Standardizing the Intelligence Stack for the Telco of Tomorrow

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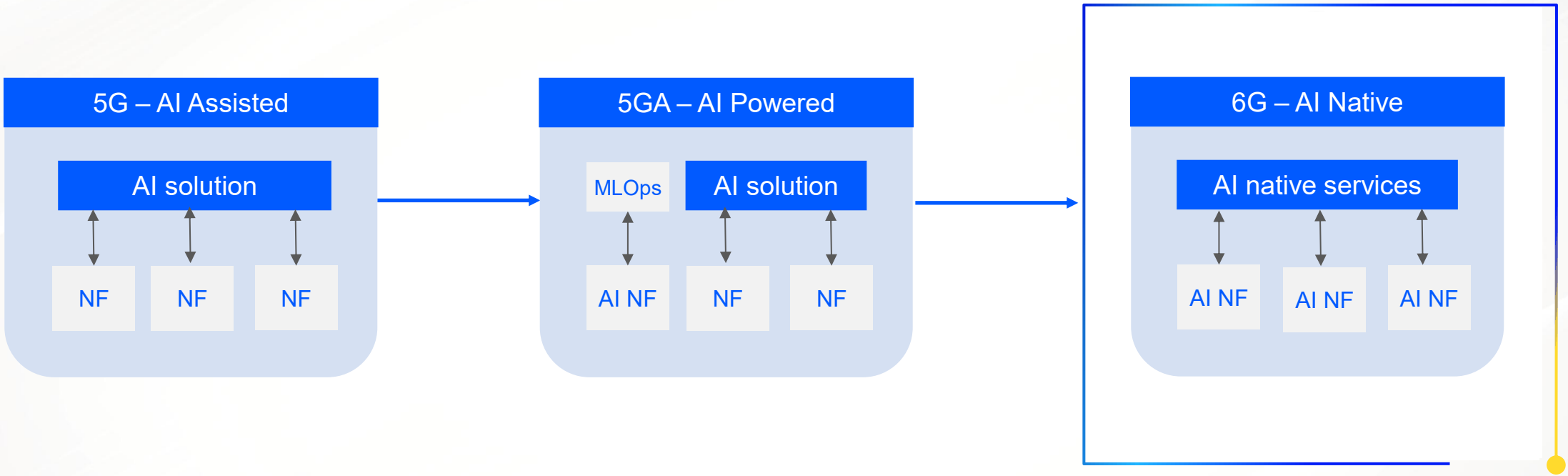
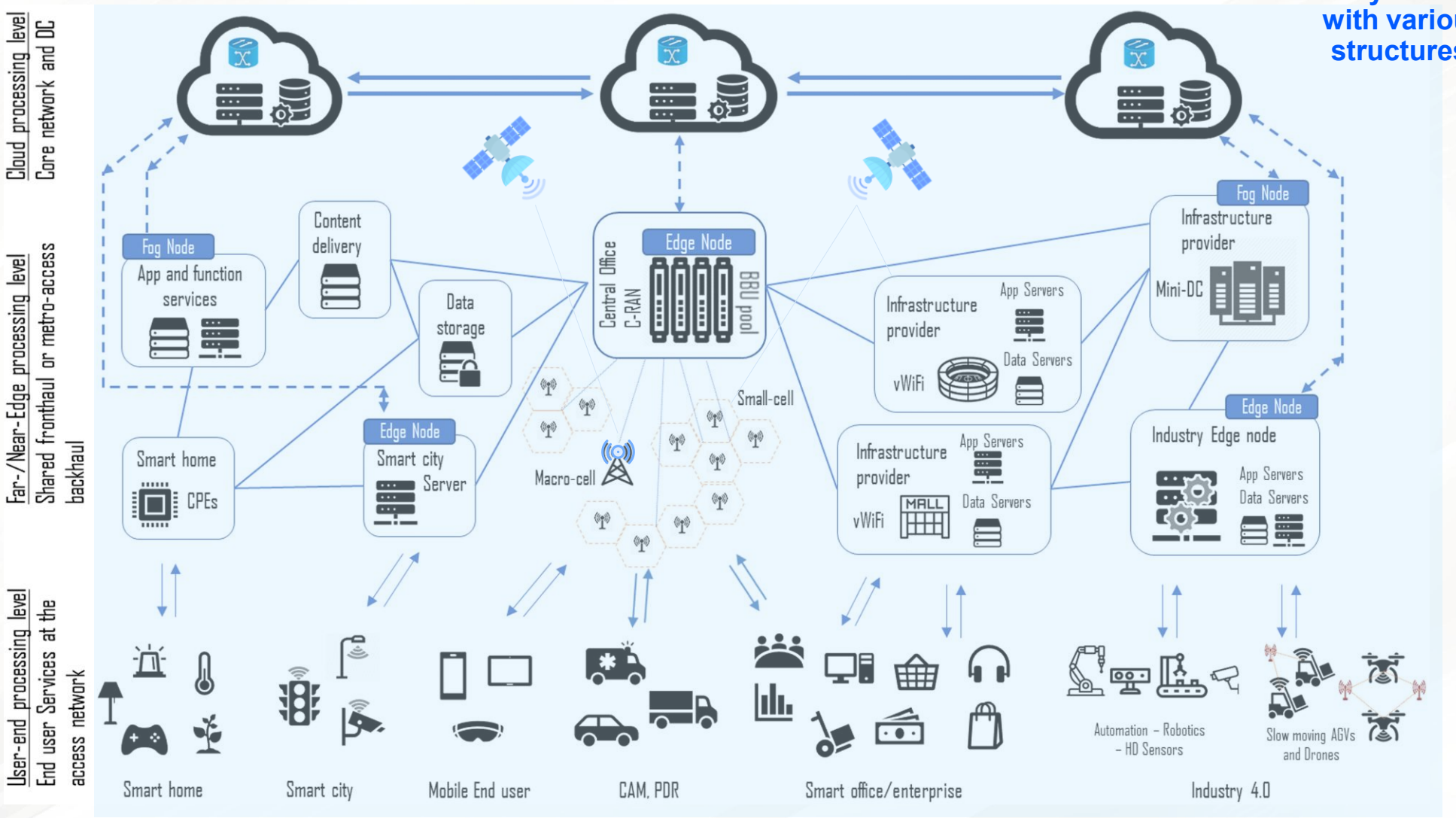
AI for Everything in Everywhere!



