OSM in 5G-TRANSFORMER

5th OSM Hackfest 5G Day

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Project Overview (http://5g-transformer.eu)

- **Vision**: Mobile Transport Networks shall transform from today's rigid interconnection solutions into an **SDN/NFV-based 5G Mobile Transport and Computing Platform supporting diverse vertical industries**.
- **Technical Approach**: bring "**Network Slicing**" into mobile transport networks by provisioning and managing slices tailored to the needs of verticals.
  - Enable **Vertical Industries** to meet their service requirements within customized **network** (i.e. mobile transport infrastructure) **slices**;

  - Aggregate and **Federate transport networking and computing fabric**, from the edge up to the core and cloud, to create and manage **slices throughout a federated virtualized infrastructure.**

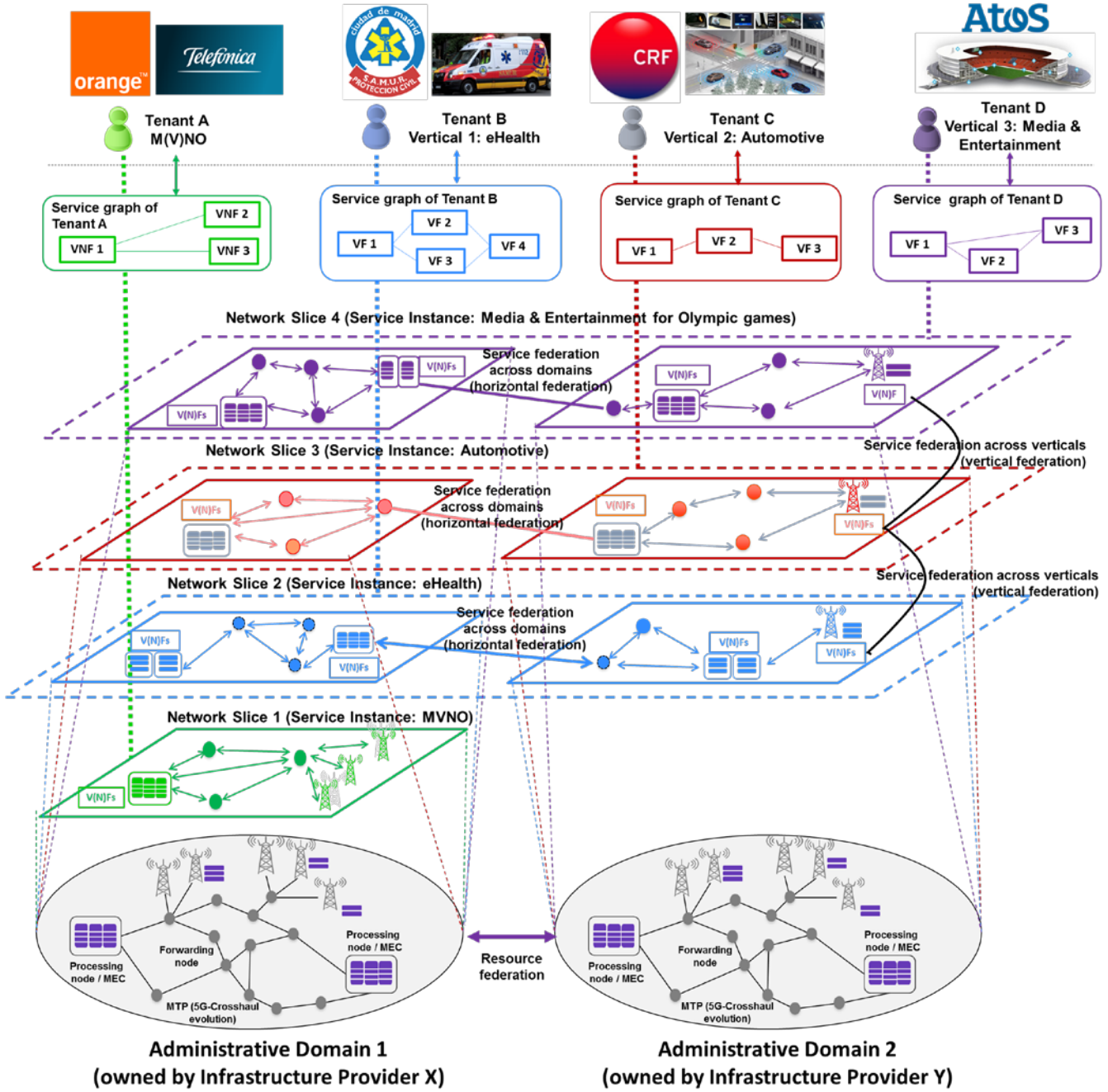
5G-TRANSFORMER Project Vision

Key architectural concept

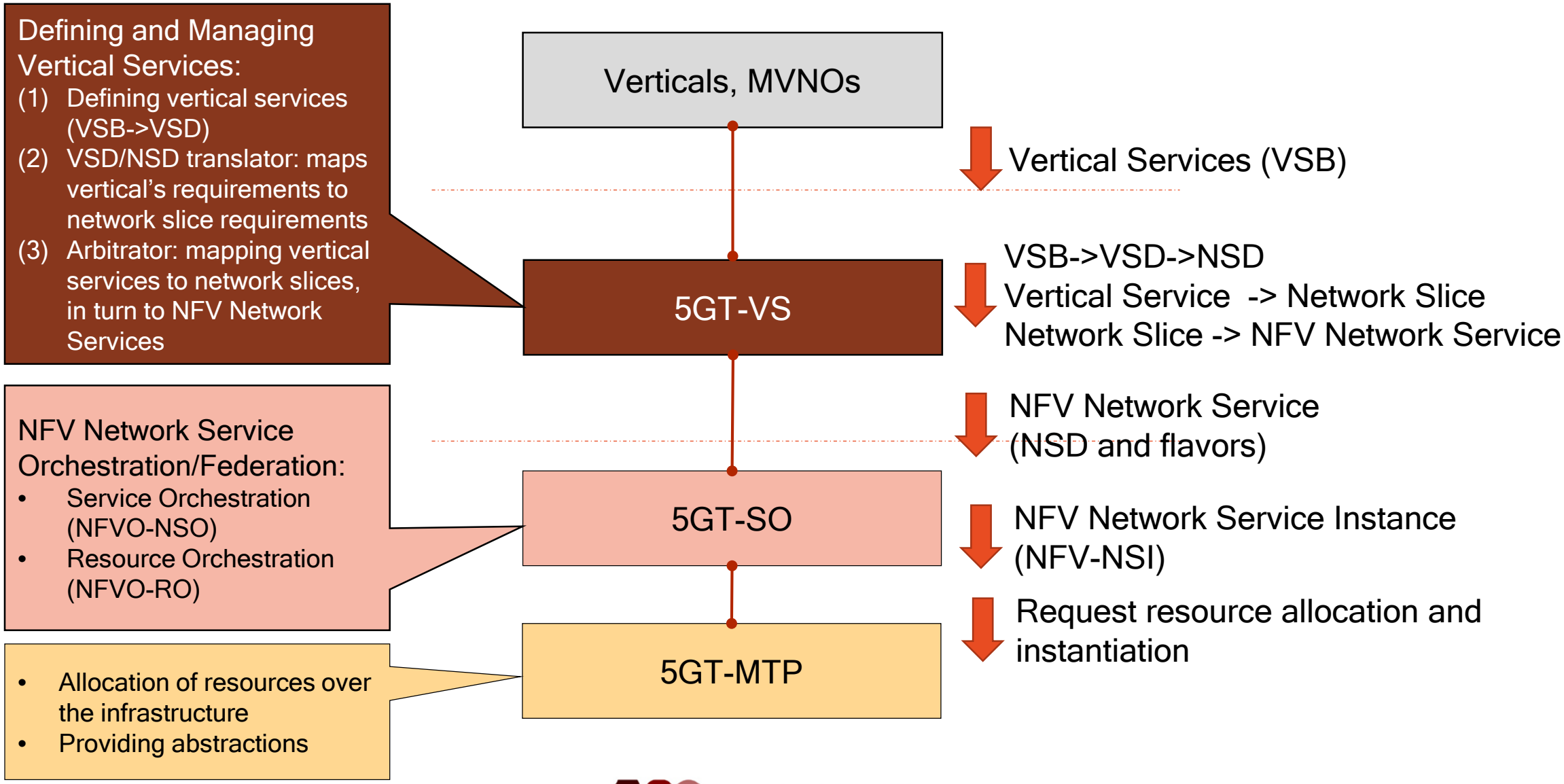
Network Slicing aligns network functionality to business needs in order to support adaptation between the needs of Verticals and 5G-T Service Provider

