



GNA-G: Network eAcademy Working Group

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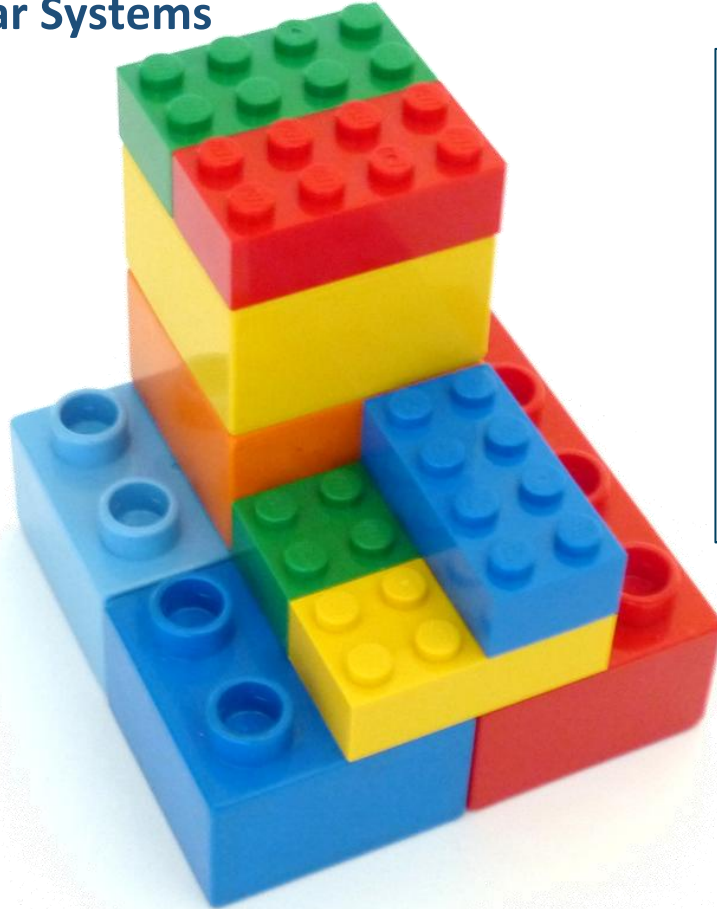
WP6 T4 Leader at GN5-2

1st Open Meeting

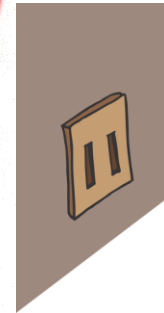
08 October 2025

Public (PU)

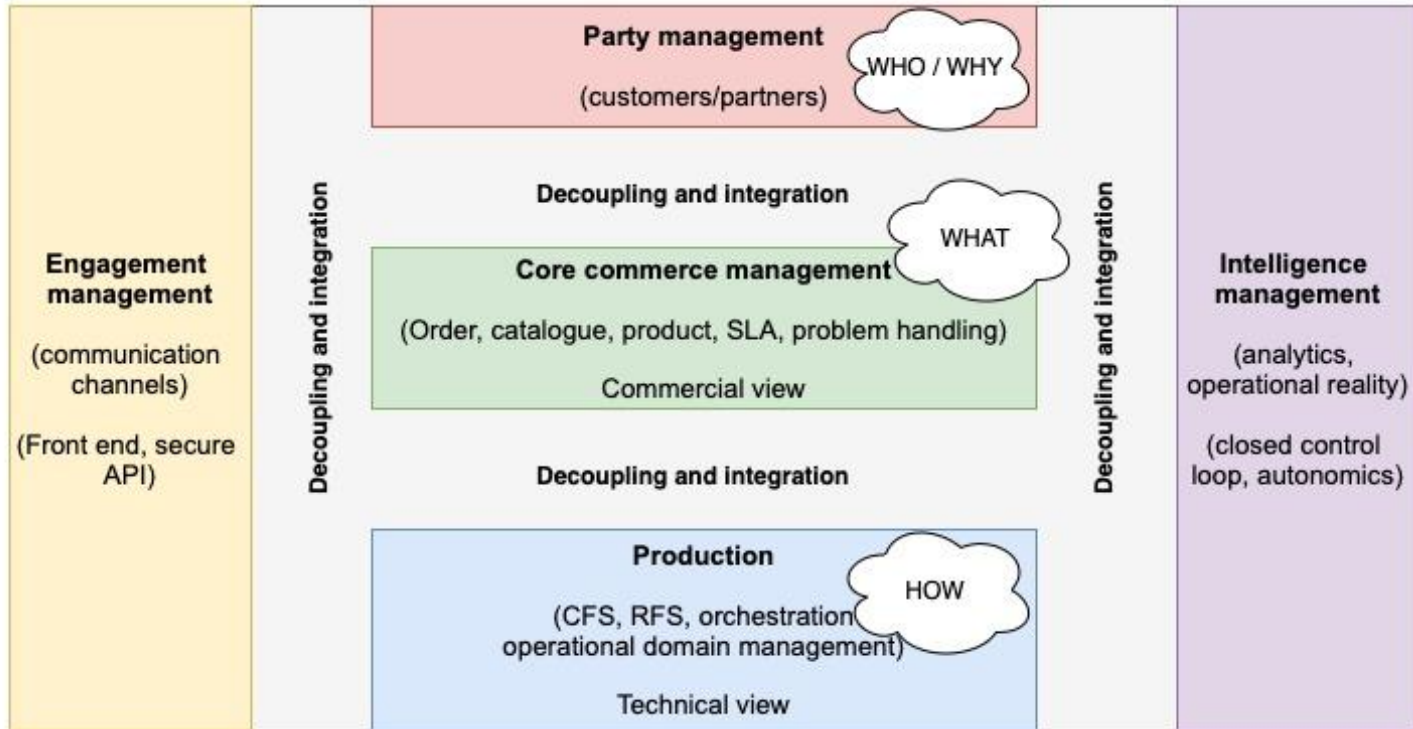
Decoupled and Modular Systems



Building blocks
+
Standard interfaces
↓
Easier Collaboration



The High-level ODA Functional Architecture



Digital Architecture Analysis

Mapping NREN & use cases architectures to a common blueprint, the TM Forum Open Digital Architecture (functional architecture).

Align efforts

Find similarities

Collaboration

Interoperability

NREN Architectures

- [CARNET](#)
- [CYNET](#)
- [GÉANT](#)
- [GRNET](#)
- [HEAnet](#)
- [PIONIER](#)
- [SURE](#)

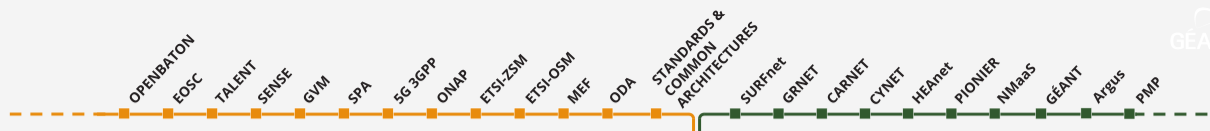
NETDEV Architectures

- [Argus](#)
- [NMaaS](#)
- [PMP](#)
- [SPA](#)

Other Use Cases

- [5G](#)
- [EOSC](#)
- [ETSI GANA](#)
- [ETSI OSM](#)
- [ETSI ZSM](#)
- [GVM](#)
- [MEF LSO](#)
- [Open Baton](#)
- [ONAP](#)
- [SENSE](#)
- [TALENT](#)

Network Automation eAcademy



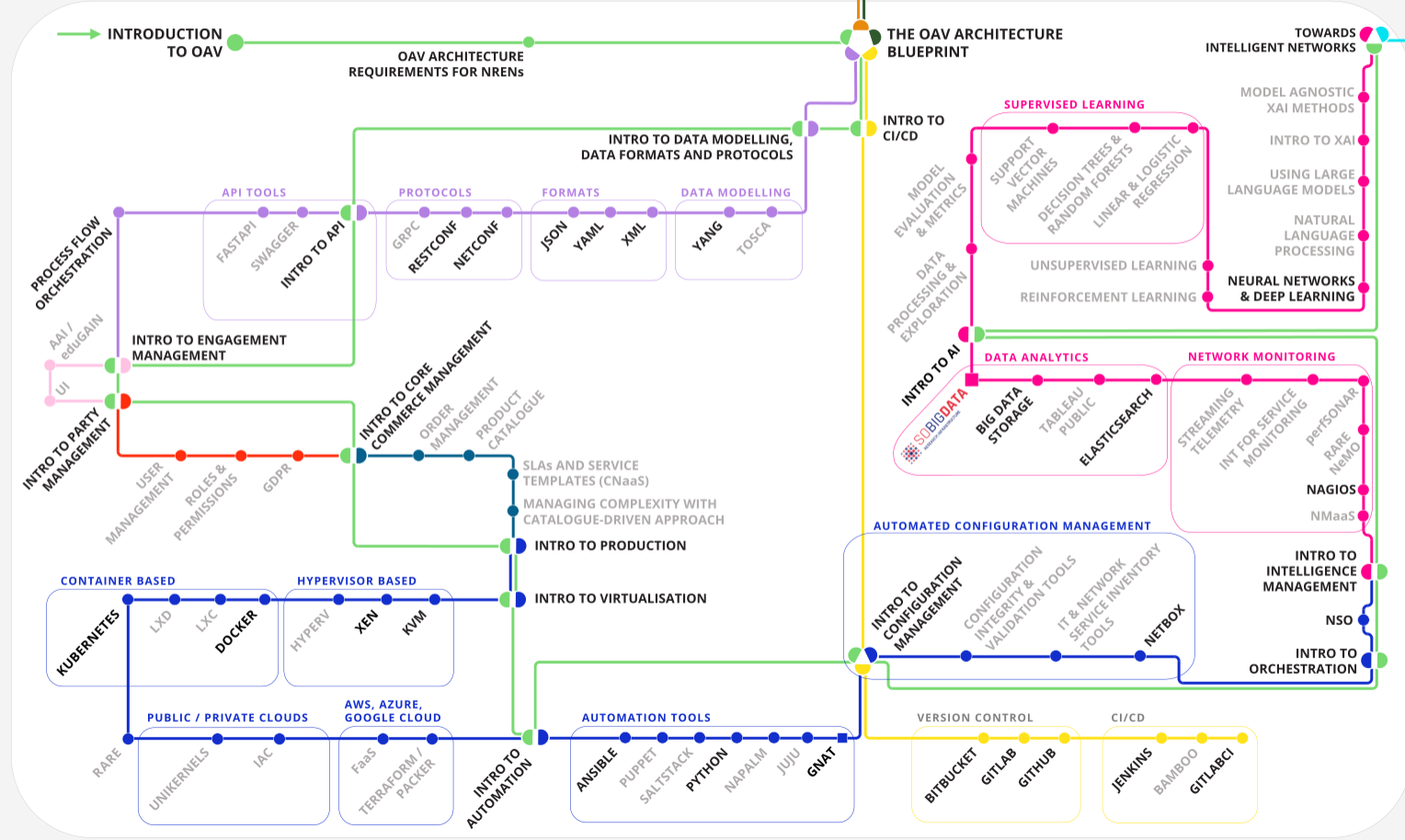
Legend

- Unit / Document / ext. link
- Released / Not released

Tracks

- GENERAL INTRODUCTION
- AGILE, DevOps, CI/CD
- DECOUPLING & INTEGRATION
- PRODUCTION
- ENGAGEMENT MANAGEMENT
- PARTY MANAGEMENT
- CORE COMMERCE MANAGEMENT
- INTELLIGENCE MANAGEMENT
- OAV REALISATION
- USE CASES AND EXAMPLES
- ARCHITECTURE

Functional Blocks in the TM Forum OPEN DIGITAL ARCHITECTURE (ODA)



