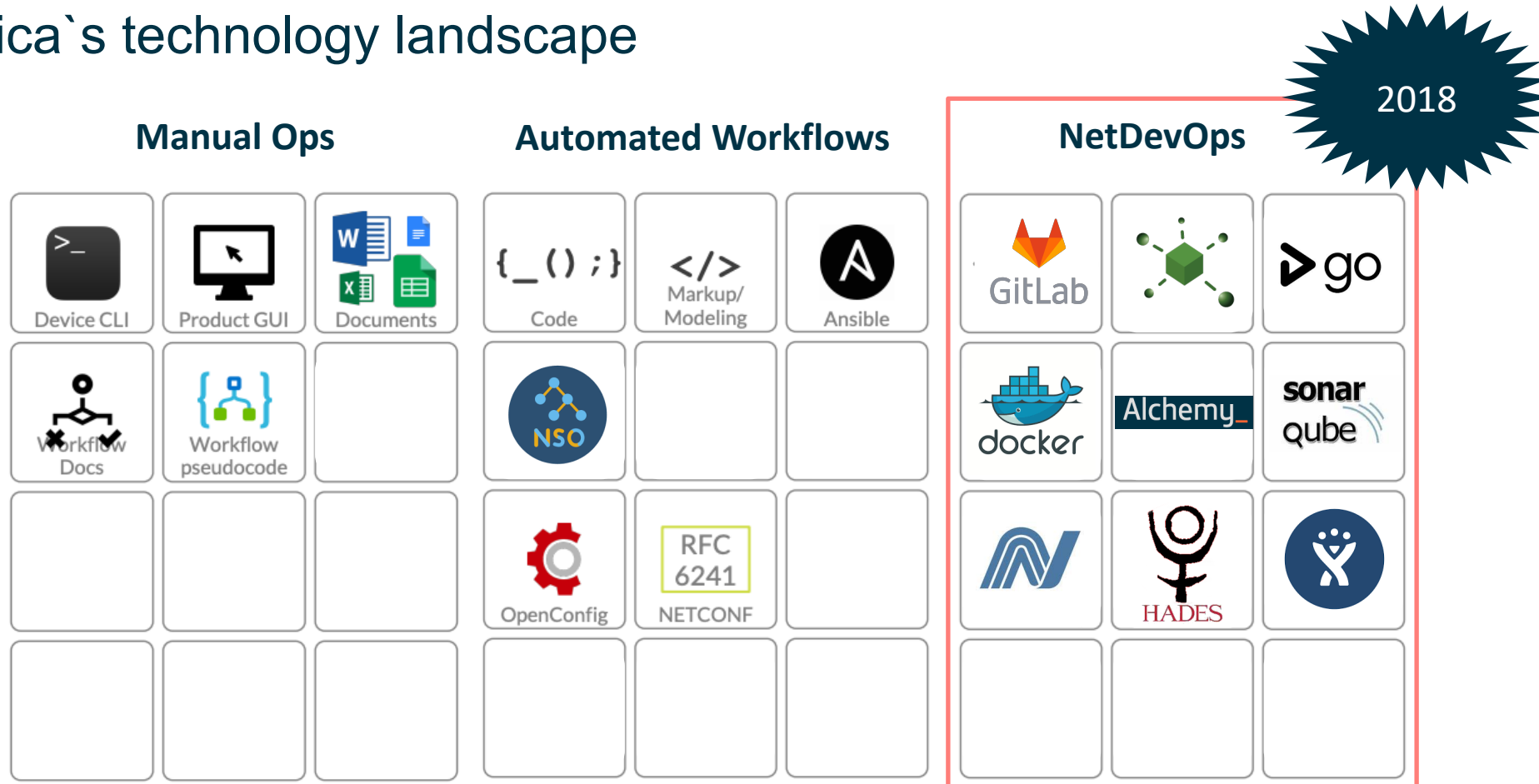
- Adopt NSO as SDN controller
- Automate the design of ops
- Cisco's services development
- Do it yourself philosophy
- First internal stacked-services

## Automation, tests and networks as code

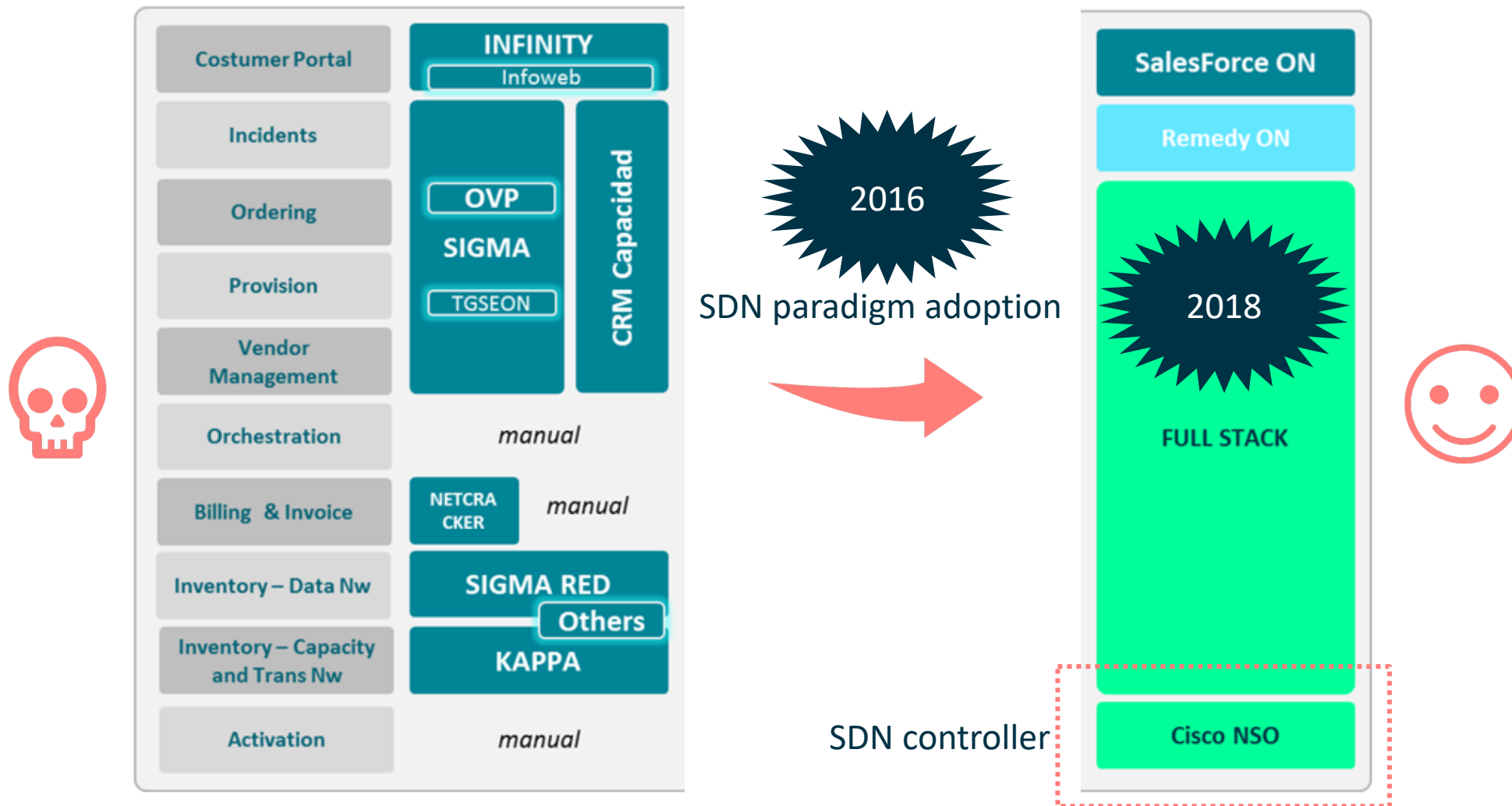
- Adopting NetDevOps methodology
- Extending services above NSO
- Special Services. Special treatment

