CAMPUS PORTFOLIO @SURF

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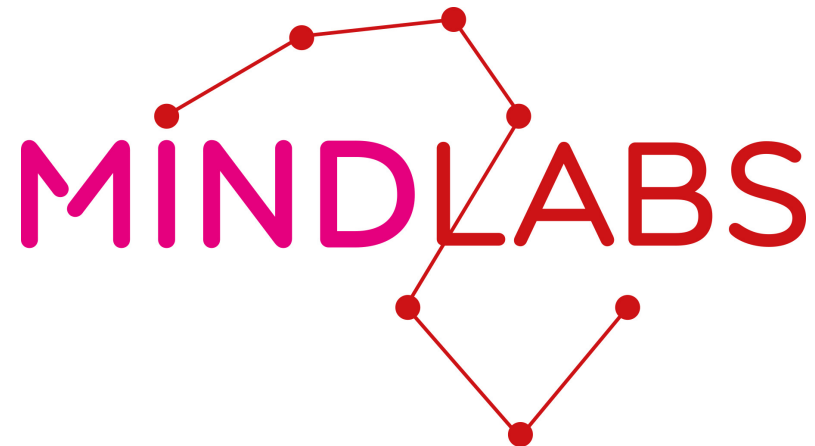
SURF

Background (1)

- SURF started with a campus service in 2016

  - SURFwireless initial slow uptake

  - 12 customers as of 2022

- Launch of SURFfirewall at the end of 2021 on physical hardware

- NFV platform coming online in late 2022

  - eduvpn

  - vRaaS – virtual router as a service

  - Virtual firewalls

- eduroam and iotroam (pilot) - RaaS radius as a service

- Offloading from on premise services to services in the cloud(s).

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Background (2)

- More and more customer needs for services that closely integrate with the campus

- Braindrain at our institutions and transformation towards management organisations

- In 2021 a number of institutions requested SURF to develop an integrated solution for a new campus in Tilburg

- Wireless and Wired for a collaboration between 3 institutes and a number of private companies

SURF Campus product portfolio.

- The Campus portfolio is the umbrella under which all services targeted towards the campus will be positioned

  - *SURF campus will enable end-to-end connectivity between institutions, the cloud and datacenters. It encompasses a variety of different products spanning from hardware to software and licensing.*

- At the moment we believe that when an institution will subscribe to a Campus product, more likely than not they will also use a number of different services in the Campus portfolio.

- Therefore we need to make sure all products within that portfolio integrate seamlessly

- Achieving seamless integration will unlock SURF's potential for the institution.

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So whats next?

- Progress on two fronts:

  - Campus as a Service product portfolio

  - The more immediate issue, developing SURFwired; the wired counterpart of SURFwireless.

- SURFwired: Inspired by the SUNET model and the CNaaS service.

- First deployment May 2022*, more likely to be late (summer) 2022

* Subject to shifting shedules

An introduction into SURFwired

- SURFwired is the "wired" component of the Campus as a Service portfolio at SURF

- The concept is born from the CNaaS NMS project started by SUNET and adapted towards the SURF use case and operational model.

- The project is still in a Pilot phase, during which we are developing the businsess case, evaluating the software and adapting the organisation to support this new service:

  - Juniper hardware instead of Arista

  - Out-sourced NOC

  - Orchestrated service provisioning on the Core vs more manual steps on the campus.

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SURFwired pilot at Mindlabs

- New building in the heart of Tilburg city center

- Greenfield installation (!)*

- Building maximum capacity is 2000 persons

- SURFwireless & SURFwired

- Campus with multiple tenants and a startup hub who all will be using the SURFwired and SURFwireless product

- Active in discussions between, SUNET, SIKT to further the opensource CNaaS effort

