

# Unifying the Programmability of Cloud and Carrier Infrastructure

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EWSDN 2014, Budapest

# We might only have to knit the future.



Future



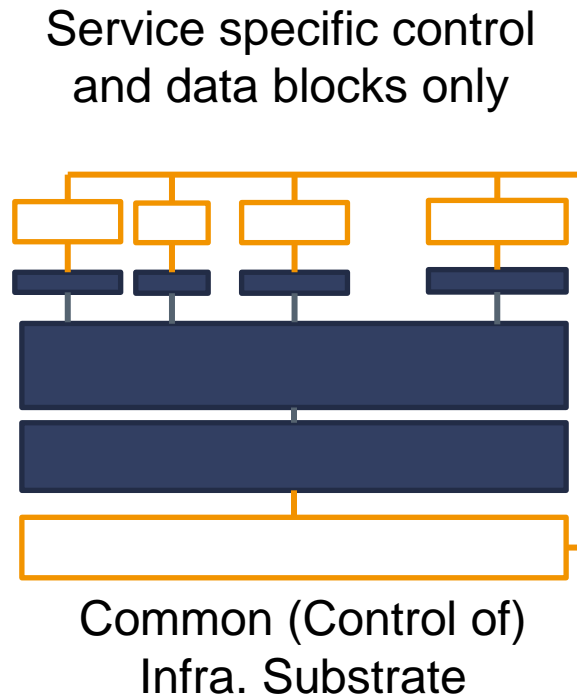
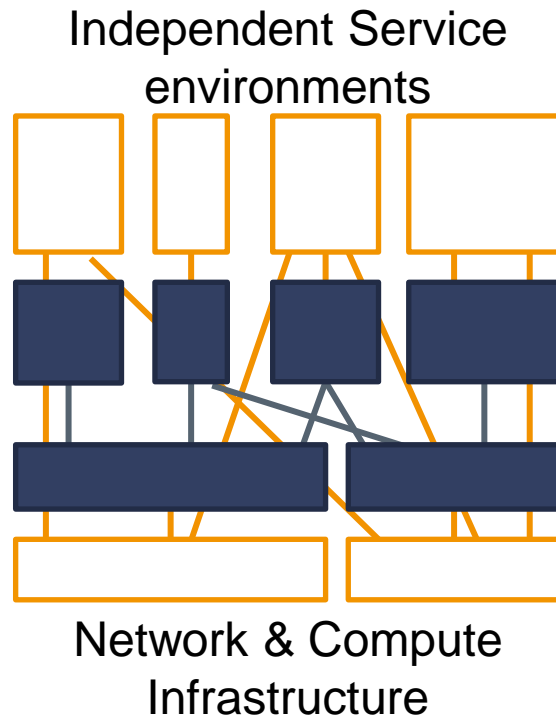
Operator

- + Agility
- + Flexibility
- + Automation
- + Scalability

User

- + Rich, elastic services
- + Quality of experience
- + Rapid provisioning
- + Self-service

# Knit the Unified Production Environment.



Unified Production Environment with dynamic service creation platform, leveraging a fine-granular service chaining architecture.

