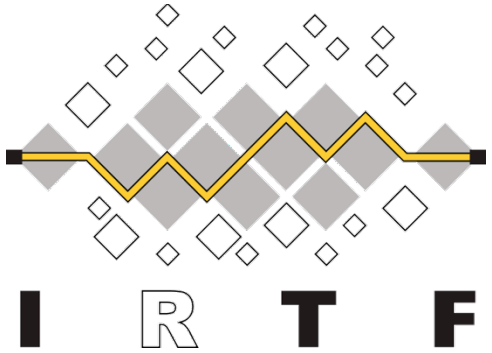

Cooperating Layered Architecture for SDN (CLAS)

<draft-contreras-sdnrg-layered-sdn-02>

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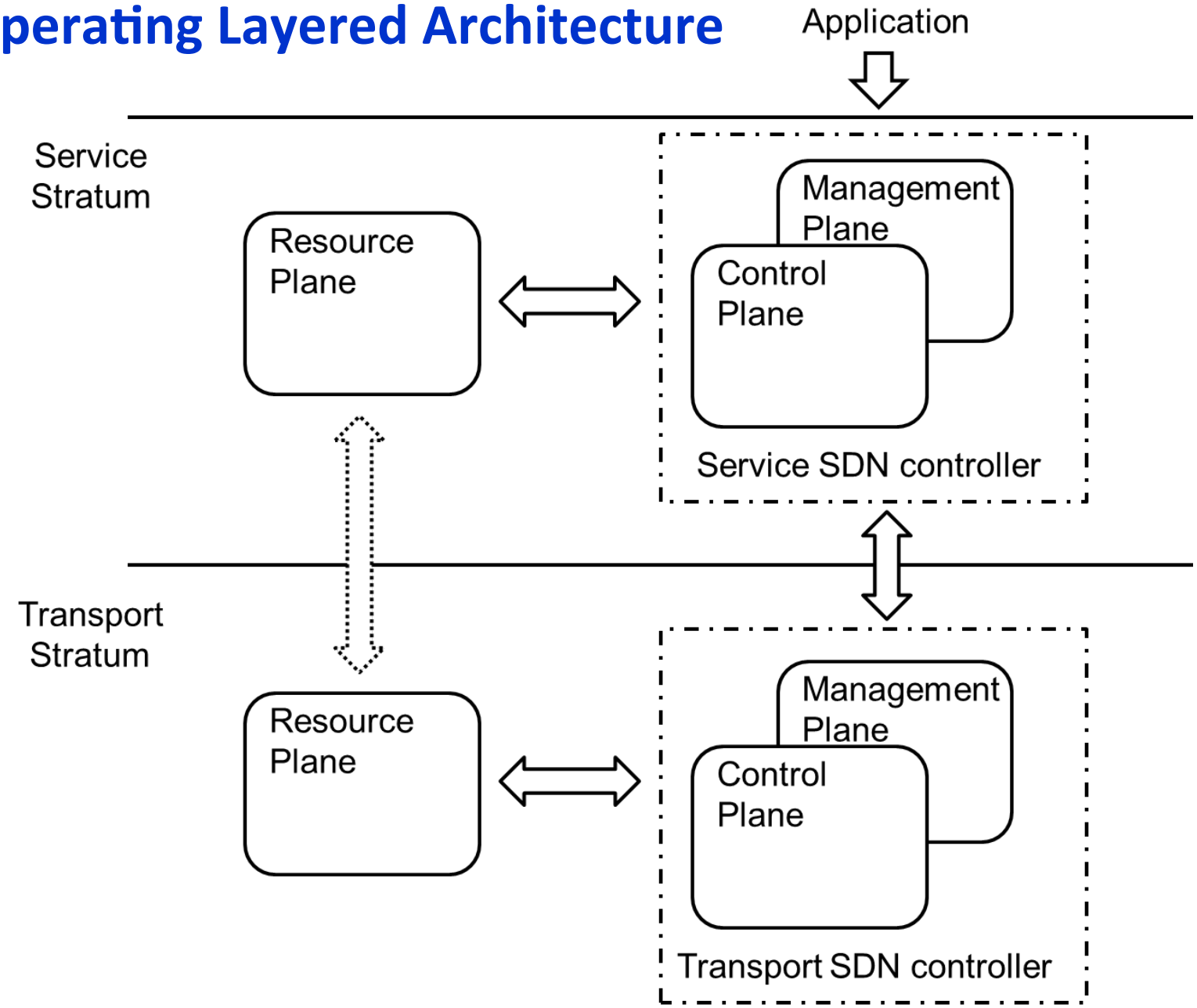
Rationale

- Existing proposals for SDN centralize control capabilities with very different objectives and purposes
- No separation between services and transport control
  - No clear responsibility for service provision and delivery
  - Complicated reutilization of components for delivering different services
  - Monolithic control architectures, driving to lock-in
  - Difficult interoperability, then difficult interchange of some modules by others
  - No clear business boundaries
  - Complex service/network diagnosis and troubleshooting

