



## Control-/Data Plane for N6 Traffic Steering

(<https://www.ietf.org/id/draft-fattore-dmm-n6-trafficsteering-01.txt>)

# Applicability to MEC for automotive use cases

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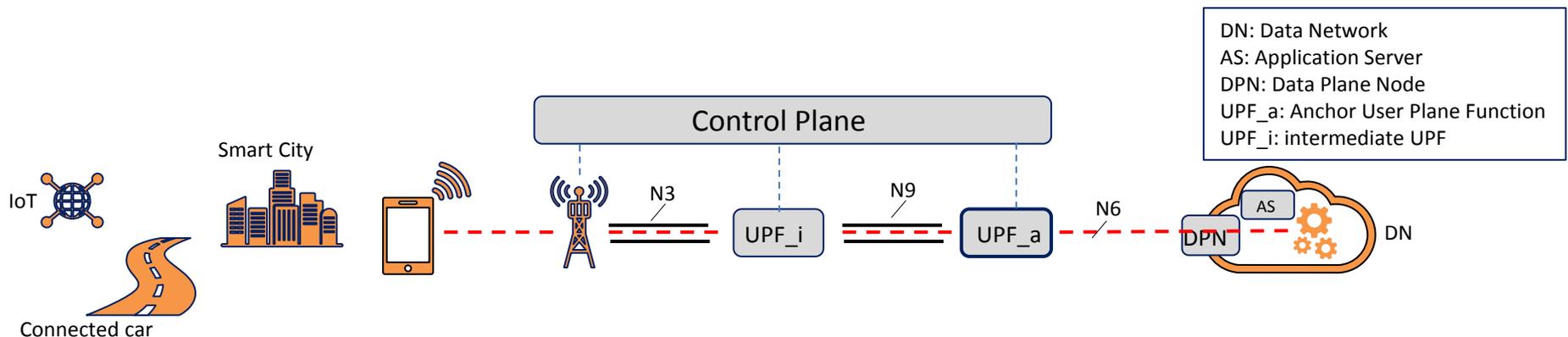
IETF#105

