

3GPP TSG-SA WG1 Meeting #83
West Palm Beach, FL, USA, 20-24 August 2018
Agenda item: 4 – New study work items



Discussion on the Future Services of Smart Community and City over 3GPP Systems

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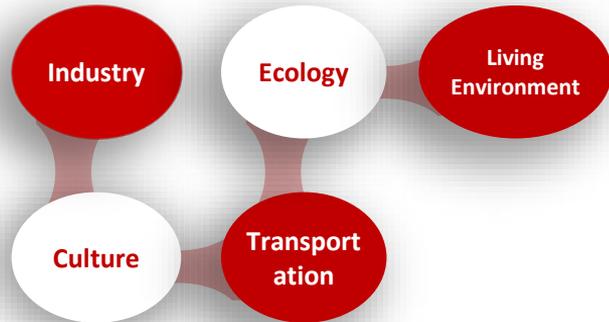
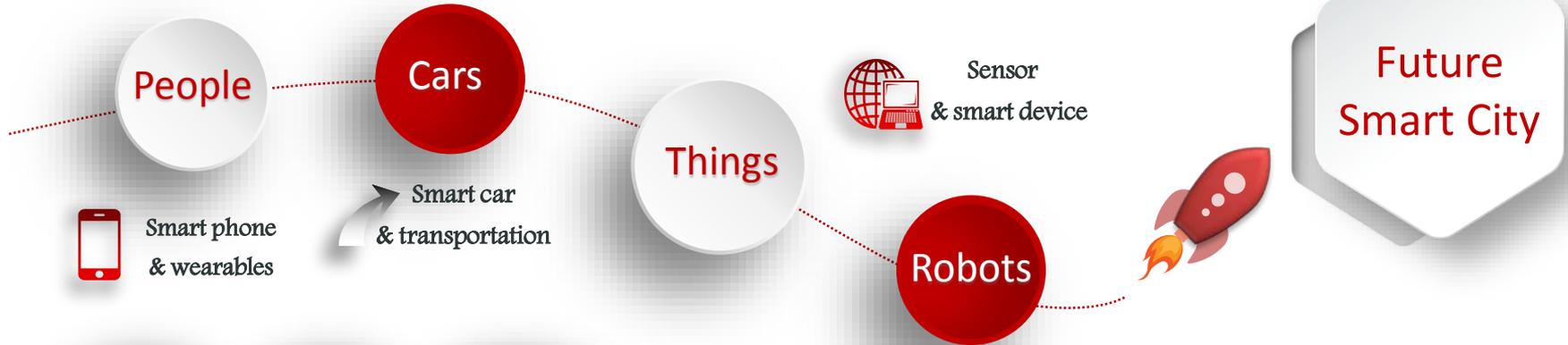
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Vision of the new Internet



Smart Infrastructure: **People** (smart phone, wearable) , **Cars** (smart car, transportation) , **Things** (sensor, smart devices) , servicing **Robots** , **INTERCONNECTED**.



The next generation Internet of Everything (IoE) drives the applications of 5GS!

Motivations



Background: Although individual segments including IoT, V2X, URLLC, EMBB, etc. have been well studied in 3GPP, e.g., in SMARTER, eV2X, and cyberCAV etc., IoE based smart city and community services shall provide an upgraded USER EXPERIENCE over any current IoT and EMBB applications, and have not yet been analyzed.

Key Impacts

System Wide Impacts:

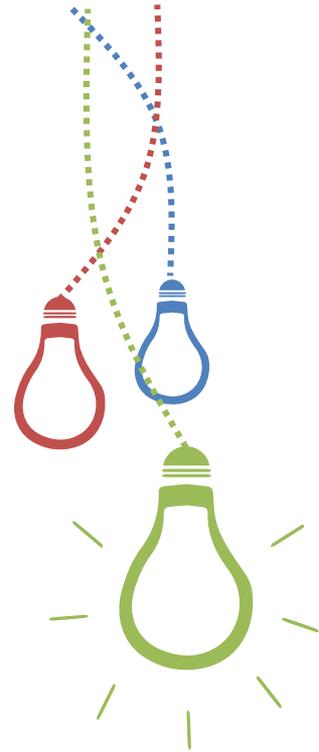
- Interconnection and real-time information processing of all the UEs in IoE (including IoT, V2X, EMBB) to enable new services. Similar to the logic in V2X computing, but it is now aimed for all the UEs.

