5G Service Modeling & 5G Service Creation

- R6 Frankfurt Use Cases

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Aug 19, 2019 version 1

5G Basics & 5G RAN

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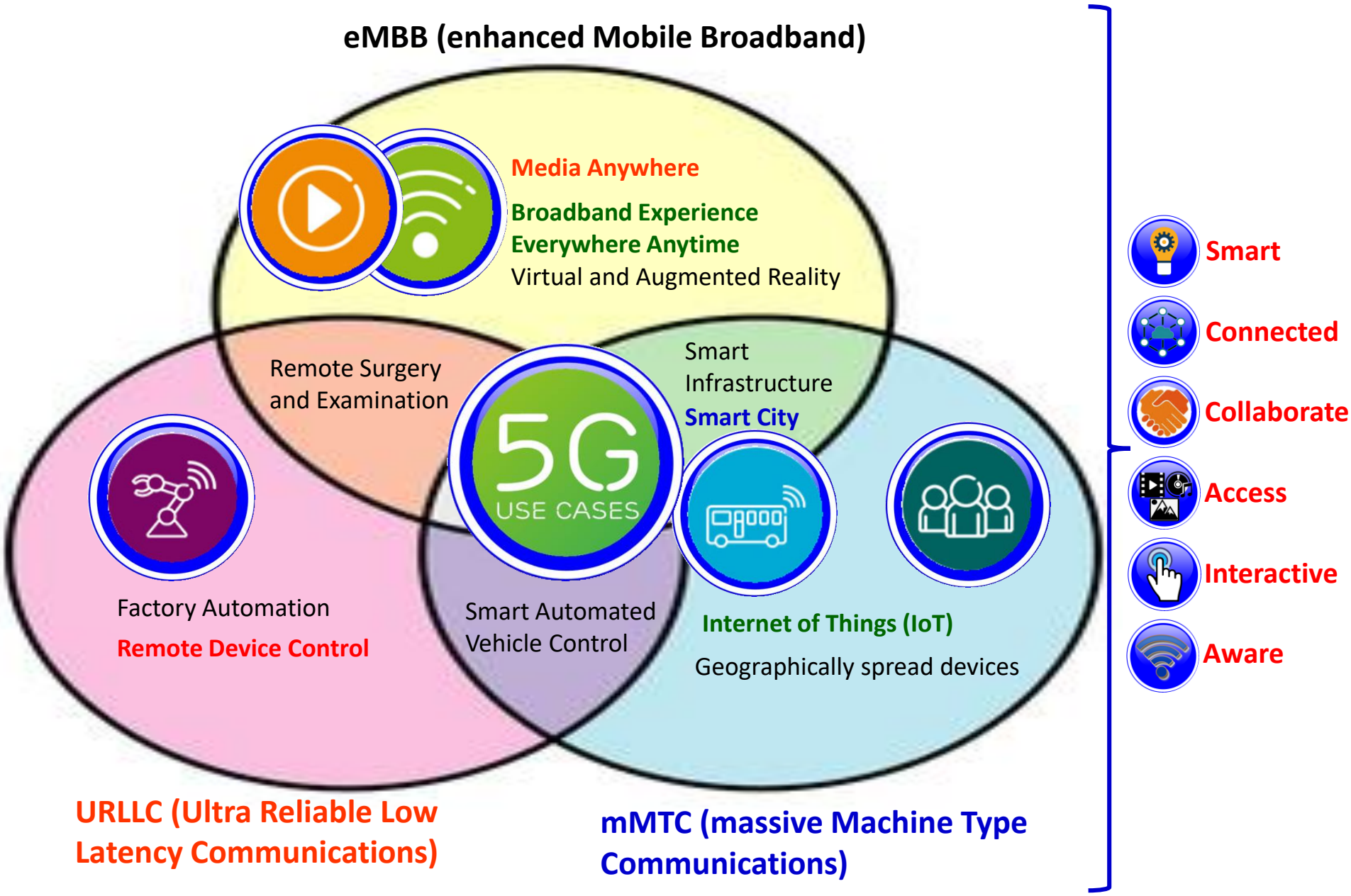
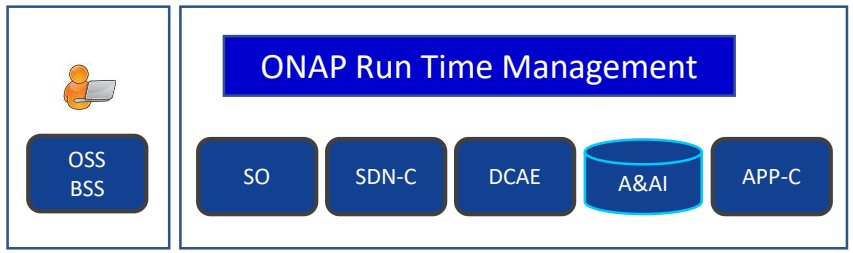
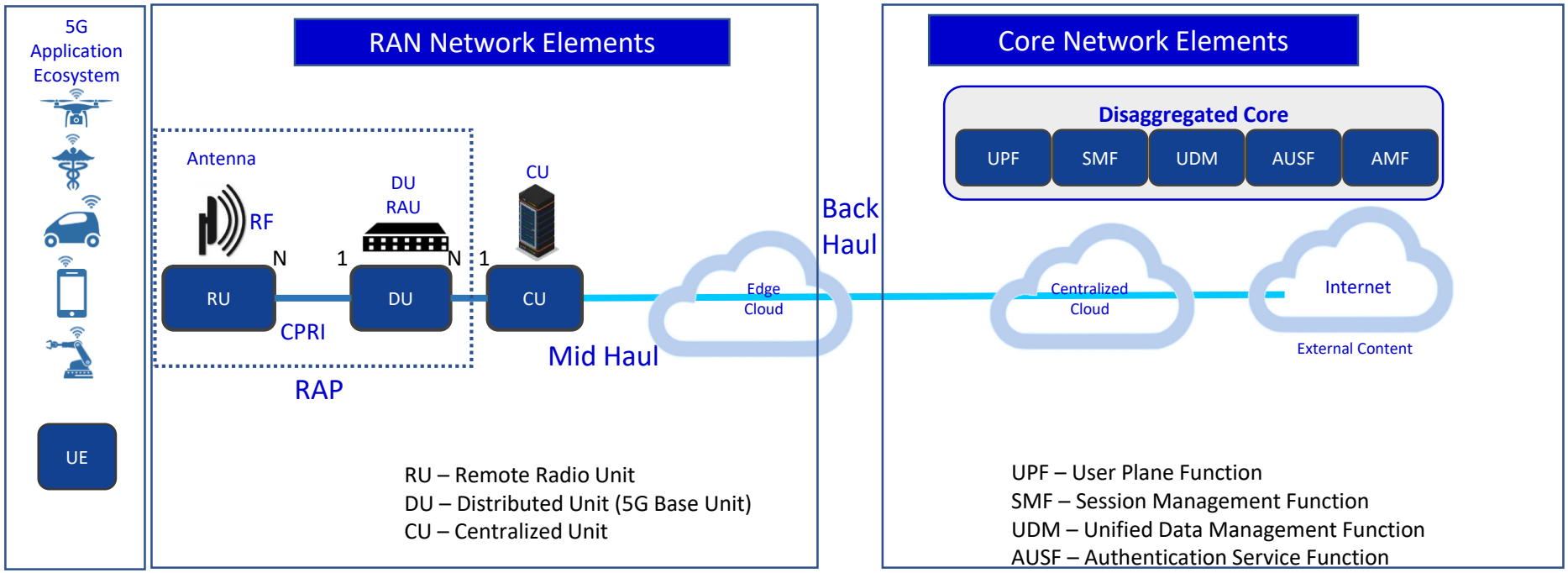
3GPP Release 15, IMT-2020 = 5G



