



Automation & Orchestration and Virtualisation at SURF

TNC19: Orchestration, Automation and Virtualisation (OAV) BoF
20 June, Tallinn, Estonia • Migiel de Vos

SURF

Network Automation, Orchestration and Virtualisation?

Automation

- separate tasks that can be performed without human assistance

Orchestration

- intelligent processes that consist of multiple automated tasks

Virtualisation

- virtual instances of network functions/applications

Automation and Orchestration Horizon

Customer facing information



Clean and correct administration



Automated processes



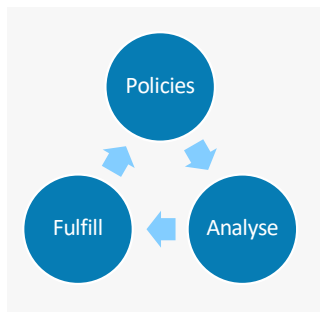
Self service delivery



Composed services



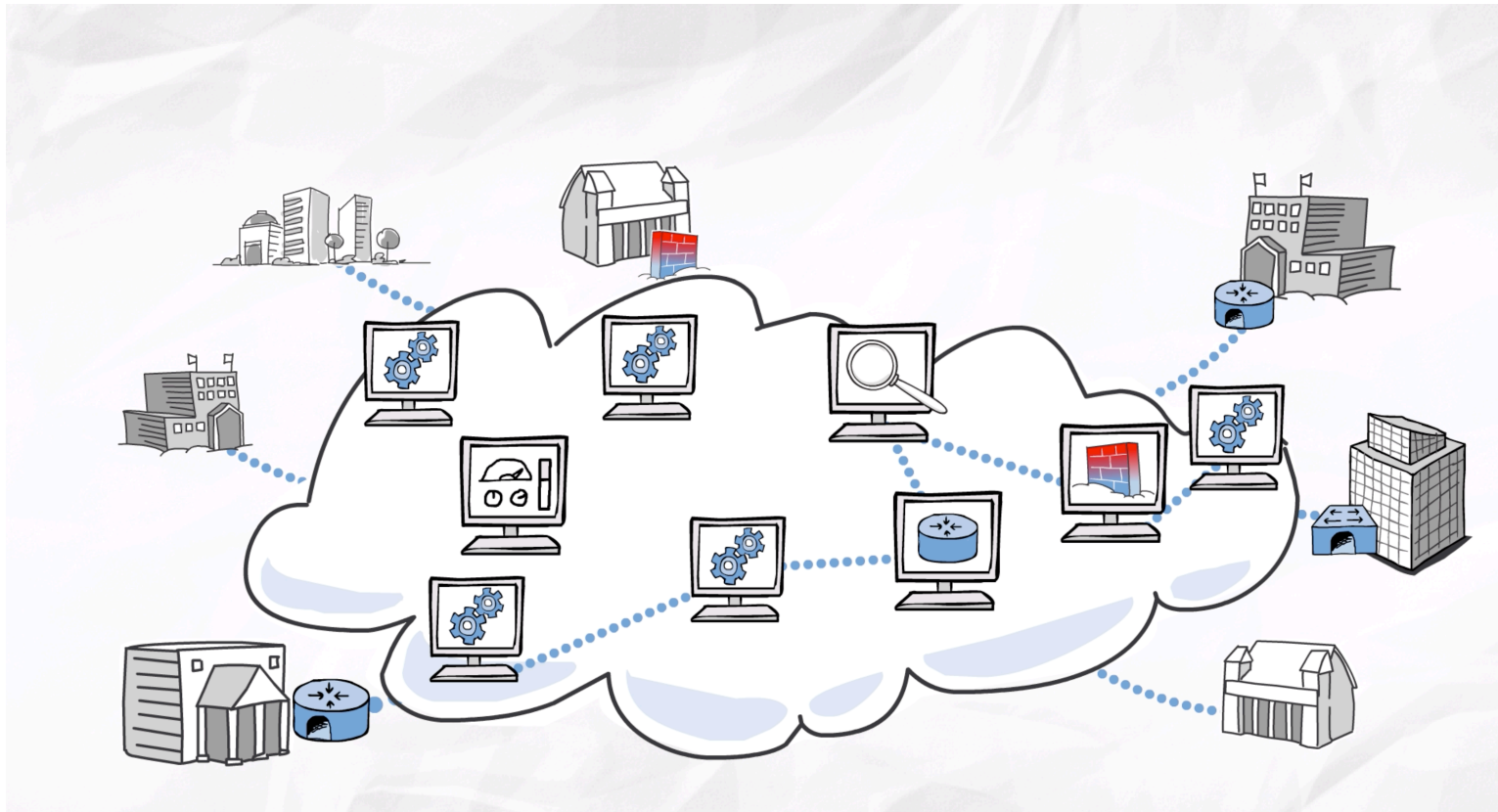
Self learning network



Interworking



Network Function Virtualisation Horizon



Ingredients for Orchestration utopia



Single Points of Truth

Standardized interfaces

Solid information model