# Focus on seamless integration

Invocation of Dynamic Service Chains

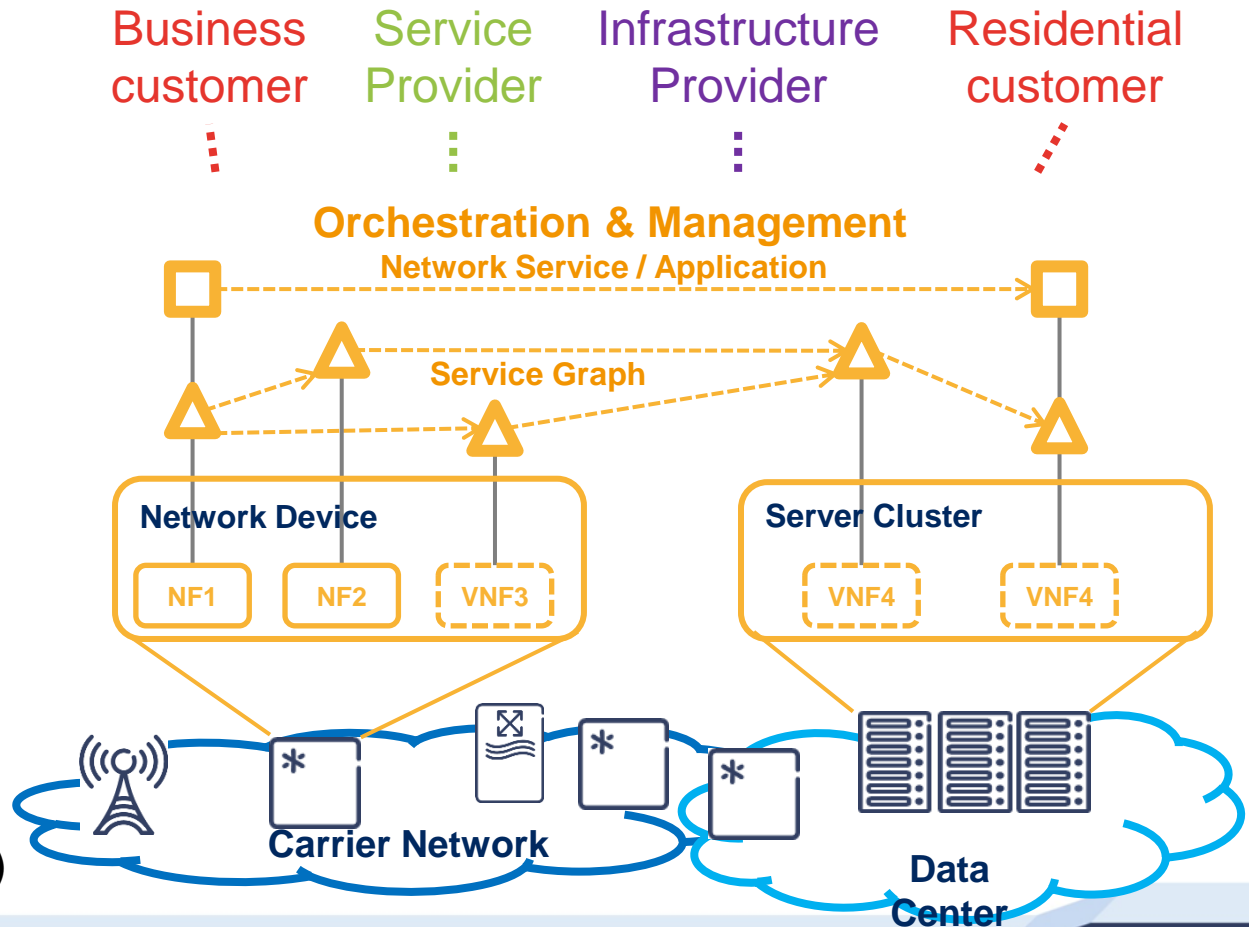
UNIFY Control Plane  
(Programmability)

Joint Orchestration in Network and Clouds

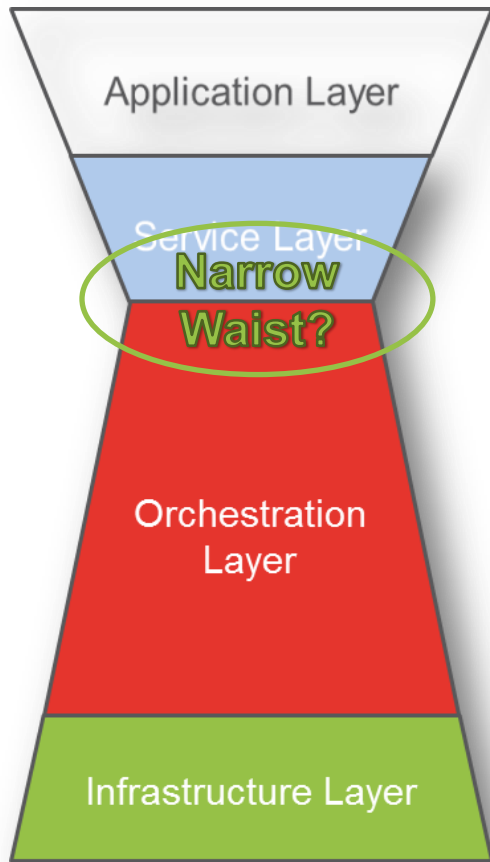
UNIFY Control Plane  
(Abstractions)