Share the 5G mobile transport and computing infrastructure efficiently among verticals and M(V)NOs to enhance the 5G-T provider network efficiency

Aligned with existing architectures in SDOs supporting network slicing (e.g: **3GPP, NGMN, ETSI**)



5G-T Main Building Blocks



5G-T baseline architecture design

Interfaces are aligned with **ETSI NFV** Interface and Information Model Specifications (IFA)

Defining and Managing Vertical Services:

(1) Defining vertical services (VSB->VSD)

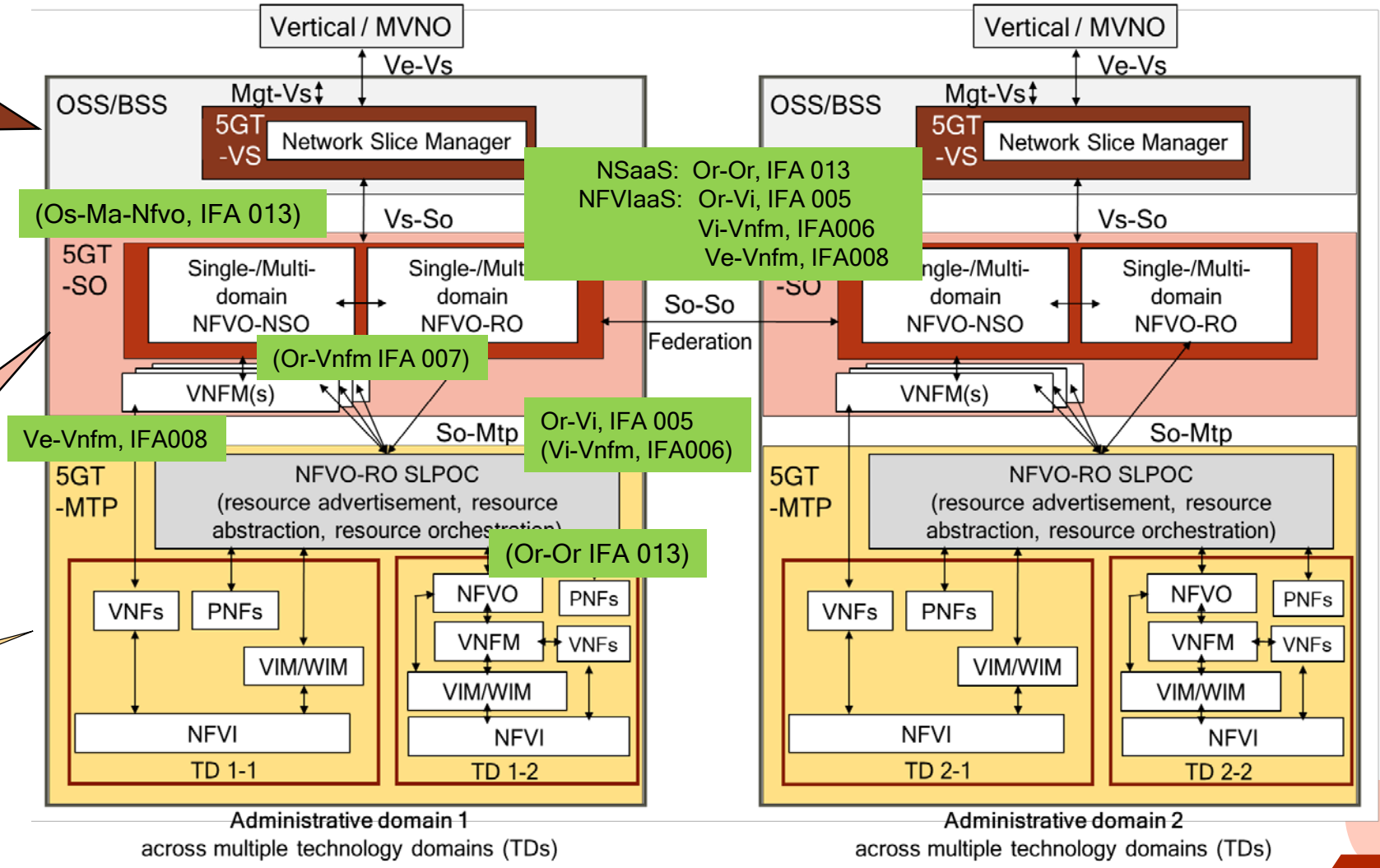
(2) VSD/NSD translator: maps vertical's requirements to network slice requirements