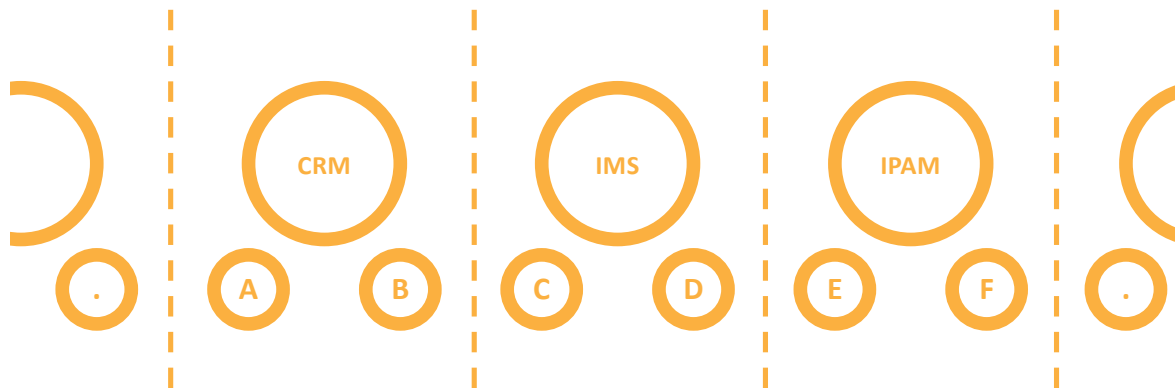
Automated administration

Predetermined service delivery

Unit and Integration tests

Users in control and monitoring

Ingredients for Orchestration



Single Points of Truth

Standardized interfaces

Solid information model

Automated administration

Predetermined service delivery

Unit and Integration tests

Users in control and monitoring

Ingredients for Orchestration



Single Points of Truth

Standardized interfaces

Solid information model

Automated administration

Predetermined service delivery

Unit and Integration tests

Users in control and monitoring

SURF

Ingredients for Orchestration



Single Points of Truth

Standardized interfaces

Solid information model

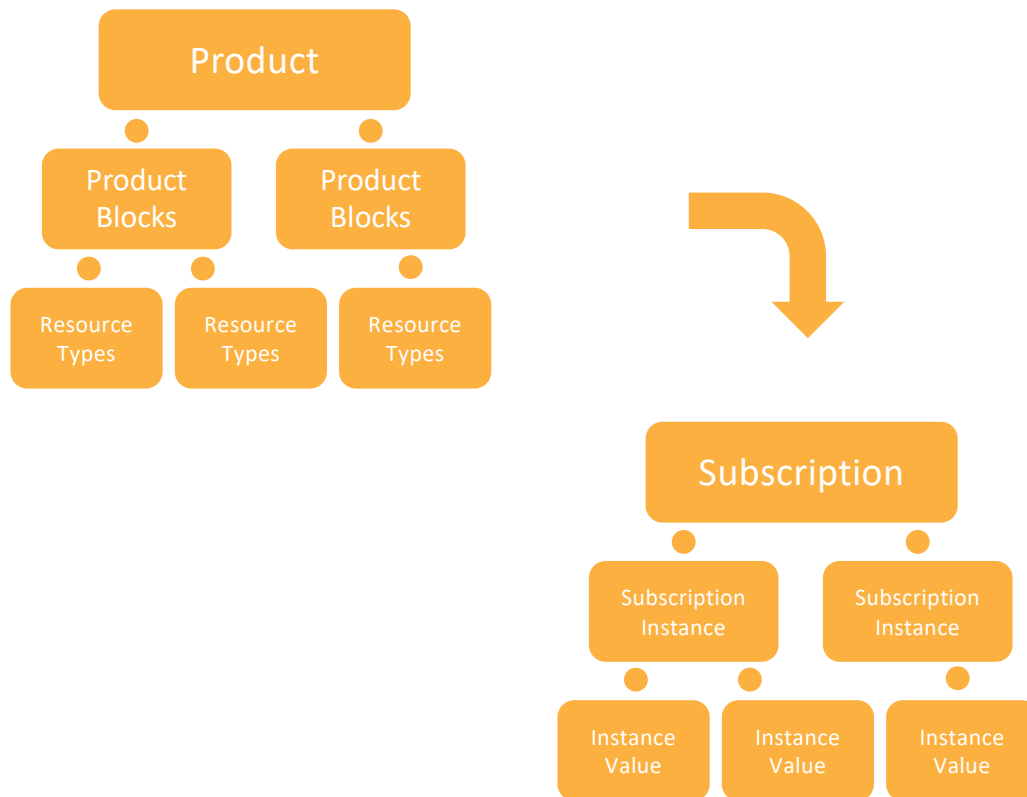
Automated administration

Predetermined service delivery

Unit and Integration tests

Users in control and monitoring

Ingredients for Orchestration



Single Points of Truth