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Montreal

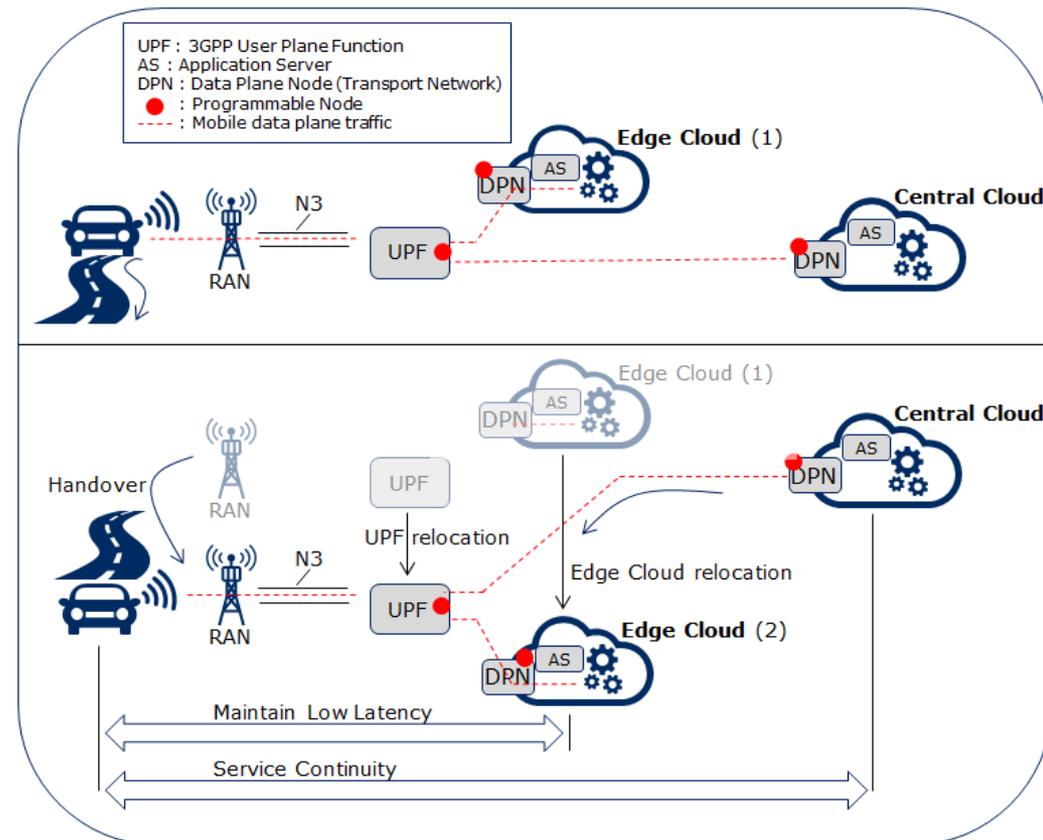
# Background & Motivation

- Various drafts published in the context of data plane protocol solutions for the 3GPP mobile architecture's N9 interface
- Routing of IP PDUs assumed on N6 interface
- Future support of industry verticals:  
Demand for more flexible deployment options (→ customization) and traffic steering
  - Mobile device applications connect to multiple distributed data networks (central, edge)
- This draft:
  - Enable de-coupling of anchoring UPF(s) from data network(s) and UPF distribution
  - Enable enforcement of traffic treatment policies on N6 interface for complete end-to-end policy control