Data performance  
optimized infrastructure  
virtualization

(x86 based architecture)  
UNIFY Universal Node



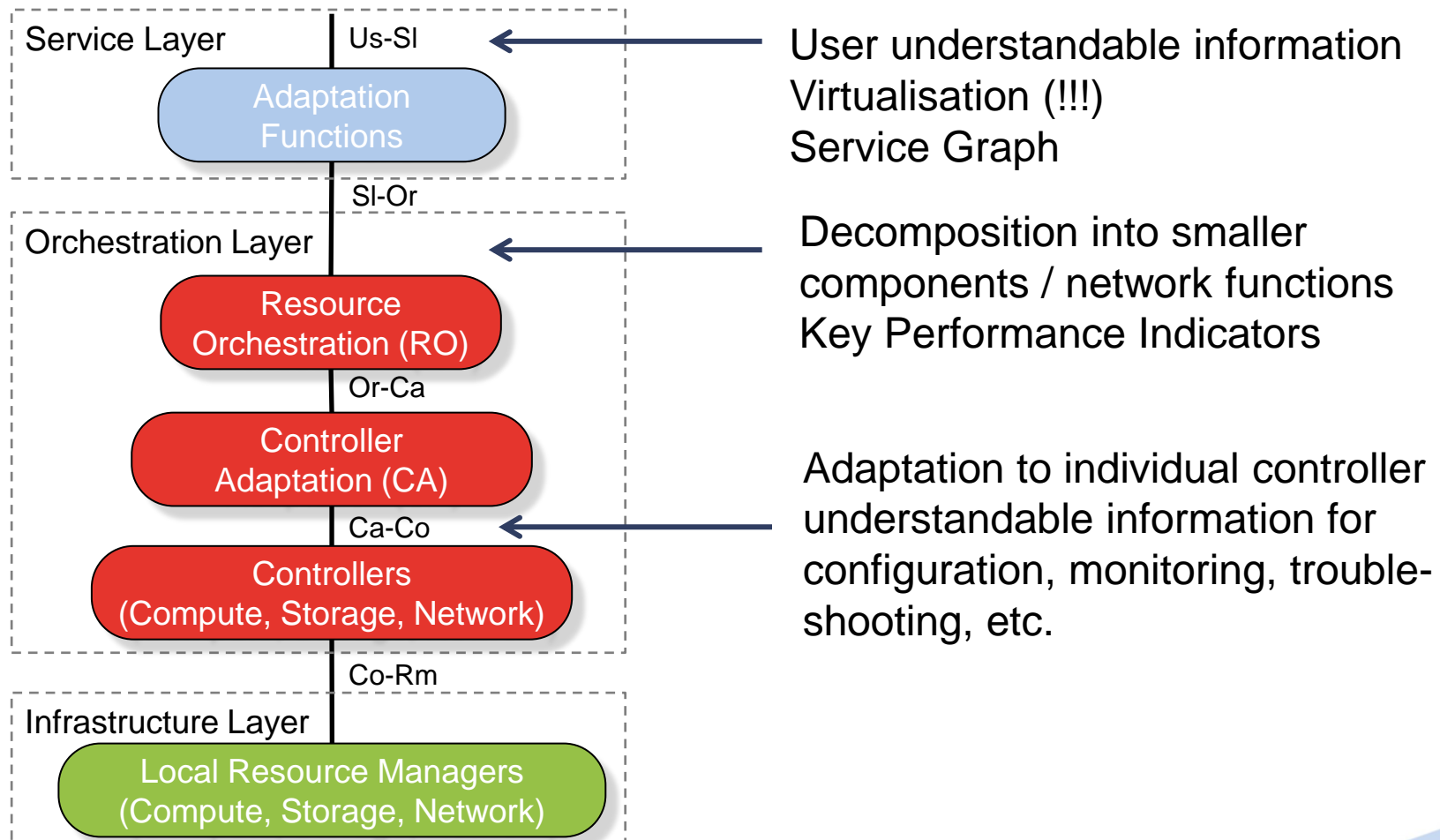
# Layering the Architecture.