To fully harness AI in future networks, we must carefully design the data stack and data flows from the ground up

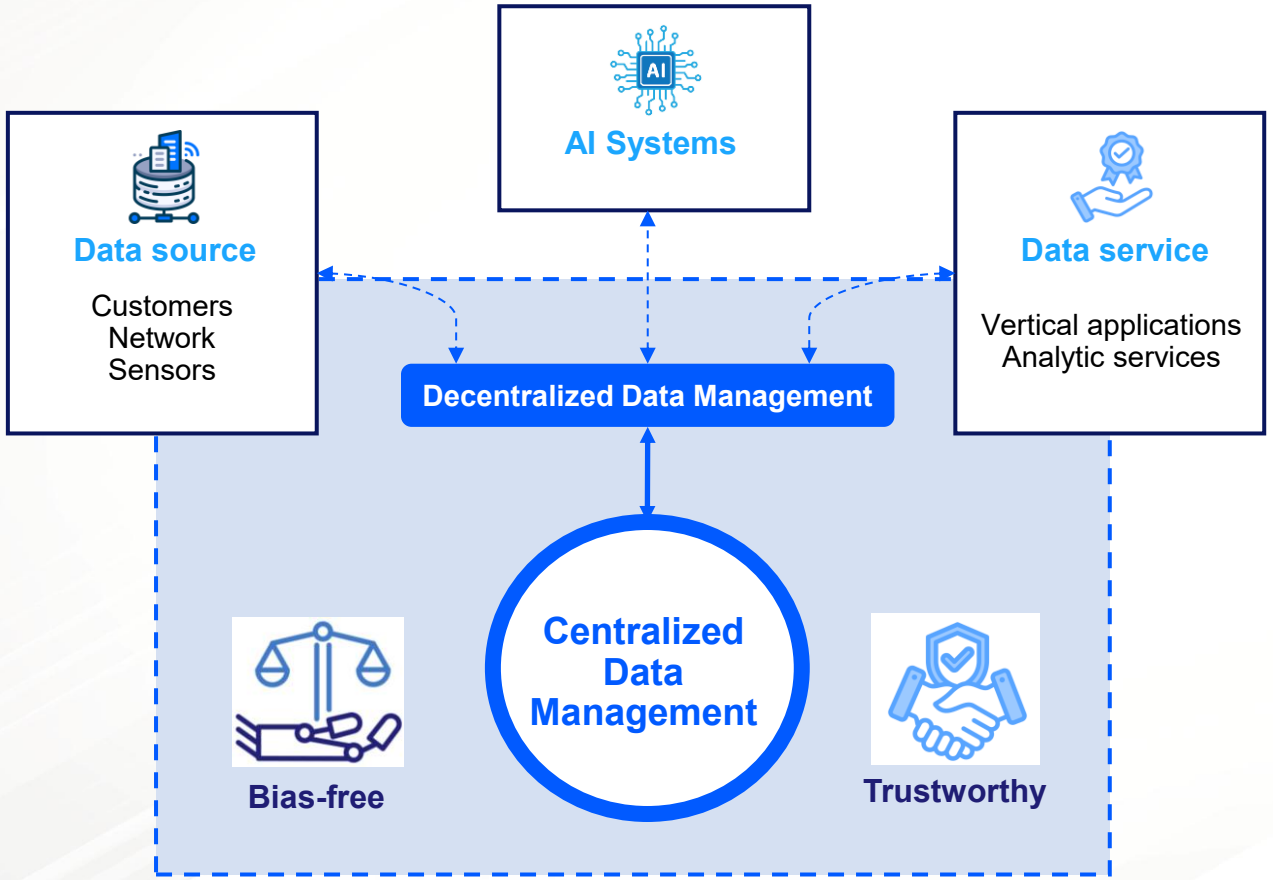
Data: The Fuel for AI in Future Networks

Zettabytes of data with various structures!



Data: The Fuel for AI in Future Networks

AI's output is only as good as the input data.

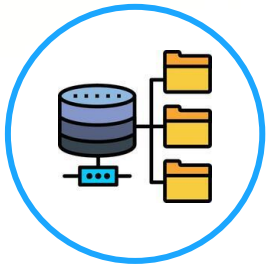


Challenges:

- Handling massive, distributed data in real-time
- Incomplete or poor-quality datasets
- Bias-free dataset
- Managing the distributed and complex data plane