Standardized interfaces

Solid information model

Automated administration

Predetermined service delivery

Unit and Integration tests

Users in control and monitoring

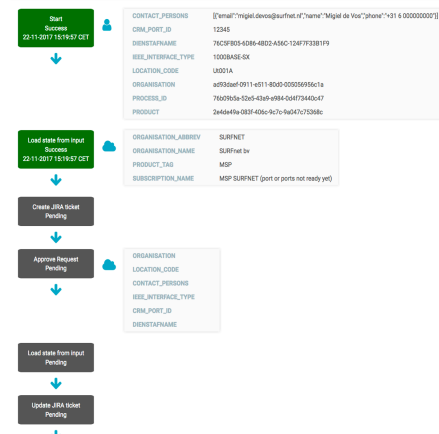
Ingredients for Orchestration

PROCESS

Process MSP 1G of workflow msp_aanvragen for SURFnet bv

SHOW DETAILS SHOW STATE INPUT SHOW RAW JSON

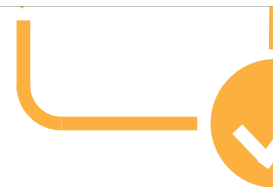
STATUS: Running
ASSIGNEE: SYSTEM
LAST STEP EXECUTED: Load state from input
STARTED: 22-11-2017 15:19:57 CET
LAST UPDATED: 22-11-2017 15:19:57 CET



CONTACT_PERSONS: [{"email": "migiel.devos@surfnet.nl", "name": "Migiel de Vos", "phone": "+31 6 00000000"}]
CRM_PORT_ID: 12345
DIENSTAFNAME: 76C5FB05-6D86-4BD2-A56C-124F7F33B1F9
IEEE_INTERFACE_TYPE: 1000BASE-SX
LOCATION_CODE: Ut001A
ORGANISATION: ad93daef-0911-e511-80d0-005056956c1a
PROCESS_ID: 76b09b5a-52e5-43a9-a984-0d4f73440c47
PRODUCT: 2e4de49a-083f-406c-9c7c-9a047c75368c

