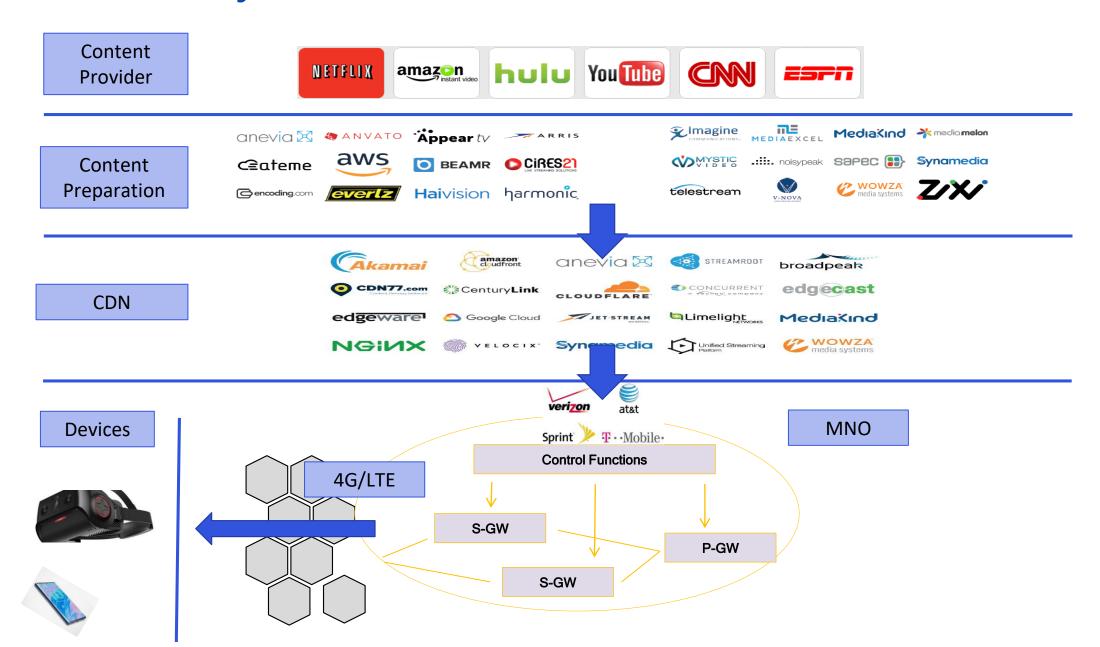
# Ingest Technologies

**Imed Bouazizi** 

### Media Delivery in 4G



#### xMB Interface

3GPP defined xMB interface in 26.348 and 29.116

First attempt to ingest content into MNO's network for distribution

Primarily targets Broadcast distribution

BM-SC acts as end point of the Ingest, controls the broadcast session, and streams the media

With MooD, content may also be delivered over unicast

xMB is implemented as a RESTful API together with a security framework:

TLS for authentication of both sides

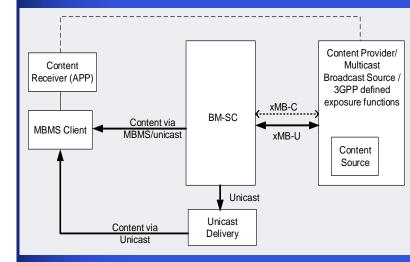
HTTP Digest for Authorization

DTLS for all RTP and UDP traffic

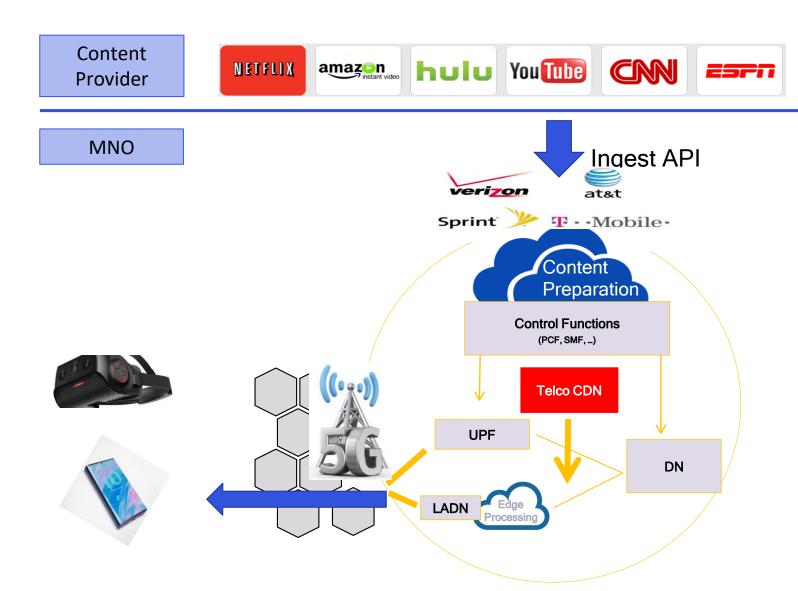
#### Drawbacks:

