

# Smart Cities and connectivity

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2<sup>nd</sup> National Summit on 100 Smart Cities

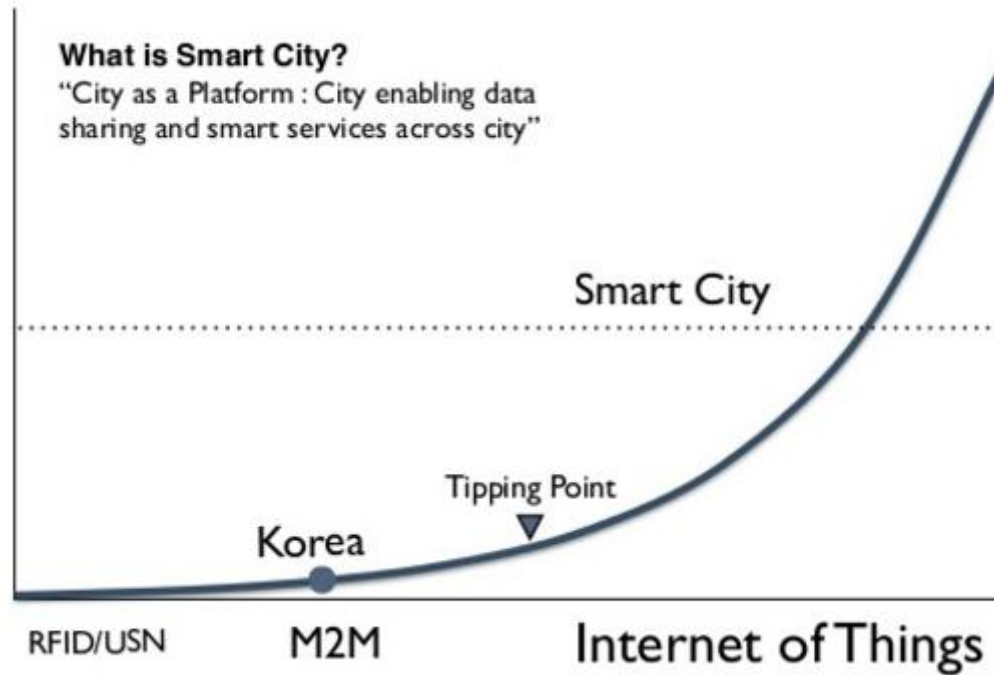


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# Smart Cities...what?



# Smarter Cities...the human problem!



You don't qualify for a Smart Car, but I do have quite a few Dumb Cars you may be interested in."

# Dramatic Invasion of Devices – typical Family of Four



2012	2017	2022	
2 smartphones	4 smartphones	4 smartphones	
2 laptops/computers	2 laptops	2 laptops	
1 tablet	2 tablets	2 tablets	
1 DSL/Cable/Fibre/Wifi Modem	1 connected television	3 connected television	
1 printer/scanner	2 connected set-top boxes	3 connected set-top boxes	
1 game console	1 network attached storage	2 eReaders	
<b>8</b>	2 eReaders	1 printer/scanner	
	1 printer/scanner	1 smart metre	
	1 game console	3 connected stereo systems	
	1 smart metre	1 digital camera	
	2 connected stereo systems	1 energy consumption display	
	1 energy consumption display	2 connected cars	
	1 Internet connected car	7 smart light bulbs	
	1 pair of connected sport shoes	3 connected sport devices	
	1 pay as you drive device	5 internet connected power sockets	
	1 network attached storage	1 weight scale	
	<b>24!</b>	1 eHealth device	
		2 pay as you drive devices	
		1 intelligent thermostat	
		1 network attached storage	
		4 home automation sensors	<b>50!!</b>