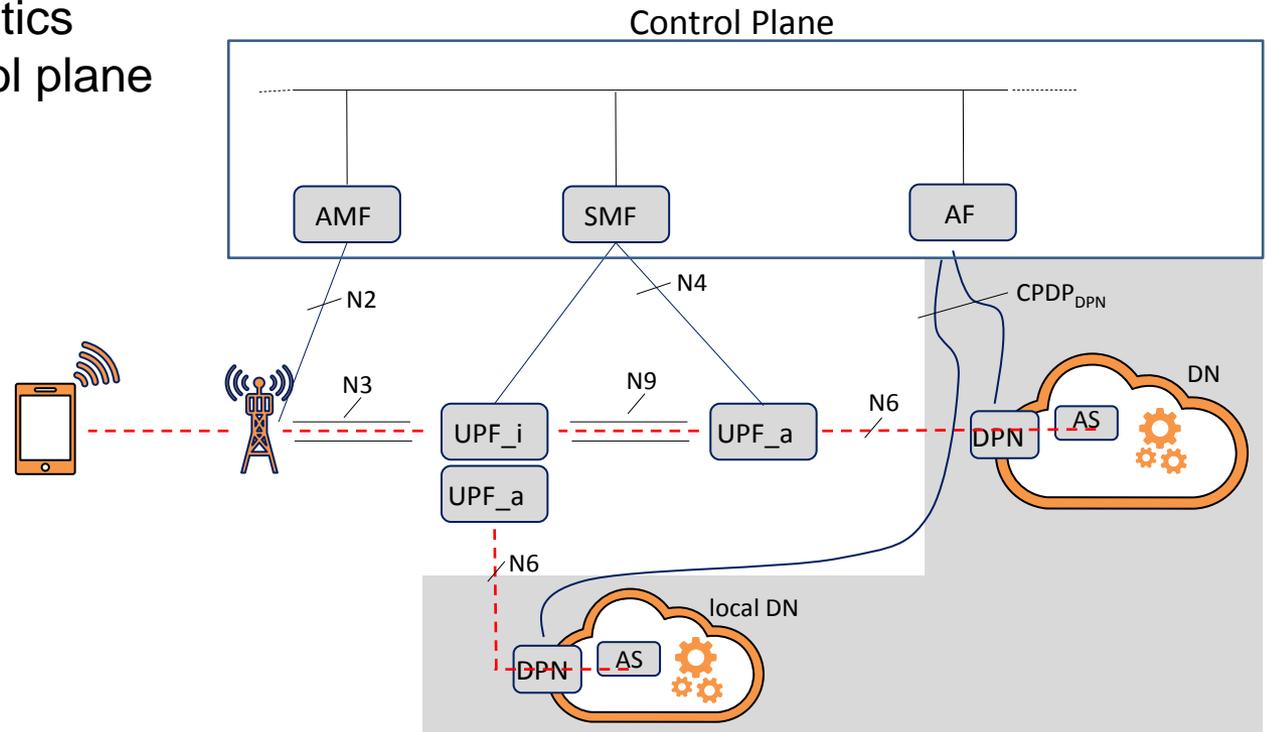
# Automotive Use Case

- Edge deployment of anchor UPF, e.g. to enable low-latency service access
- Re-configuration of the data plane to maintain required service level
- Re-selection and configuration of new anchor UPF  
(also refer to MFA draft <https://www.ietf.org/id/draft-gundavelli-dmm-mfa-01.txt>)
- Update data plane on N6 to steer traffic to new UPF
  - Use of SRv6, tunnel, ID-LOC, ..

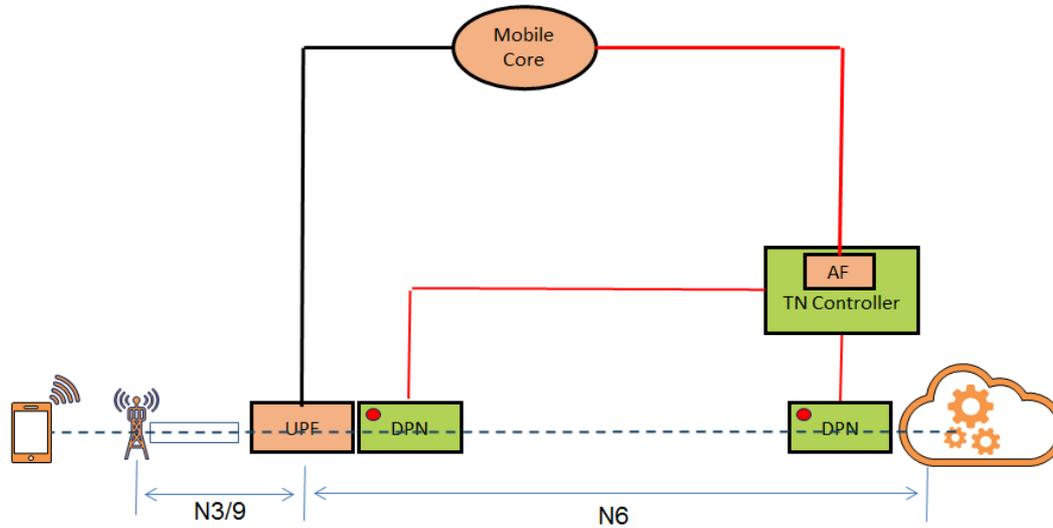


# Scope of this draft

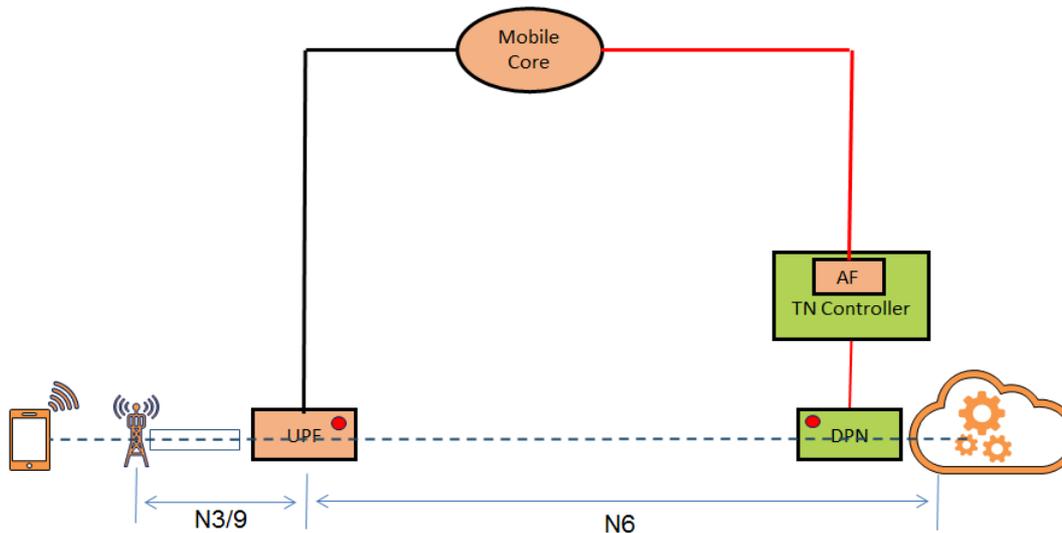
- Use cases and **operation** of de-centralized mobile data plane
  - Flexible deployment and re-configuration of anchor UPF(s)
- **Semantics** and **data models** for DPN traffic treatment policies (UL, DL) on N6
  - Enforcement at data network(s) (DPN/AS) for DL traffic and at anchor UPF for UL traffic
  - Use of SRv6, ID-LOC, LOC re-write, .. policies for traffic steering
- **Architecture** to bind end-to-end data plane control to Mobile Control Plane and required semantics to/from 3GPP control plane