# 1. A brief history of configurations at TIWS

## Telefonica`s technology landscape



# 1. A brief history of configurations at TIWS





# 1. A brief history of configurations at TIWS

> 70% 

Network commits deployed  
by Cisco NSO

and growing!!!



# Automation is the Key. Adopting Cisco NSO

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## 2. Automation is the key. Development flow



### Service Modelling and Coding

- Config model (Stacked architecture CFS-RFS)
- Service coding
- Template mapping
- Continuous code quality

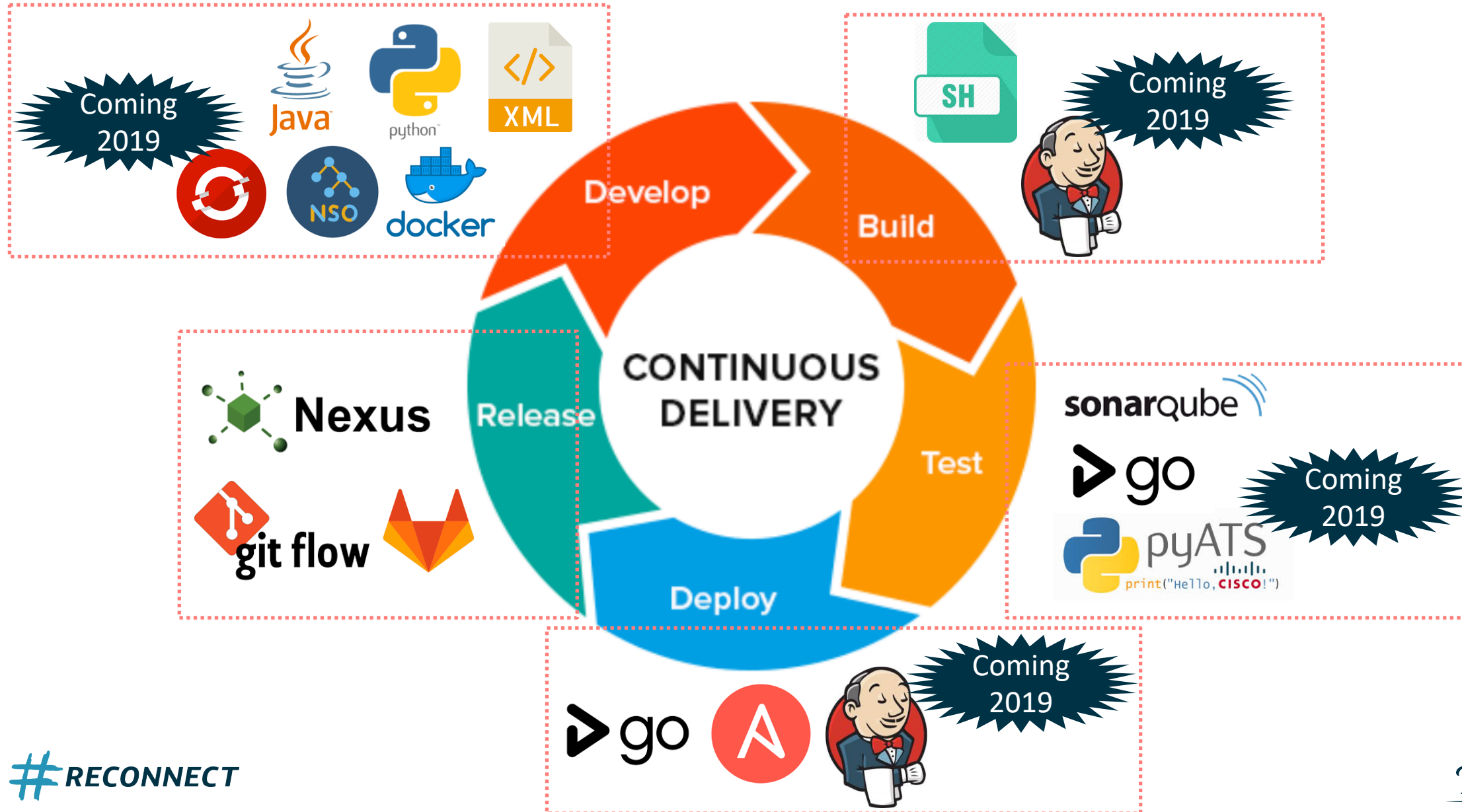
### Service testing

- Pre-checks and Post-checks into service development
- Service config validation
- Regression tests
- UATs
- Leverage release (master)