- Actively contributing to the opensource software

* Not a trivial installation as there is potential for conflicting requirements and it is not straight forward to decide who sponsors building facilities
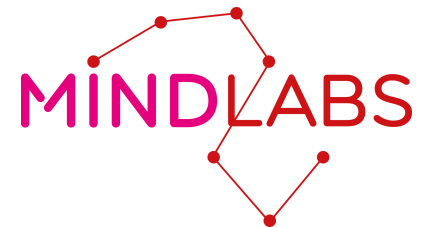
# Network types that are going to be supported
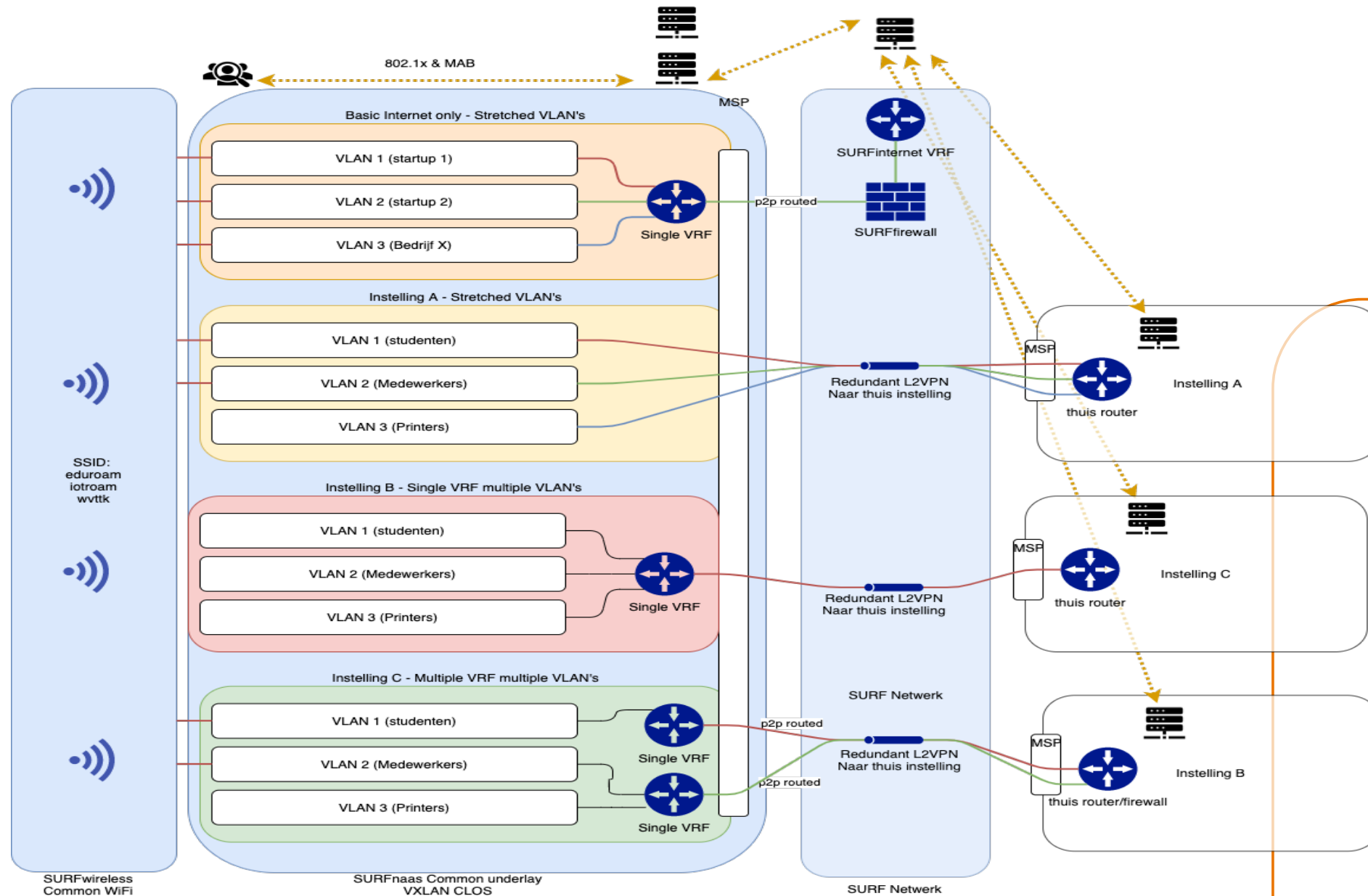
Challenges along the way

- Hardware: lead time at this point in time for basic EX series switches is > 12 months

  - Refurbished and repurposed hardware is going to be used

- Radius: We are going to be using a combination of eduroam, iotroam and proxying

  - This is a non trivial setup due to the various institutions taking part in the Pilot

- Creating a heterogeneous setup:

  - We must support all network types from day one

  - We must support all radius variants from day one

- Learning curve of the Juniper hardware

- Planning and receiving the correct requirements

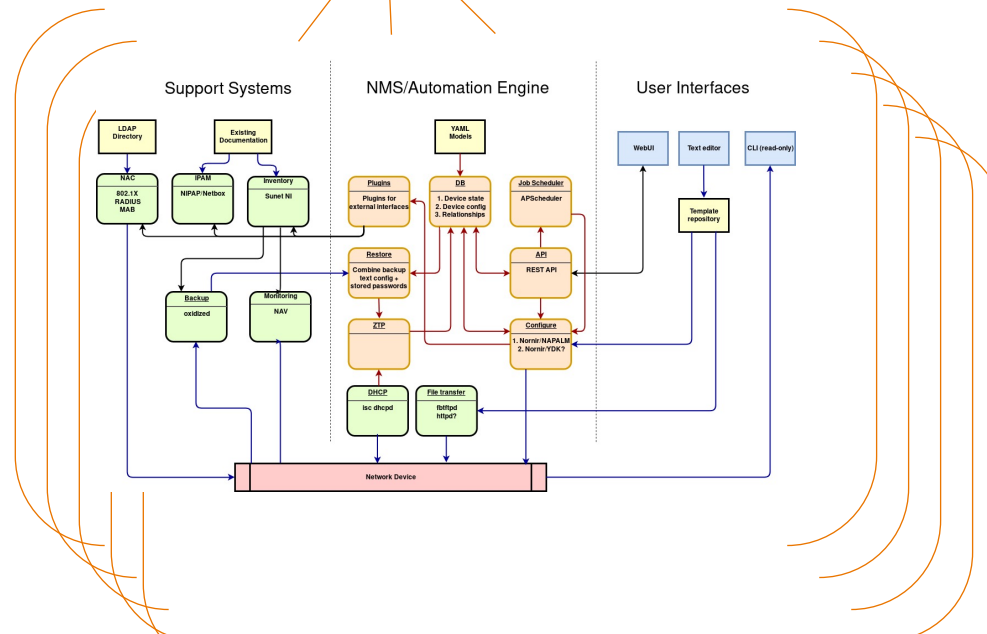- The definition of "as-a-Service"