RAN Impacts:

- Any combination of the following features for realizing multiple levels of user experience: high density, real-time edge computing (network-controlled UE relay), high data-rate, low latency, high reliability, high mobility, extended network coverage (multi-hop links), and high-precision positioning.

Business Impacts:

- New business opportunities can be expected with enhanced user experience, where network operators could charge based on the QoS and number of connections instead of pure bandwidth.



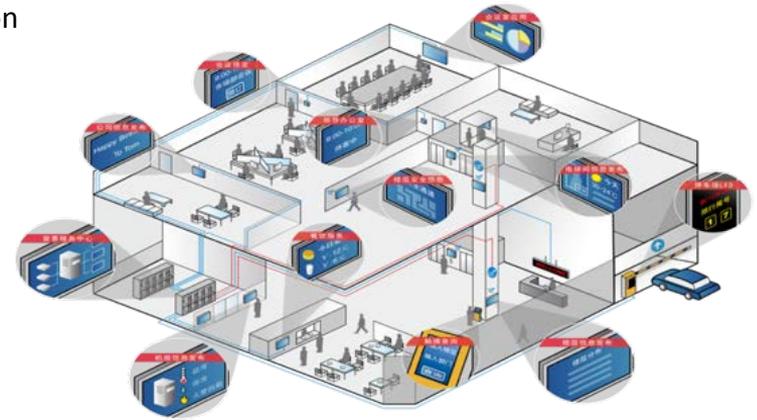
Future Smart Community for 3GPP



Objective: To provide consumers with an upgraded IoE user experience over any current mobile Internet (EMBB) services.

Target users: In the future smart community, consumers shall be provided with intelligent services based on the real-time processing of IoE information from the sensors (things), vehicles, retailers and people, and an integrated Online-Merge-Offline environment that seamlessly combines the physical world and the virtual world. IoE smart community with distributed AI presents a potential **Killer Application for Consumer Services**.

- Micro-environment Services
- Parking and transporting services
- Elders and children services
- Retailer services
- Social networking services



Future Smart Community for 3GPP



Use case I (an illustration): Micro-environment Services

- Any air pollution area is real-time tracked and effective warning is issued to neighbouring users. Outdoor activity guidance is provided to consumers.
- Ambient light is well mapped for controlling community lighting infrastructure and outdoor guidance.
- Any noise or UV pollution area is well tracked and effective warning is issued to neighbouring users. Outdoor activity guidance is provided to consumers.
- Local variance of humidity and temperature is mapped and outdoor activity guidance is provided to consumers.
- Real-time street-sight multimedia is provide in the virtual scene for visualization to consumers, the content rate is determined and updated in real-time by the combined and instantaneous micro-environment conditions.



Levels of User Experience:

Levels of user experience depends on the real-time QoS being provided in the distributed processing and local distributing of sensory information.

Future Smart City for 3GPP



Objective: To provide city management with an enhanced IoE user experience over any current IoT services.

Target users: massive data representing real-time city IoE elements can be efficiently processed and merged to a virtual scene with accurate synchronization, which not only provides city management with intelligent real-time analysis and automatic controlling, but also an immersive and interactive (on site) management experience. IoE smart city with distributed AI presents a potential **Killer Application for Governmental Services**.

- Urban infrastructure management
- Environment and traffic management
- Industrial park management
- Community management
- Tourism management



Roadmap toward R17 and the new IoE

- Rel17 targeted, addressing potential killer applications
- SID planned for completion at SA#83 (March 2019)
- Basics of use cases have been described
- World-wide collaboration required for 3GPP to support future smart community and city services in the globe



2018

THANK YOU!

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