Source: OECD

# The Connected Car

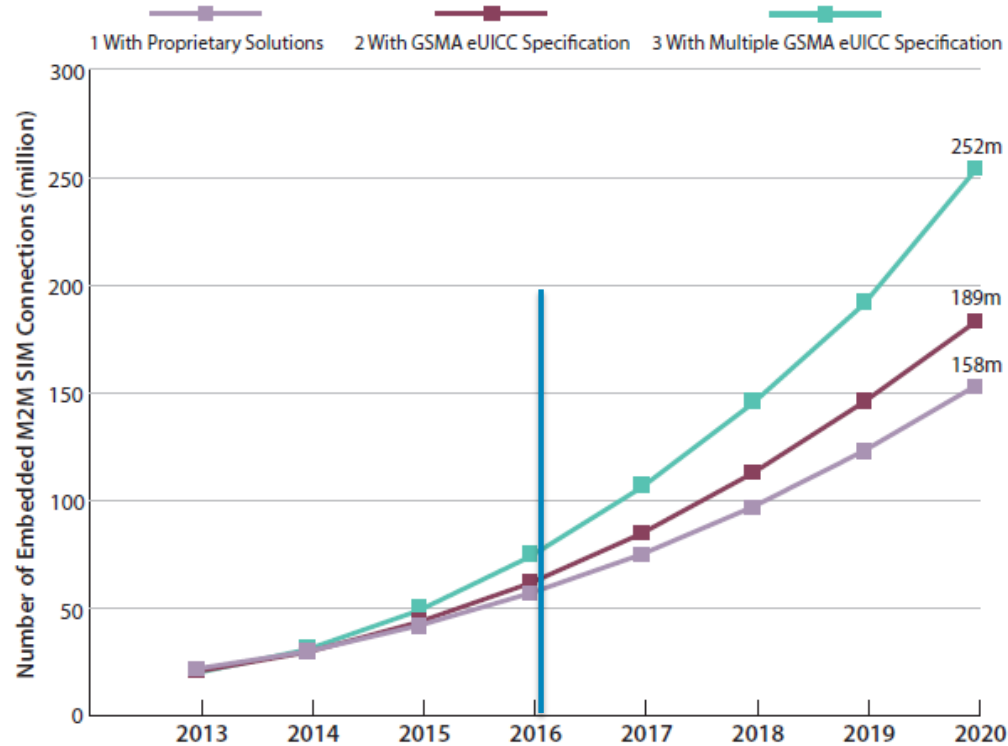
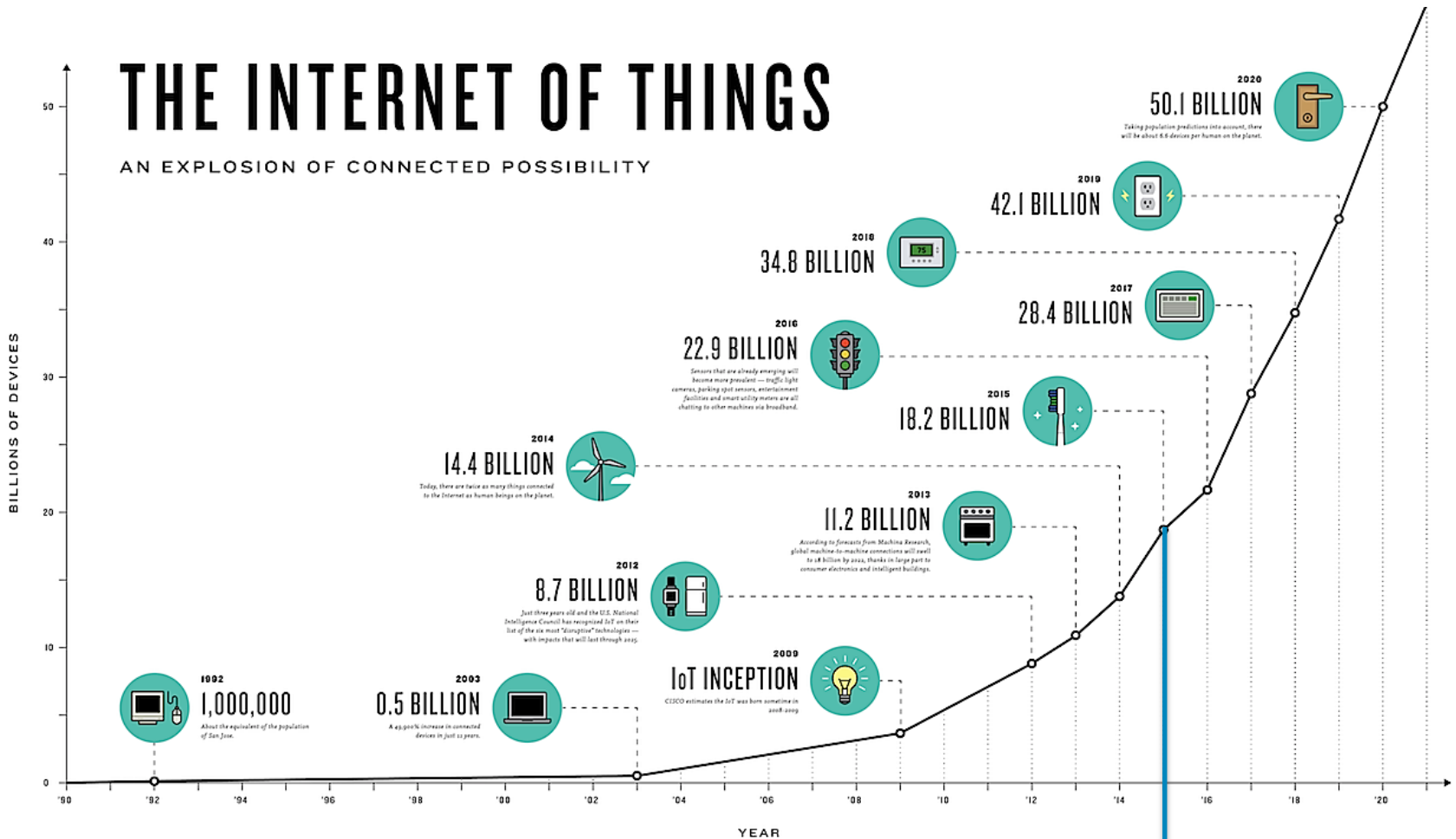


