

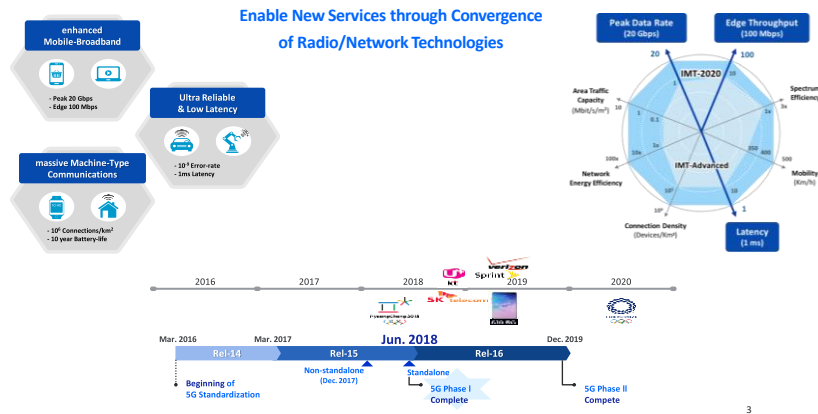


5G & IoT – A Symbiotic Relationship

Dr. Aloknath De
Samsung R&D India – Bangalore
IEEE Comsoc 5G Workshop - 30th Nov 2019

5G

5G Requirements & Standards



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5G Train: Trial to Full Service

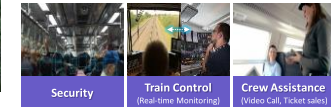
Providing Multi-Gigabit Mobile Backhaul Solution to Trains



For Passenger

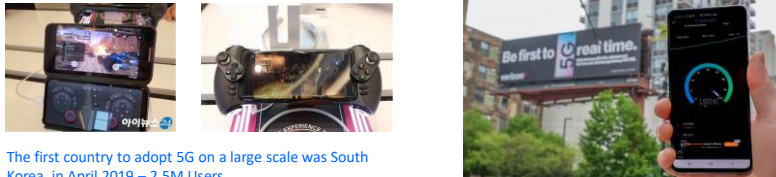


For Train Operator



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Korea & US: Early 5G Deployment from Samsung



The first country to adopt 5G on a large scale was South Korea, in April 2019 – 2.5M Users

Samsung is the largest supplier for 5G base stations in South Korea at launch - 53000/86000 base stations

- AT&T, Verizon, Sprint, T-Mobile
 - Trials ongoing (Ericsson, Samsung, Nokia)
- Verizon Speed Test
 - 1.4 Gbps in Chicago
 - Samsung NW and Samsung S10 5G
 - Stranger Things (entire first season) on 5G: 38.78 seconds
 - Stranger Things (entire first season) on 4G: one hour 16 minutes
 - Latency ranges from 30ms down to 17ms on 5G

<https://www.techgenyz.com/2019/08/27/ig-u-launches-geforce-5g-cloud-game-with-vidia/>

<http://koreajoongangdaily.joins.com/news/article/article.aspx?aid=3067287>

http://www.uplus.co.kr/ent/fiveg/5GServiceDetailGeforce.html?utm_campaign=brandcomm2_geforce&utm_medium=portal_blog&utm_source=naver&utm_content=alliance_blogger20

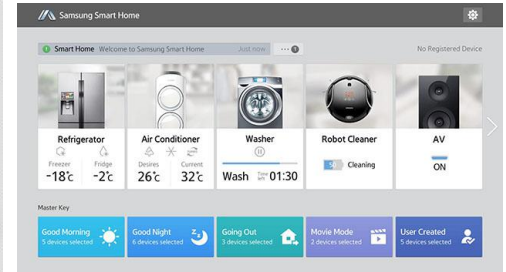
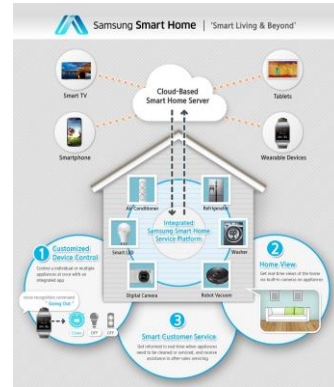
Commercial 5G in 2019 – Its Real Now!

