

LG Uplus

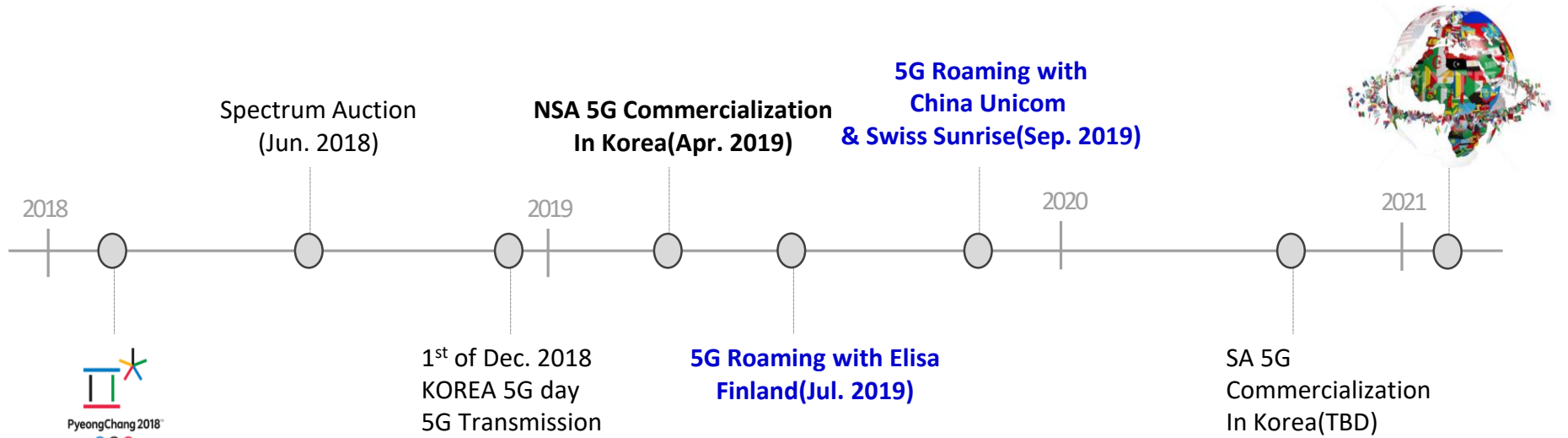
Current & Future 5G






Michael Yang (Mike) Senior manager – International Roaming

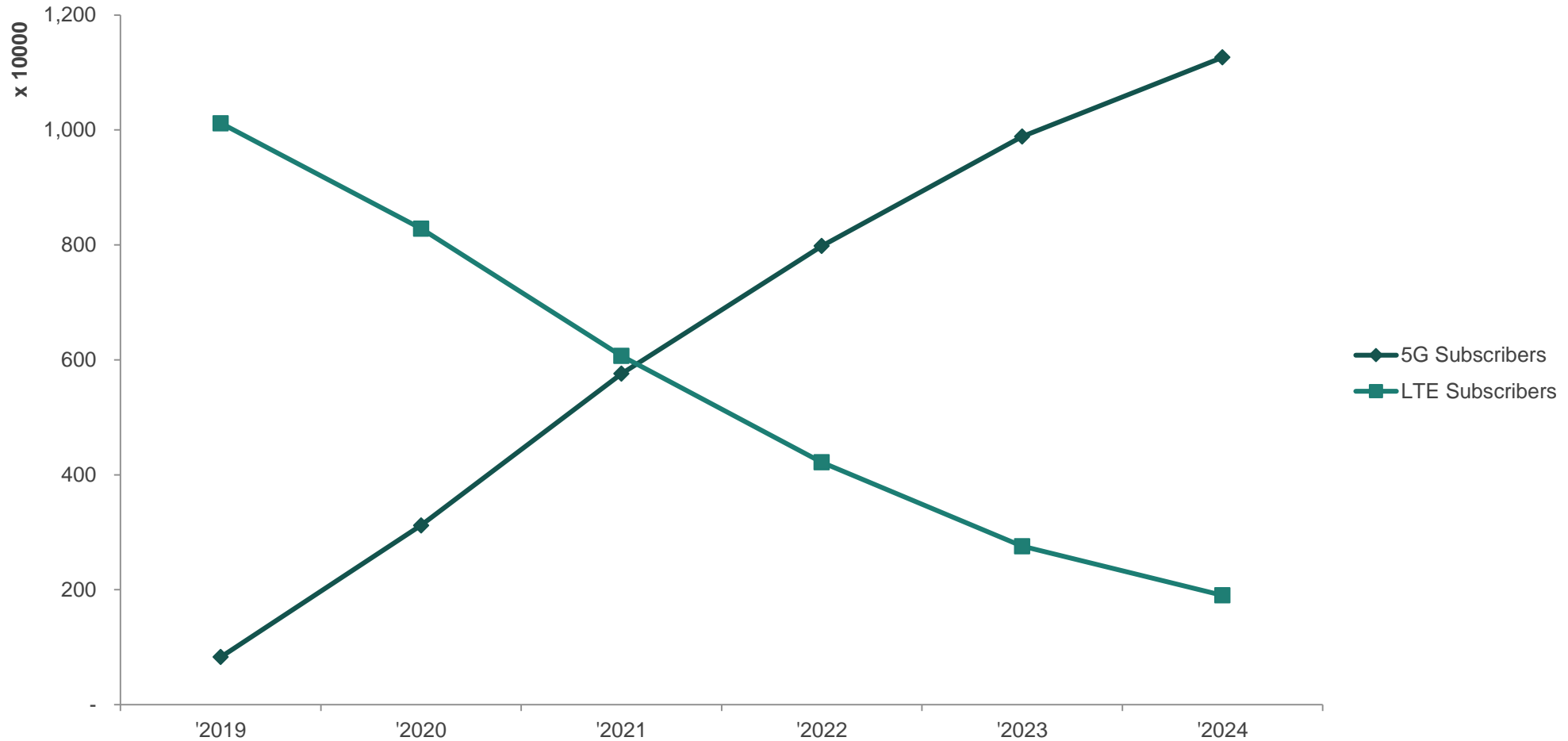
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5G Roadmap