Figure 1.2: Projected Connected Car Connections worldwide with alternative scenarios

	2013	2014	2015	2016	2017	2018	2019	2020
1 With Proprietary Solutions	27,669	35,708	47,183	62,163	80,716	102,912	128,822	158,519
2 With GSMA eUICC Specification	27,669	36,780	50,420	68,680	91,651	119,424	152,093	189,755
3 With Multiple GSMA eUICC Specification	27,669	38,924	56,894	81,715	113,520	152,447	198,635	252,225

Source: GSMA

# From the Telecom hockey stick, to the hockey stick of everything



Source: Earthdecks, based on data from Cisco

# It is not only a matter of price, it's a matter of physics



- Current mobile networks will not gracefully handle these billions of new devices, especially not in cities where population density is high.
  - Current QoS is not enough for simple person to person voice call, it is difficult to comprehend support for mission critical M2M use-cases
  - Calculation example for Mumbai (21 Mn residents)
    - 2014: 42 Mn connected devices
    - 2019: 126 Mn connected devices
    - 2025: **300** Mn connected devices
- The above numbers exclude City Services infrastructure devices and sensors!!

# A decade of three M's in Communications

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## Mobility

- 1996-2005
- Basic Mobility

## Multi-media

- 2006 - 2016
- Internet and Video

## M2M

- 2016-2025
- A billion M2M Devices

Guess who almost forgot about M2M and IoT : ETSI & GSM !!