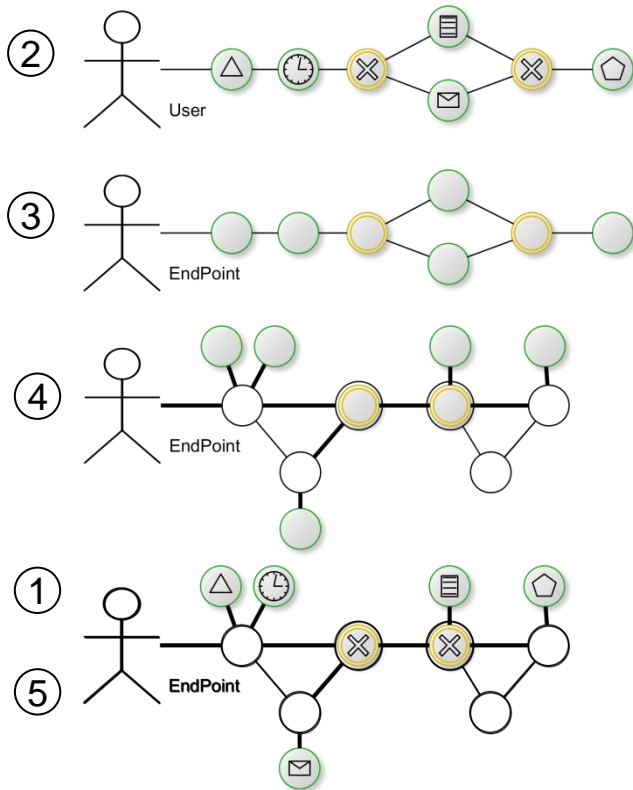
## UNIFY Control Plane

- **Services** decomposition and abstraction
- **Orchestration** for Network Function Forwarding Graphs (NF-FG)
- **Combined Compute, Storage & Network** abstraction over all resources
  - forwarding elements,
  - compute host capabilities,
  - hardware based network function capabilities,
  - data plane links