5G RAN Wireless Network



SO – Service Orchestrator
SDN-C – Service Design Network Controller
DCA&E – Data Collection Analytics & Events
A&AI – Available & Active Inventory
APP-C – Application Control



RU – Remote Radio Unit
DU – Distributed Unit (5G Base Unit)
CU – Centralized Unit

UPF – User Plane Function
SMF – Session Management Function
UDM – Unified Data Management Function
AUSF – Authentication Service Function

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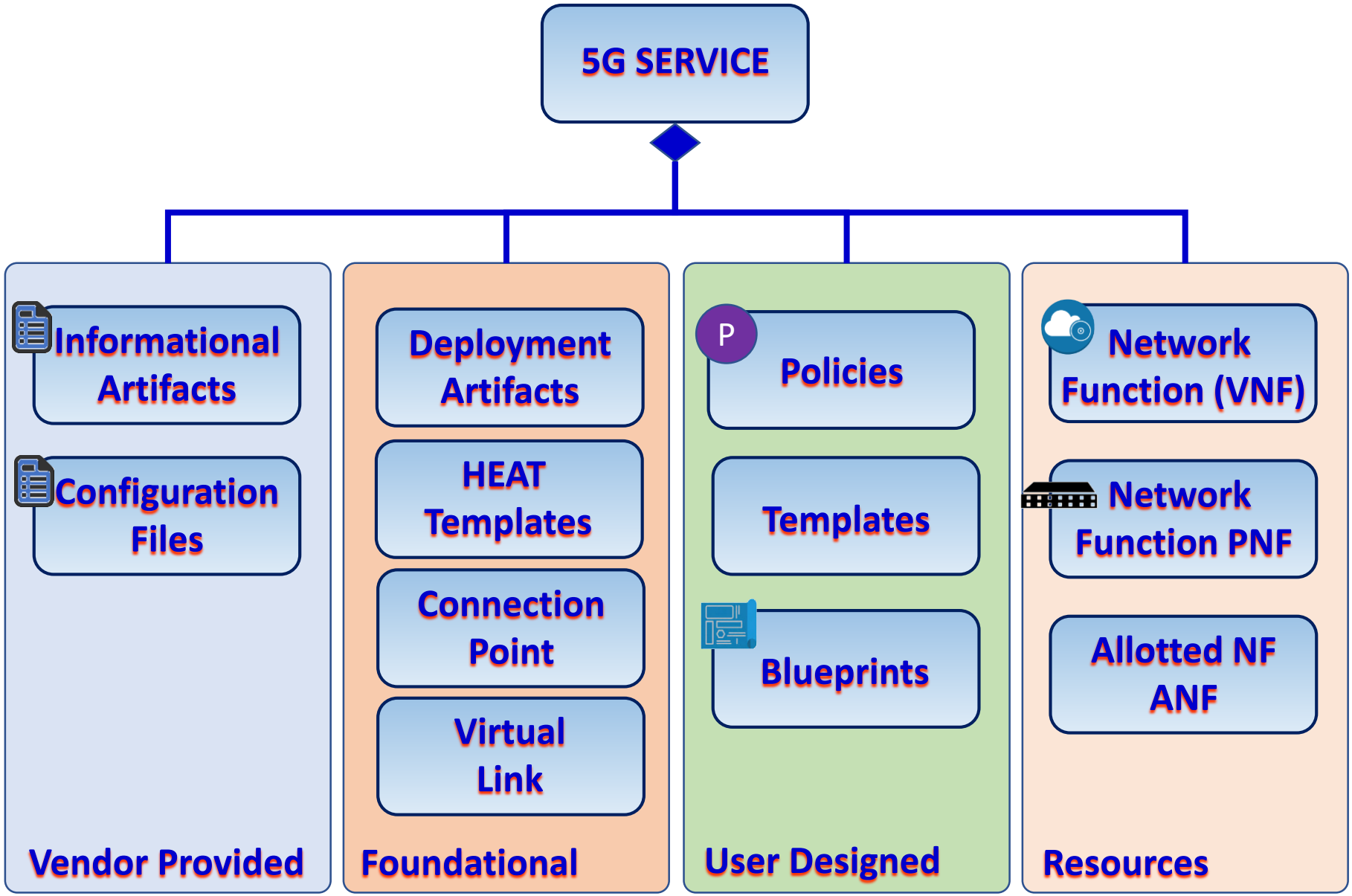
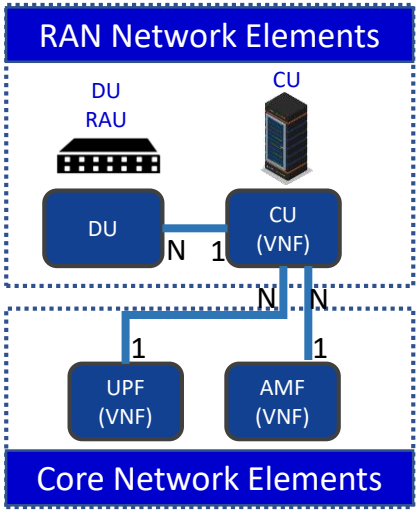
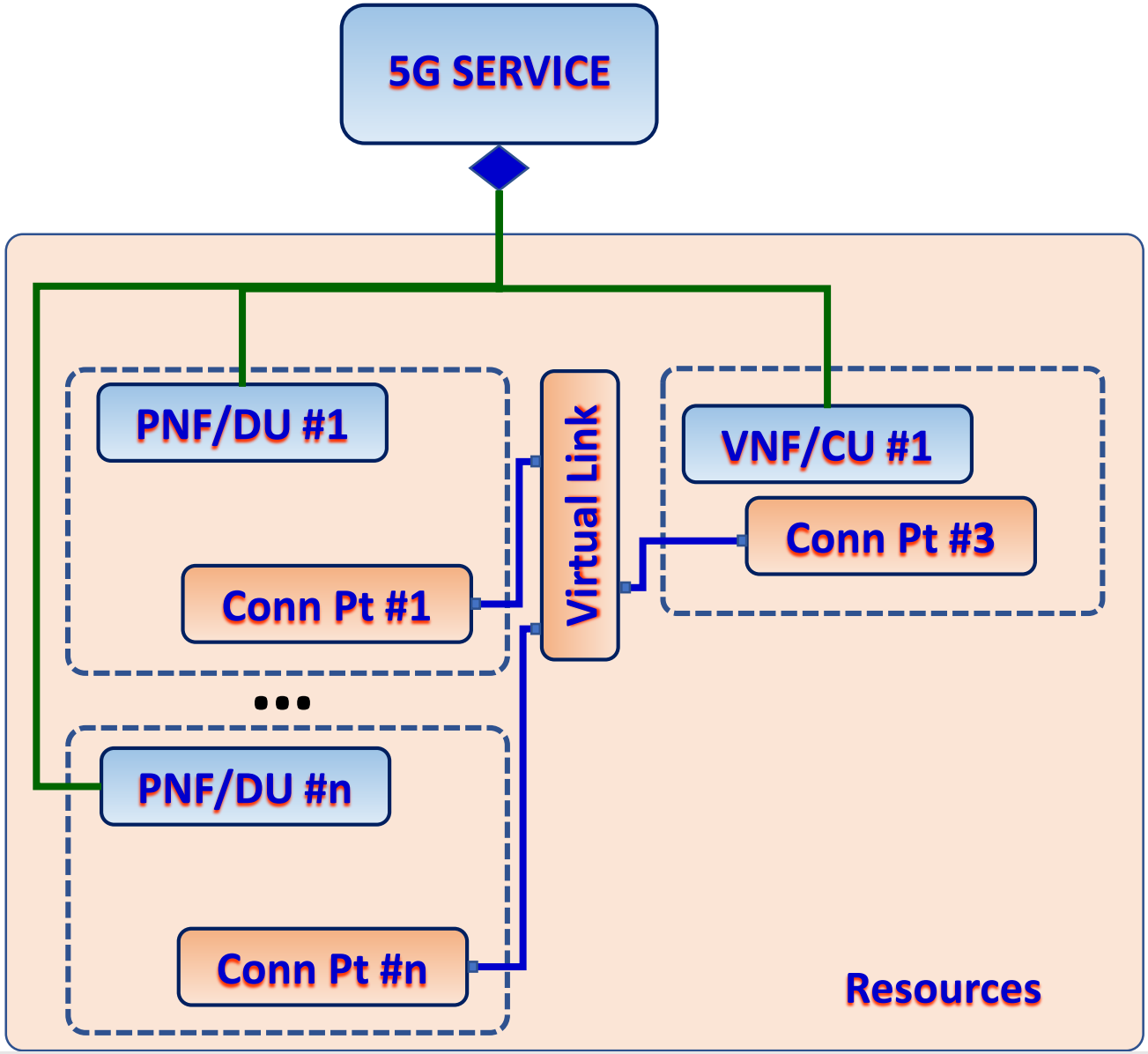
R4: Modeling a 5G Service