(3) Arbitrator: mapping vertical services to network slices, in turn to NFV Network Services

NFV Network Service Orchestration/Federation:

- Service Orchestration (NFVO-NSO)
- Resource Orchestration (NFVO-RO)

- Allocation of resources over the infrastructure
- Providing abstractions

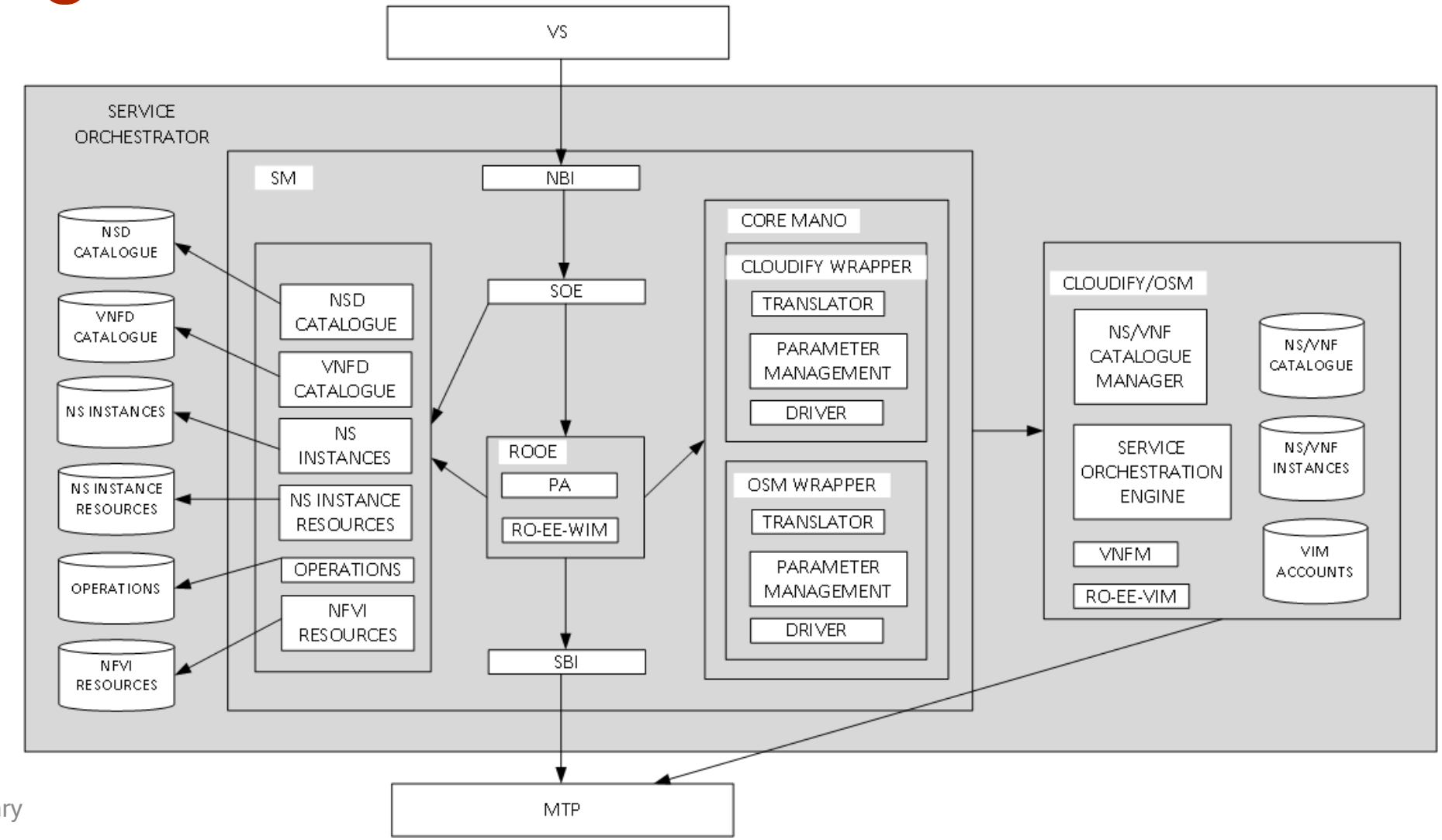


5G-T Service Orchestrator Implementation approach

- Use external APIs of big projects to exploit the services offered by MANO platforms (e.g., OSM, Cloudify)
- Add 5G-T functionality as external building blocks that exploit this functionality
- Advantages
  - Easier including different open source orchestration platforms
  - Better survivability of 5G-T code: New big project release would only imply adapting the API, not the whole integrated code inside thousands of lines of code.
  - Offers flexibility (ease of development) for evaluating research concepts in the project timeframe