### Service deployment

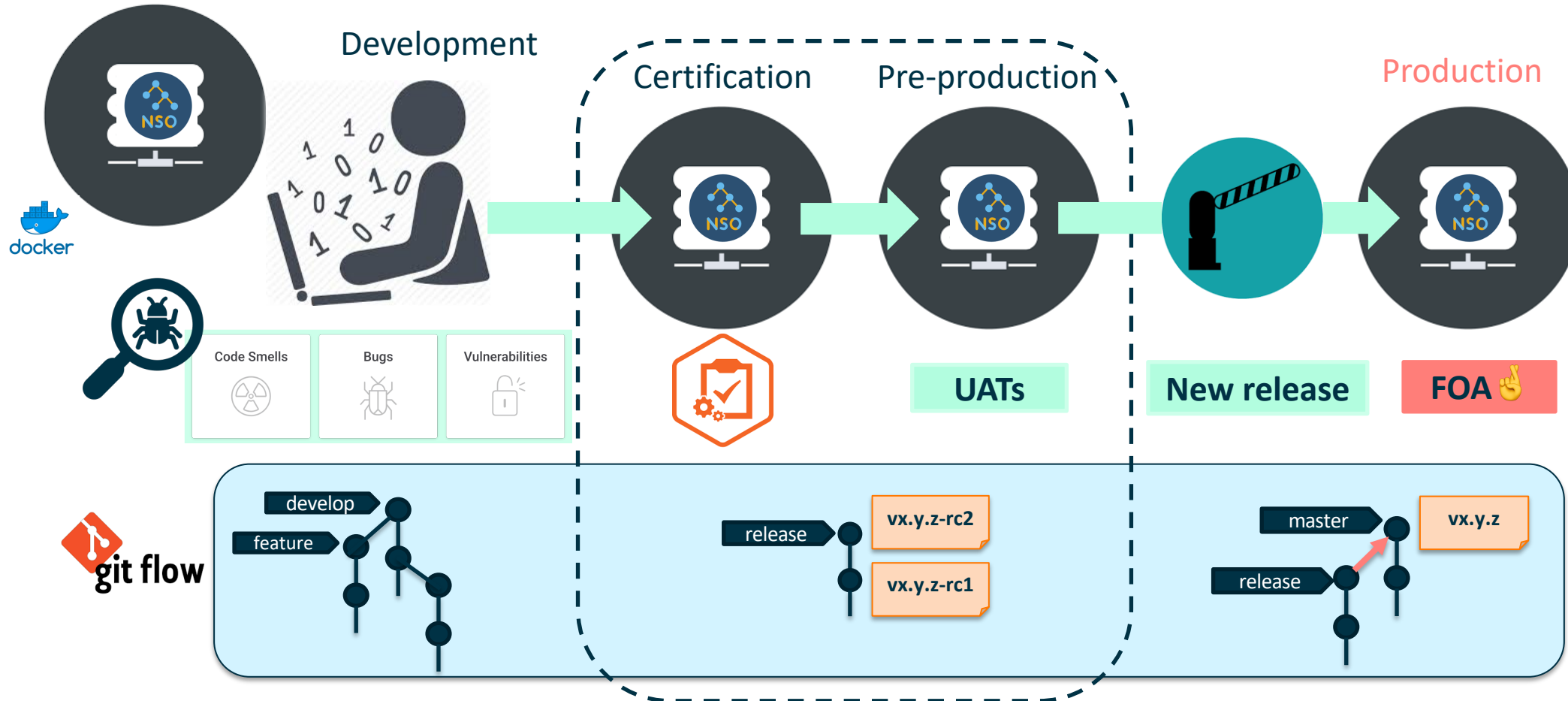
- CI/CD DevOps methodology
- FOA
- Service Operation