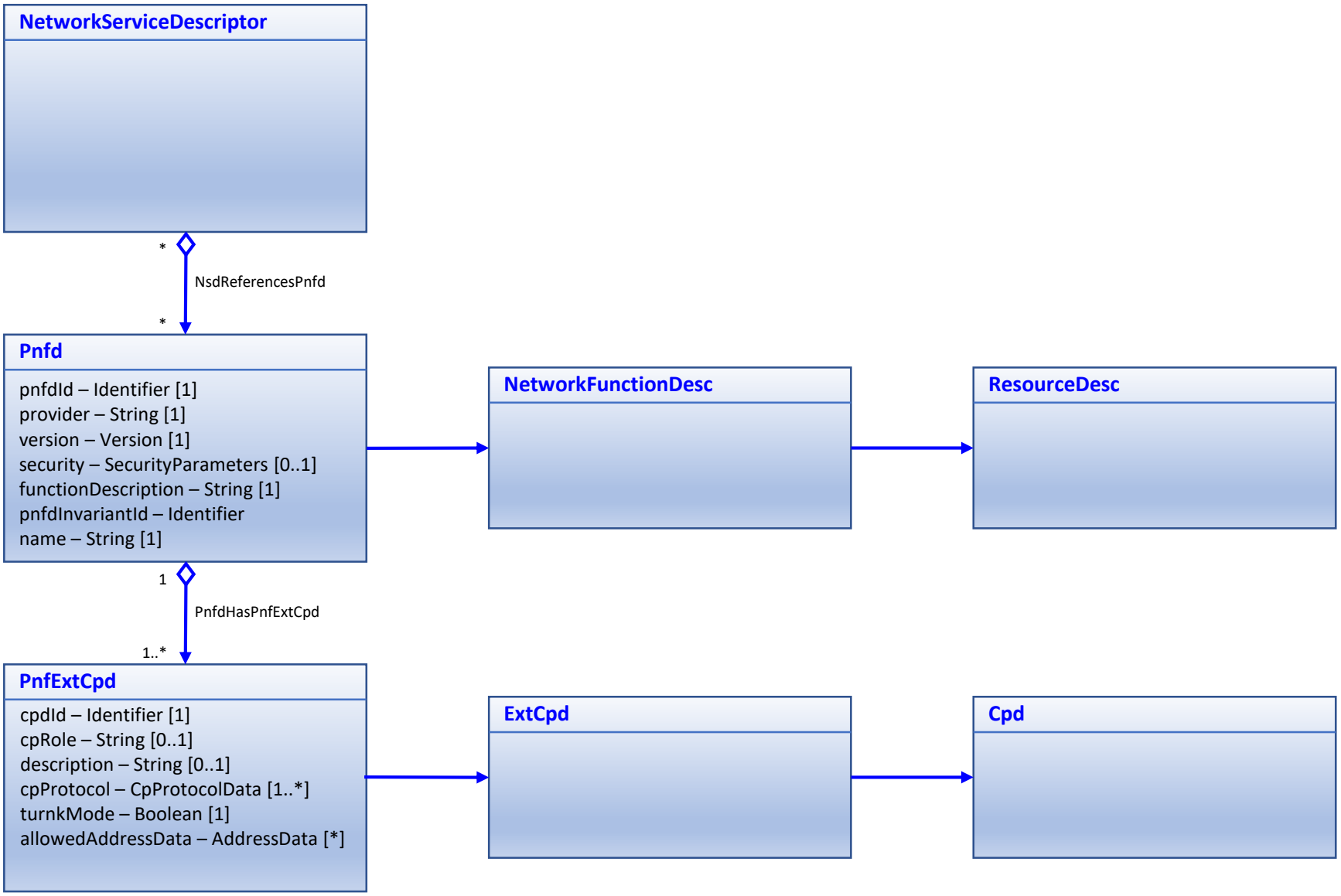


R4: 5G Base Station (gNodeB)