What's Missing Today: Gaps in Telco Data Handling

Fragmented Data Silos



Inconsistent Data Formats and Models

Limited Data Access Interfaces

Data Management & Storage Strategy

Vendor Lock-In and Proprietary Solutions

Data Governance and Privacy

Emerging Data Stack: Edge Data Layer

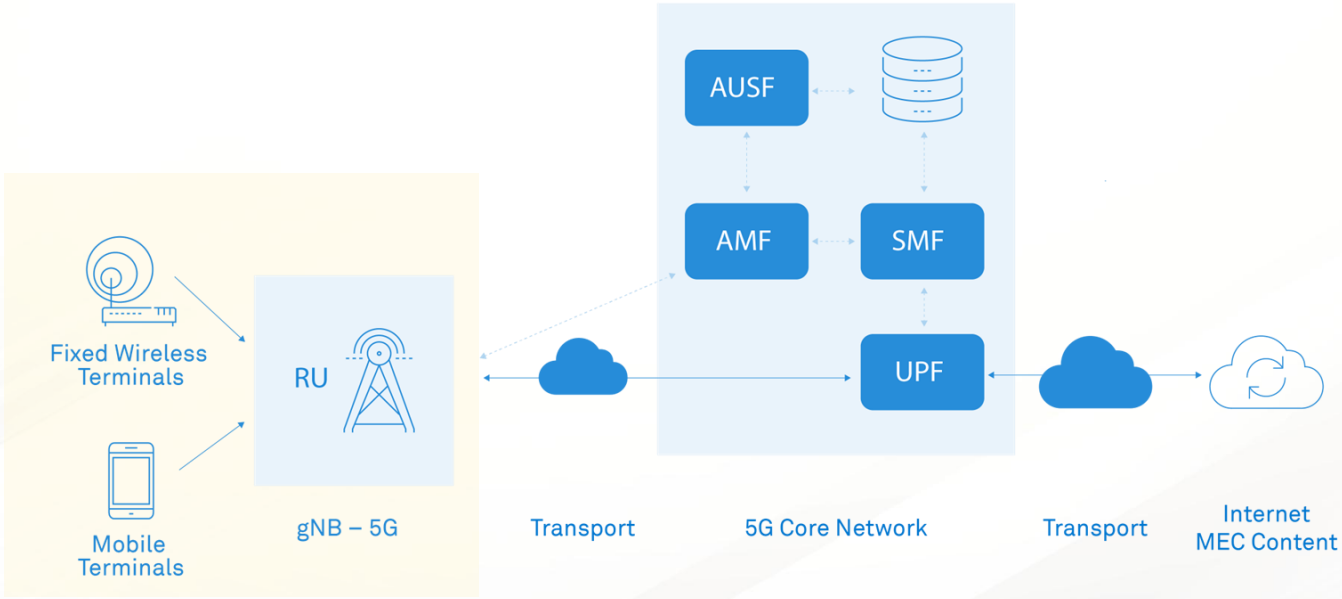
A lot of this data can be processed locally for low-latency decisions or filtered to reduce volume!

Where we are:

- ETSI MEC -> Platform for edge-cloud deployments
- ITU-T -> Data broker and APIs between the network and AI/ML layer
- ONAP -> Developing and deploying analytics microservices

Gaps:

- Minimal telco-specific standardization for AI in edge/cloud
- Alignment with hyperscaler edge-cloud AI services