## 2. Automation is the key. Continuous delivery

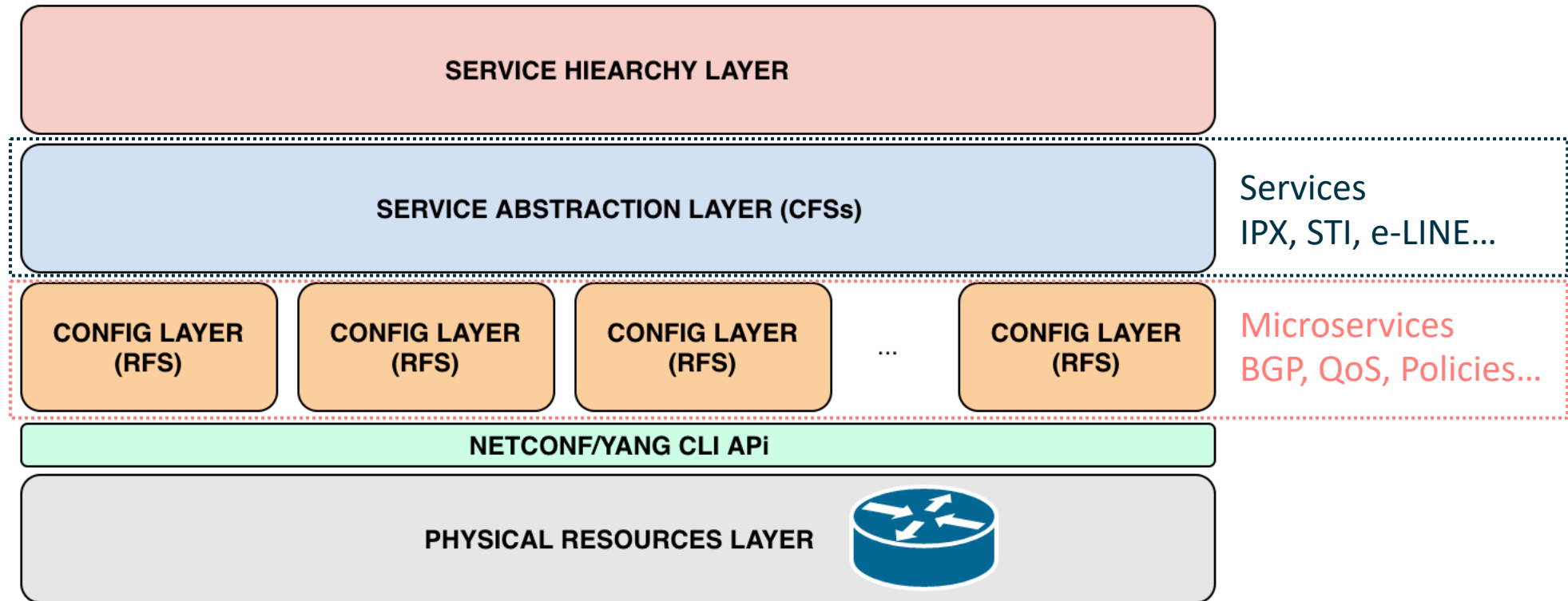


## 2. Automation is the key. Workflow

Dev. environment



## 2. Automation is the key. NSO stacked services architecture



# Extending Cisco NSO.

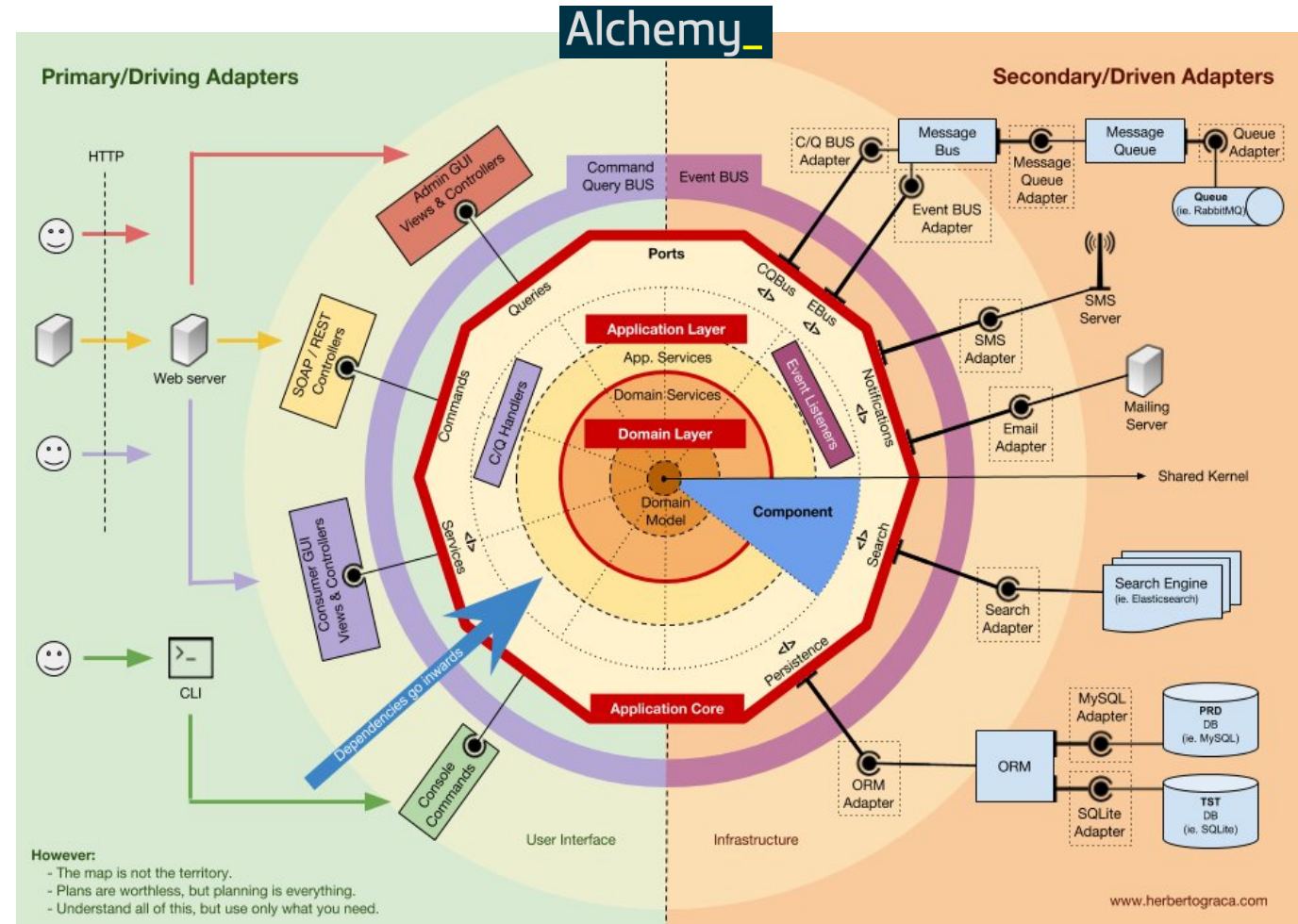