Process MSP 1G of workflow msp_aanvragen for SURFnet bv

```
{  
  "assignee": "SYSTEM",  
  "current_state": {  
    "contact_persons": [  
      {  
        "email": "migiel.devos@surfnet.nl",  
        "name": "Migiel de Vos",  
        "phone": "+31 6 00000000"  
      }  
    ],  
    "crm_port_id": "12345",  
    "dienstafname": "76C5FB05-6D86-4BD2-A56C-124F7F33B1F9",  
    "ieee_interface_type": "1000BASE-SX",  
    "location_code": "Ut001A",  
    "organisation": "ad93daef-0911-e511-80d0-005056956c1a",  
    "organisation_abbrev": "SURFNET",  
    "organisation_name": "SURFnet bv",  
    "process_id": "76b09b5a-52e5-43a9-a984-0d4f73440c47",  
    "product": "2e4de49a-083f-406c-9c7c-9a047c75368c",  
    "product_tag": "MSP",  
    "subscription_name": "MSP SURFNET (port or ports not ready yet)"  
  },  
  "customer": "ad93daef-0911-e511-80d0-005056956c1a",  
  "failed_reason": null,  
  "id": "76b09b5a-52e5-43a9-a984-0d4f73440c47",  
  "last_modified": 1511360397,  
  "product": "2e4de49a-083f-406c-9c7c-9a047c75368c",  
  "started": 1511360397,  
  "status": "running",  
  "step": "Load state from input",  
}
```