Service orchestrator architecture Integration of OSM

Code available at: https://github.com/5g-transformer/5gt-so

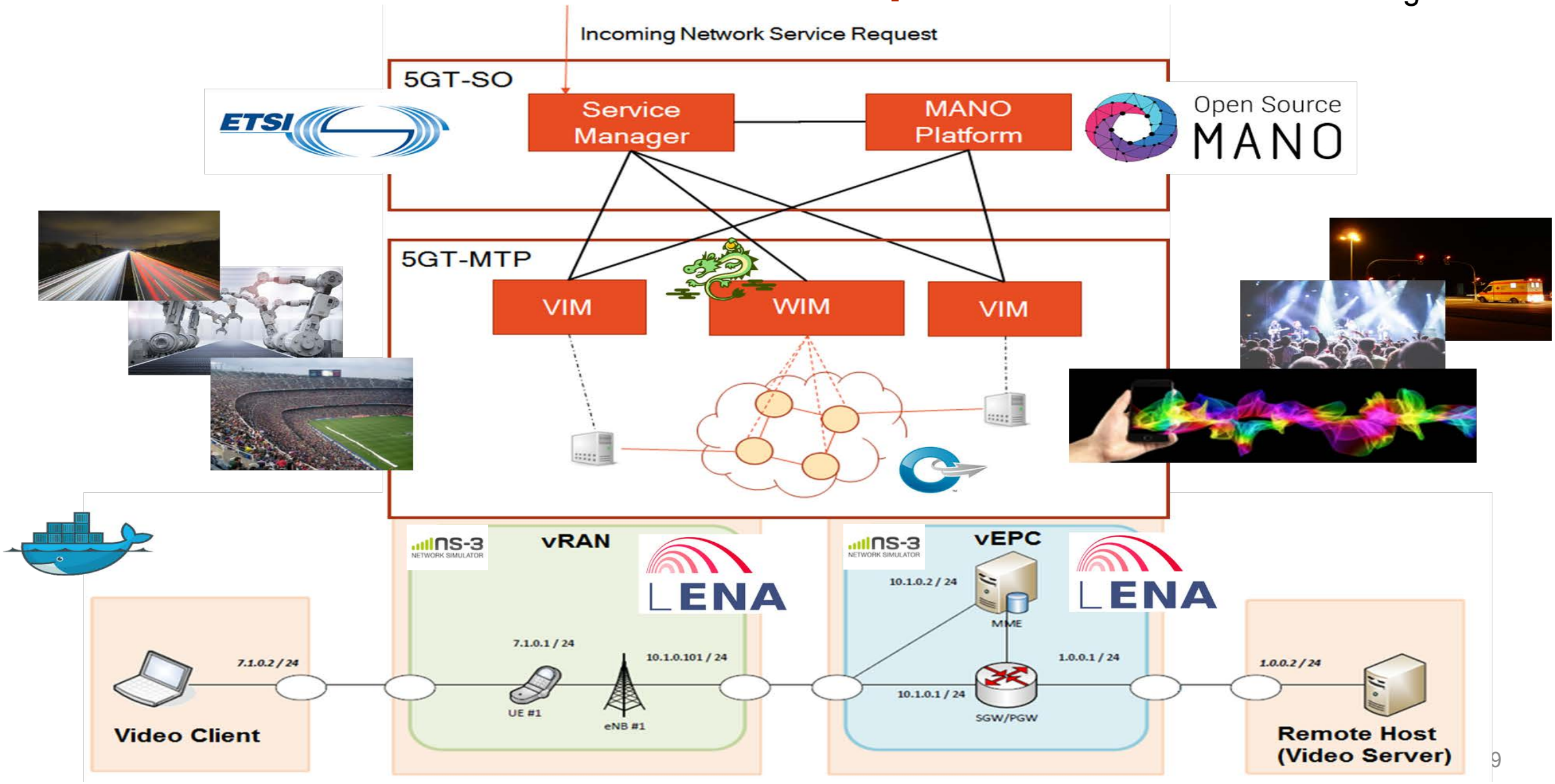


OSM integration

- Why?
  - Open source
  - ETSI NFV compliance
  - Critical mass
- What?
  - Integrated R3 and R4 (R5 ongoing)
  - Interaction through OSM wrapper
    - Translation between formats (JSON to YAML)
    - Parameter management for construction of appropriate call towards OSM
    - OSM client
  - Used to handle computing resources
    - Stitching with WAN resources carried out by the service manager
    - Interested in SDN integration for WAN + cloud E2E orchestration
  - Modified OSM client to be able to deploy placement algorithm decision and attaching VNFs to networks implementing the virtual links

Network scenario example

To be presented at
Mobile World Congress'19



OSM. Future work

- Integration of R5 in general
- Scaling support in R5
- Slicing support
- Constrained deployment for E2E provisioning (WAN+Cloud) of network services
- Any feature that helps in 5GT service composition and federation

- Request: More documentation would be appreciated

Summary

- OSM currently used to manage computing resources
  - External stitching with WAN resources for multi-PoP scenarios
- Currently exploring OSM R5 new features to define integration in 5GT architecture
- Ongoing work
  - Composite network services