Emerging Data Stack: Domain-specific Data Layer

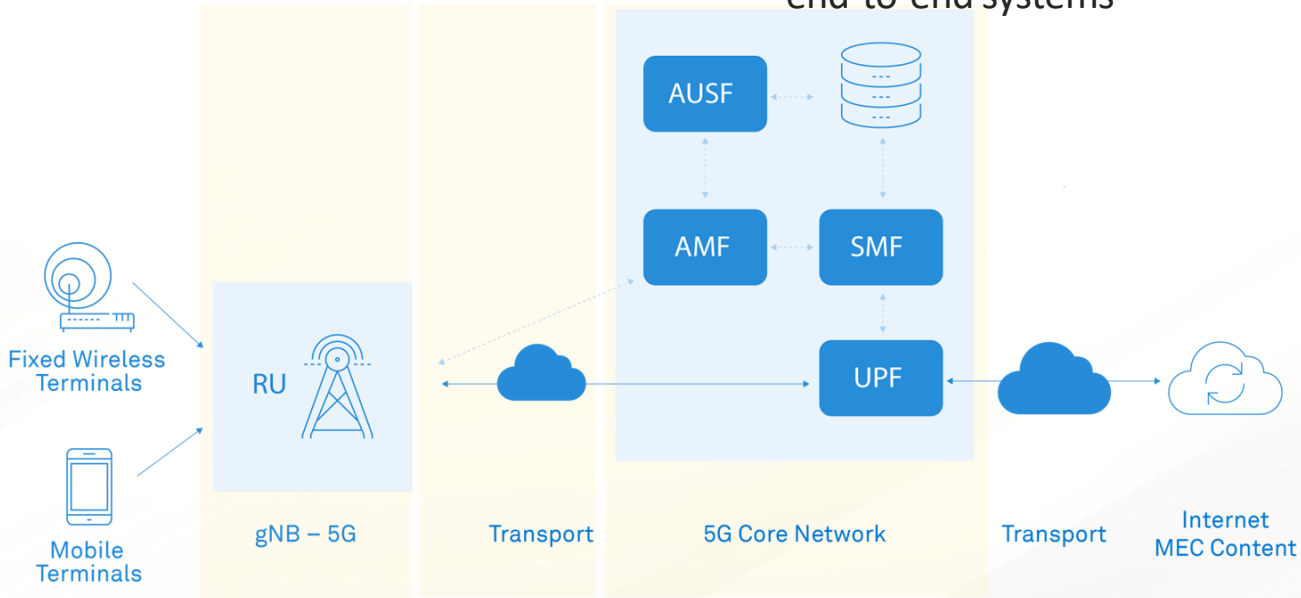
Domain data layers should not be black boxes – they need standard interfaces to share insights upward or outward.

Where we are:

- O-RAN Alliance -> RIC for access network
- ETSI ZSM & TMForum -> Conceptually include transport layer
- 3GPP -> NWDAF for core network

Gaps:

- No 3GPP-defined analytics function in the RAN
- No dedicated AI/analytics function standard exists specifically for transport networks
- Missing coordination between RAN analytics and core or end-to-end systems



Emerging Data Stack: Cross-domain Data Layer

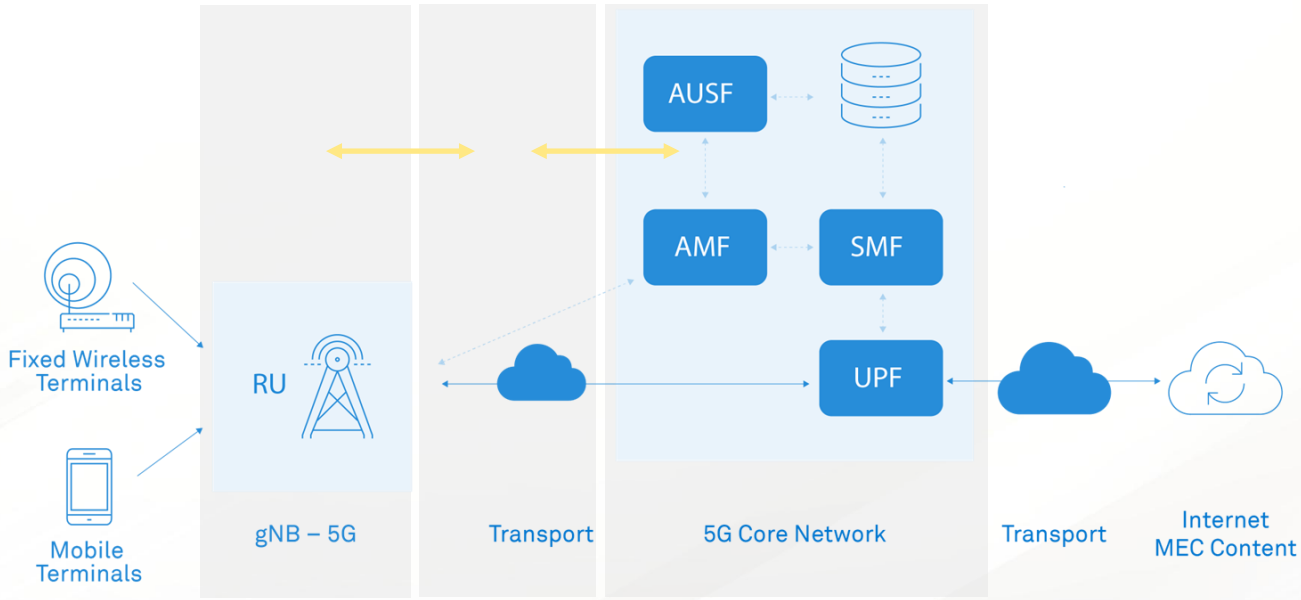
This is an aggregated layer, often in a central cloud or data lake, that correlates data across domains.