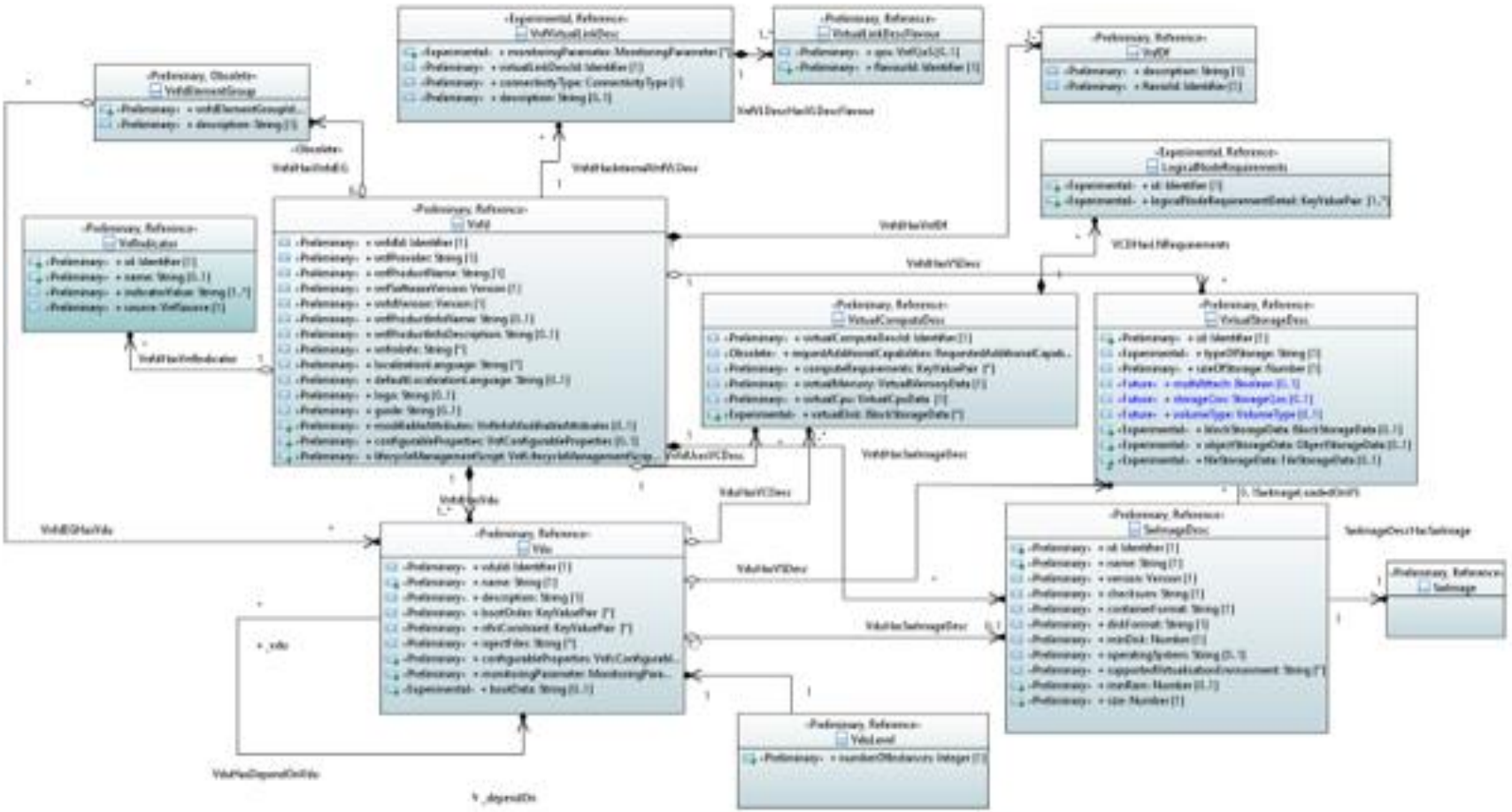


PNFD Model



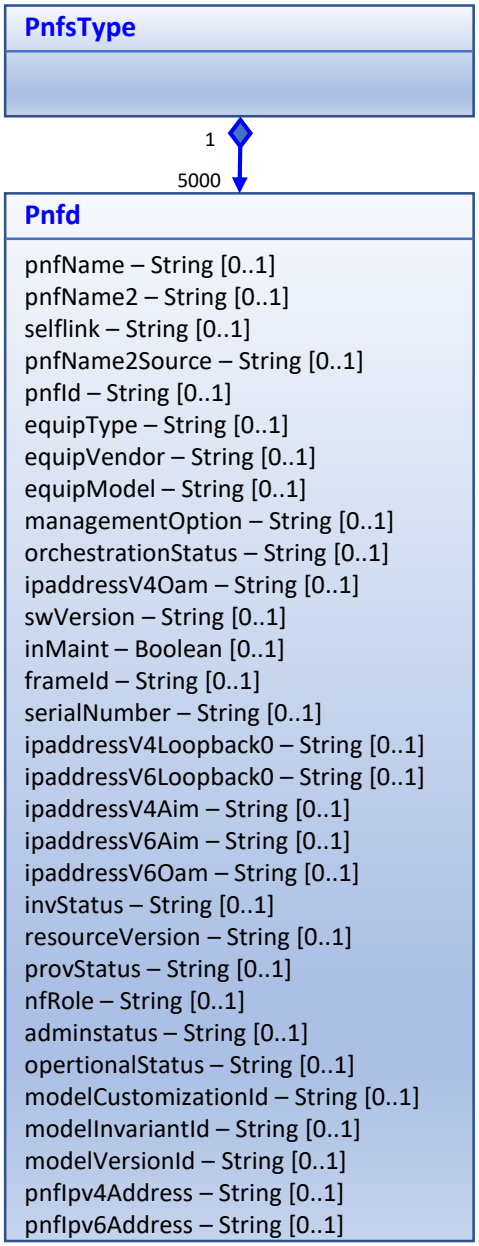
https://wiki.onap.org/display/DW/Agreed+PNFD+Model