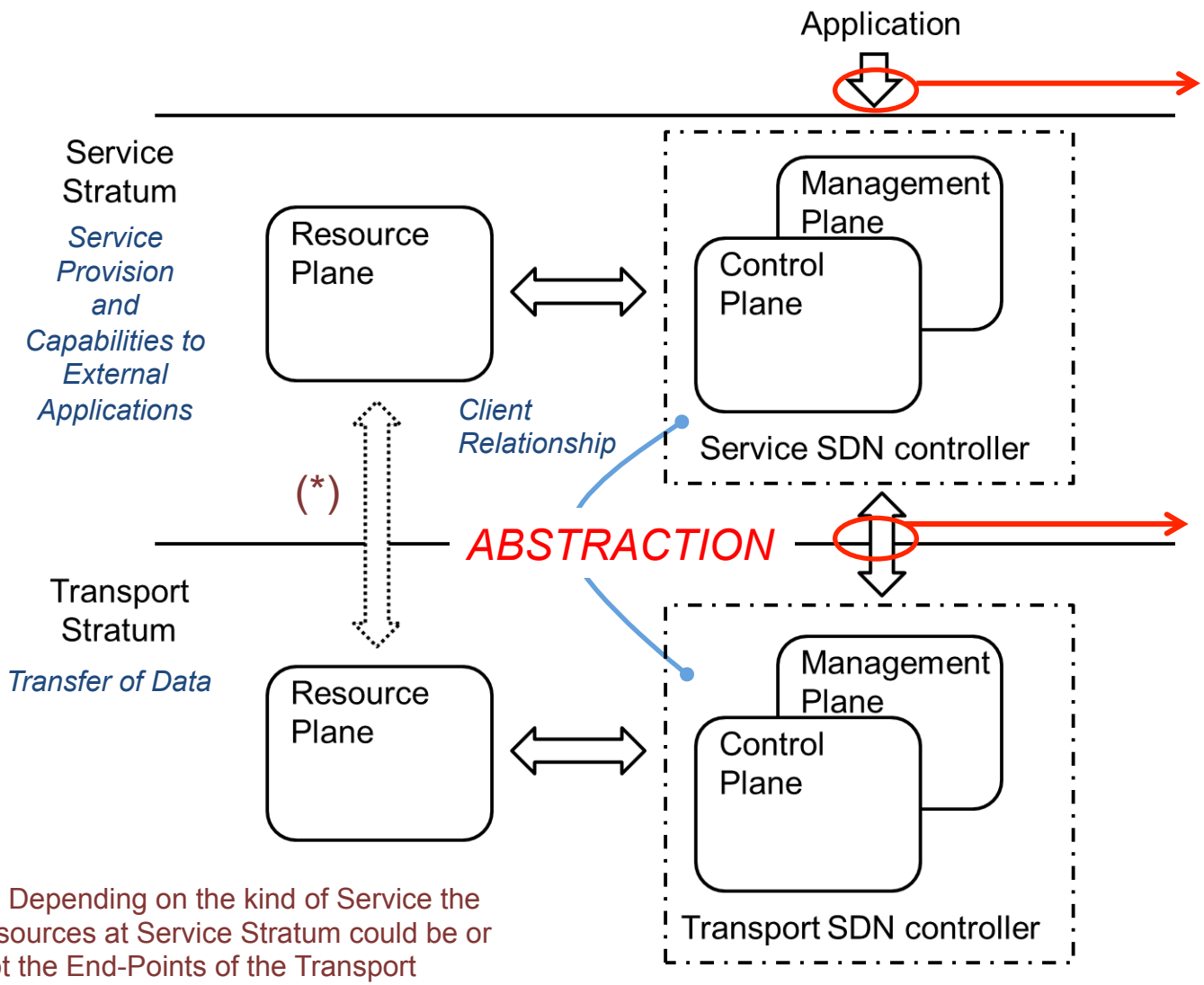
Cooperating Layered Architecture for SDN

- Key concept: separation of the control functions associated to services from those associated to transport
  - Service control becomes independent from transport control
- Functional Strata
  - Service stratum: functions related to the provision of services (including capabilities exposed to external applications)
  - Transport stratum: functions related to the transfer of data between communication end-points
- Plane separation
  - Control plane: control of resources in each strata
  - Management plane: management of resources and control plane in each strata
  - Resource plane: resources required for a given service (can be or not the termination points of a transport function)
- Despite differentiation, tight cooperation is needed for an efficient service provision

Cooperating Layered Architecture



Cooperating Layered Architecture – Topics to address



- Means to capture service requirements of services
- Means to expose transport capabilities to external services
- Means to notify service intelligence with underlying transport events
- Means to instruct the underlying transport capabilities to accommodate new requirements

(*) Depending on the kind of Service the resources at Service Stratum could be or not the End-Points of the Transport Resources