Too Broadcast-centric

Due to the monolithic design of the BM-SC, does not align with 5G architecture concepts

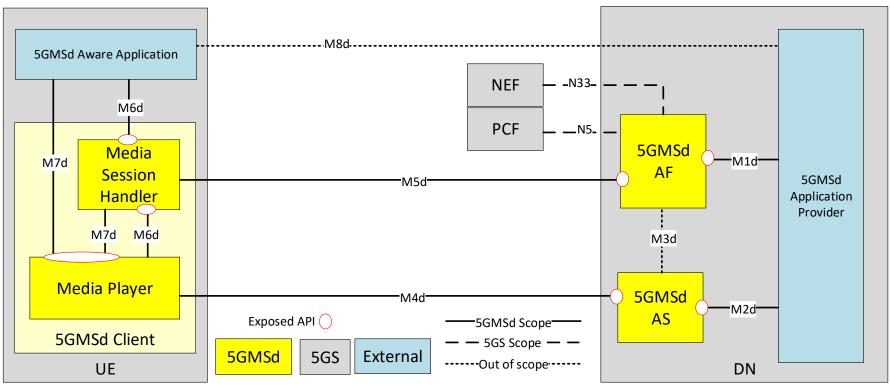


### Media Delivery in 5G



- MNO's integrated Media
  Delivery offering:
  - QoS guarantees for streaming sessions
  - Sponsored data usage through network slicing
  - CDN for optimized network resource usage
  - Media Preparation in MNO's cloud
  - Edge Processing for customized experiences
- Enabler:
  - Standardized Ingest API

### **5G Media Streaming Architecture**

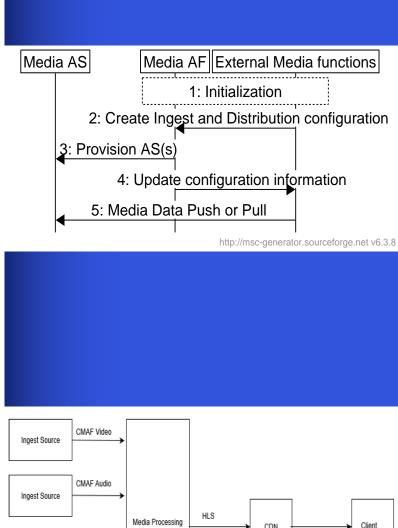




Transforming how media is distributed over mobile networks

### Media Ingest in 5G

- More generic compared to xMB
  - Will handle unicast, multicast, and broadcast distribution
  - Service-Based Architecture
  - Functions are scalable, discoverable, configurable
- Media AF ensures full integration with the rest of the 5G system
- M1d interface implements a RESTful API with JSON data formats
- M1d implements CDN-style functionality to provide a familiar experience to content providers
- Media AF can be configured to leverage 5G functionality:
  - QoS configuration, traffic handling, charging
  - Network Slicing
  - Processing in the Core for Media Preparation
  - Processing on the Edge for customization and low latency
- M2d designed to be a flexible user plane
  - Customizable ingest protocol
  - Currently, only DASH-IF Ingest is referenced
    - Push Only, CMAF Format, HTTP POST method



DASH

CMAF Metadata

CMAF Text

Ingest Source

Ingest Source

#### Discussion

Will MNOs do this on their own or in cooperation with the key players?

How important are 5G features (QoS, Slicing, Edge processing,...) are to content providers and how much control is needed over the Ingest interface?

5G

Will a standardized interface be sufficient to avoid fragmentation, with 100s of wireless carriers globally?

Will 5G be a challenge or an opportunity for the key players in the media delivery landscape?

#### Qualcomm

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