# N6 PEPs – Loose coupling vs tight coupling



● Relevant policy enforcement points

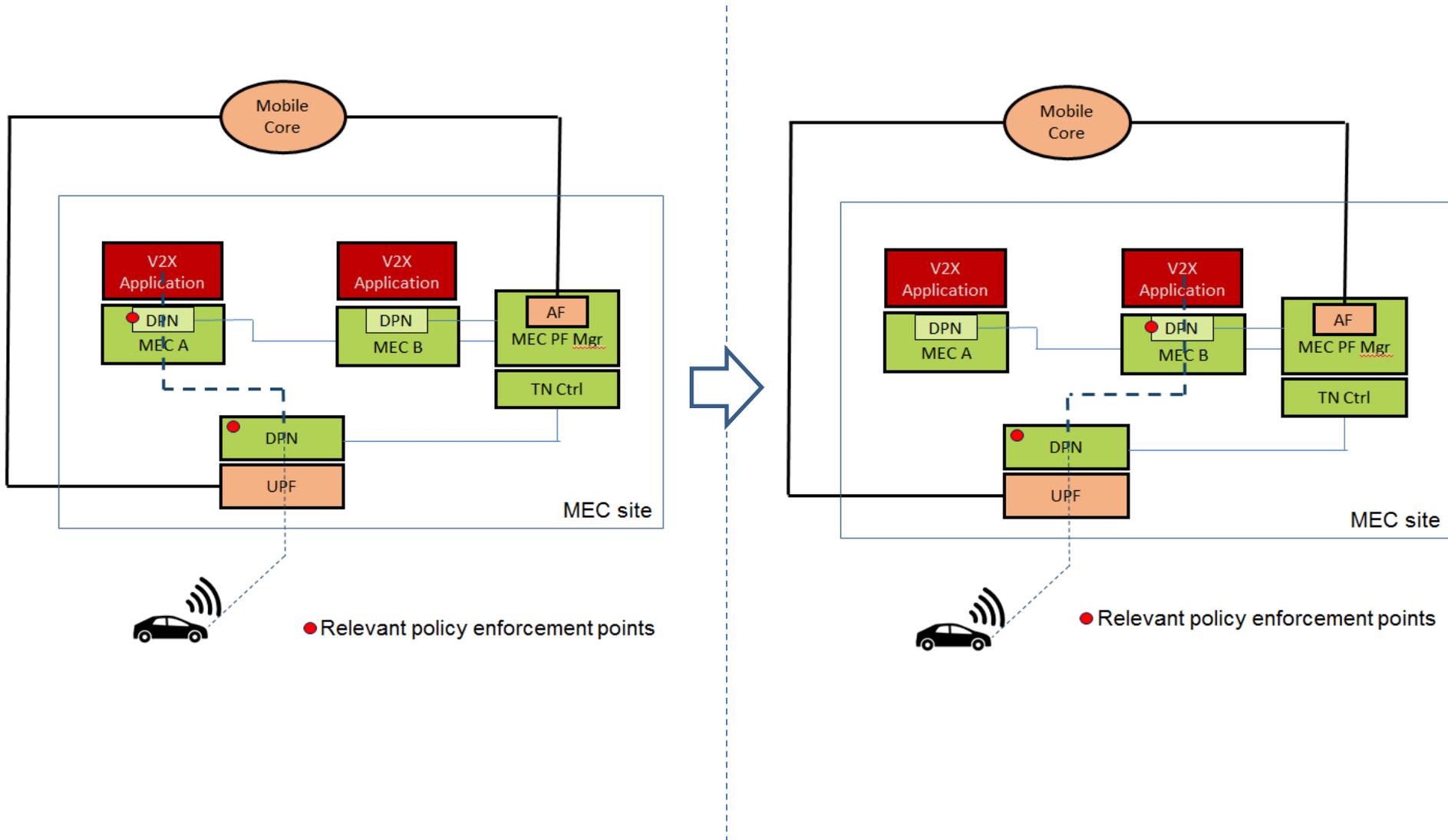


# Status

- Concepts and draft have been discussed at IETF103 and IETF104. Interest and valuable feedback received. More discussion and feedback about applicability to distributed edge clouds and MEC
- Draft updated before IETF104
  - Deployment and operational aspects
  - Supports data plane *loose coupling* and *tight coupling* options
    - N6 rules on UPF-side received either through 5G Control Plane or from TN Controller
  - More energy needed to elaborate on a mature info model
- No draft update before IETF105..., but
  - Current focus on various aspects of integrated solution for automotive MEC
  - Current focus on experimental prototyping, analysis and evaluation
  - EU Project on Cooperative, Connected and Automated Mobility (CCAM)