# Slicing the elephant – Separation of problems

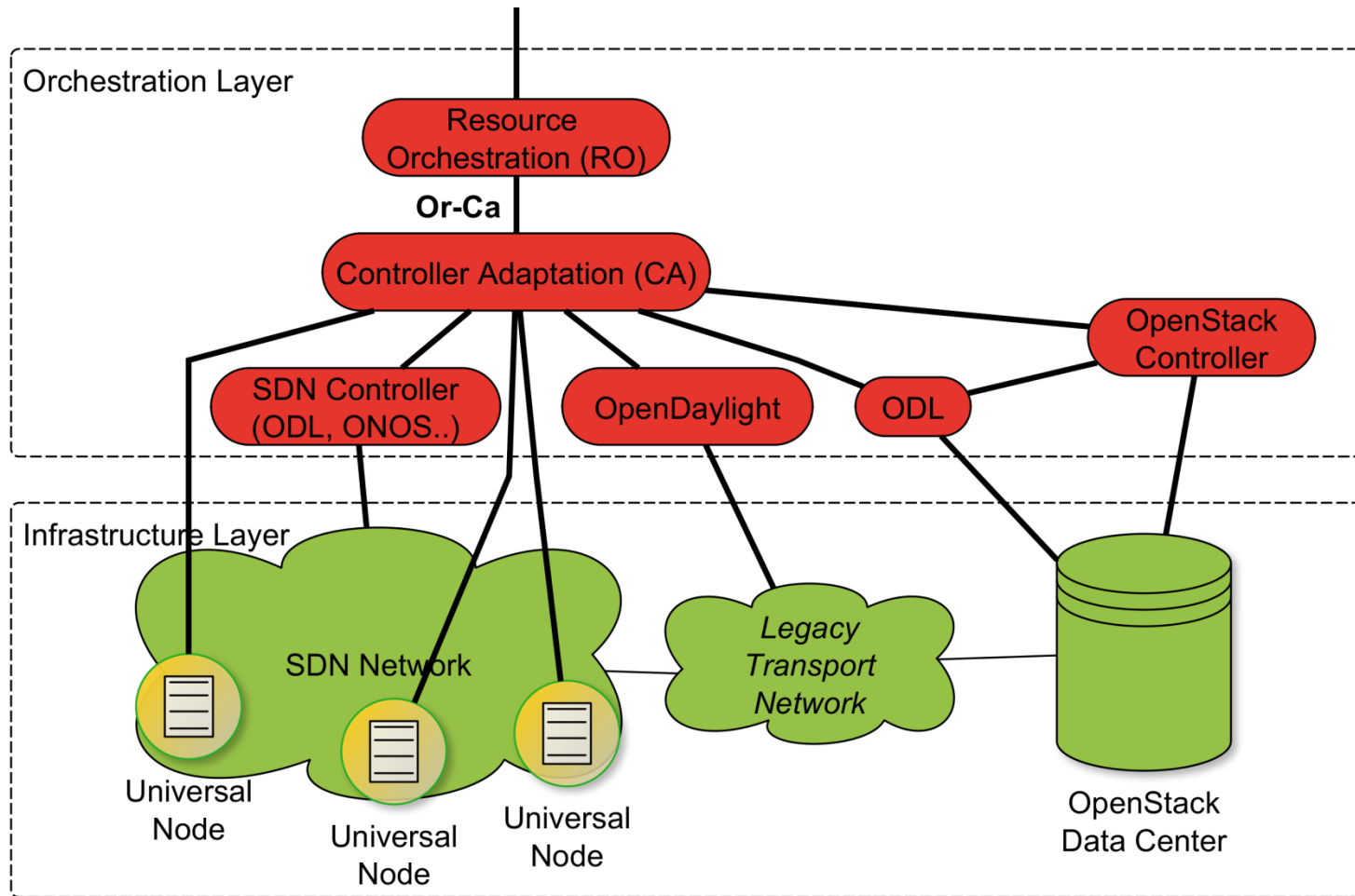


# Abstraction – an example of magic



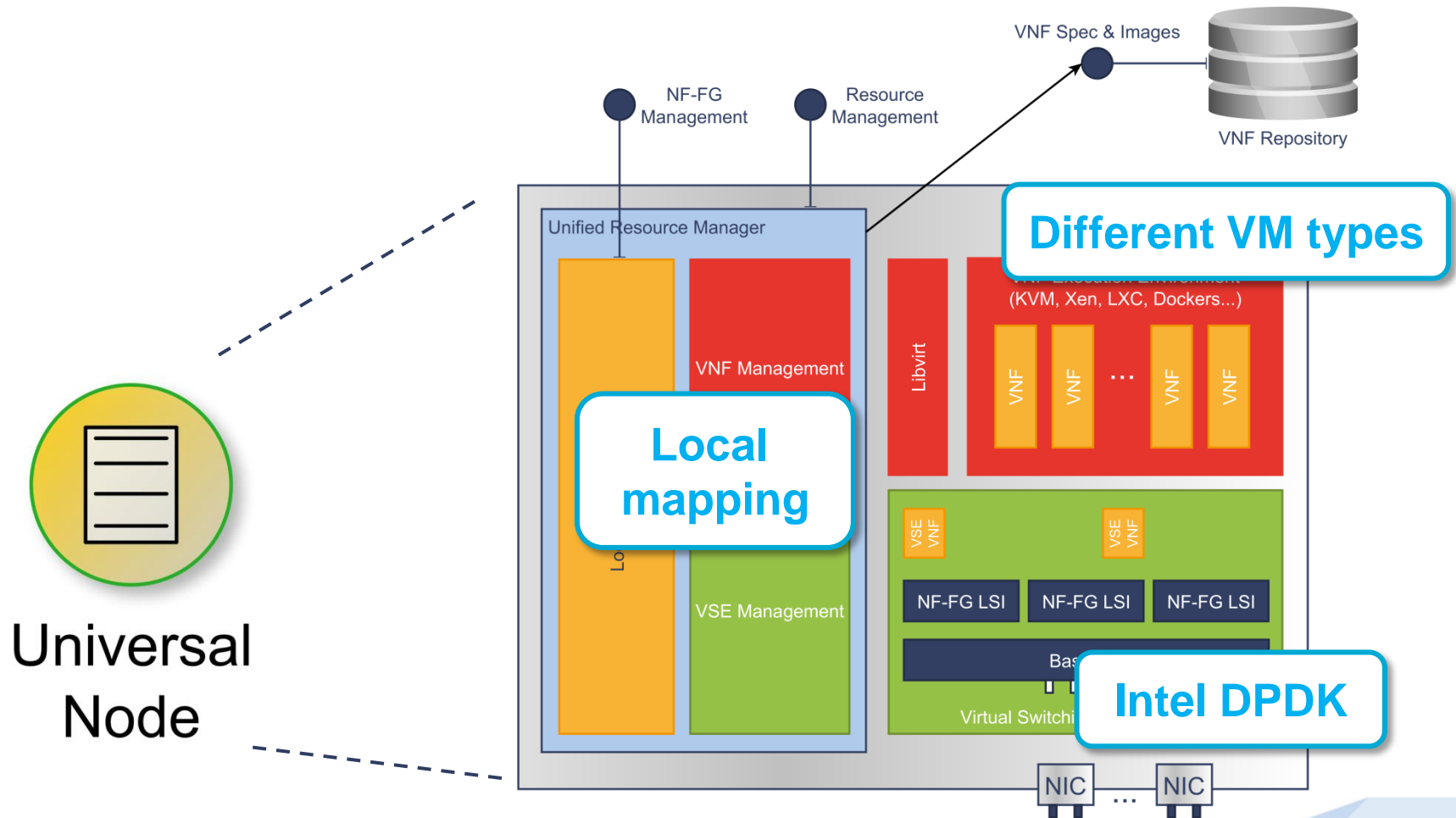
- Service Graph
- Abstract *Network Function Forwarding Graph*
- Abstract Resource Mapping
- Physical Infrastructure
  - Compute, Storage, Network and topology
  - **Instantiated Service Graph**

