TOWARDS COLLABORATIVE DIGITAL SERVICES

The delivery of modern network services is evolving from services that were traditionally provisioned via heavily manual processes that were based on classic OSS/BSS platforms. Today's users demand self-service environments where *they* can make changes at a time that suits *them*. NRENs and their clients are reacting to this demand by embracing a digital transformation process - seeking to use digital platforms in an agile way - where that process mandates automation, modularity and flexibility. The drivers for automation are clear, including more efficient provisioning, and configuration consistency. It is also important to consider how a collaborative approach for the GÉANT community can bring additional benefits.

As NRENs and R&E organisations embrace their digital transformation, it is important to foster such collaboration through the sharing of knowledge and experience within the GÉANT community. Agreeing to implement Orchestration, Automation and Virtualisation (OAV) using a shared vocabulary and a common high-level architecture blueprint helps to ensure interoperability and potentially facilitate future inter-domain services as NRENs converge towards a shared objective for their users: the provision of true on-demand, self-service environments.

The search for such a blueprint led to the selection of the TM Forum's Open Digital Architecture (ODA), adopted by and driving the digital transformation of most communication providers. ODA is a reference framework which provides a common understanding and generality in an environment where each NREN is free to choose its own path towards OAV - including architecture, design and implementation.

Fostering collaboration and interoperability via common principles and guidelines

Modular architecture approach	Loosely coupled components that work together in an orchestrated manner.
Discrete, functional building blocks	Each component exposes well-defined functional capabilities.
Open APIs	Each component is accessed via an Open API that fosters interoperability, supports multi-vendor environments, and is the basis for automation and orchestration.

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Leveraging ODA to build interoperable (multi-domain) digital services

The ODA modular architecture supports efficient automation, data integrity and a streamlined approach to workflows with a template- and catalogue-based "single source of truth".

Within the GÉANT community, the federated approach of supporting interoperable discrete functional building blocks translates to agreeing to a minimum set of common APIs - used both internally and externally - and a common description of composable abstract services and resources in the corresponding catalogues. In this way, the NRENs are able to implement the Vegas rule ("what happens in the domain *stays* in the domain"), meaning that each NREN remains in control of how it implements its own platforms, and decides what and how much information (or level of abstraction) is exposed to other parties or systems via open APIs.

ODA Benefits

- Agile development of new services
- Independent evolution of components
- Multi-domain and federated services via standardised patterns
- Technology agnostic blueprint
- Integrates related standards
- Faster support and troubleshooting
- Change management support
- Zero-touch orchestration
- Multi-vendor interoperability
- Stepwise evolution
- Model-driven service management
- Support for autonomous networks
- AI /ML ready

OAV Wiki Knowledge Base

Terminology	https://wiki.geant.org/display/OAV/OAV+Terminology+and+Glossary
Community Portal	https://wiki.geant.org/display/OAV/OAV+Community+Portal
White paper	https://wiki.geant.org/display/OAV/OAV+Architectures

- Want to align your architecture with ODA?
- Have an OAV use case you would like to share and work on with us?
- Looking for a particular component or an open API specification?
- Seeking/offering to provide OAV training?

Contact us at oav@lists.geant.org

THE AUTOMATION, ORCHESTRATION AND VIRTUALISATION JOURNEY

OAV WIKI

https://wiki.geant.org/display/OAV

oav@lists.geant.org

The WP6 T2 team can help you on your OAV journey.

WHERE TO START?

Map your NREN architecture to the Open Digital Architecture* to start analysing the current situation

FROM A TRADITIONAL OSS/BSS

- Analyse components and functionalities
- De-couple & de-duplicate
- Expose components via APIs
- Automate manual tasks per component
- Use orchestrators to implement complex processes spanning multiple components

VIA A DIGITAL PLATFORM

- Agree on common terminology to understand each other
- Common service abstraction definition
- Interoperable interfacing via common Open APIs
- Federate with other NRENs or commercial providers

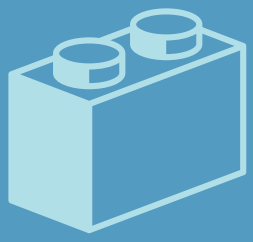
TO AN INTEROPERABLE COMMUNITY

On-demand provisioning of multi-domain services using common APIs and data models

Digital Platform Concepts and Principles*

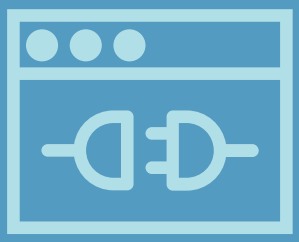
* based on the TMForum Open Digital Architecture

Architecture building blocks



De-couple functionalities into separate components.
Use the single source of truth approach to data storage.
Implement DevOps to develop/maintain each component.

open APIs



Promote a multi-vendor environment where each component has a well-defined API.
Ensure interoperability with open API specifications.
Same APIs for intra- and inter-domain integration.

Orchestration and Automation

Start incrementally: automate repetitive daily tasks first.
Orchestrate multiple components using processes.
Innovate: don't improve existing manual processes or compromise - invent new, more efficient workflows.

Service abstraction

Define abstracted service representations.
Describe services and resources using catalogues.
Re-use components for all services.

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