## Alchemy\_

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# 3. Extending Cisco NSO. Alchemy\_

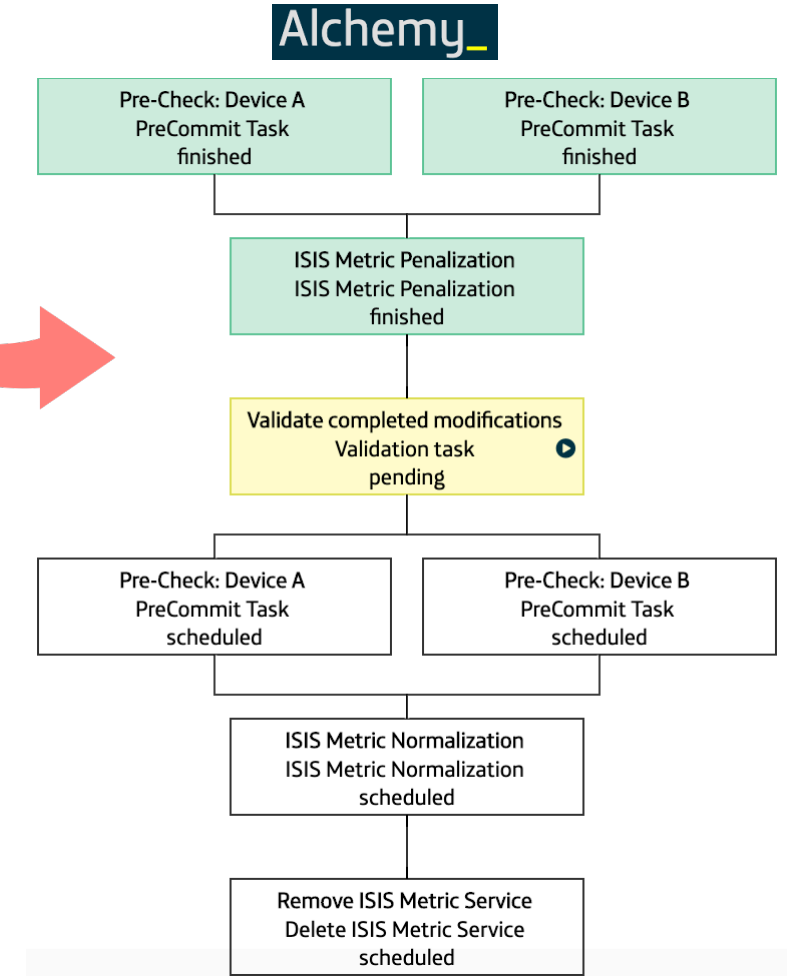
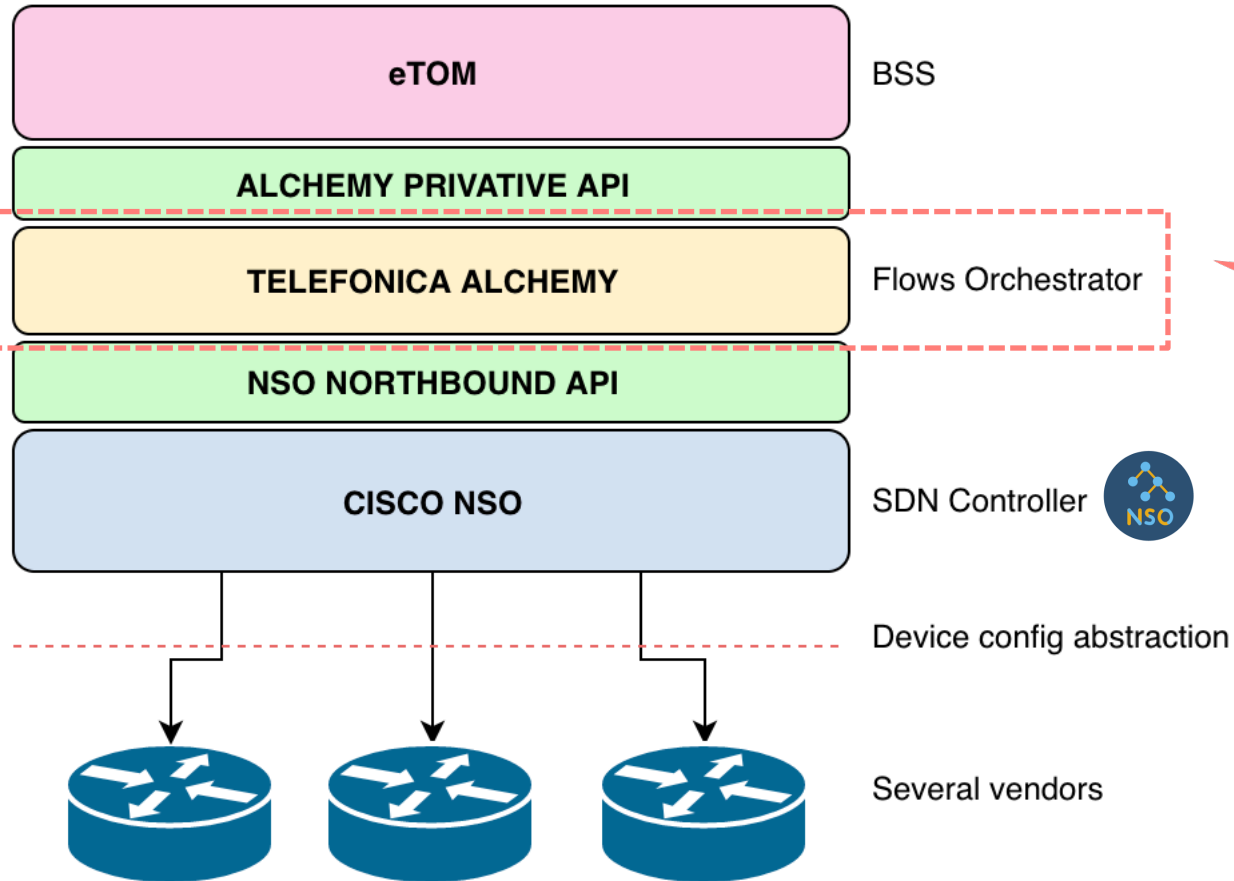
**Alchemy\_** is a flows orchestrator developed under an architecture called **Hexagonal Architecture or Ports and Adapters**.

