

Smart-Cities and Cloud Computing

Toward Smart Society and the 4th Industrial Revolution

Panel Discussion

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Leader, The ISO Linux Standard Implementation Study Group

2017. 2. 23

Smart-Cities and Cloud Computing

❖ Smart-Cities

- ❖ IoT & Smart Devices: Embedded systems
- ❖ Smart Home, Smart Town, Smart Village, Smart Country

❖ Cloud computing

❖ Smart Society

❖ The 4th Industrial Revolution

The Smart City Consortium for Seoul

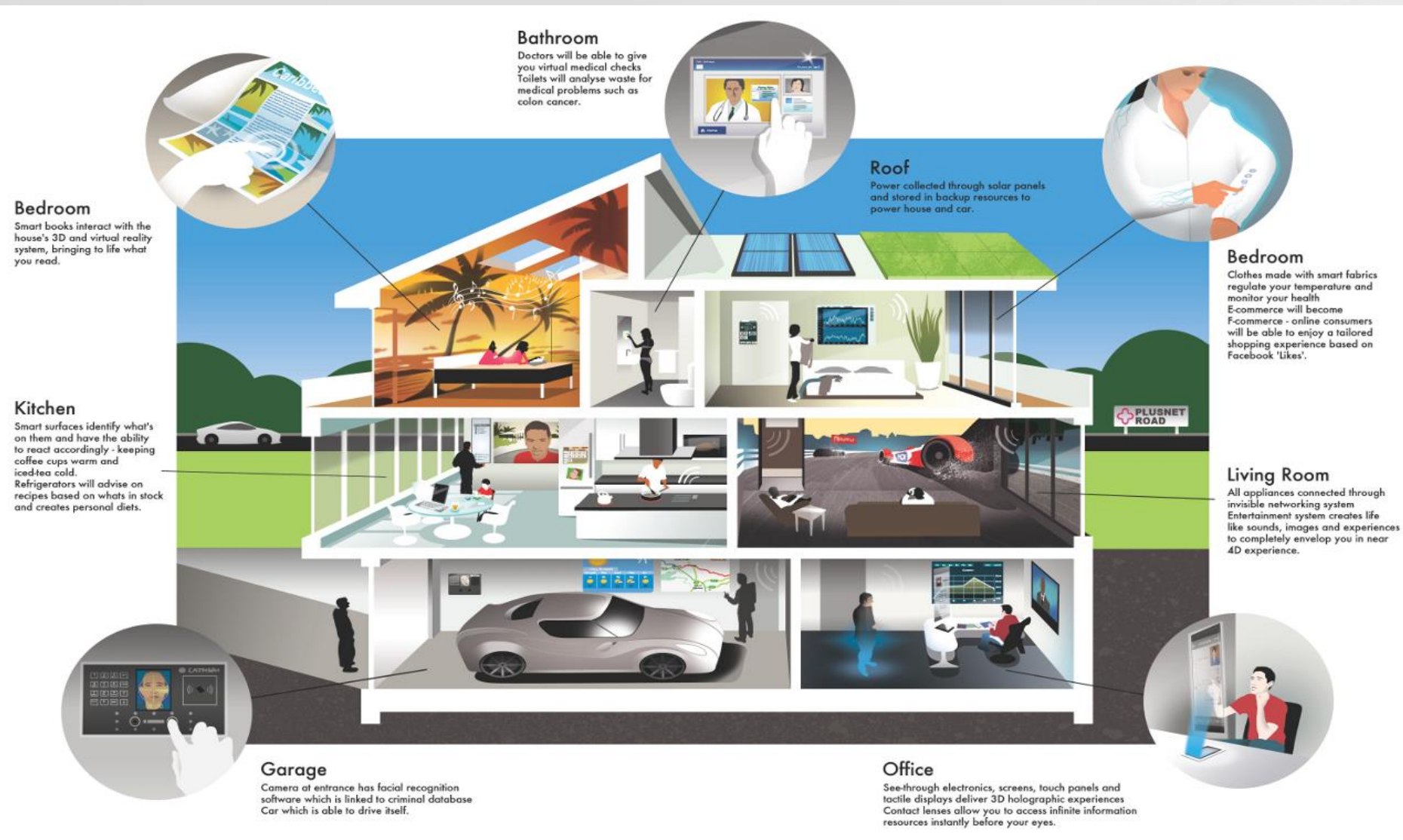
- ❖ **R&D for The Intelligent (Smart) Cities based on IoT and ubiquitous Cities.**
- ❖ **LG-CNS, SK-Telecom, Small Companies as well**
- ❖ **Seoul Metropolitan Government,**
- ❖ **Many universities,**
- ❖ **Research organizations, etc.**
- ❖ **Since 2002, Digital Media City.**
- ❖ **Over 20 million U.S. Dollars for R&D since 2005.**

Cf. The Eco U-City Consortium by Korean Ministry of Land and Traffic Management.

- * **Focused on real construction and testbeds.**
 - * **Fund over 300 million U.S. Dollars.**
 - * **Since 2007, operational.**
-
- * **Over 100 cases throughout Korea.**

Smart-Cities

Smart House



Smart Village, Smart Town



The Smart-City based on the ubiquitous city.



Smart Korea, Smart World, Smart Universe.



Smart-Cities

- A future city.
- **Based on Internet of Things (IoT).**
 - Smart devices.
- Based on super-connection.
 - Based on ubiquitous computing.
- Being smart for smart services.
- Cloud computing.
- Security.
-

What is being smart?

- ❖ Human like?
- ