The Network eAcademy

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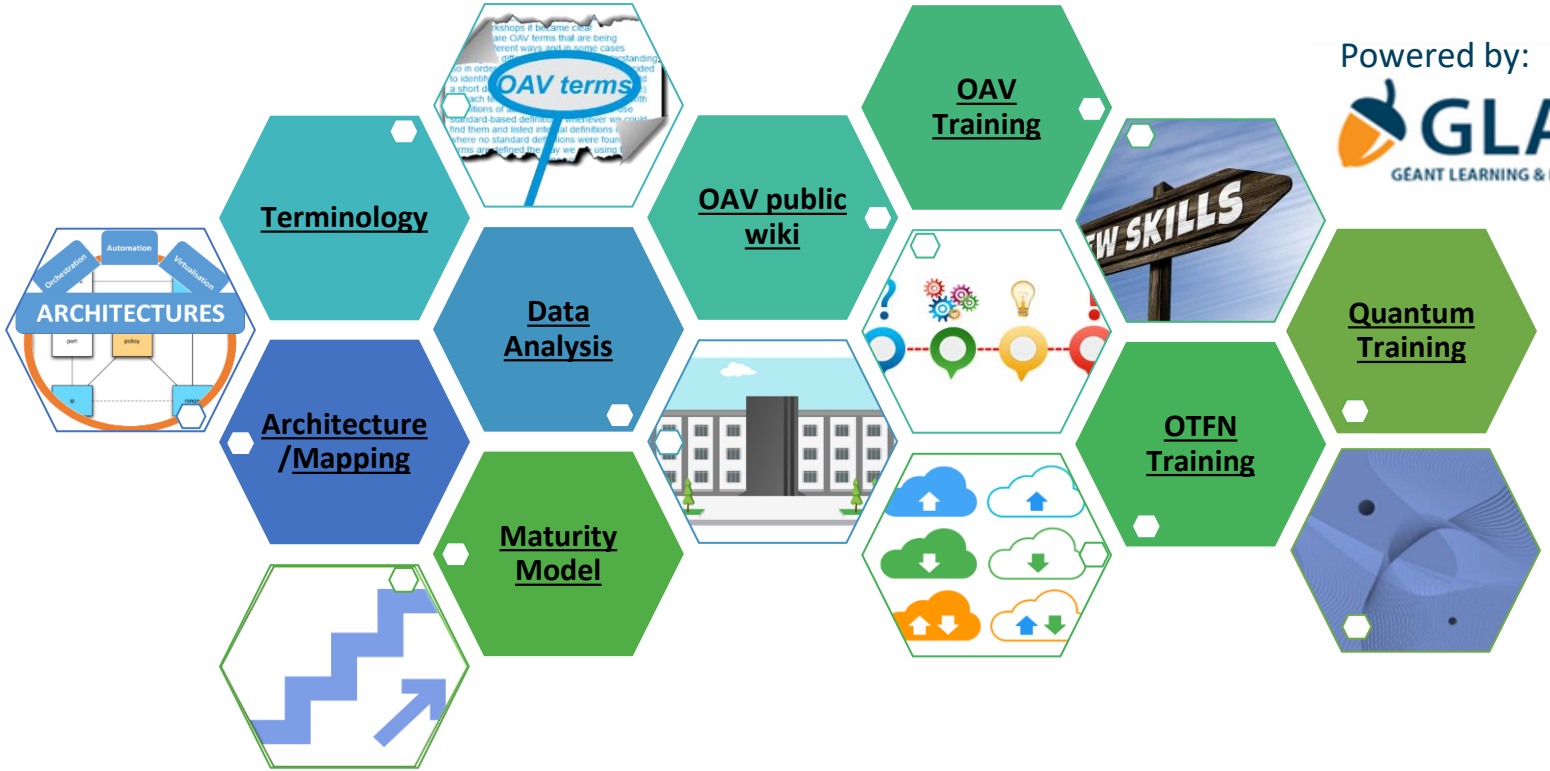
WP6 T4 Leader at GN5-2

SIG-ISM
08 October 2025

Network eAcademy, a Service in GÉANT

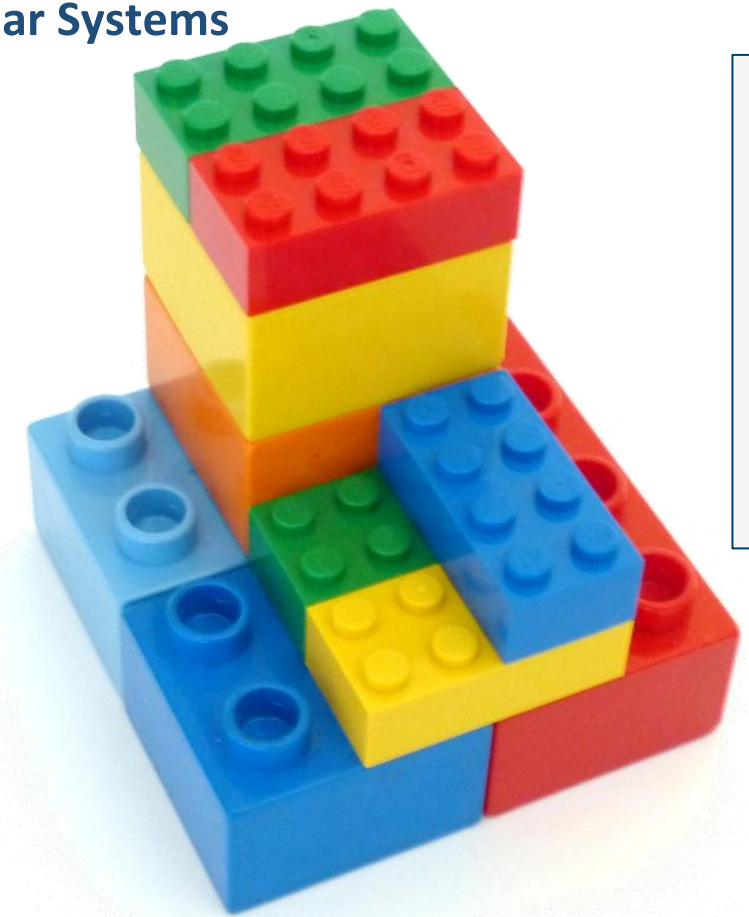
The Network eAcademy was born to help and support organisations in human capital development in Network-development-related domains, as an umbrella covering several activities



Powered by:

GLAD
GÉANT LEARNING & DEVELOPMENT

Decoupled and Modular Systems



Building blocks

+

Standard interfaces

↓

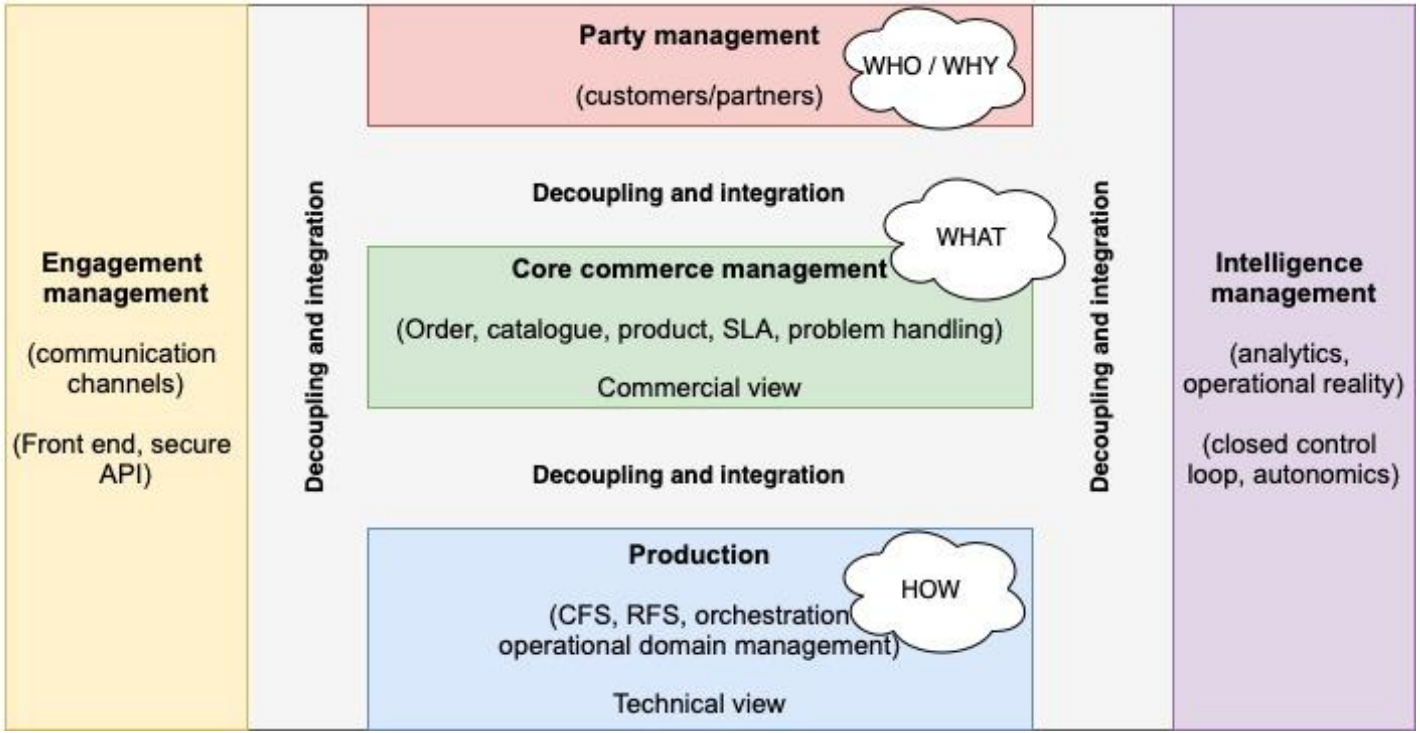
Easier Collaboration

The High-level ODA Functional Architecture

People

Organizations

Things



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
- SURF

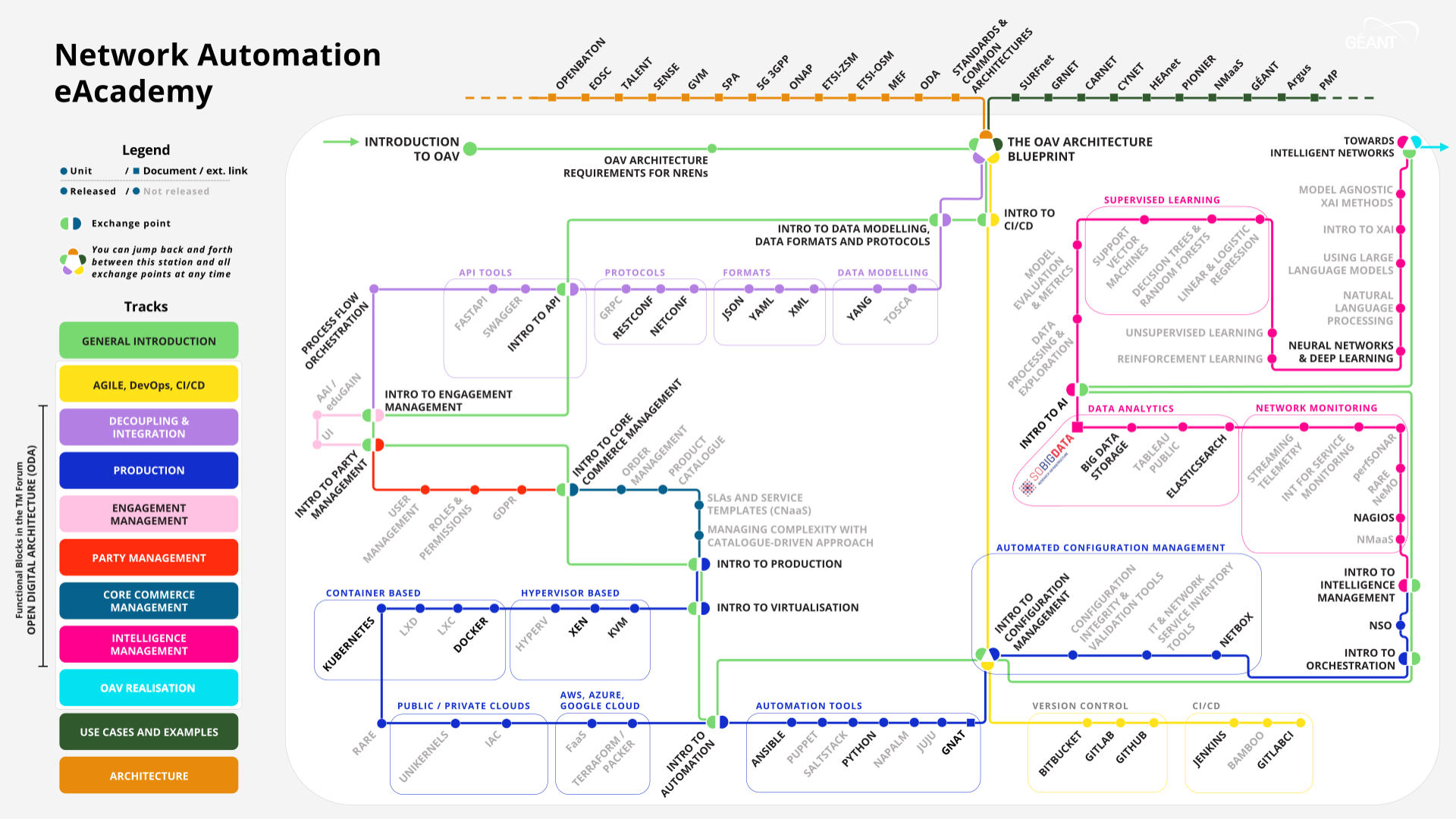
NETDEV Architectures

- Argus
- NMaaS
- PMP
- SPA

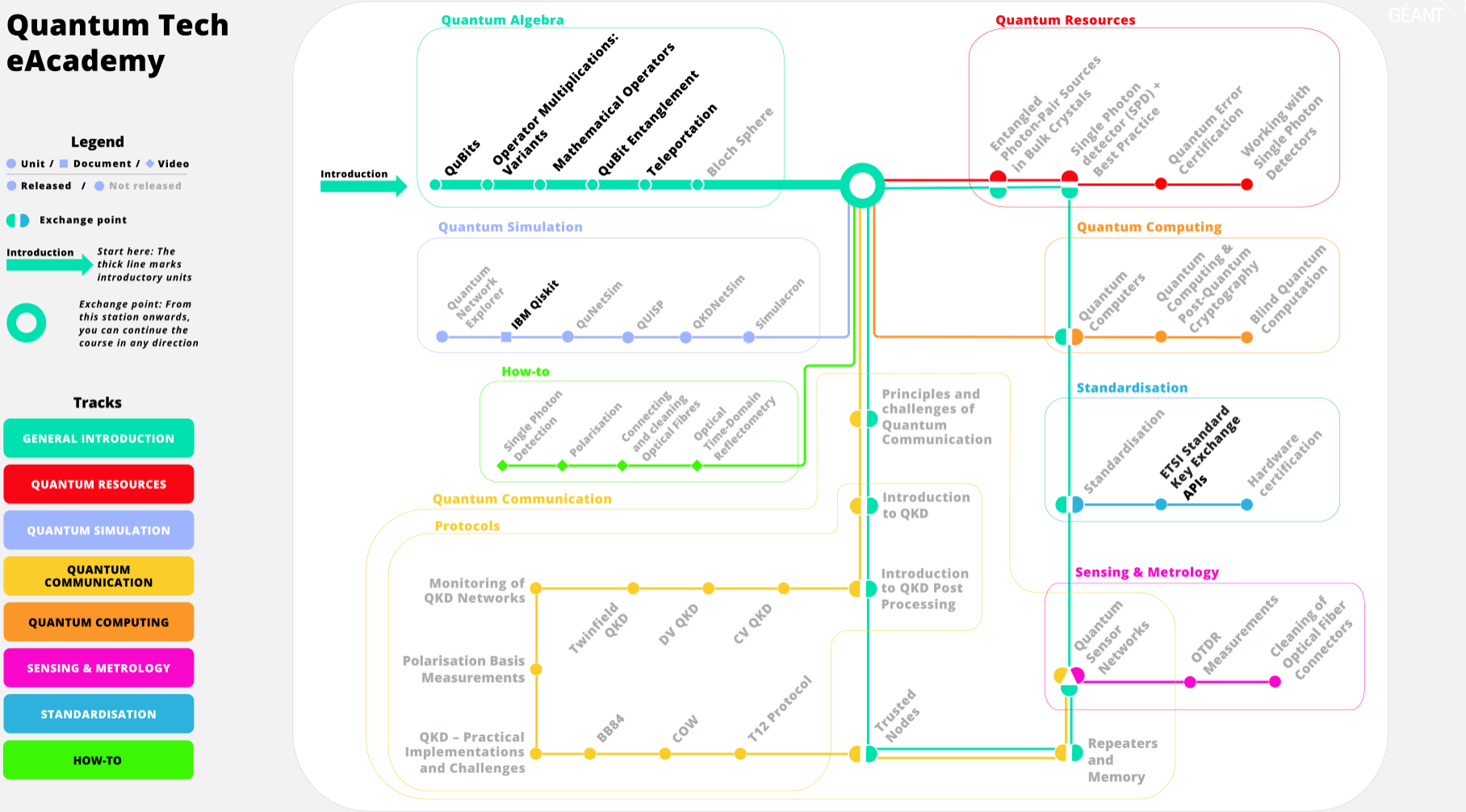
Other Use Cases

- 5G
- EOSC
- ETSI GANA
- ETSI OSM
- ETSI ZSM
- GVM
- MEF LSO
- Open Baton
- ONAP
- SENSE
- TALENT

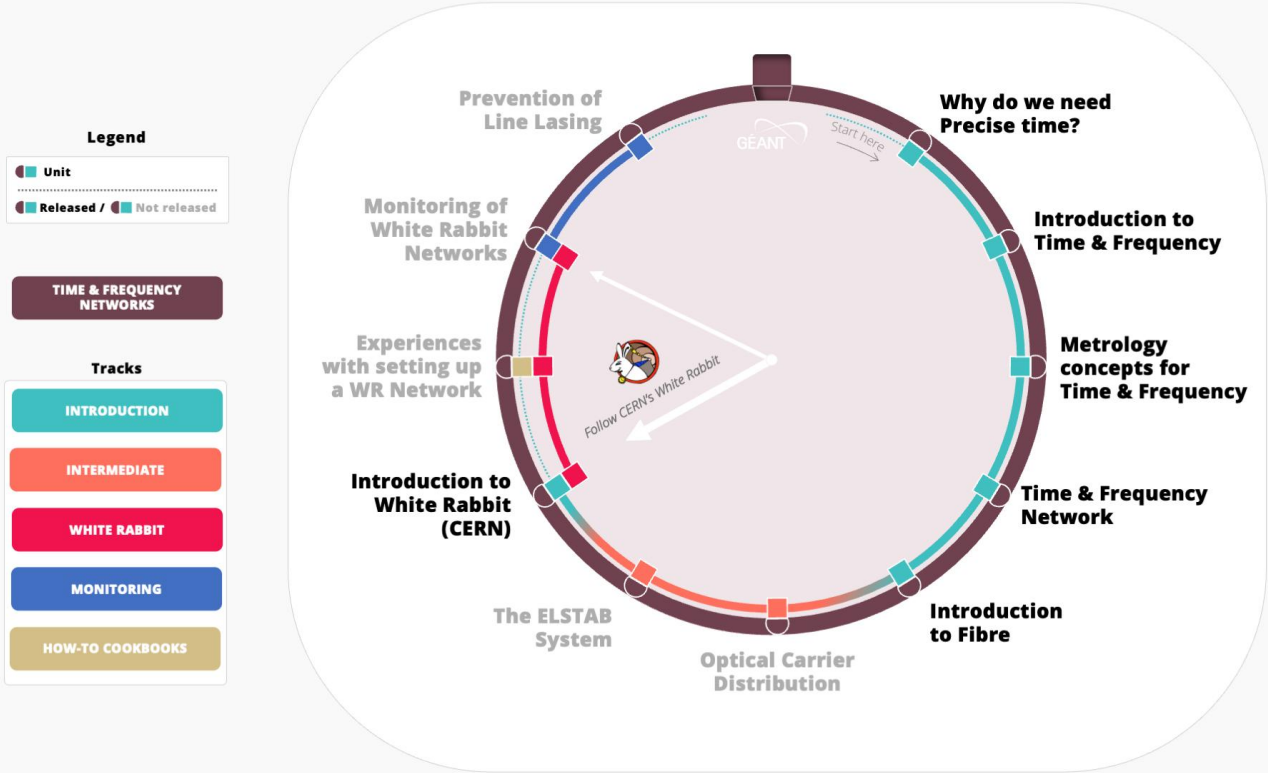
Network Automation eAcademy



Quantum Tech eAcademy



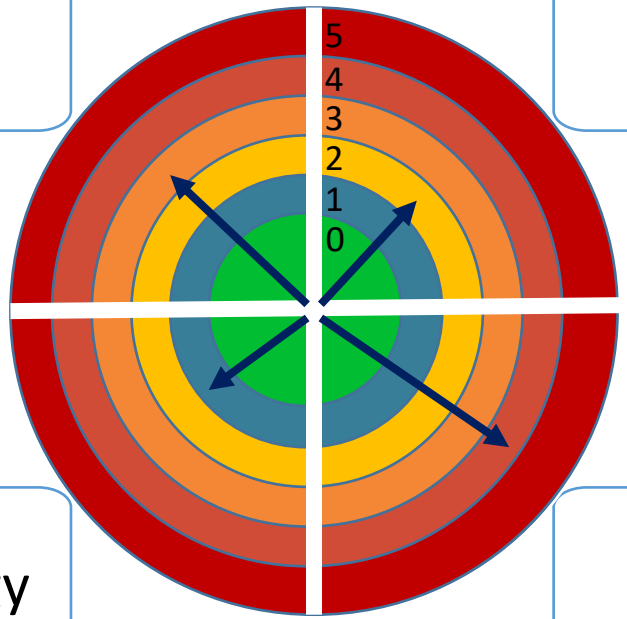
Optical Time & Frequency Networks (OTFN) eAcademy



OAV Maturity Model - Dimensions

Architecture & Technology

Processes & Services

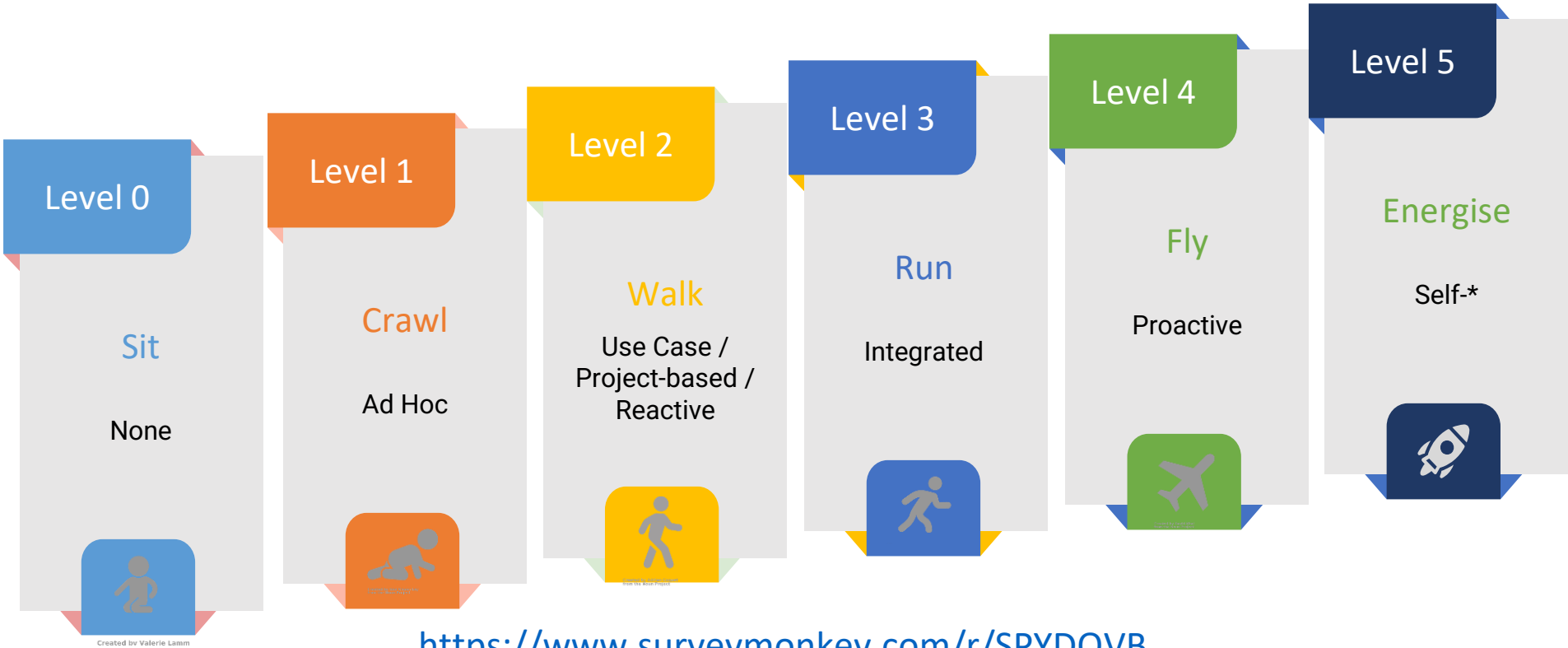


Vision & Strategy

People & Organisation

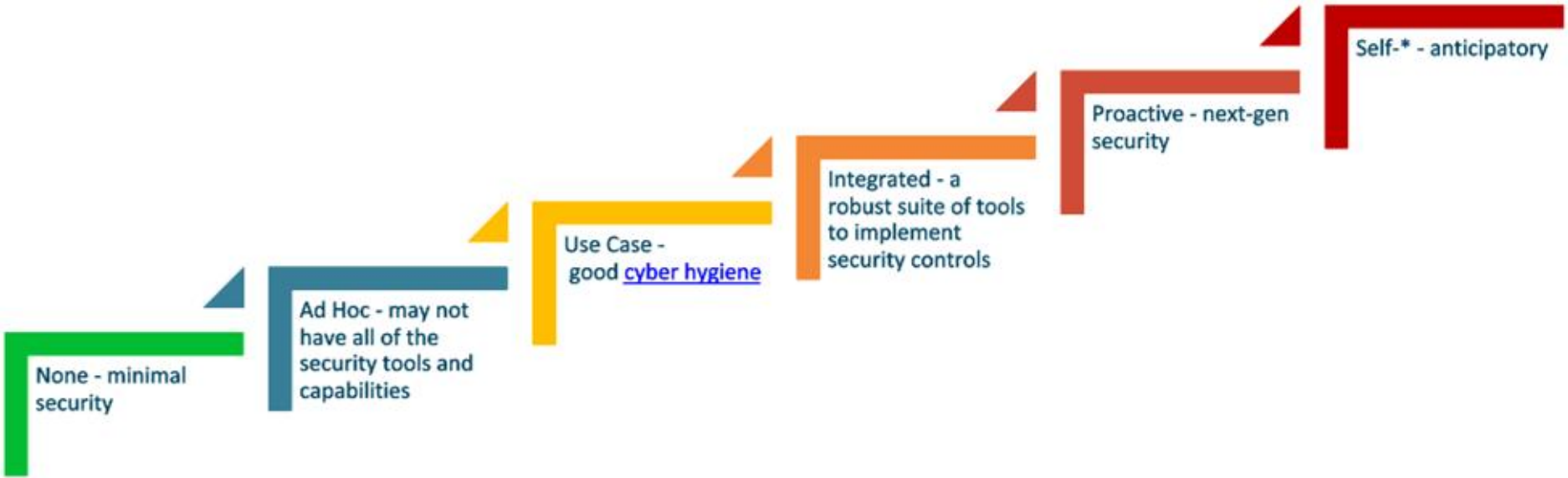
https://www.surveymonkey.com/r/SPYDQVB

OAV Maturity Model - Stages



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

Example for Security



Community Portal

OAV Community Portal

Creado por Susanne Nägele-Jackson, actualizado por última vez el sep 03, 2025 • 7 min de lectura

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

OAV Examples by Country

AARNET, Australia

- **https://www.aarnet.edu.au/**
- Hindrik Buining, David Jericho, Orchestration, Automation and Virtualisation, BOF, TNC19, Tallinn, Estonia, June 20, 2019 (pdf)

ARNES

- **https://www.arnes.si/**
- ARNES is working on the project WLAN-2020 to offer wireless connection within the schools in the country, hiring consultants during the deployment phase. They are using Automator as the middleware and doing ZTP (Zero Touch Provisioning).
- They have built the ARNES network service orchestration stack, automation based on Ansible.
- https://geant.app.box.com/s/68pzsqbkbcx9683j8qybgoi5zlu7jhtz

CARNET

- **https://www.carnet.hr/**
- Damir Regvart, Lidija Jakovčić, Silvije Milišić, CARNET OAV, BOF, TNC19, Tallinn, Estonia, June 20, 2019 (pdf)
- CARNET is also working on a national project to offer wireless connection within the schools in the country (https://www.e-skole.hr/en/results/adequate-ict-infrastructure-in-pilot-schools/), with a network management system built by them (Management system for the educational system). CARNET does the network provisioning and monitoring through an API: https://geant.app.box.com/s/fji5tdbv2dhxlfed137kl7mj806mmi16
- See the lightning talk during the Network Management and Monitoring Workshop.
- whitepaper: **CARNET OAV Architecture Analysis**, White Paper
- Mirna Ljubić Tustonjić, Daniel Zima, NOC Troubleshooting, 21st SIG-NOC, Berlin, Germany, November 14, 2024 (pdf)

CSUC

- **https://www.csuc.cat**
- CSUC has automated the provisioning of new circuits in the L2 and L3 devices using Rundeck, Python scripts and Ansible modules for Anella Científica (Regional Research and Education Network in Catalonia).
- For the Internet Exchange, CATNIX, CSUC has an internal portal where customers can add their new MAC addresses and the filters are uploaded in the switches through Python scripts.

CyNet

- **http://www.cynet.ac.cy/**
- whitepaper: **CYNET OAV Architecture Analysis,** White Paper
- Iacovos Ioannou. Active member of OAV working group of WP6-T2.

ESnet, USA

- **http://es.net/**
- John MacAuley, Service orchestration in ESnet6, BOF, TNC19, Tallinn, Estonia, June 20, 2019 (pdf)
- David Mitchell, ESnet Adventures in Ticket Automation, 19th SIG-NOC meeting, Dublin, Ireland, November 15, 2023 (pdf)

FUNET

- **https://www.csc.fi/funet-kaikki-palvelut**
- Asko Hakala, Workshop on Network Management and Monitoring, Copenhagen, October 2019: https://wiki.geant.org/download/attachments/131629403/Funet%20Kampus%20Service.pdf?version=1&modificationDate=1571047057236&api=v2.
- Kampus Service Project. All new customer provisioning is automated, with no manual configuration (only physical installation).
- Everything automated using Ansible, configuration stored in YAML files.

GÉANT

- **https://www.geant.org/**
- Bram Peeters, Orchestration, Automation and Virtualisation (OAV) in GÉANT, GN4-3 Future Service Strategy Workshop, Amsterdam, May 9, 2019 (pdf)
- Mian Usman, Orchestration and Automation, BOF, TNC19, Tallinn, Estonia, June 20, 2019 (pdf)
- Tony Barber, 10th SIG-NOC meeting presentation
- GÉANT has automated the testbed setup for IP/MPLS type certification testing using the Robot framework and pyEZ. Version control using Gitlab. Using Ansible for the automation system, Saltstack for network devices and Jsnapy to collect operational status checks for before/after action comparison
- whitepaper: **GÉANT OAV Architecture Analysis**, White Paper
- Karel van Klink, The GÉANT Automation Platform, 33rd STF, Berlin, Germany, November 13, 2024 (pdf)

Terminology and Glossary

OAV Terminology

Creado por Susanne Nägele-Jackson, actualizado por última vez el sep 03, 2025 • 32 min de lectura

Terminology and Glossary

During our discussions with NRENs and at workshops it became clear that there are OAV terms that are being used in different ways and in some cases with slightly different meaning and understanding. So in order to have a common basis we decided to identify a list of relevant OAV terms and add a short definition with a reference link (source) for each term as well as an acronym table with definitions of abbreviations. We tried to use standard-based definitions whenever we could find them and listed internal definitions in cases where no standard definitions were found.

Internal definitions are based on the consensus of all team members; to come to an agreed definition of all team members a terminology document was created with descriptions of the terms and an internal survey was conducted for final adjustments. Additional comments are welcome!

Whitepapers

- Orchestration, Automation and Virtualisation Terminology Version 3.0 (Oct 29,2024)
- Orchestration, Automation and Virtualisation Terminology Version 2.0 (Jan 10,2023)
- Orchestration, Automation and Virtualisation Terminology Version 1.1 (Jan. 20, 2021)
- Orchestration, Automation and Virtualisation Terminology (Apr. 8, 2020)

OAV Common Terms

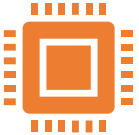
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Glossary

OAV Terms	Definition and reference
AIOps	***AIOps is (the usage of) Artificial Intelligence for IT Operations. It combines big data and machine learning to automate IT operations processes, including event correlation, anomaly detection and causality determination.*** • https://www.gartner.com/en/information-technology/glossary/aiops-artificial-intelligence-operations
Adaptive Machine Learning	***Adaptive machine learning builds on traditional machine learning to create a more advanced solution to real-time environments with variable data. As its name suggests, adaptive machine learning can adapt to rapidly changing data sets, making it more applicable to real-world situations.*** • Reference(s) or Source: https://www.encora.com/insights/machine-learning-what-is-adaptive-ml
Adversarial AI/ML	***A practice concerned with the design of ML algorithms that can resist security challenges, the study of the capabilities of attackers, and the understanding of attack consequences.*** • Reference(s) or Source: "The Language of Trustworthy AI: An In-Depth Glossary of Terms (updated August 4, 2024)" (https://docs.google.com/spreadsheets/d/e/2PACX-1vTRBYglcOtgaMrdF11aFxfEY3EmB31zslYl4q2_7ZZ8z_1lKm7OHtF0t4xlsckuogNZ3hRZAaDQuv_K/pubhtml) NIST(Reznik,_Leon)
AI Accuracy	***Closeness of computations or estimates to the exact or true values that the statistics were intended to measure.*** • Reference(s) or Source: "The Language of Trustworthy AI: An In-Depth Glossary of Terms (Updated August4, 2024)" (https://docs.google.com/spreadsheets/d/e/2PACX-1vTRBYglcOtgaMrdF11aFxfEY3EmB31zslYl4q2_7ZZ8z_1lKm7OHtF0t4xlsckuogNZ3hRZAaDQuv_K/pubhtml) (https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-3.pdf)
AI Agent	***An artificial intelligence (AI) agent is a software program that can interact with its environment, collect data, and use the data to perform self-determined***

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.

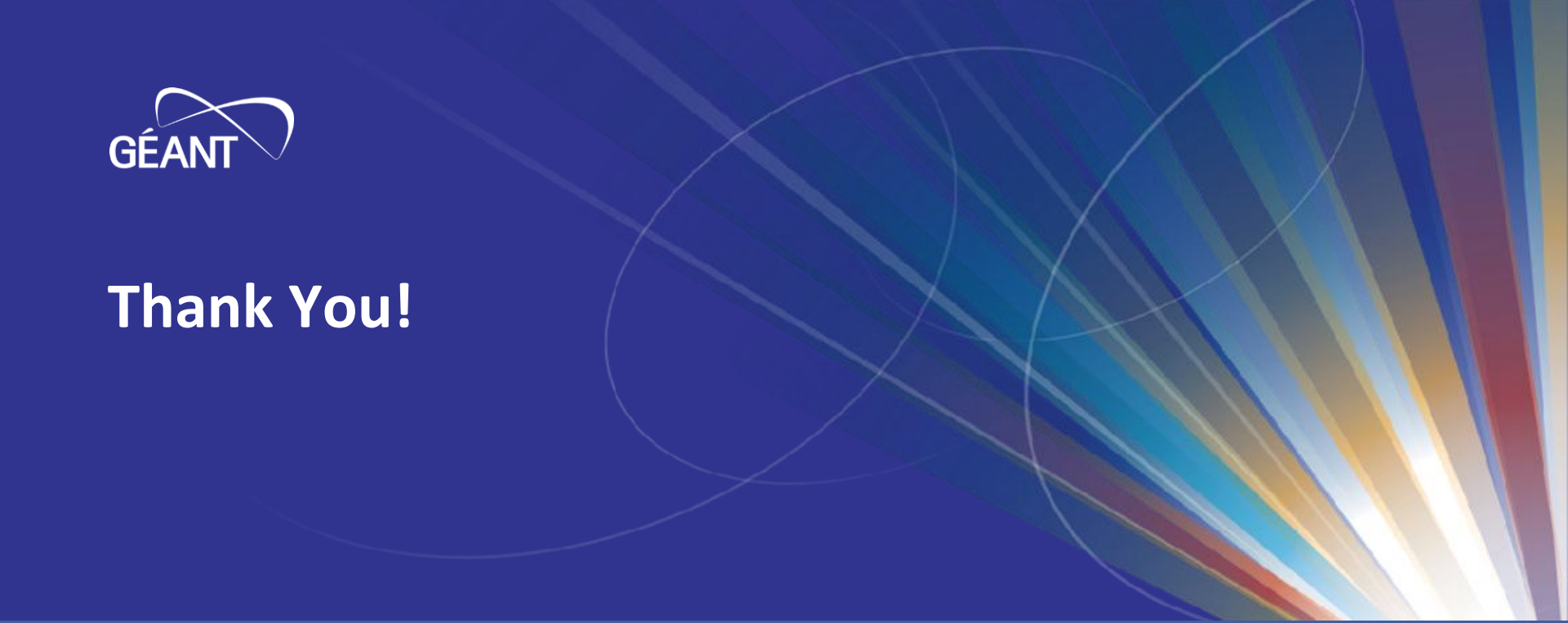


Be a tool for Research and Education institutions around the world to help them **check their maturity status and compare their architecture** in Orchestration, Automation and Virtualisation with other sibling organisations.

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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Co-funded by
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