<p>LG V50 ThinQ & V50S</p>  <p>LG V50 ThinQ 5G begins with LG</p>	<p>Samsung Galaxy S10 5G</p> 	<p>S10 Note 5G</p> 
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4G/5G Subscribers trend of LG Uplus



Services



Media (Broadcasting)



VR



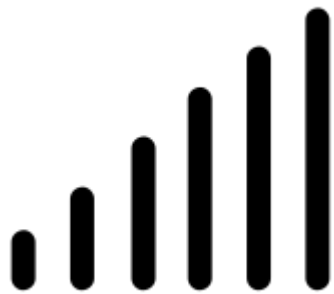
Cloud



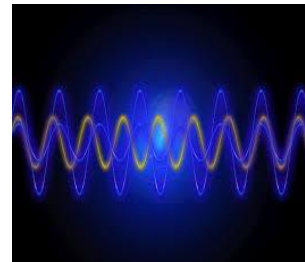
AR



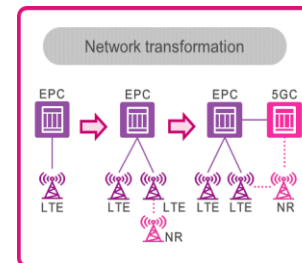
Network



5G spectrum



Network Infra



Current status & Lesson learned



1) Multi-view Broadcasting

See the unseen, See what you want



- **Feature**
 - Panoramic View
 - 4D Live

- **21Mbps (5G) / 6Mbps (LTE)**

- **Feature**
 - AR Tour Live
 - 4D Live

- **21Mbps (5G) / 5Mbps (LTE)**

- **Feature**
 - Celebrity focused Camera

- **18Mbps (5G) / 4Mbps (LTE)**

- **Male in 30s~50s**
- **37K UV**

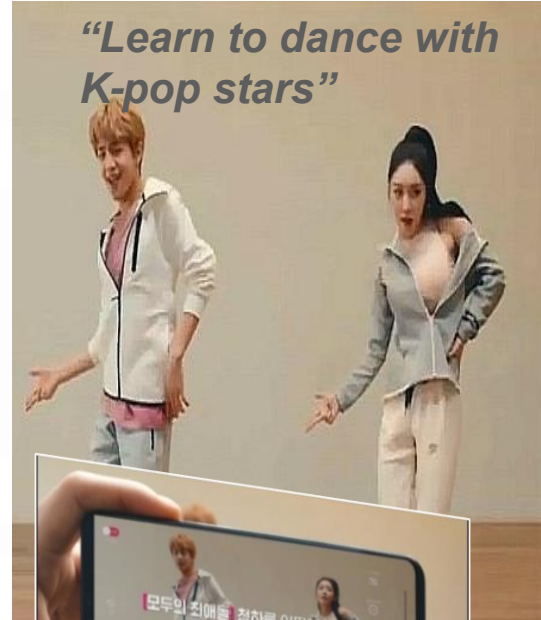
- **Male in 40s~50s**
- **15K UV**

- **Female in 10s~20s**
- **36K UV**



2) Immersive Media

Virtual Reality | Augmented Reality



Ref. User-Created Content Using U+ AR



UV



Data (/day)



