QUALCOMM®

SP-120661

3GPP system area Rel-12

Qualcomm

Overview

- Release-12 is a long release
  - Consider **significant** enhancements to the system
  - Not just "optimizations for the trends of the last 5 years"

- Create an attractive platform that allows the 3GPP industry to monetize innovation, new services & new trends in the **next** 5 years

  - MTC

  - Proximity-based services (including public safety)

  - Operator-controlled WiFi

  - eMBMS

  - 3GPP-based multimedia

Machine to Machine (SA2)

- M2M: new markets opportunities & new challenges

- Rethink **power consumption**
  - Dramatically **reduce power** when UE is not active & needs highly infrequent radio access
  - Study item goal of two AA batteries for the lifetime of the device is **achievable**

- Transition to connected state
  - Particularly beneficial for transmission of small amounts of data
  - Combining signaling messages **over the air interface**
    - E.g. today connection establishment/reconfiguration takes 7-10 exchanges
  - For UMTS only: **UE radio capability** delivery optimizations (e.g. caching)

- Group communication
  - Consider large amount of devices (e.g. meters) providing individual data / receiving common data
  - 3GPP should **extend already existing mechanisms** for broadcast/multicast communication:
    - CBS(Cell Broadcast Service)/PWS (Public Warning System) & MBMS/eMBMS

- 3GPP aspects: UEPCOP, MTCe_SDDTE, MTCe_GROUP
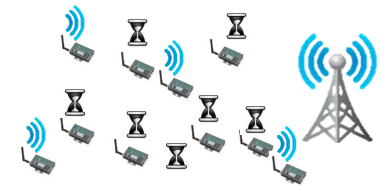
Proximity services & device-to-device (SA1/SA2)

- Emergence of **proximity based services**
  - Services based on the ability to discover what's around you (e.g. over the top such us 4Square)

- Growing interest of **public safety** providers to adopt LTE
  - Opportunity for LTE operators and LTE ecosystem
  - Public safety also needs a mode of operation where devices discover & can directly connect to each other in absence of network coverage

- Operators can seize **both** of these opportunities in LTE
  - Network control & authorization for discovery & direct communication
  - **Same features become available for public safety & non public safety purposes**
  - Technically superior solution
  - Operator-centric platform compared to over-the-top

- 3GPP aspects: ProSe (WI in SA1 & WI w/ study phase in SA2)
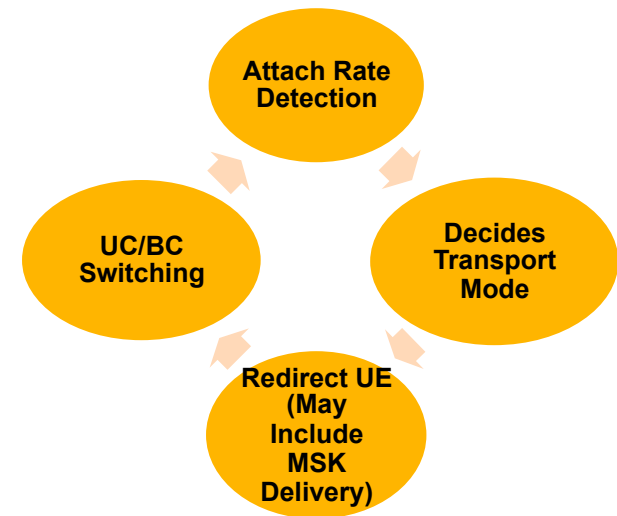
MME   EPC

eNBs

SP-120661
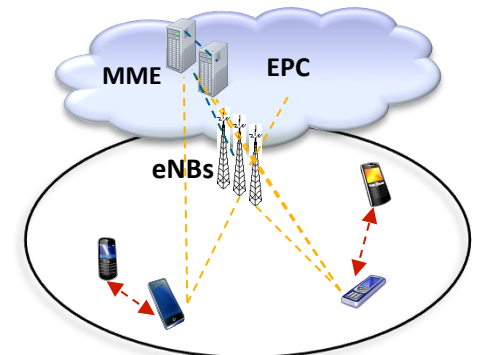
WiFi in 3GPP (SA2)

- Trend from operators to deploy their own WiFi networks to complement cellular

- We expect two types of deployments & two level of WWAN/WLAN integration
    - Tighter integration in the **Core** (no level of integration with the cellular RAN)
    - Tighter integration in the **RAN** (WiFi as part of the broader cellular RRM)
    - SA should focus on enhancing the former; RAN will focus on the the latter

- What does this mean for SA
    - Integration of WiFi Hotspot 2.0 and 3GPP WLAN **policies**, i.e., ANDSF
        - Better identifiers, improved PLMN selection for WLAN
    - Enhance existing WLAN **access selection** mechanisms
        - Allow interleaved priorities between 3GPP RATs and WLAN
    - Tighter **integration** of WiFi data plane with operator core
        - IP address continuity with multiple APN support over trusted WLAN

- 3GPP SA aspects:
    - WLAN Network Selection for 3GPP Terminals (WLAN_NS)
    - Study on Optimizing Offloading to WLAN in 3GPP RAT mobility (FS_WORM)
    - Study on S2a Mobility based On GTP and WLAN access to EPC (FS_SaMOG)
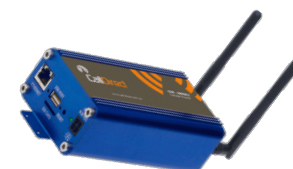
eMBMS (SA4/SA2)

- Enabling MBMS for delivering advanced web services in a scalable manner

- **eMBMS On Demand**: Enable eMBMS when sufficient numbers of UEs listen to the same content in the same location
  - Real time (breaking news) and non real time (podcast)
  - Offload from unicast traffic
  - Active service area, MBSFN, and eMBMS service are based on user demand

- **Datacasting Enhancement**
  - Enhancements of datacast & carousel services: provide periodicity to the UE to save battery life

- **Real-time service using MBMS download delivery**
  - Improvements to FLUTE
  - Push-based web services

- 3GPP aspects: WI to be proposed

Attach Rate Detection

Decides Transport Mode

UC/BC Switching

Redirect UE (May Include MSK Delivery)

SP-120661

Multimedia (SA4)

- Essential that 3GPP continues to enhance its **multimedia** offering as a complement to radio/system evolution

- **Codec** Improvements
  - EVS: new codec speech (ongoing)
    - Focus on wireless usage, i.e. resource efficiency, high quality speech, high capacity
  - HEVC for video (new for Rel-12)
    - Incorporating new high-quality HEVC/H.265 codec into 3GPP services
    - Provides substantial reduction in data rates compared to H.264/AVC

- **Streaming** Improvements
  - DASH
    - DASH is supported since Rel-10
    - Focus is on getting commercial deployments out; developing deployment guidelines in 3GPP
    - Also studying future work focusing on operator control & value

- 3GPP aspects: Ongoing