Single Points of Truth

Standardized interfaces

Solid information model

Automated administration

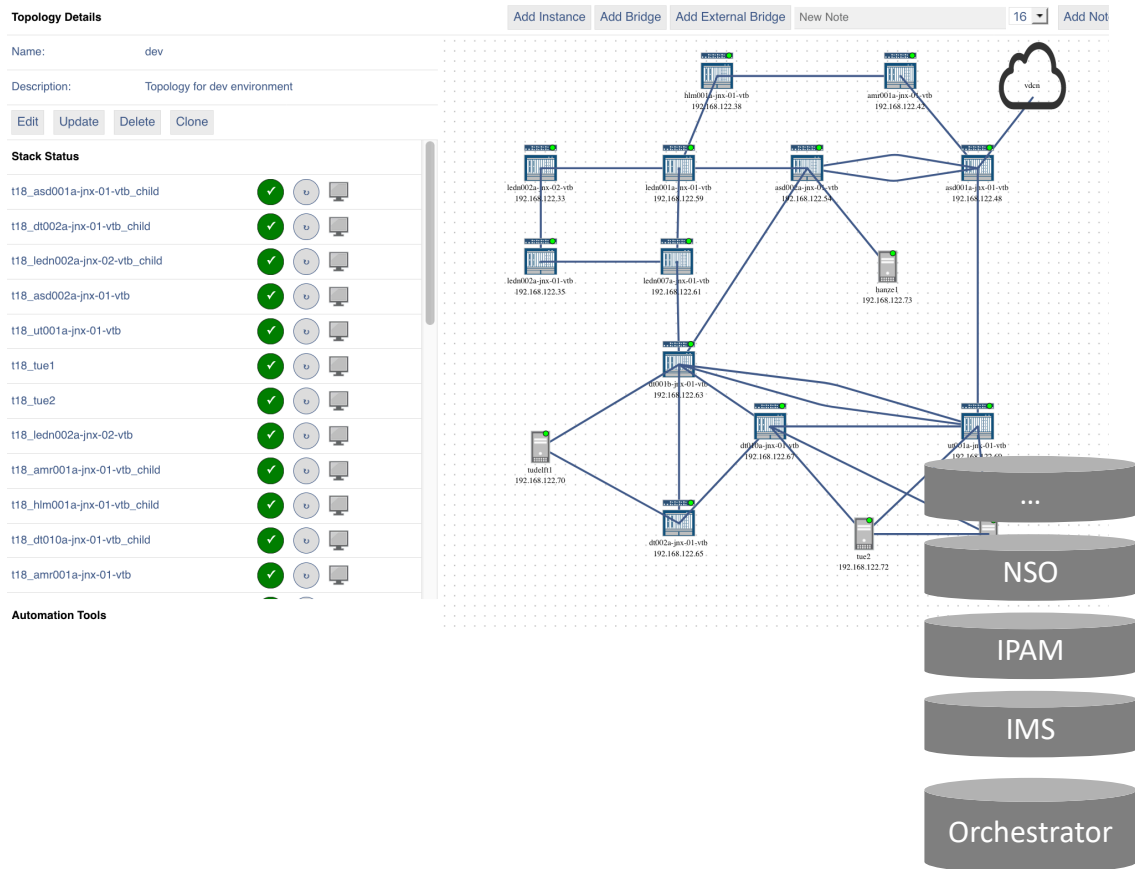
Predetermined service delivery

Unit and Integration tests

Users in control and monitoring



Ingredients for Orchestration



Single Points of Truth

Standardized interfaces

Solid information model

Automated administration

Predetermined service delivery

Unit and Integration tests

Users in control and monitoring

SURF

Ingredients for Orchestration

Netwerkdashboard API

API exposing all data needed for the customer facing netwerkdashboard

customer	Show/Hide	List Operations	Expand Operations
fulfilment	Show/Hide	List Operations	Expand Operations
health	Show/Hide	List Operations	Expand Operations
messages	Show/Hide	List Operations	Expand Operations
stats	Show/Hide	List Operations	Expand Operations
subscriptions	Show/Hide	List Operations	Expand Operations
user	Show/Hide	List Operations	Expand Operations

[BASE URL: , API VERSION: 0.9.0]
Powered by [Easypost](#)