INTRODUCTION TO OAV

OAV ARCHITECTURE REQUIREMENTS FOR NRENS

THE OAV ARCHITECTURE BLUEPRINT

INTRO TO CI/CD

INTRO TO DATA MODELLING, DATA FORMATS AND PROTOCOLS

INTRO TO AI

DATA ANALYTICS

NETWORK MONITORING

AUTOMATED CONFIGURATION MANAGEMENT

INTRO TO CONFIGURATION MANAGEMENT

INTRO TO ORCHESTRATION

TOWARDS INTELLIGENT NETWORKS

API TOOLS: FASTAPI, SWAGGER, INTRO TO API

PROTOCOLS: GRPC, RESTCONF, NETCONF

FORMATS: JSON, YAML, XML

DATA MODELLING: YANG, TOESCA

INTRO TO AI: SUPERVISED LEARNING (SUPPORT VECTOR MACHINES, DECISION TREES & RANDOM FORESTS, LINEAR & LOGISTIC REGRESSION), UNSUPERVISED LEARNING, REINFORCEMENT LEARNING, NEURAL NETWORKS & DEEP LEARNING

DATA ANALYTICS: SUBRIGDATA, BIG DATA STORAGE, TABLEAU PUBLIC, ELASTICSEARCH

NETWORK MONITORING: STREAMING TELEMETRY, INT FOR SERVICE MONITORING, PerfSONAR, RARE Nemo, NAGIOS, NMaaS

INTRO TO ORCHESTRATION: NSO, INTRODUCTION TO ORCHESTRATION

Automation Tools: ANSIBLE, PUPPET, SALTSTACK, PYTHON, NAPALM, JUJU, GNAT

Configuration Management: INTRODUCTION TO CONFIGURATION MANAGEMENT, CONFIGURATION INTEGRITY & VALIDATION TOOLS, IT & NETWORK SERVICE INVENTORY TOOLS, NETBOX

Virtualisation: INTRODUCTION TO VIRTUALISATION, CONTAINER BASED (KUBERNETES, LXD, LXC, DOCKER), HYPERVISOR BASED (HYPERV, XEN, KVM)

Engagement Management: INTRODUCTION TO ENGAGEMENT MANAGEMENT, USER MANAGEMENT, ROLES & PERMISSIONS, GDPR

Party Management: INTRODUCTION TO PARTY MANAGEMENT, AAU / edUGAIN, UI

Commerce Management: INTRODUCTION TO CORE COMMERCE MANAGEMENT, ORDER MANAGEMENT, PRODUCT CATALOGUE, SLAs AND SERVICE TEMPLATES (CNaas), MANAGING COMPLEXITY WITH CATALOGUE-DRIVEN APPROACH

Production: INTRODUCTION TO PRODUCTION

Clouds: PUBLIC / PRIVATE CLOUDS (UNIKERNELS, IAC), AWS, AZURE, GOOGLE CLOUD (FaaS, TERRAFORM / PACKER)

Architecture: INTRODUCTION TO ARCHITECTURE

Quantum Tech eAcademy

Legend

● Unit / ■ Document / ◆ Video

● Released / ● Not released

⬮ Exchange point

Introduction → Start here: The thick line marks introductory units

⊕ Exchange point: From this station onwards, you can continue the course in any direction