# Connecting the Smart Cities

- **Smart Water**
  - River and Canals Water Balance & Usage
  - Drinking Water Supply
- **Smart Lighting**
  - Intelligent and weather adaptive lighting in streets and offices
- **Waste Management**
  - Detection of rubbish levels in containers to optimize the trash collection routes.
- **Disaster Aversion, Management & Control**
  - Monitoring soil moisture, vibrations and earth density to detect dangerous patterns
  - Coastal Area Warning
- **Woman's Safety and City Surveillance**
  - Wearable panic buttons and automatic detection and alarm in abnormal human conditions
  - City Surveillance and Crime Control
- **Pollution Control and Awareness**
  - Control of CO2 emissions of factories, pollution emitted by cars and toxic gases generated in farms
- **Intelligent Transport Systems**
  - Connected Cars, V2V and V2I communications

SenseL<sup>CM</sup>

Broadband, Full Mobility | Reliable, Long Range

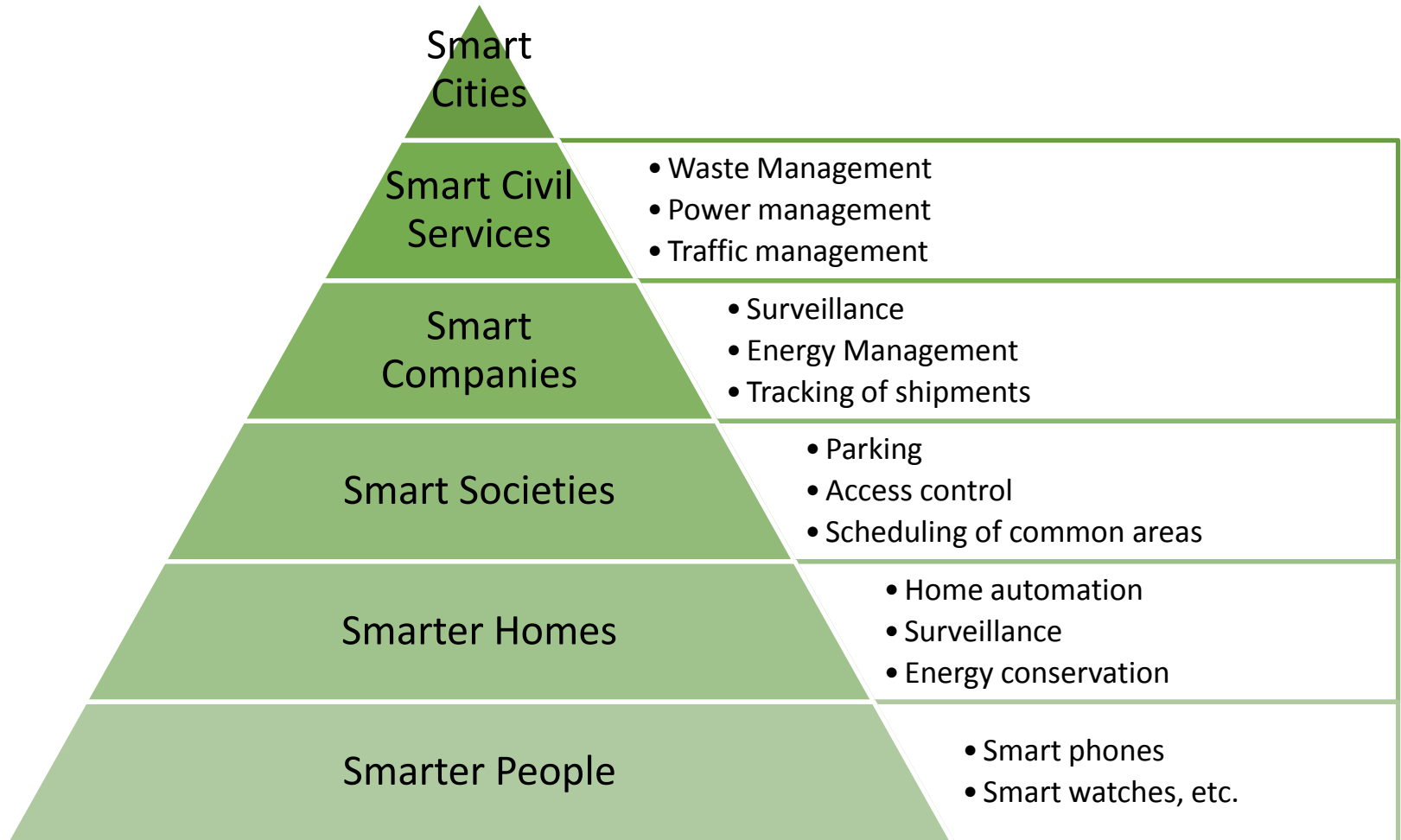
GSM

LoRa

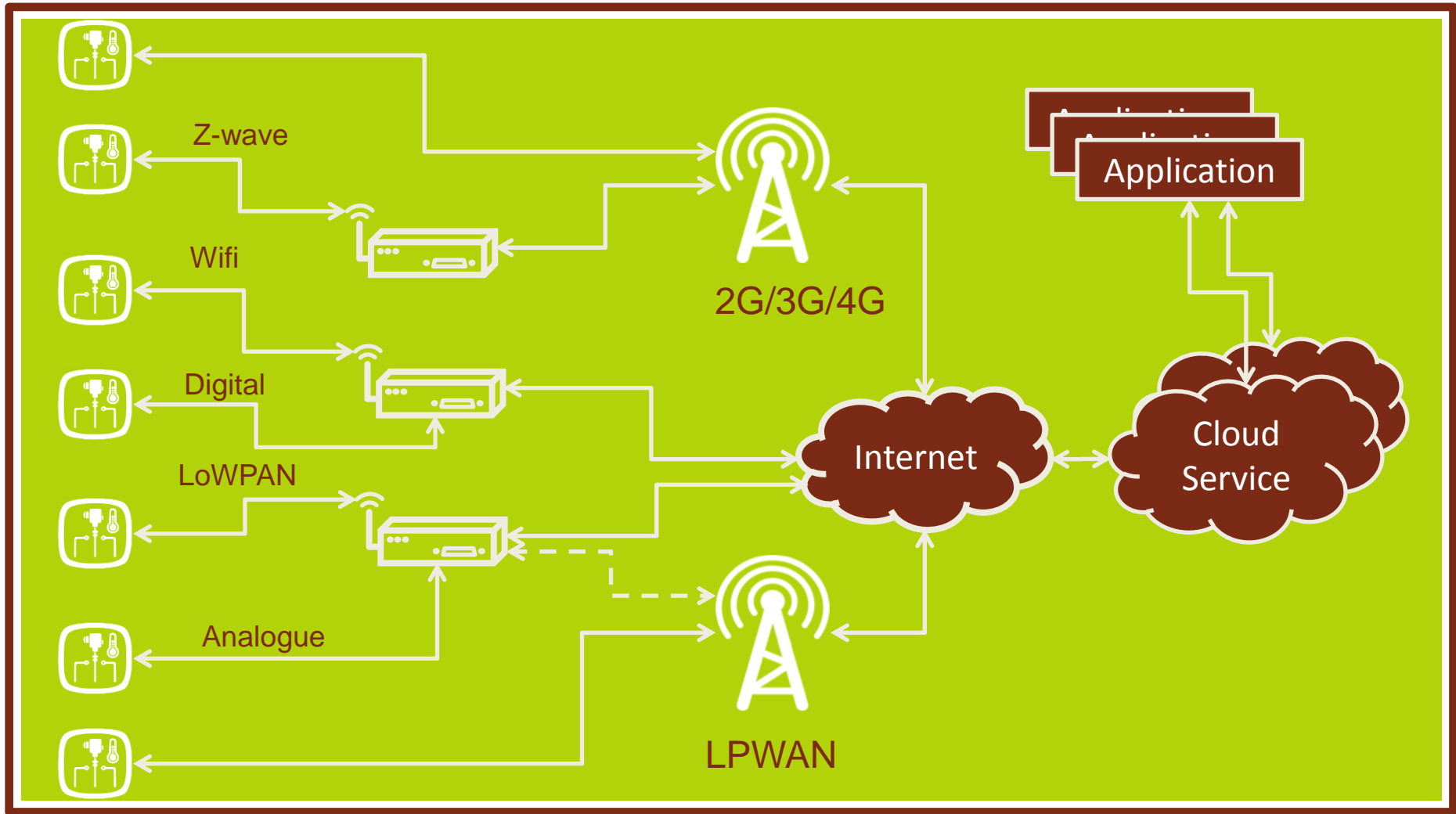


Smart Cities require mission critical **Connectivity**