# Example for realisation

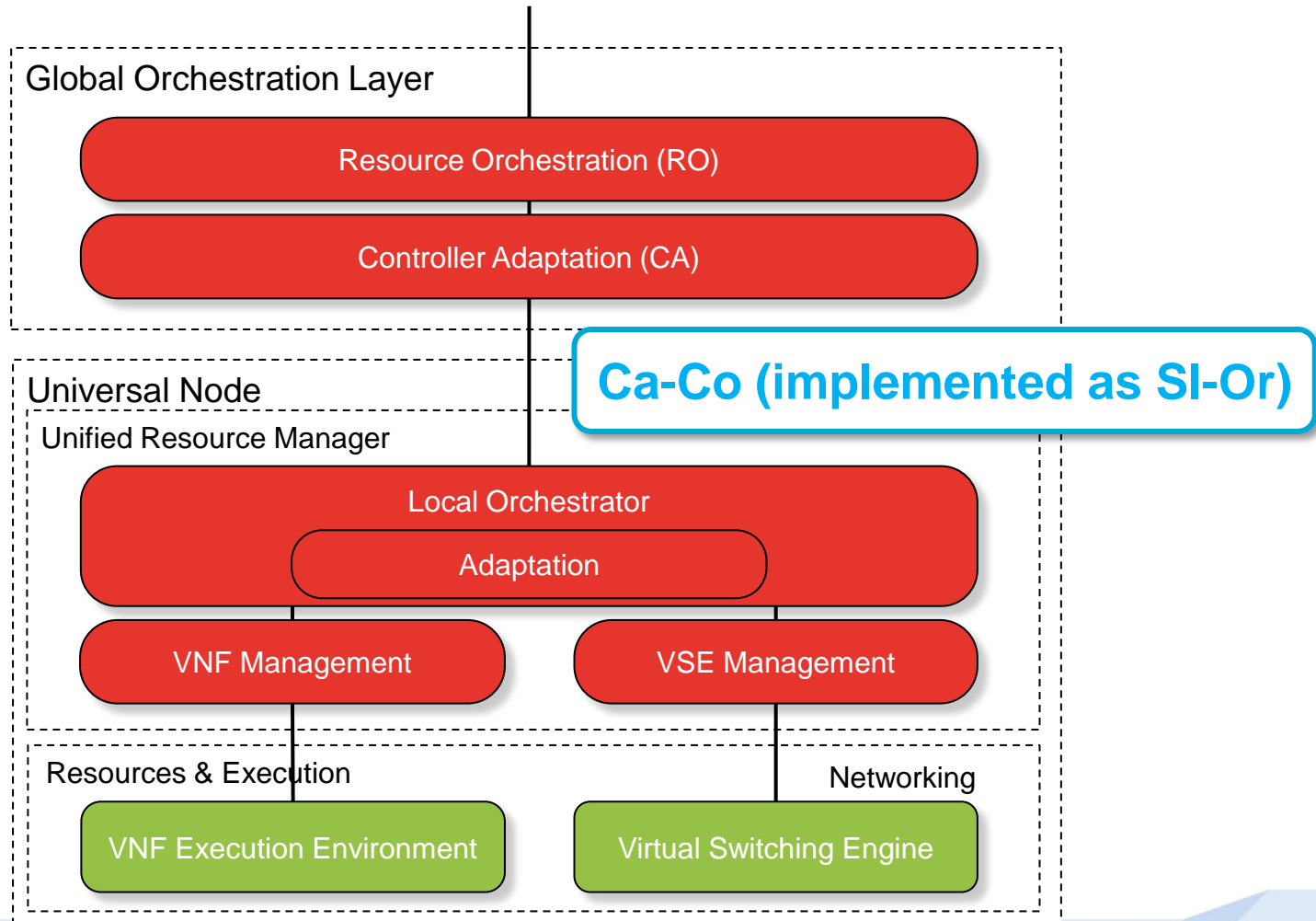




# Universal Node Concept



# UN integrated in UNIFY Architecture.



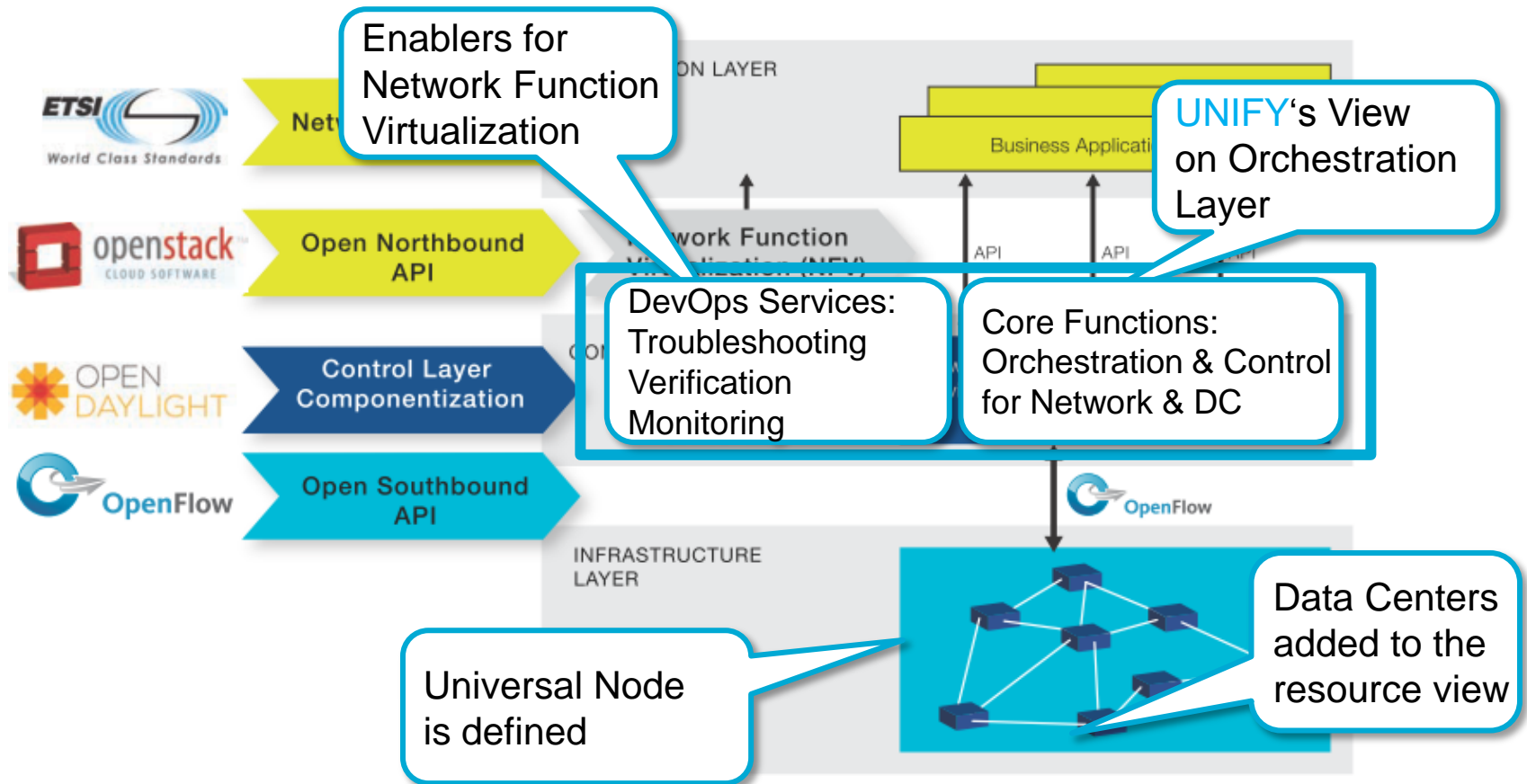
# Proof of concepts – here at EWSDN

- Mininet based prototyping framework – VNF container
- Click router environment – Click Service Function Graph
- OpenDaylight and OpenStack – Legacy SDN and Cloud

# Copy agility of IT: Service Provider DevOps

- Propose a definition for **integrating developer and operator** roles in telecommunication service provider networks
- Build a set of tools with dual developer-operator audience, based on research challenges identified in the following areas:
  - **Observability** for Software-Defined Infrastructure
  - **Verification** for Software-Defined Networks, in particular OpenFlow
  - **Troubleshooting** of performance degradations in a distributed Network Function Virtualization environment
  - **VNF Development support** for sandboxing prototypes