  - Service federation (incl. multi-MANO platform tests)
  - Scaling
  - Vertical-oriented PoCs (automotive, entertainment, eHealth, MVNO, cloud robotics)

- 5G-TRANSFORMER code available at: https://github.com/5g-transformer/
- Final software implementation (R2) of the 5G-T platform delivered in May 2019

For more information and code

- The 5G-T initial system design is described in D1.2, the functional architecture design of the 5GT-VS, 5GT-SO and 5GT-MTP is reported in D2.1, D3.1 and D4.1 (http://5g-transformer.eu/index.php/deliverables/)
  - Currently producing updated versions of all these documents
- The initial software implementation (R1) of the 5G-T platform is published as open source on github in November 2018 (https://github.com/5g-transformer/)
  - **Vertical Slicer Platform:** https://github.com/5g-transformer/5gt-vs
  - **Service Orchestrator Platform**: https://github.com/5g-transformer/5gt-so
  - **Mobile Transport and Computing Platform**: https://github.com/5g-transformer/5gt-mtp
  - **Monitoring Platform**: https://github.com/5g-transformer/5gt-mon
- The final software implementation (R2) of the 5G-T platform is to be delivered in May 2019

- Videos of demos of 5G-TRANSFORMER available at:
  - http://5g-transformer.eu/index.php/dissemination/video-gallery/

5G-TRANSFORMER

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