# The demand for IoT applications will grow from the bottom



# Love All Serve All



# Who will pay for it all?



**DON'T PANIC**



City, State, and National Government are key stake holders

- Assist new use-cases to become viable (make in India, Digital India) and bridge innovation to sustainable use-cases
- Invest in improving the civil services, which benefits everyone

Enterprises

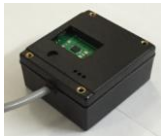
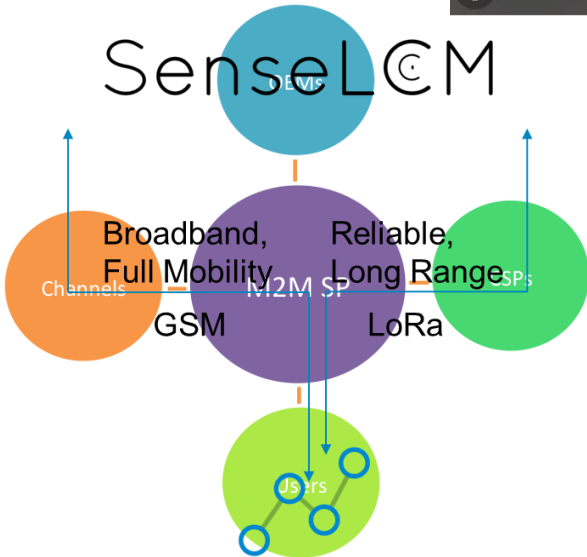
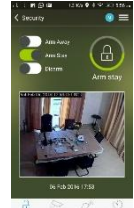
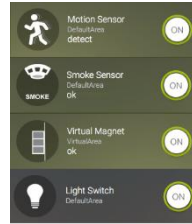
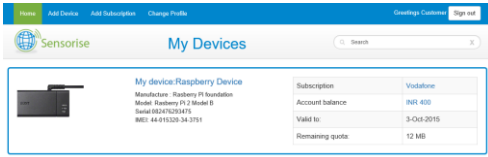
- The driving force behind the explosion of connected devices.
- Edge towards competitors
  - Higher margins for better service
  - Reduced cost of service

Citizens

- Pays for new services, including its infrastructure when they see and understand the benefits
- Benefits from new and more efficient services
- repays further by *being fitter, happier, more productive*



# Sensorise at Work



- Build trust on all sides
  - Device and Motor Manufacturers (OEM)
  - Communication Service Providers (CSPs)
  - Government & Regulation
  - Corporate and Retail Users
- Quality of Service solutions for IoT / M2M connectivity for improved service in national and international geographies
- Solutions for factory fitment of connectivity, unrestricted choice of mobile operators in the after market operation with e-KYC convenience
- Powerful and hassle free automation for homes and offices improving safety, convenience, comfort & control
- Smart Devices, Sensors and end to end Services using LPWAN / GSM connectivity, Portals and Applications



# Get ready for the 4<sup>th</sup> Industrial Revolution



- Progressive Government
  - National Telecom M2M roadmap published a year ago
  - Paving the road forward with Smart Cities initiative
- Technology exists
  - Cloud infra enables small enterprises
  - OneM2M for aligning service and data access
- Technology interested citizens
  - Passion for new things
  - Open to change
  - All to win

Time to connect the devices, and use them!



SMART CITY **JAIPUR**



SmartCity  
**Kochi**



Smart City  
**GANDHINAGAR**



SMART CITY  
**GWALIOR**

Thank you for your  
attention

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DOMBIVLI**

A SMART CITY FOR ALL



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Building a  
Smart India