- Time, money and people…. ☺

SURF network department software architecture
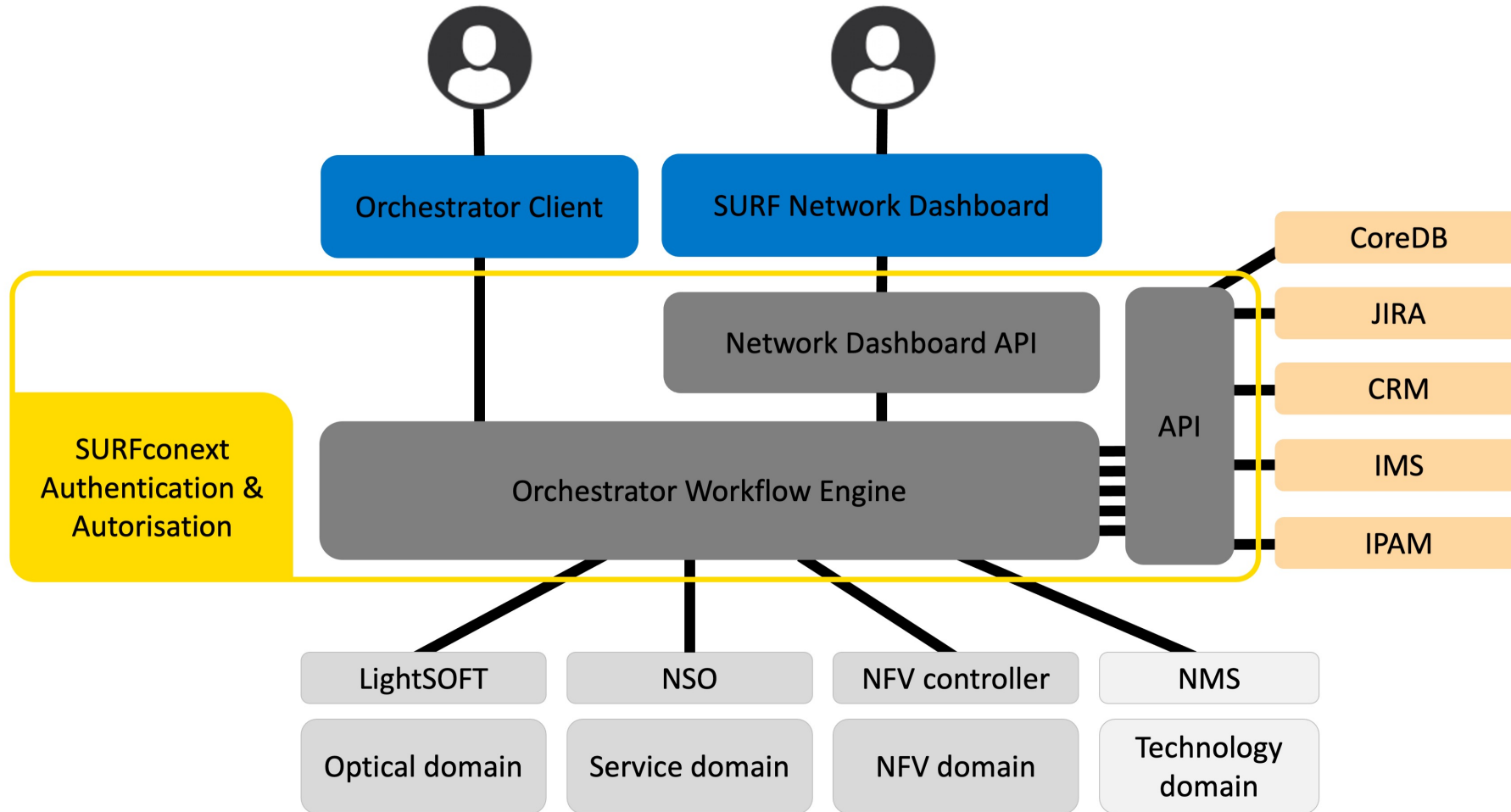
SURFWired in relation to the orchestration platform
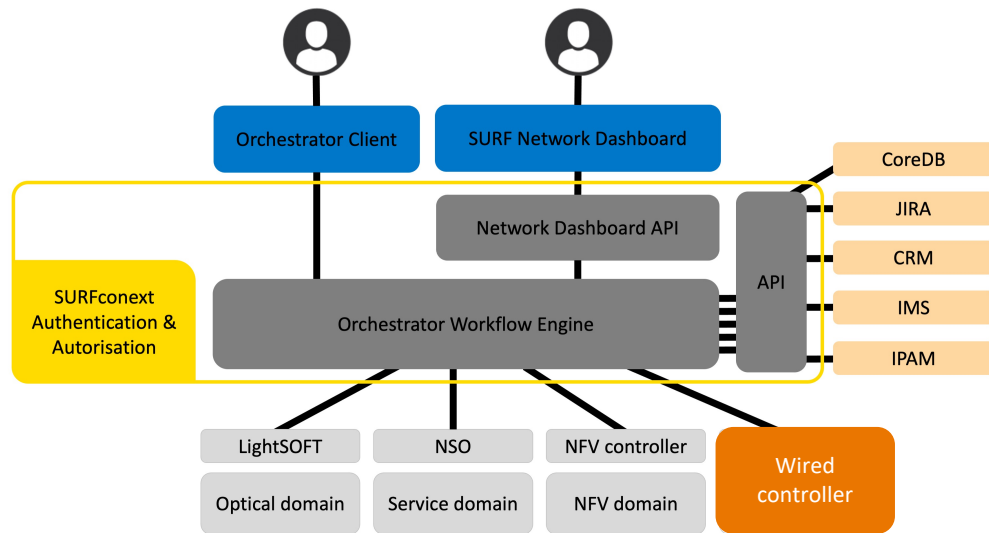
- Multiple campusses beneath one controller.
- Implement it as a technology domain.

SURFwired development and deployment philosophy

- Rinse and repeat.

  - Make deployment predictable and reliable

  - Make it possible to turn certain parts of the software on or off (DHCP servers, Firewall integration etc)

- Integration into other SURF services:

  - Automatic provisioning of Direct-Connect/Expressroute vlans and the Campus

  - Integration with SURFfirewall

  - Integration into the networkdashboard

- Build a community of operators that are familiar with Campus networking within the Netherlands

- Contribute to the opensource project.

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Future work…

- Northbound api on the CNaaS software

- Make the settings files parameters also available through an API

- Opensource parameterized ansible and terraform scripts to deploy CNaaS NMS modules in an infrastructure

- Add route-maps and access-list support to CNaaS Software so it is not necessary to hardcode it in the templates

- Add an integration module with our orchestrator: https://workfloworchestrator.org.

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QUESTIONS?

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