Single Points of Truth

Standardized interfaces

Solid information model

Automated administration

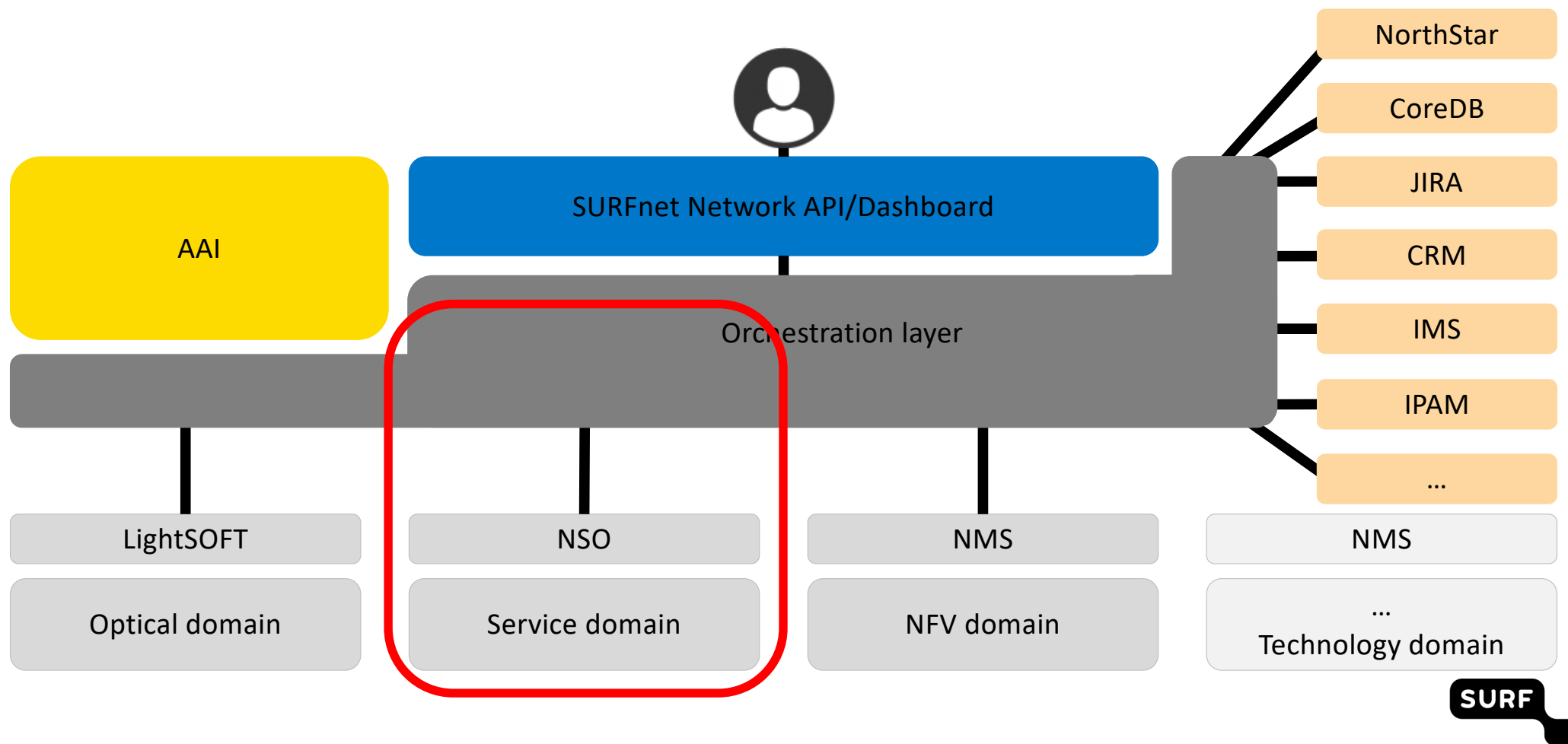
Predetermined service delivery

Unit and Integration tests

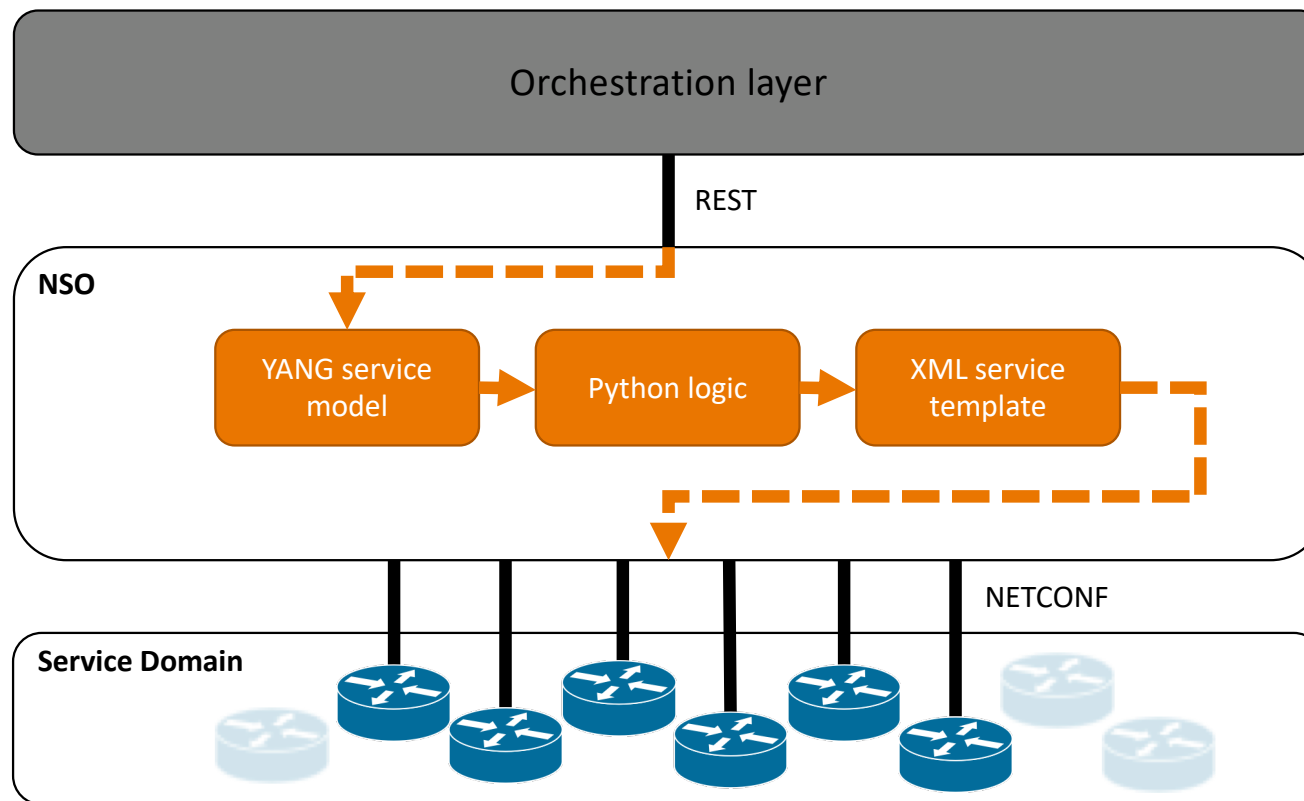
Users in control and monitoring

SURF

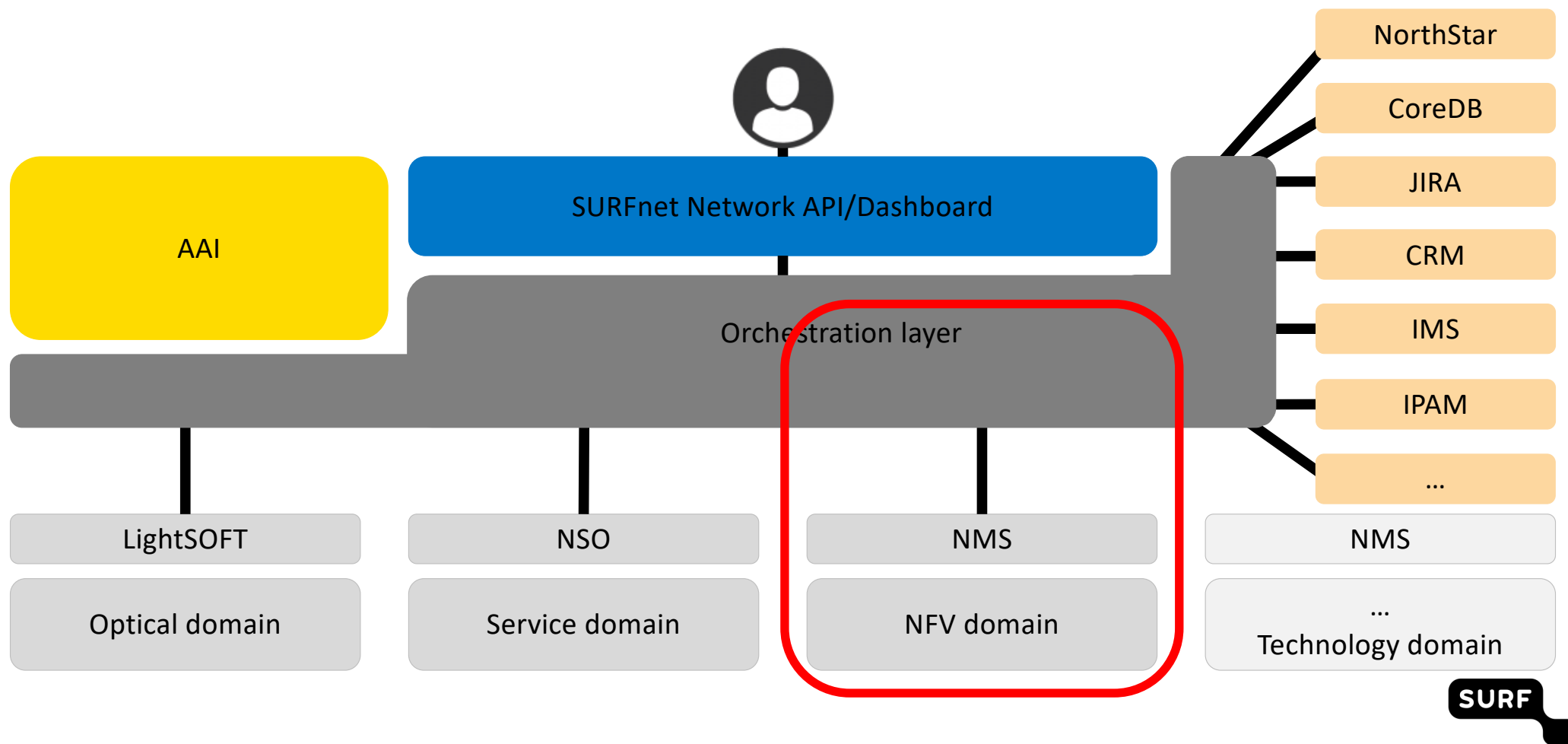