- **Domain layer:** Contains business logic, domain entities... in general, all domain elements and contracts.
- **Application layer:** Here we can find the application logic, and mainly, contains the use case of our application.
- **Infrastructure/Framework layer:** Contains the implementations tied to any framework, library, infrastructure details...



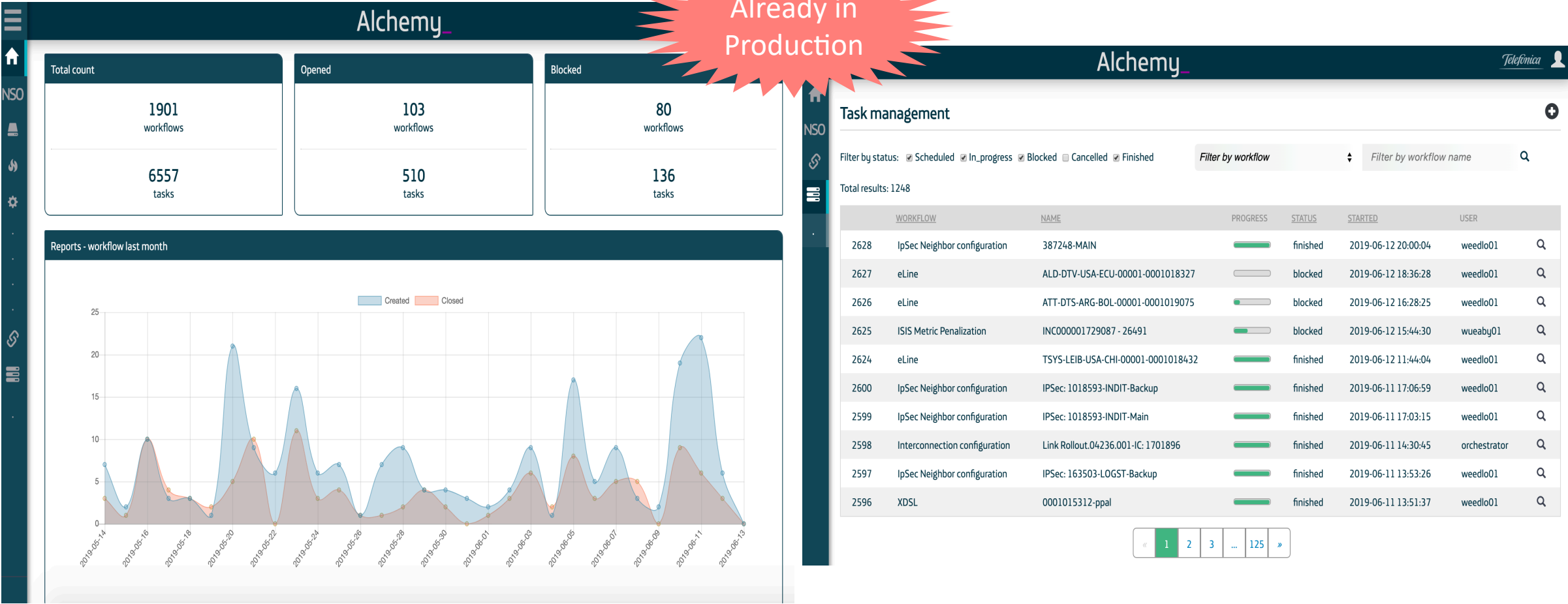


# 3. Extending Cisco NSO. Alchemy\_



# 3. Extending Cisco NSO. Alchemy\_

Already in  
Production



<https://alchemy.cic.wh.telefonica/>

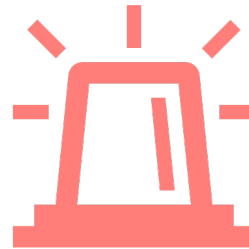
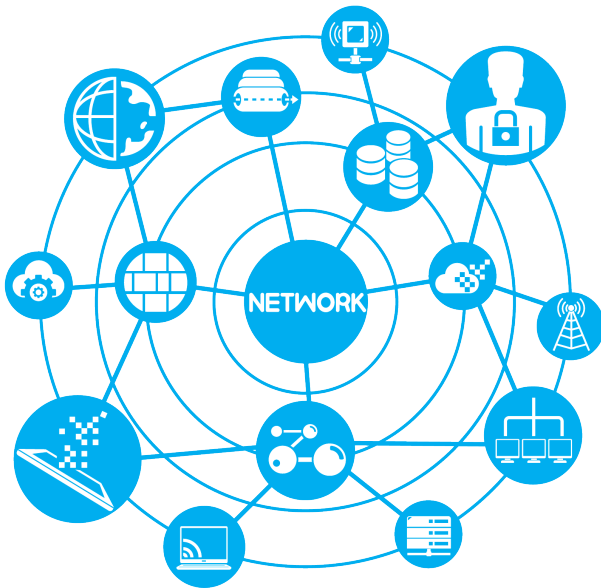
# Beyond Cisco NSO...

## Welcome HADeS!

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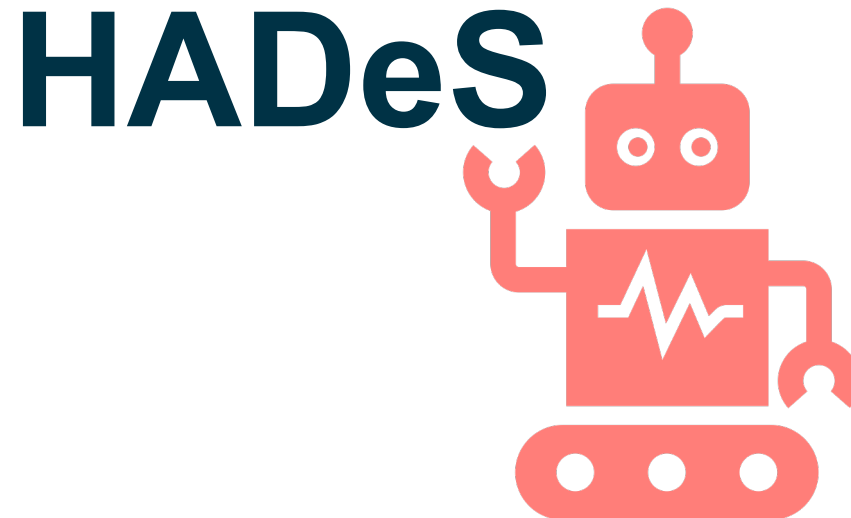
## 4. Beyond Cisco NSO. Welcome HADeS!

Telefonica has more than **1000**  
Special services



# 4. Beyond Cisco NSO. Welcome HADeS!

## OUR SOLUTION



HADES



Node-RED



## 4. Beyond Cisco NSO. Welcome HADeS!

# NSO relevancy in HADeS

- Works as **Orchestrator/Network controller**
- Is the **CORE** of the solution
- Configures Network **devices**