VNFD Model



https://wiki.onap.org/display/DW/Updated+V2.5.1+VNFD+Model

PNF A&AI Model



https://wiki.onap.org/display/DW/Example%3A+PNF+in+AAI

PNFD Model

CP1

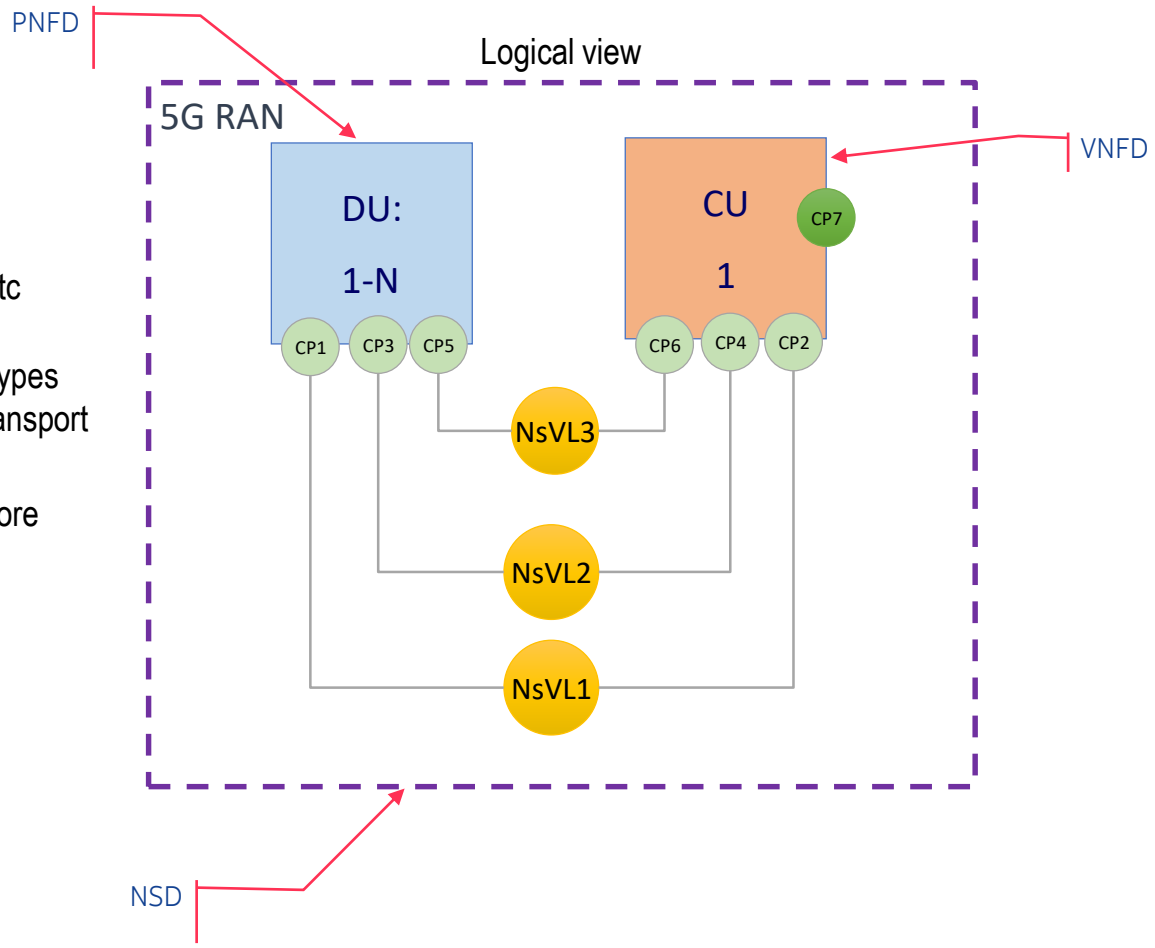
CP1 to CP6: Ext connection points (e.g. Control plane, data plane, management, etc

NsVL1

NsVirtual link for each type of connection types
Note: These VL may also can represent transport network technologies used.