VR HMD Usage Rate



View through HMD



Re-visit



File Size



Content



Bitrate



Use Case

3) Cloud

Take data from the cloud, away from squeezing it into a tiny storage on your phone



- Your games streamed from cloud
- Play anywhere on multiple devices



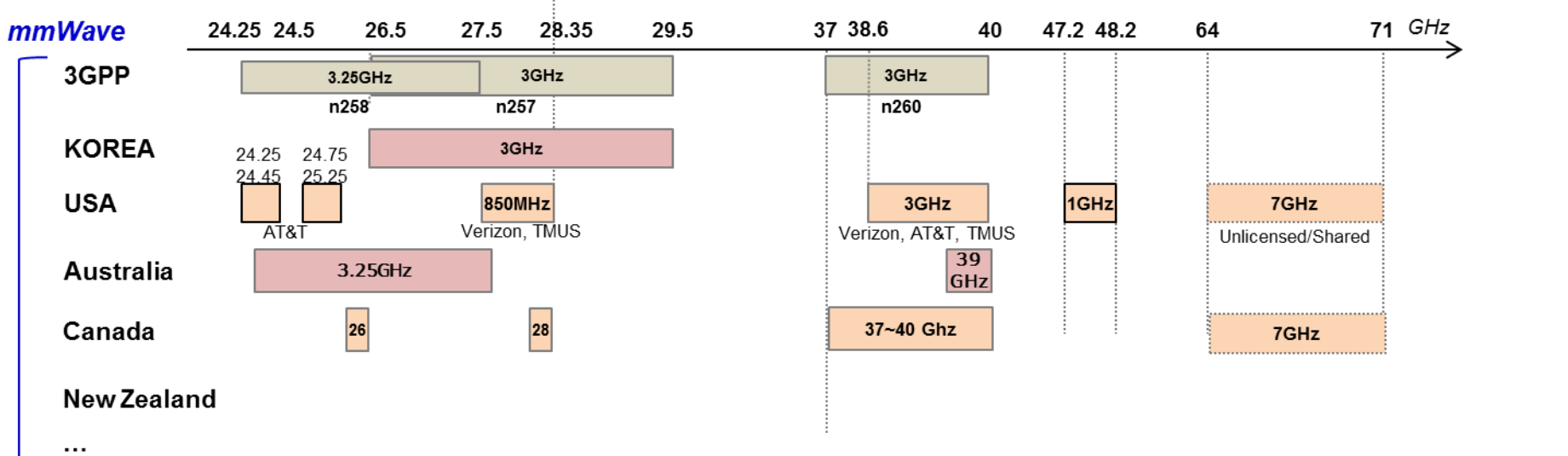
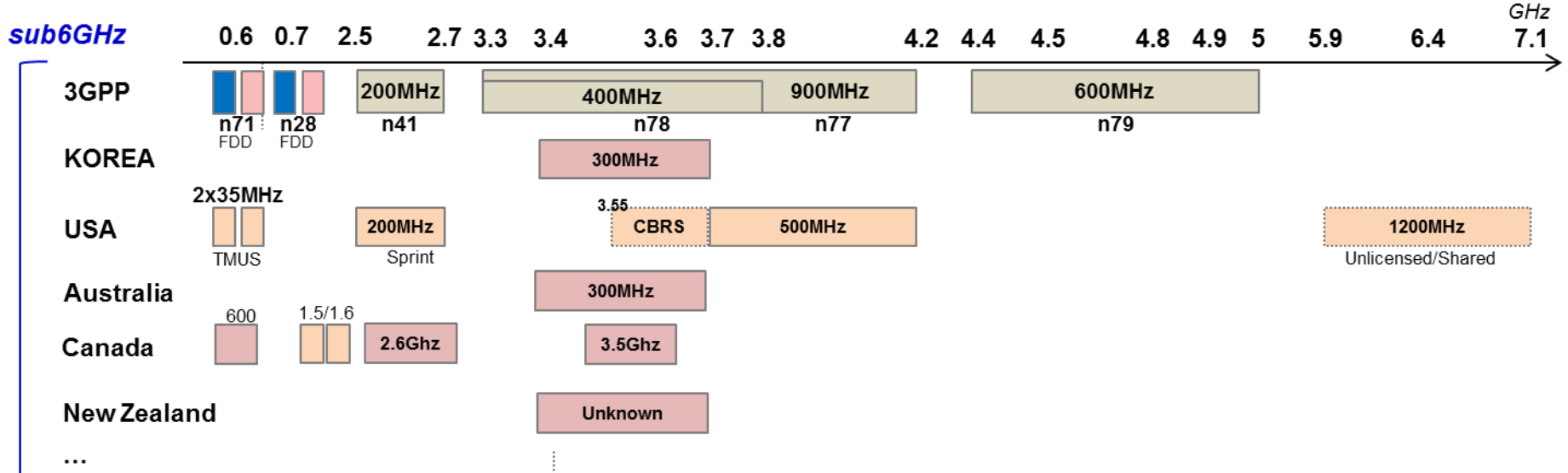
- The most demanding VR games streamed from the cloud
- Play without PC, without wires