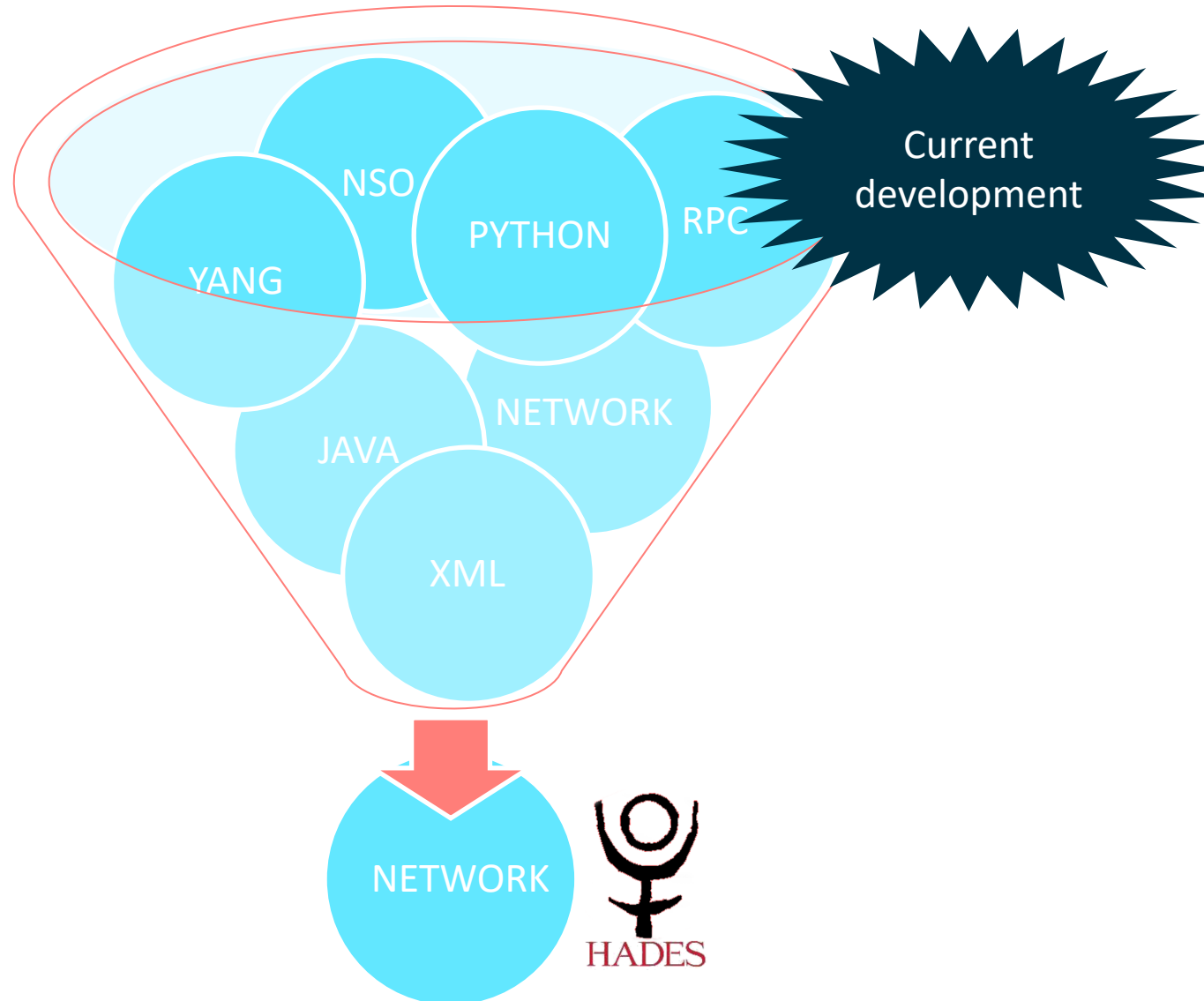


## 4. Beyond Cisco NSO. Welcome HADeS!

# NSO model Data

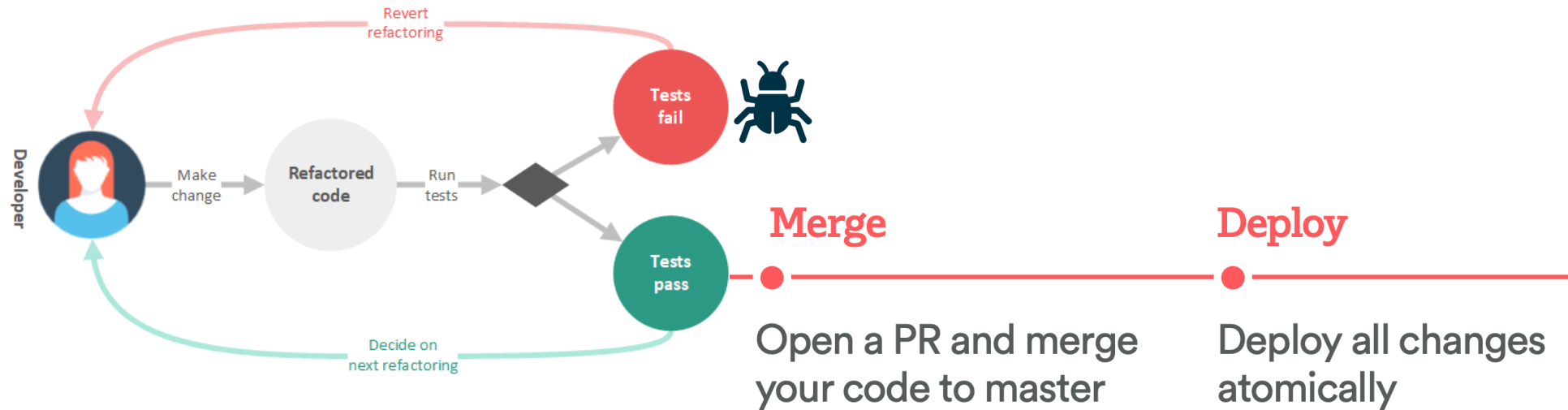
- Generic data model for Hades solutions.  
**We don't need to maintain a YANG model for each service**
- The data model is an abstract and common model.
- The data model does not follow a BSS model or a configured model.

# 4. Beyond Cisco NSO. Welcome HADeS!



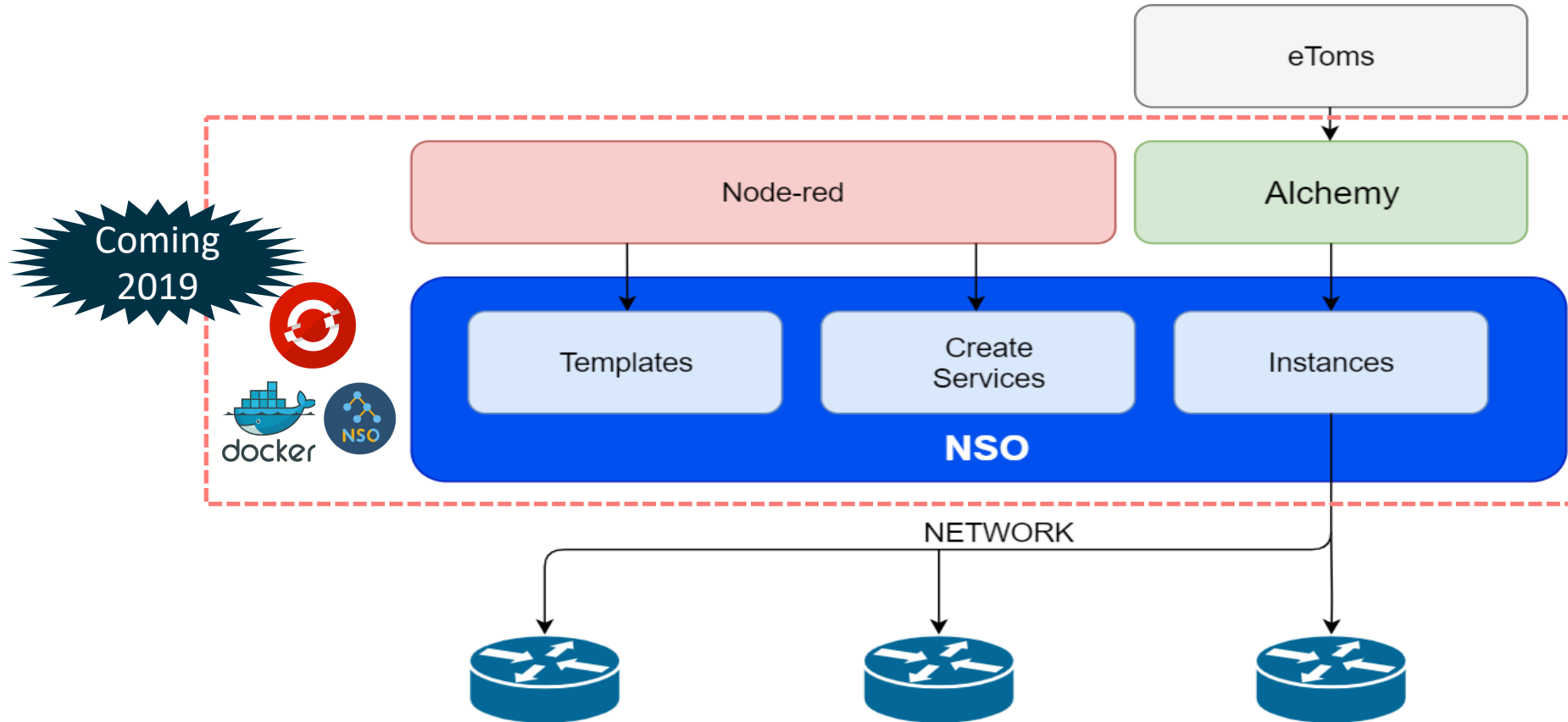


# 4. Beyond Cisco NSO. Welcome HADeS!



Narrow development time  
from months  
to days!

