Network Slicing Provision Models

draft-homma-slice-provision-models

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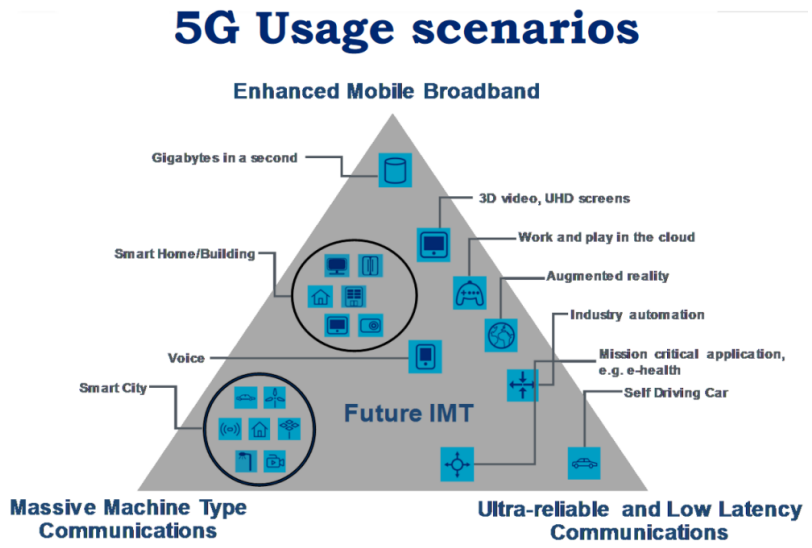
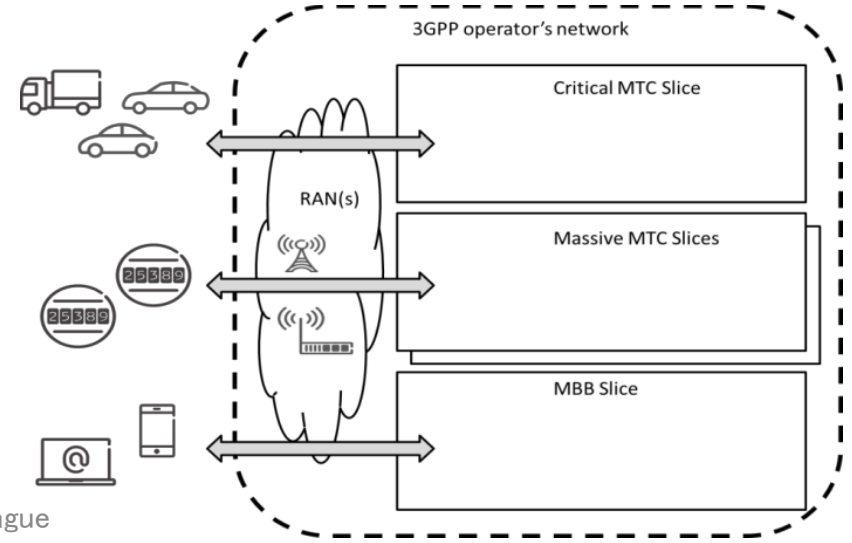
Background

- Diversity of devices and services with communication
- Network softwarization powered by NFV and SDN
- 5G is coming

Network Slicing on 5G Context

- ITU and 3GPP defined 3 axis on 5G use cases
  - eMBB: enhanced Mobile Broadband
  - mMTC: massive Machine Type Communication
  - URLLC: Ultra-Reliable and Low Latency Communication
- Network slice appears on such context but we want to aim more general (incl. fixed, datacenter, etc.) and wider applicable range





Problems

- The definition is ambiguous
  - Just VPN? Or VNFs and service chaining?
  - From where to where? Only within 5G core network?