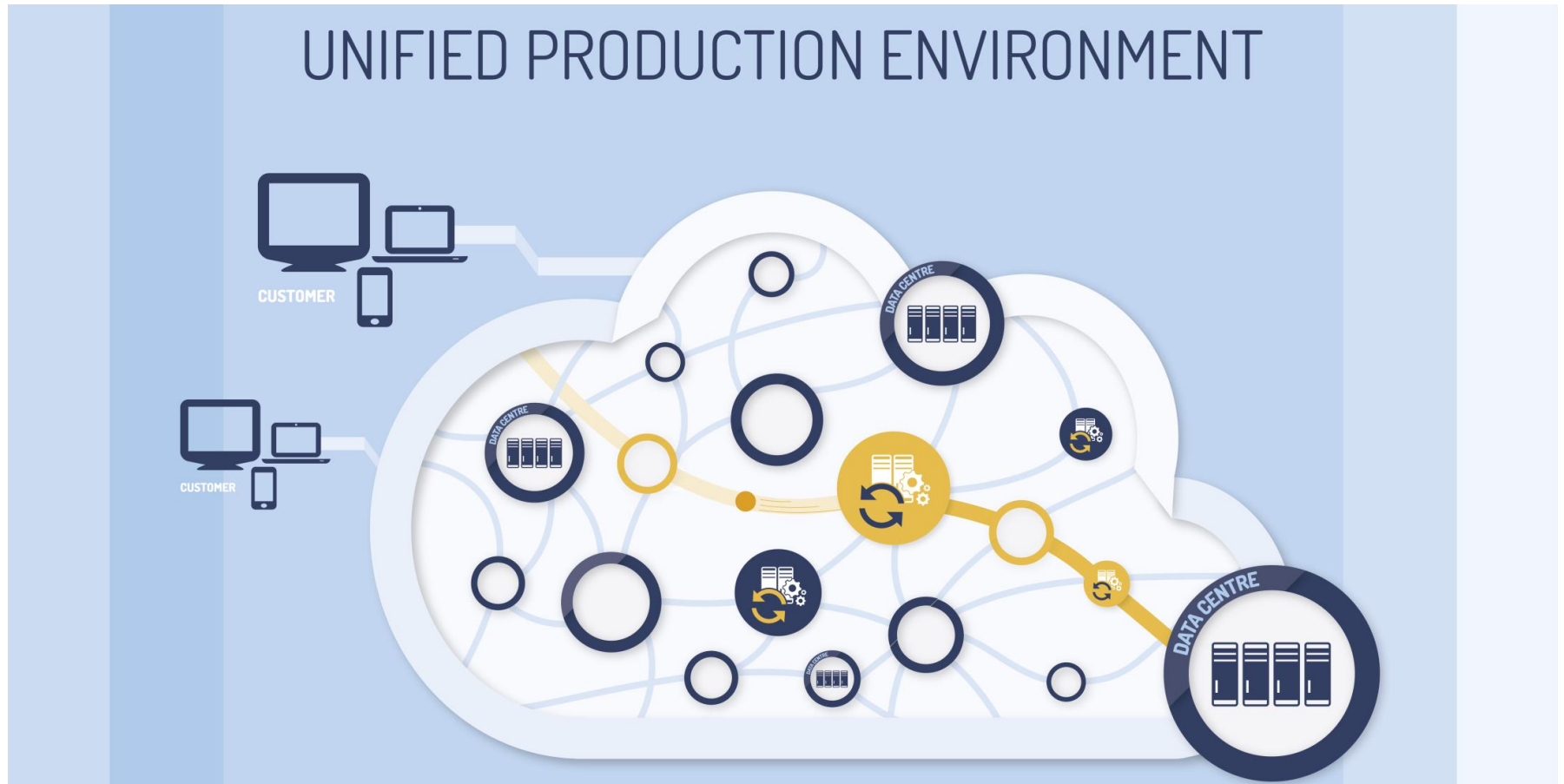
# Does UNIFY fit into the world?










# Summary

- Harmonization of control & orchestration of Compute and Network resources
- Filling the gap between ETSI NFV and ONF SDN
- Proof of Concept demonstrations
- Next steps:
  - More details in the architecture
  - Get down to the details
  - More implementations

# Thank you very much. Questions?



## RGB

	50, 63, 98
	176, 202, 235
	242, 148, 0
	248, 179, 52
	229, 53, 45
	150, 193, 71
	147, 16, 126