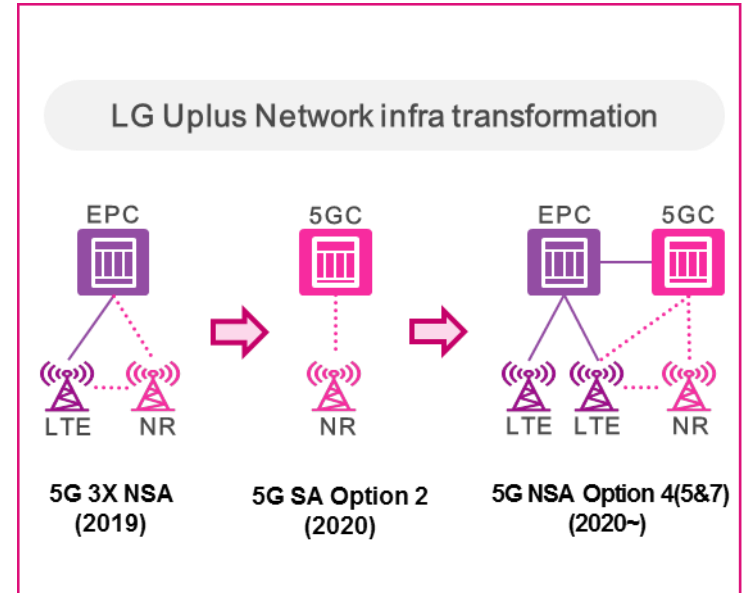
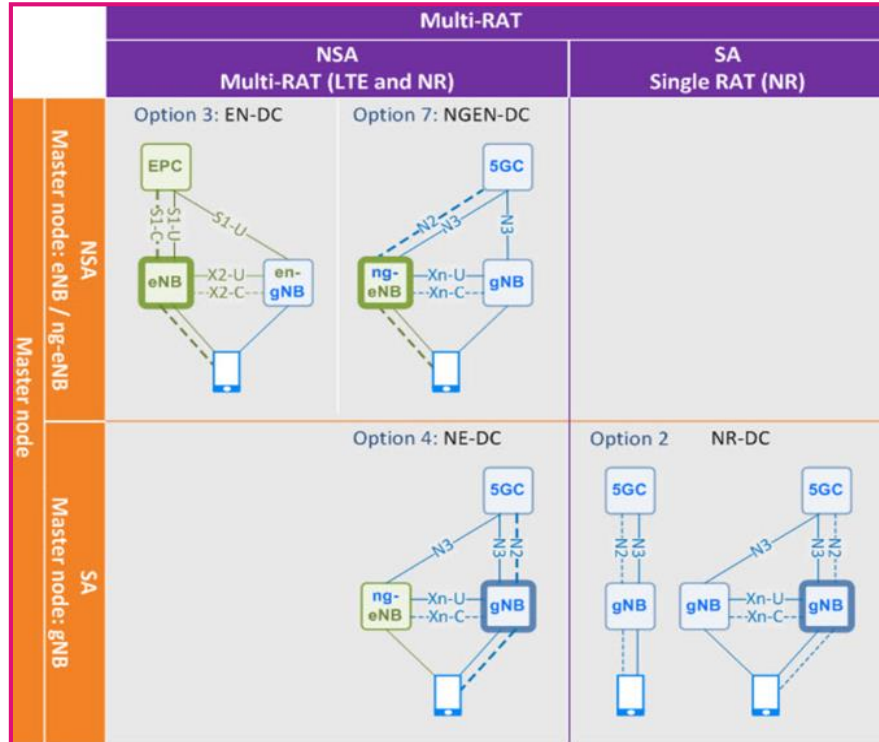
- Buy a phone, Get a PC