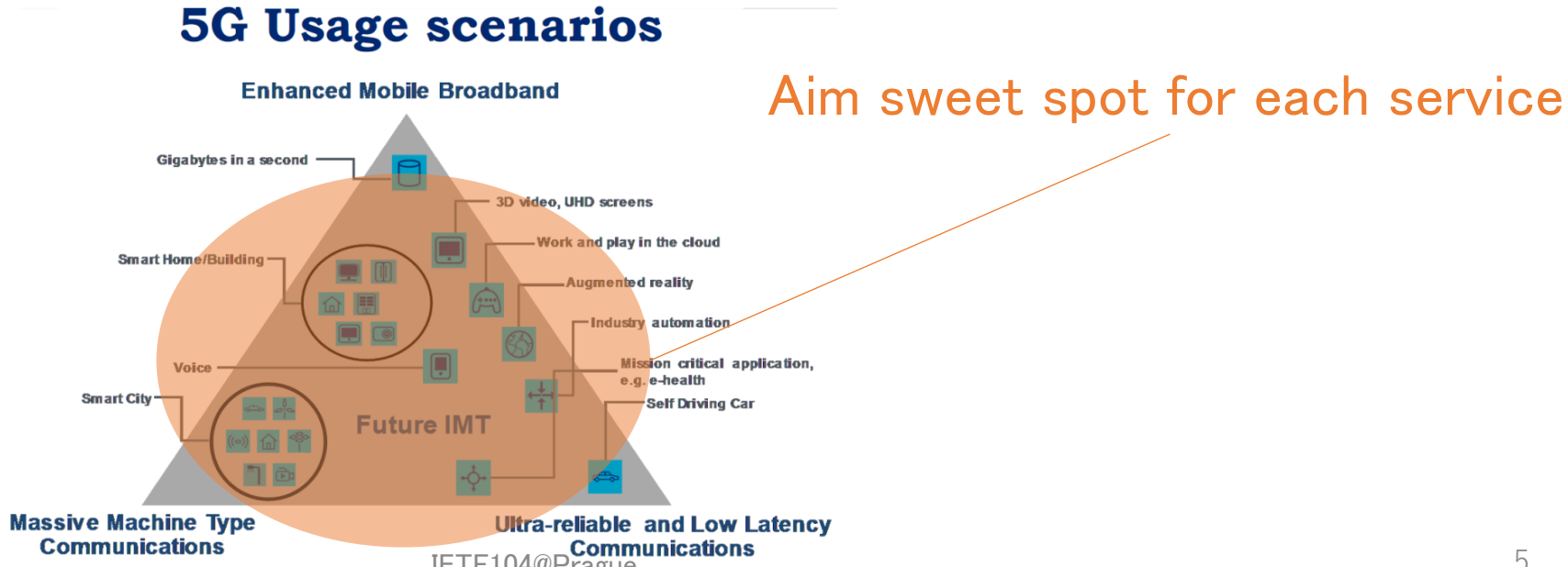
- Who will use slices? And what are their purposes?
  - Will operators use them for enriching their service plans?
  - Provide dedicated logical network to tenants?

Scope of this Work

- Provide appropriate use of resources for tenants

→ Network Slice provisioning models

→ Enable tenants to select and use any resources (incl. functionality) depending on their own services and requirements



Purposes on this I-D

- Defining:
  - Resource types structuring network slices (not only network but also cloud)
  - Stakeholders and their roles in NSaaS (Network Slice as a Service)

  -> Be fundamental reference for individual I-Ds related to slicing

- Clarifying capabilities required by tenants
  - How do we provide resources to tenants: exposure, functionality

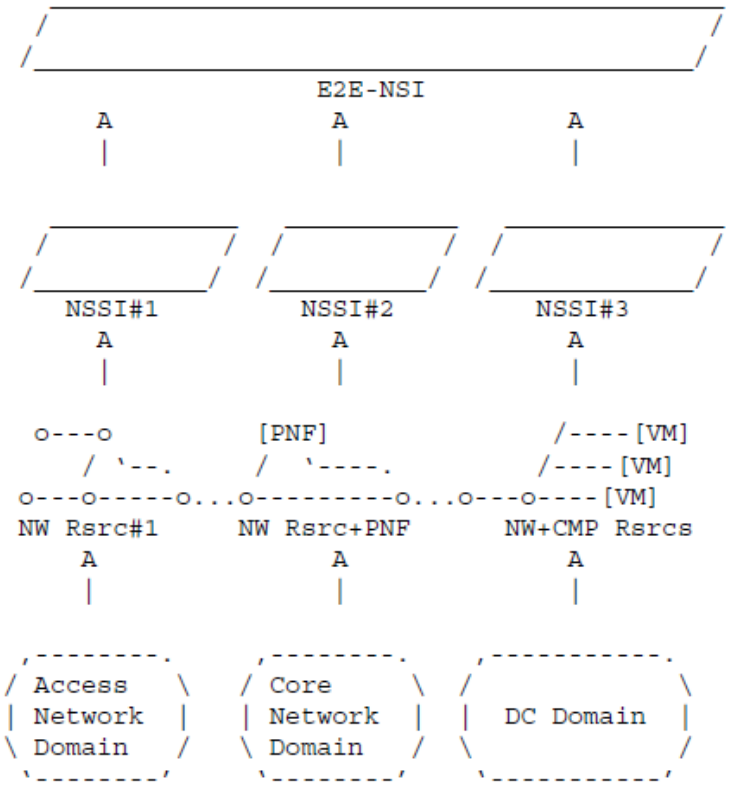
Resource types

- Three types of resources:
  - Network(WAN): Connectivity (e.g., link, node), DP protocol, etc.
  - Computing(NFVI): CPU, Memory, Storage, etc.
  - Functionalities: VAS functions (e.g., FW, DPI), optional control functions, etc.