ECP7

CP7: Ext connection point(s) for network core elements.



Example: TOSCA Service Template

```
tosca_definitions_version: tosca_simple_yaml_1_2
description: 5G RAN simple example
imports:
  - etsi_nfv_sol001_nsd_2_6_1_types.yaml
node_types:
  tosca.5gexample_NS:
    derived_from: tosca.nodes.nfv.NS
    properties:
      descriptor_id:
      flavour_id:
topology_template:
  substitution_mappings:
    node_type: tosca.5gexample_NS
    requirements:
       virtual_link: [ CU, virtual_link_XYZ ] # the External connection point of CU
  node_templates:
    my_5gservice:
      type: tosca.5gexample_NS
      properties:
      interfaces:
        Nslcm:
    CU:
      type: tosca.nodes.nfv.5Gexample_VNF1 # this type is described in another service template
      properties:
        flavour_id: simple
        vnf_profile:
      requirements:
        - virtual_link_1: NsVirtualLink_1
        - virtual_link_2: NsVirtualLink_2
        - virtual_link_3: NsVirtualLink_3
    DU_1_to_N:
      type: tosca.nodes.pnf.5gexample_DU # the description of this type is described in another service template
      properties:
      requirements:
        - virtual_link_1: NsVirtualLink_1
        - virtual_link_2: NsVirtualLink_2
        - virtual_link_3: NsVirtualLink_3
        - dependency: CU

    NsVirtualLink_1:  #
      type: tosca.nodes.nfv.NsVirtualLink
      properties:
        connectivity_type:
        vl_profile:
NsVirtualLink_2:  #
      type: tosca.nodes.nfv.NsVirtualLink
    NsVirtualLink_3:  #
      type: tosca.nodes.nfv.NsVirtualLink
# omitted here for brevity
```

Creating a 5G Service

Need to create a 5G service in R6

- Currently individual services can be created using VNFs and PNFs
- Modeling of 5G NFs is work ongoing in Platform (Internal) Info Modeling Committee
- Architecture sub-committee needs to approve modeling committee proposal before requirements can go to SDC
- SDC needs to receive requirements so service models can be created
- Schedule in R6 M0 (Sept 5 2019).
- 5G Use Case Proposed for R6.
- “Target” 5G Service. Multiple options. 3GPP options 2/7/8. Based on U/C.

ONAP
OPEN NETWORK AUTOMATION PLATFORM

Appendix

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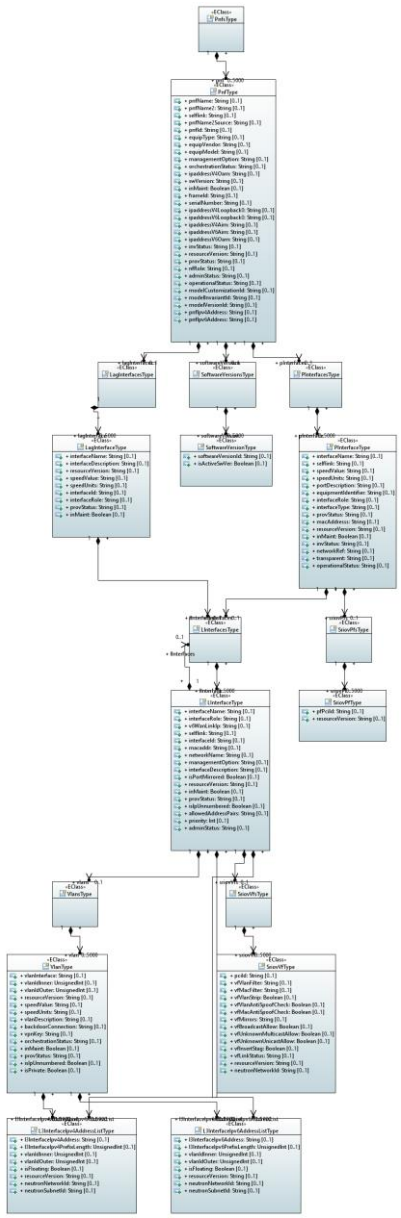
PNF (Full) A&AI Model



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