Tracks

GENERAL INTRODUCTION

QUANTUM RESOURCES

QUANTUM SIMULATION

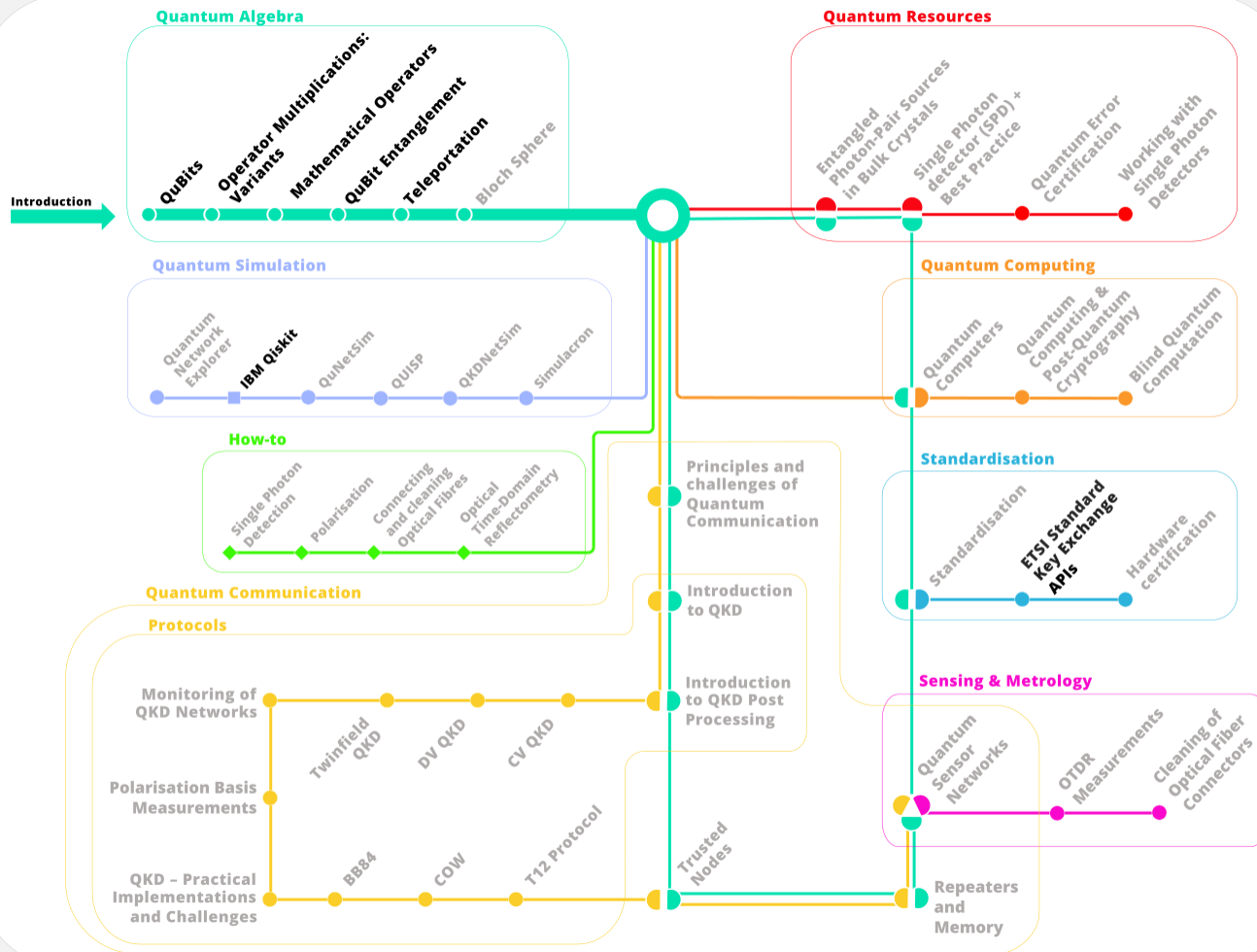
QUANTUM COMMUNICATION

QUANTUM COMPUTING

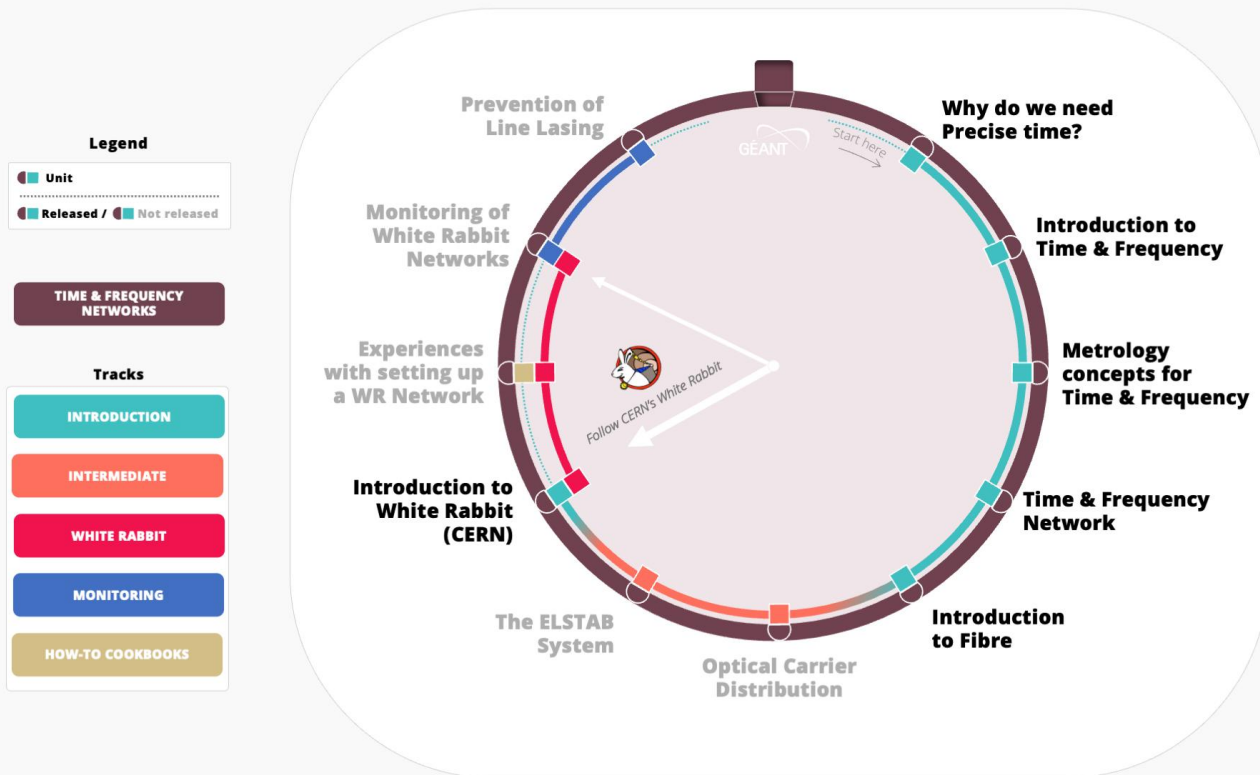
SENSING & METROLOGY

STANDARDISATION

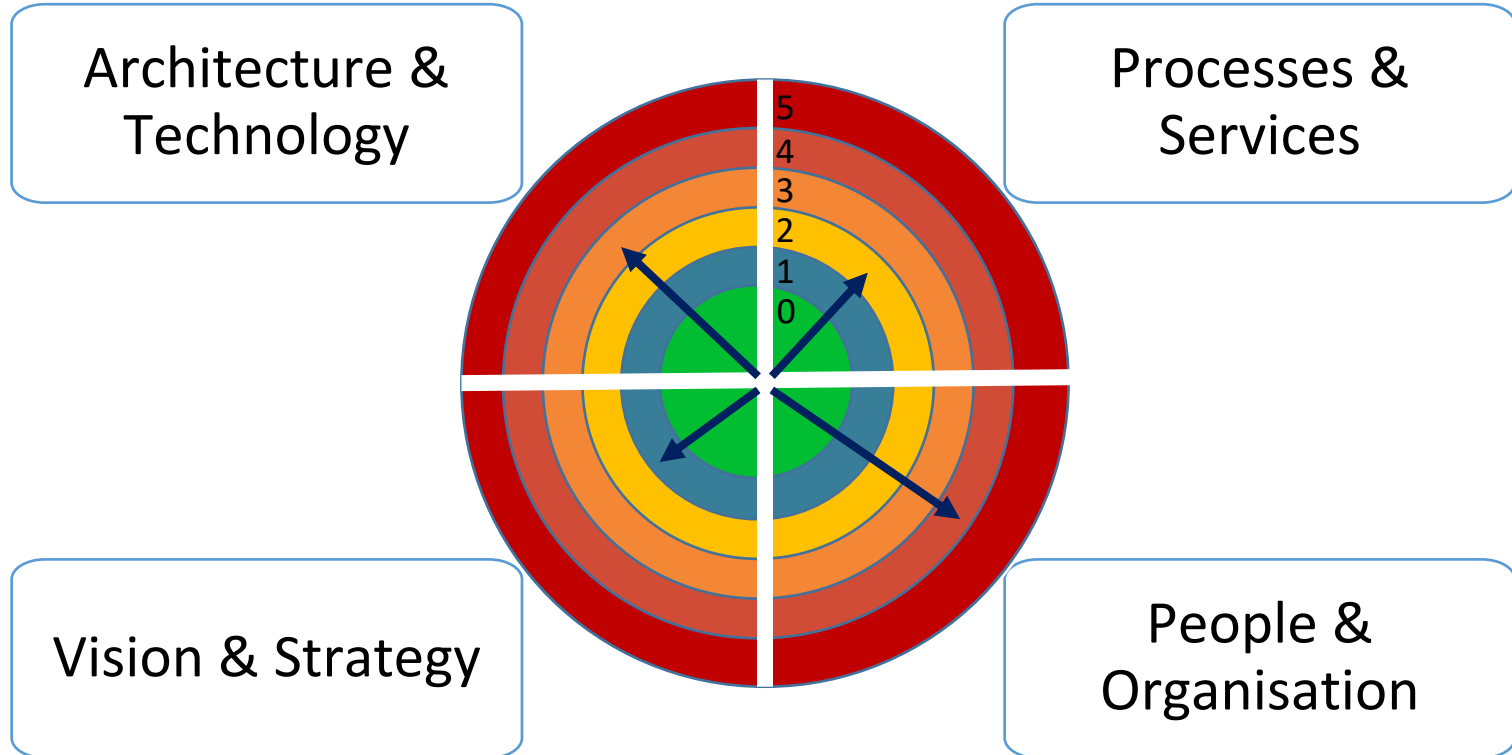
HOW-TO



Optical Time & Frequency Networks (OTFN) eAcademy



OAV Maturity Model - Dimensions



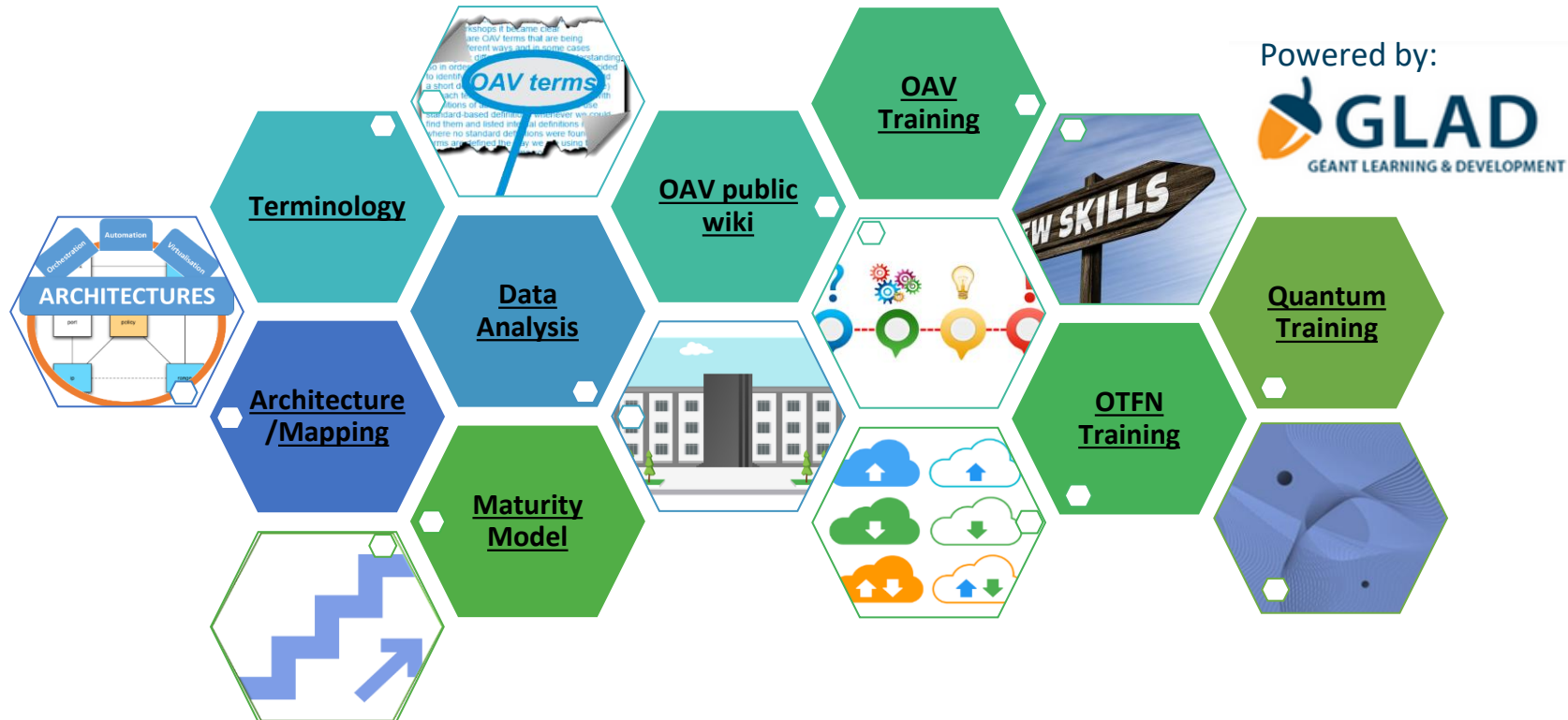
<https://www.surveymonkey.com/r/SPYDQVB>

OAV Maturity Model - Stages



Network eAcademy, as a Service in GÉANT

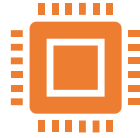