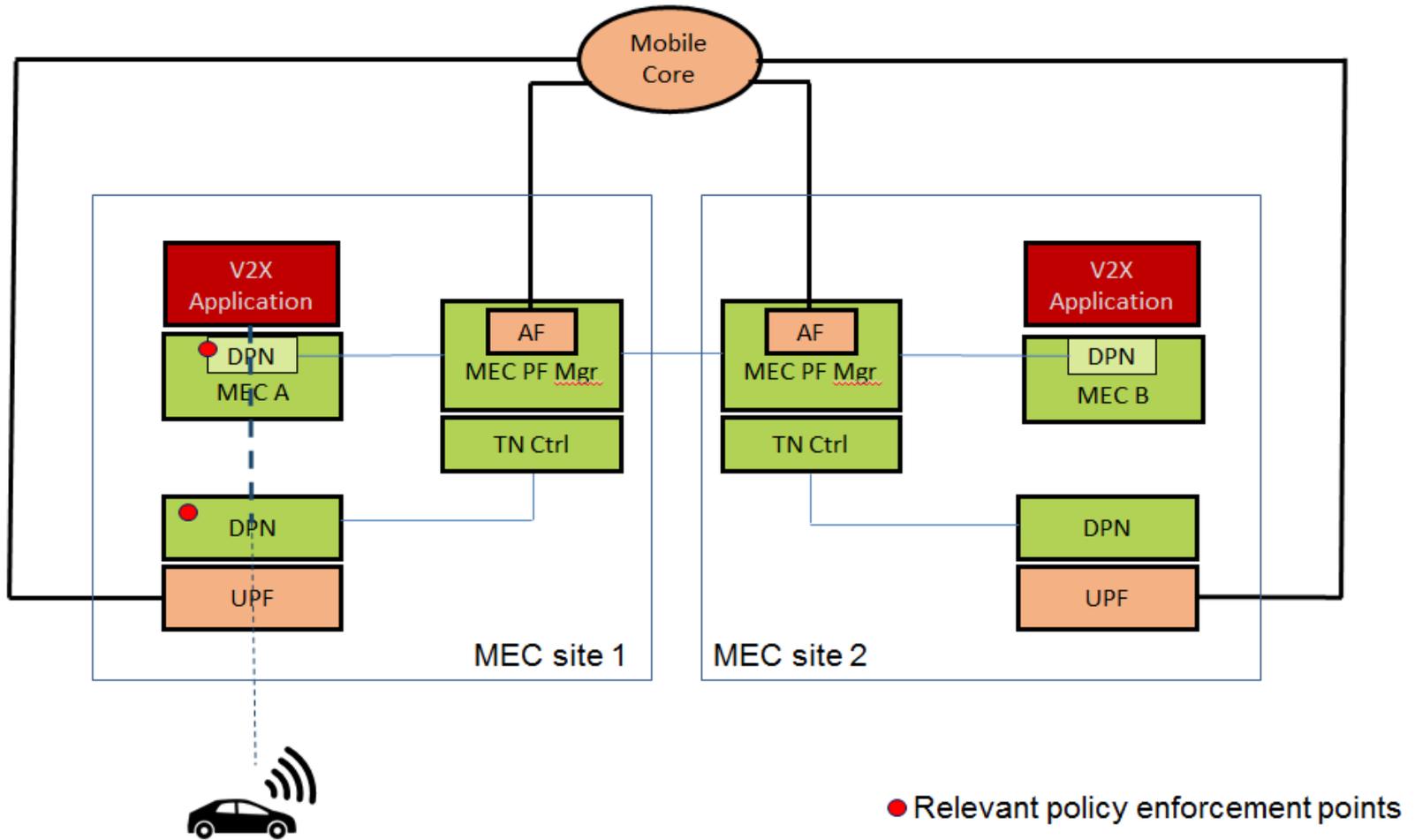
# MEC – 5GC deployment

## Site local operation



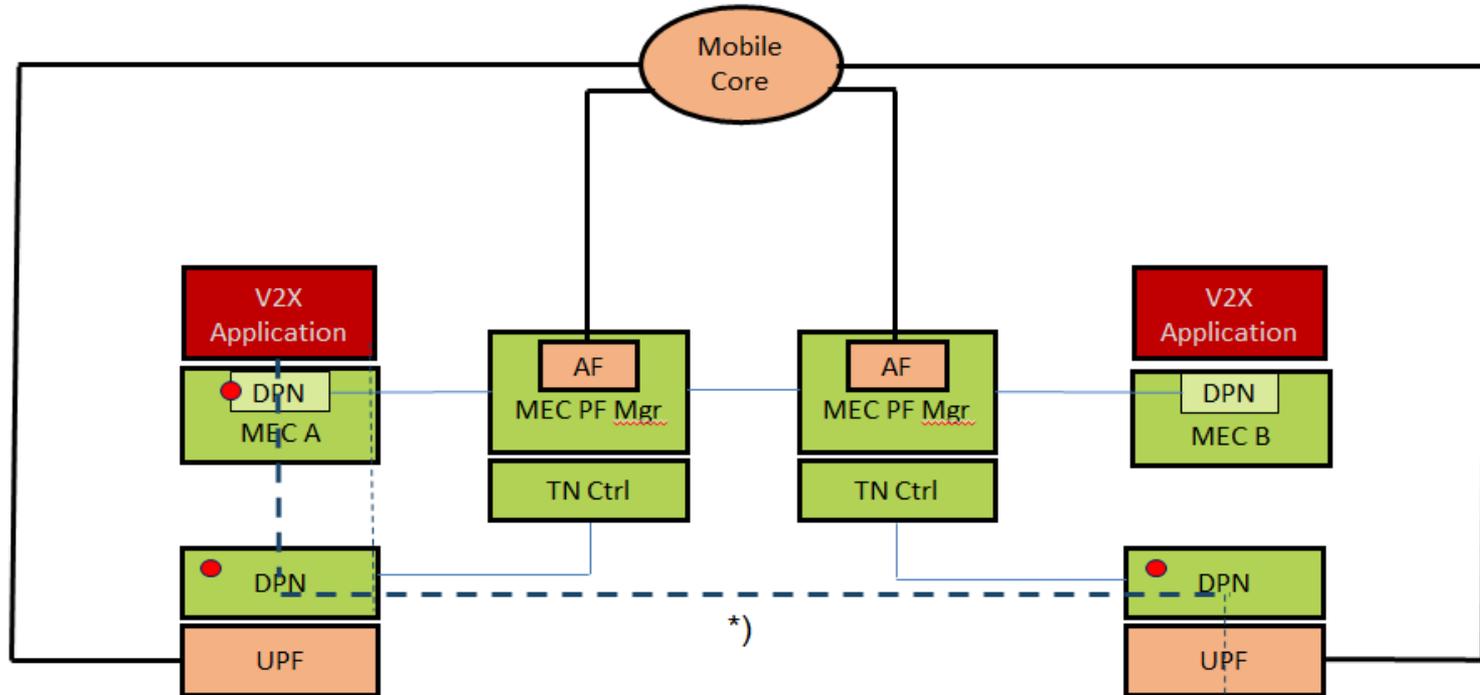
# MEC – 5GC deployment (1/3)