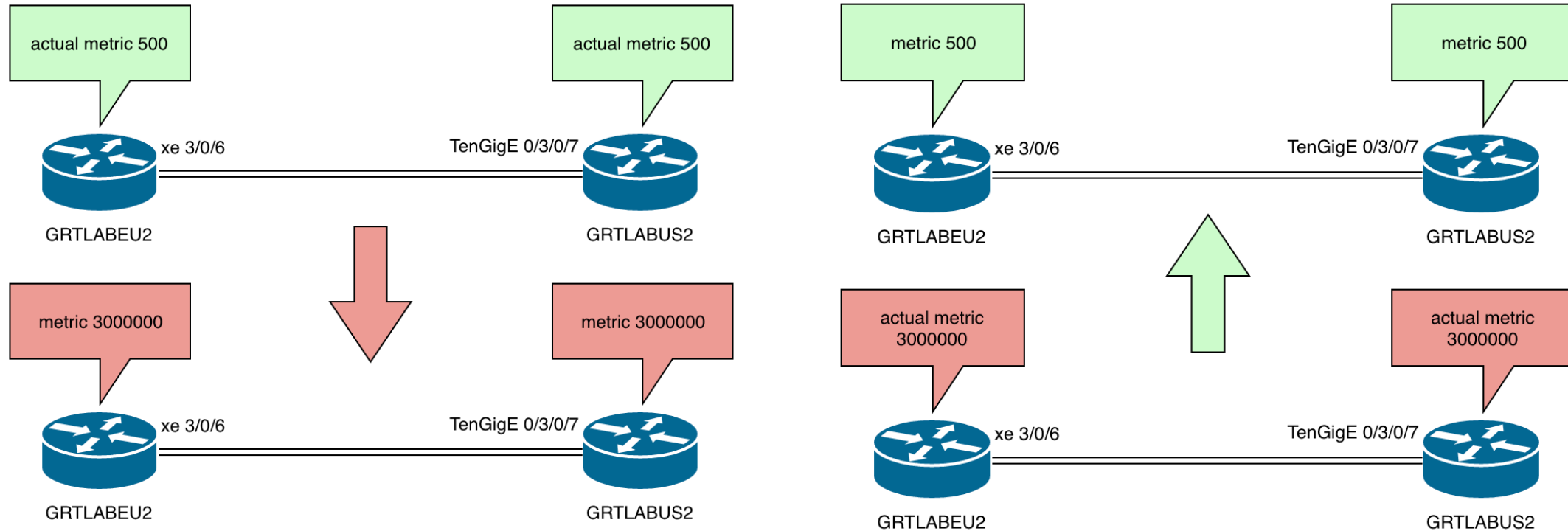
# 4. Beyond Cisco NSO. Welcome HADeS!



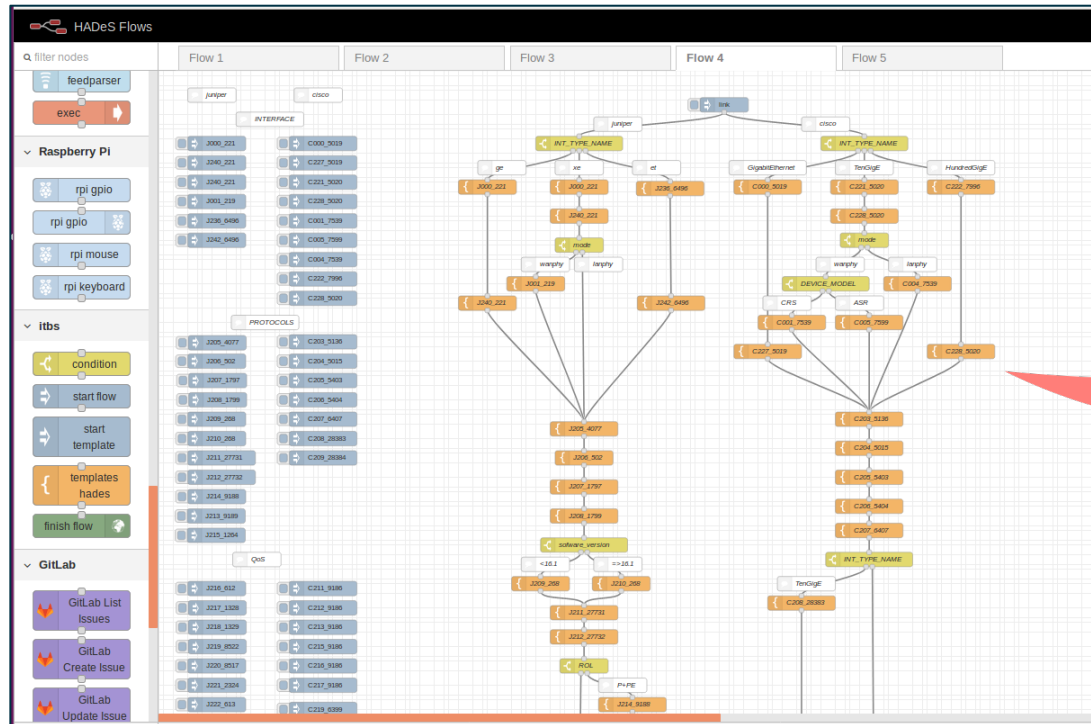
# Demo time



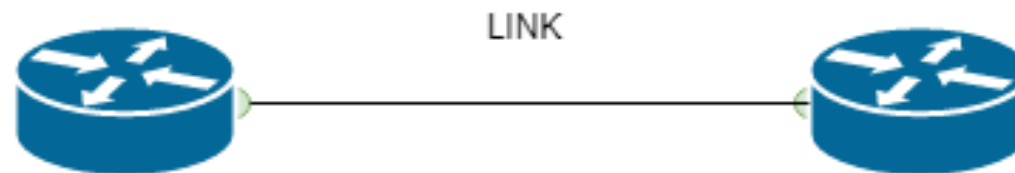
# LIVE-DEMO: Alchemy IS-IS metric penalization



# LIVE-DEMO: HADeS Network link configuration



The Alchemy configuration interface shows the configuration details for Site 0. The interface includes a sidebar with navigation options like Phases, Provider Reference, Descriptions, Change Ip LSP, Api Caronte, Regularizations, Hades, and Task management. The main configuration area includes fields for State (ready), Mode (lanphy), Sites configuration (Site 0), Site name (Site 0), Device (GRALABUS3), DEVICE MODEL (ASR), INT TYPE NAME (xe), Software version (15.4), INT BANDWIDTH (10000000), and ROL (P).



# Any question ?

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