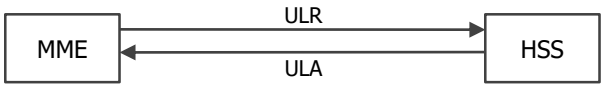
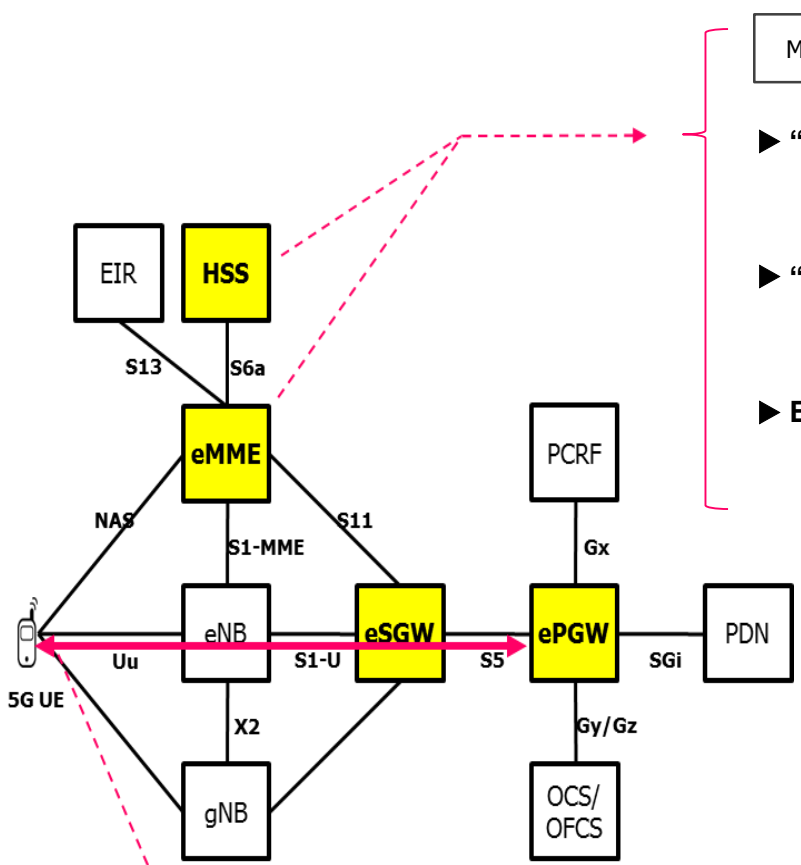
1) 5G spectrum allocation



2) Network infra transformation



2) Network infra transformation – 5G NSA 3X



- ▶ **“NR as Secondary RAT” bit to Feature-List-ID 2 AVP**
 - ULR : Feature-List-ID 2, item #28
 - ULA : Access-Restriction-Data bit #8
- ▶ **“NR as Secondary RAT Not Allowed” bit to Access-Restriction-Data AVP**
 - Indication of whether subscribers will restrict LTE and NR dual connectivity
- ▶ **Extended-Max-Requested-BW-DL / UL AVP**
 - AMBR AVP such as UE-AMBR, APN-AMBR should be supported by MME in VPMN
 - *The max bandwidth that will be set/allowed for uplink and downlink need to fixed between two parties. .

Respective GTP tunnelling for 4G and 5G traffic, in case of domestic service and LG Uplus Inbound.
 *LG Uplus implemented each GW for 4G and 5G traffic separation.

3) 5G Roaming – Current status and lessons learned

Current status

- **On service**
 - Asia : China (China Unicom Oct.19, Preliminary) / Vietnam (Trial Oct.19)
 - Europe : Finland(Elisa), Switzerland(Sunrise)
- **Under discussion for testing** : 5 Operators / 5 Countries

Lesson learned

- **Possible**
 - to distinguish the traffic for each of 4G and 5G
- **Not possible**
 - to distinguish the billing information for each of 4G and 5G.
- **Advantages,**
 - of eMBB in 5G NSA, other key factors of 5G will gradually be achieved

Services



Network



Thank you.



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