The Network eAcademy was born to help and support organisations in human capital development in Network-development-related domains, as an umbrella covering several activities



Objectives of the Network eAcademy Working Group in GNA-G



Make the current contents and tools of the Network eAcademy **available to the entire research and education community** and known through meetings, GNA-G community VCs and side meetings.



Be a tool for Research and Education institutions around the world to help them **check their maturity status and compare their architecture** in Orchestration, Automation and Virtualisation with other sibling organisations.



Be a **platform for knowledge sharing and discussion** to improve the content of the Network eAcademy, in the areas of Automation, Artificial Intelligence, Quantum Technologies, and other Network Development areas.

What Can You Do?

- Follow the training tracks:
<https://wiki.geant.org/spaces/NETDEV/pages/870744119/Network+eAcademy+Training+Portal>
- Map your Architecture. Templates and examples here:
<https://wiki.geant.org/spaces/NETDEV/pages/362742030/Mapping+Use+Cases>
- Do a self-assessment through the OAV Maturity Model:
<https://wiki.geant.org/spaces/NETDEV/pages/543752253/OAV+Maturity+Model>
- Send us your examples for the Community Portal:
<https://wiki.geant.org/spaces/NETDEV/pages/212303927/OAV+Community+Portal>
- See the Terminology and Glossary:
<https://wiki.geant.org/spaces/NETDEV/pages/212303919/OAV+Terminology>
- Subscribe to the mailing list for the Network eAcademy Working Group at
<https://lists.gna-g.net/postorius/lists/network-eacademy-wg.lists.gna-g.net/>
- Contact us to share your ideas/suggestions: network-eacademy@lists.geant.org



Thank You!

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