55 'Early' Commercial 5G networks in operations by end of 2019



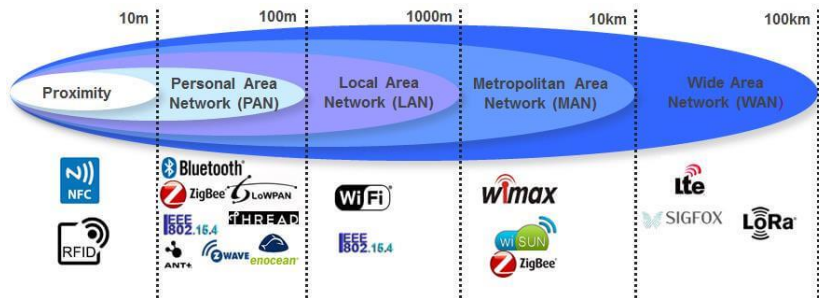
IoT

Smart Home



SAMSUNG

IoT Connectivity



Source: <https://www.simgic.com/blog/how-low-powered-wi-fi-sensors-are-the-future-of-iiot/>

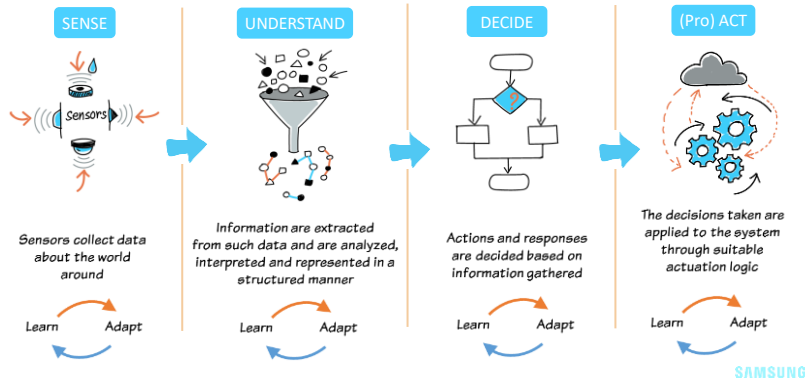
SAMSUNG

Smart Cricket Ball



Image Source: dzone.com, comsol.com

Sense, Analyze & (Pro)Act



5G and IoT

5G FWA (Fixed Wireless Access)

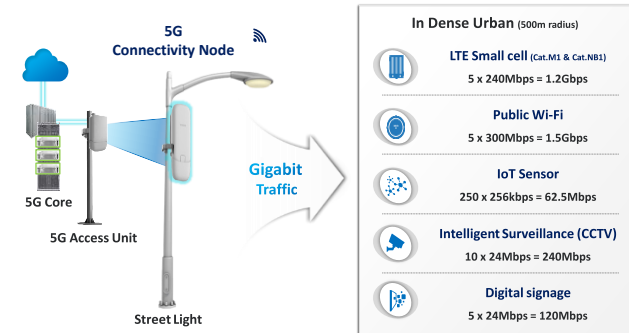
5G "Wireless Fiber" at Home for High Speed Internet, VoD etc



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5G Connectivity Node for Smart City

5G Connectivity Node Provides Gigabit Connectivity for Smart City



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5G V2X

The diagram features a central image of a multi-lane highway with cars and trucks. Overlaid on this are four light blue callout boxes, each with a title and a representative image:

- High-definition Map Update:** Shows a driver's perspective with a large, detailed map overlay on the dashboard.
- Remote Driving:** Shows a person in a control room looking at a screen that displays a car's perspective from a distance.
- Vision (Camera/LiDAR) Sharing:** Shows a 3D visualization of a car's sensor range (LiDAR) and camera view.
- Connected Traffic Light:** Shows a street scene with a traffic light and cars, with a signal icon indicating connectivity.

The text "5G V2X" is prominently displayed in the center of the highway image. Above the highway, there are three blue signal wave icons representing 5G connectivity.

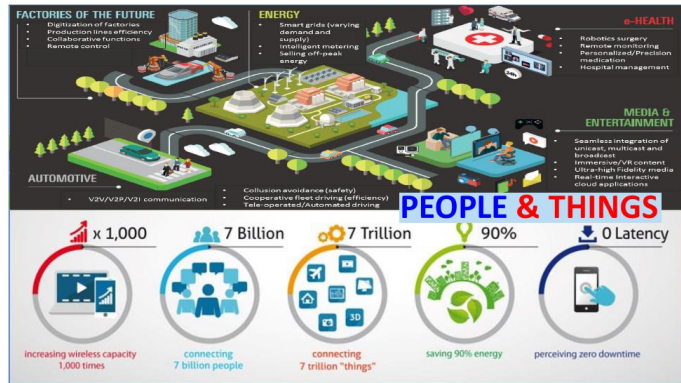
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Immersive Services

The grid is titled "Immersive Service Experiences Enabled by Innovative '5G' Devices" and contains eight service categories, each with a representative image and a label:

- Ubiquitous Health Care:** Shows a person using a mobile device with a health-related interface.
- Wearable/Flexible Mobile Device:** Shows a woman wearing a head-mounted display (AR/VR) and a flexible mobile device.
- Mobile Cloud:** Shows a cloud icon connected to various mobile devices.
- UHD Video Streaming:** Shows a person watching a large screen displaying "LTRAHD" content.
- Smart Map/Navigation:** Shows a 3D architectural model of a building with navigation lines.
- Real-Time Interactive Game:** Shows a group of people playing a virtual reality game.

5G: Connected Things



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