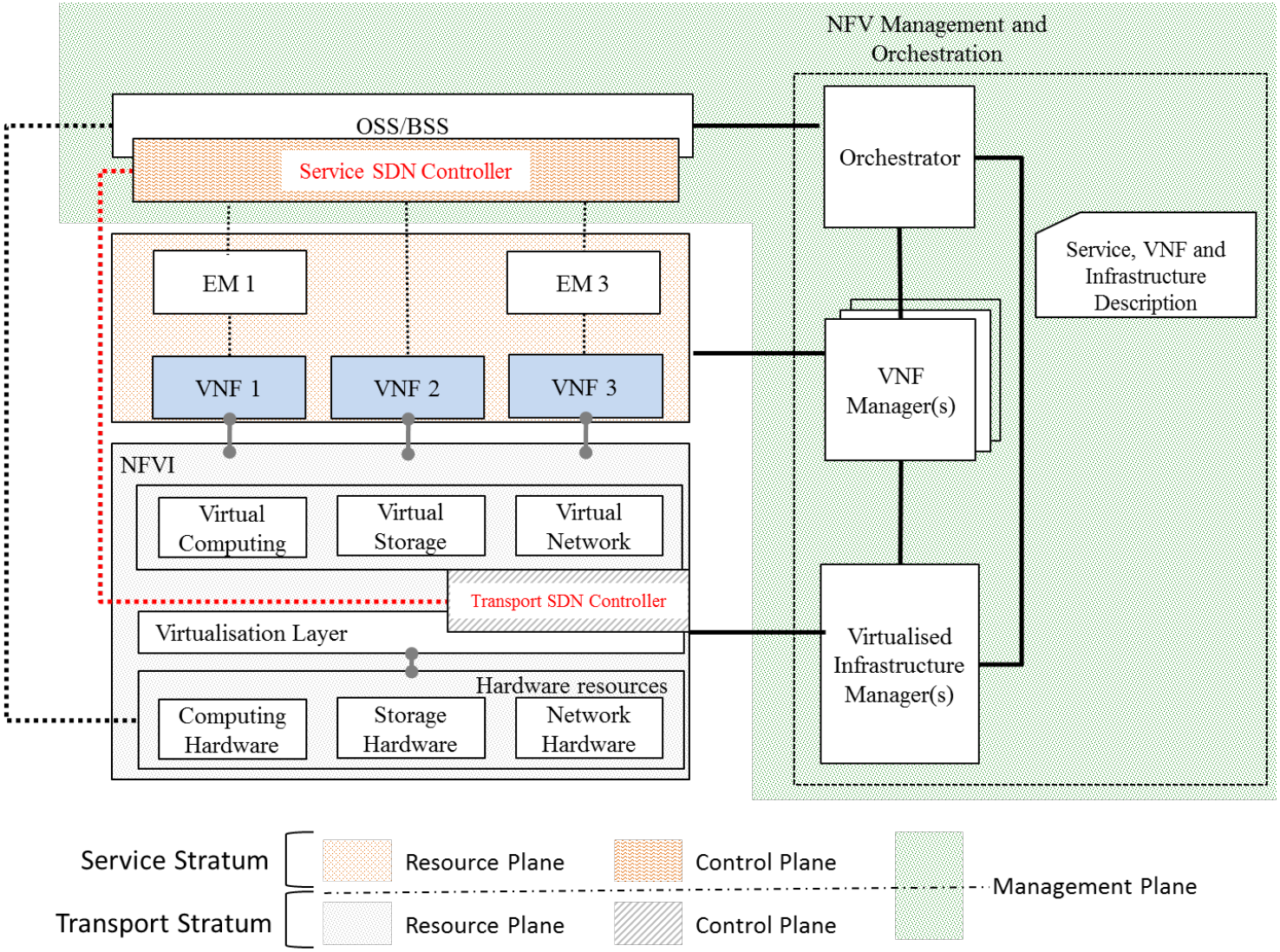
Additional topics to address

- Multi-domain scenarios in Transport Stratum
  - Transport resources being part of different administrative, topological or technological domains
- Recursiveness
  - Transport Stratum is itself structured in Service and Transport Stratum
- Security and trust
  - Security in the communication between strata
- Event notification, OAM, diagnosis

Deployment Scenarios

- Full SDN environment
  - Multiple Service Strata associated to a single Transport Stratum
  - Single Service Stratum associated to a multiple Transport Strata
  - (And 1:1 and N:N cases, of course)
- Hybrid environments
  - SDN-based Service Stratum associated to a legacy Transport stratum
  - Legacy Service Stratum associated to a SDN-based Transport stratum

Potential use cases / scenarios – e.g., NFV (*)



(*) Telefónica, *"Operational separation of SDN control for Service-oriented and Connectivity-oriented actions in the framework of NFV"*, NFVEVE(15)000066

Next Steps

- Collect interest from the community
  - E.g., Ericsson Research contributing in multi-domain scenarios (more details in next draft version)
- Work in the following areas:
  - Document a gap analysis
  - Define and document different use cases
  - Describe requirements for interface definition between strata
  - Security (in the communication between strata)
  - Others(e.g., monitoring, inter-domain provision, SLA, etc)