Where we are:

- 3GPP -> MDA function
- ETSI -> ENI and ZSM

Gaps:

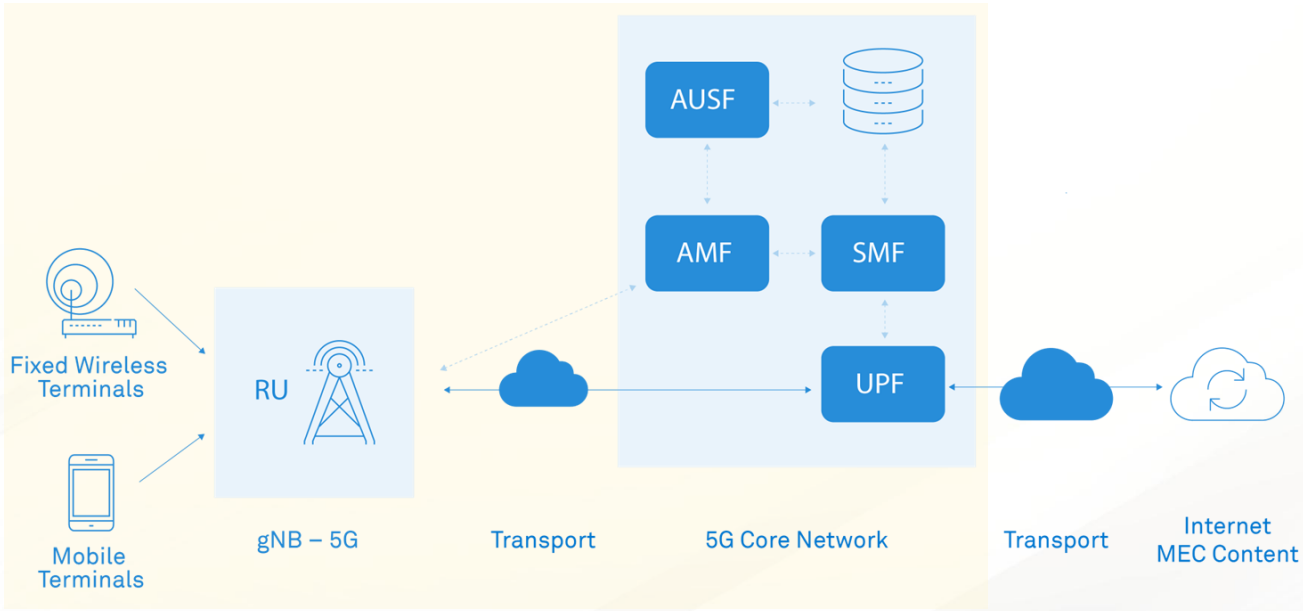
- Overlap and fragmentation
- AI model lifecycle and governance



Emerging Data Stack: Knowledge Layer

On top of raw data, the network will have distilled knowledge and policies.

An intent-based layer might translate high-level goals (e.g. a business intent for quality or cost) into low-level configurations!



Recommendations and Path Forward

We should:

- ✓ Develop a unified data strategy
- ✓ Implement/develop multi-layer data management
- ✓ Focus on data quality and governance
- ✓ Integrate the AI/MLOps into the system design

Standardizing the intelligence stack -> Standardization without affecting the innovation!

TEŞEKKÜRLER