- Both virtual and physical

Basic Structure of Network Slicing

- NSSI (Network Slice Subnet Instance) is established with resources controlled in each domain
- E2E-NSI (Network Slice Instance) is structured by connecting NSSIs with high-level orchestrator
- NSI may be multilevel structure

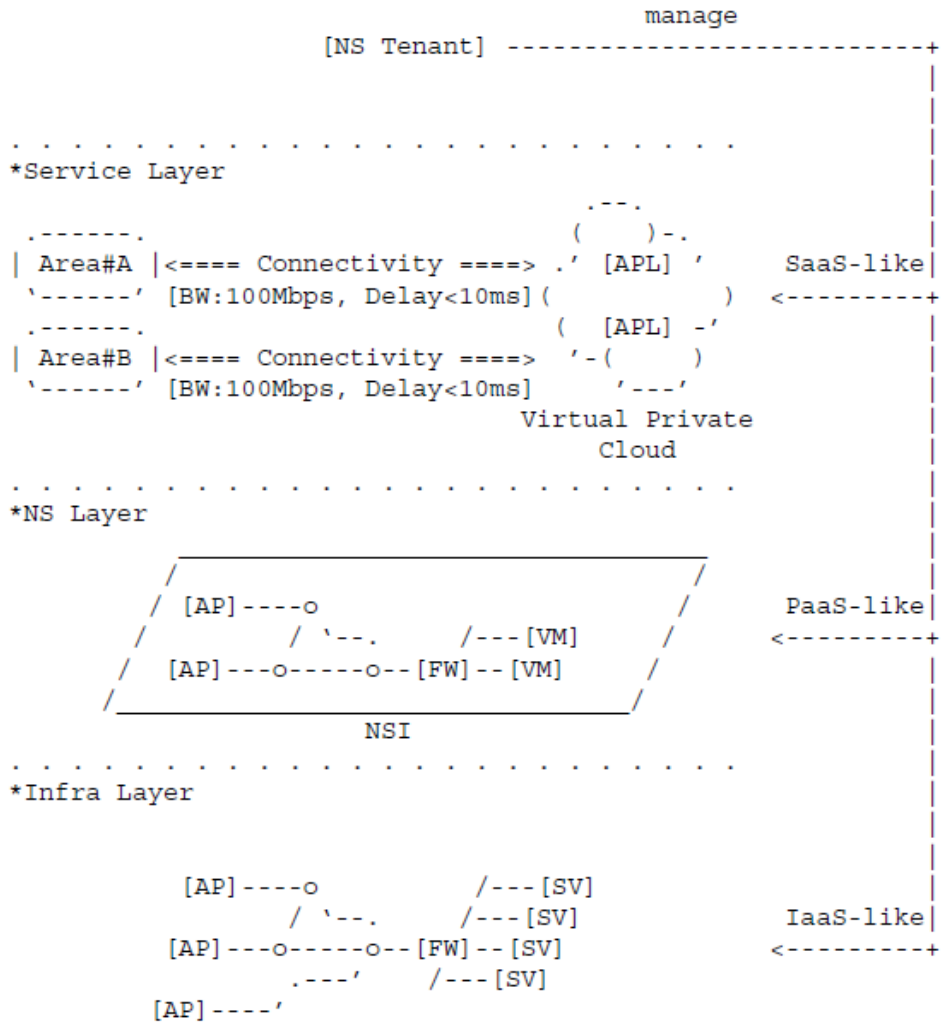


Creation Patterns

- Ready Made: NS provider creates catalogs in advance and a tenant select one which is closed to its demand
- Custom Made: NS provider design a catalog depending on requirements from tenant
- Semi-Custom Made: NS provider creates outlines of catalogs and input several parameters depending on requests from tenants

Provision Models

- SaaS-like: tenant requests its demands on connectivity, applications running on cloud, and their location
- PaaS-like: tenant indicate nodes and links with their attribution
- IaaS-like: tenant controls underlay equipment directly



Next Steps

- Need more review and opinions, especially from vertical customers
- Mapping provision models and controllable resources
- (YANG) Information/Data models

Thank you!
Questions?