## Inter-site operation



# MEC – 5GC deployment (2/3)

## Inter-site operation



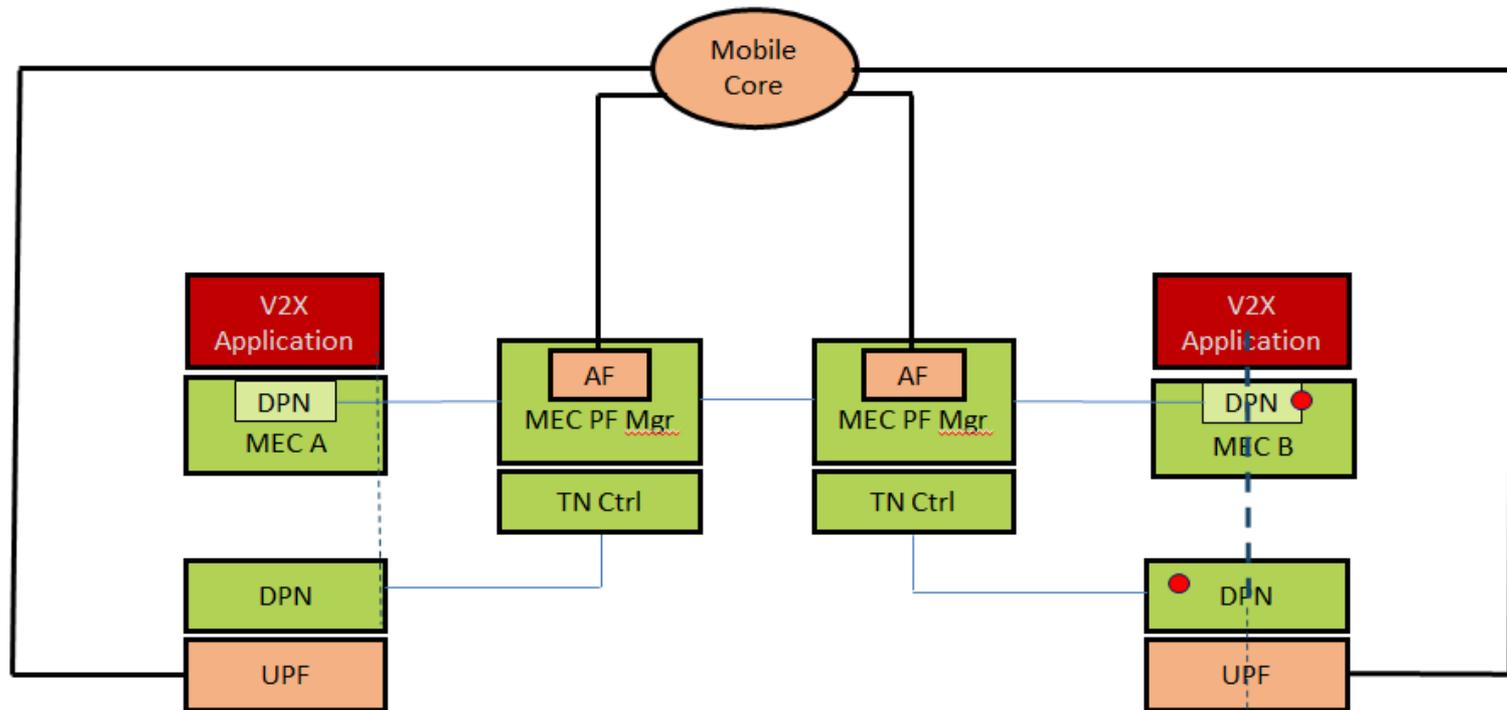
● Relevant policy enforcement points

\*) Traffic steering, e.g. by segment routes, locator re-write, tunnel



# MEC – 5GC deployment (3/3)

## Inter-site operation

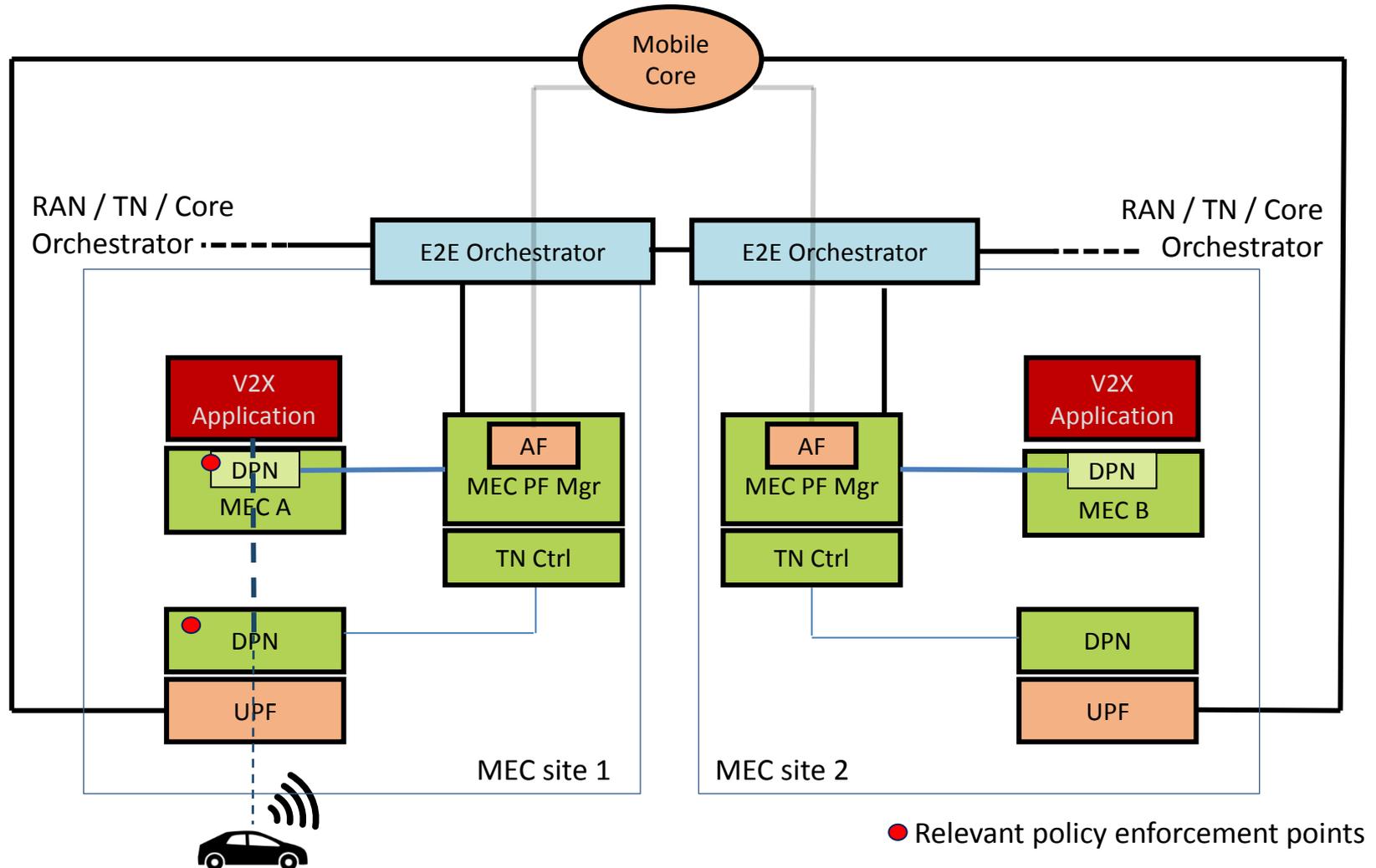


● Relevant policy enforcement points



# MEC – 5GC deployment

## Resources- and Service Orchestration



# Next

- Revise document structure to focus on the identified scope and objectives
  
- Converge on a suitable notation
  - Operational aspects
  - Semantics / models
  
- Target draft update
  
- Liaise this work with 3GPP / ETSI MEC
  
- WG interested in adopting this work?