Automation & Orchestration architecture



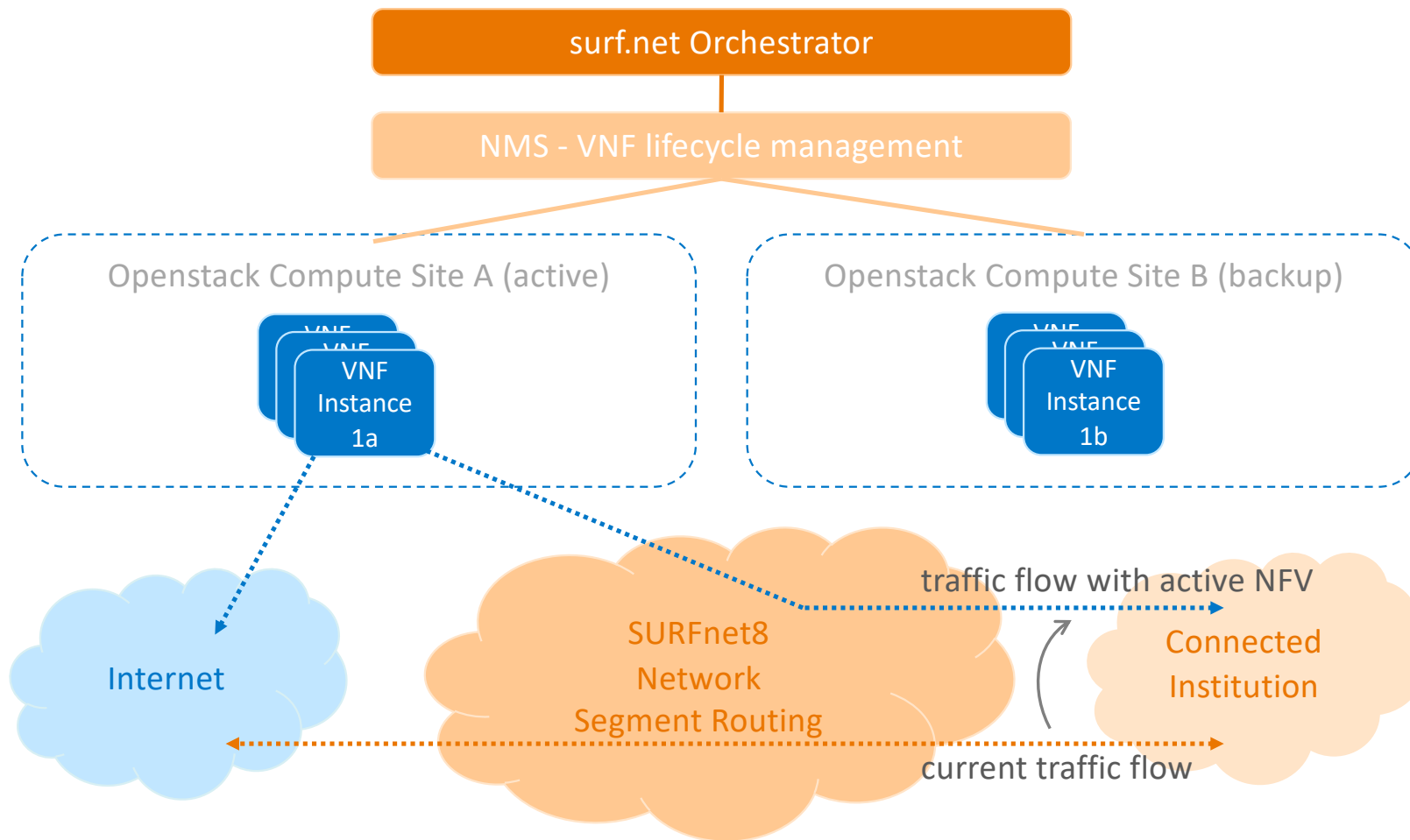
Integrating with our Service Domain using NSO



Automation & Orchestration architecture



Network Function Virtualisation toward production



Collaboration

- Sharing experiences, choices and best practices
- Understanding and using common terminology
- Intra and inter NREN agreements/standardisation
- Share templates and code

Automation & Orchestration at SURF



Peter.Boers@SURFnet.nl



Hans.Trompert@SURFnet.nl



Migiël.deVos@SURFnet.nl



Network Function Virtualisation at SURF



Eyle.Brinkhuis@SURFnet.nl



WHAT **SURF** CAN DO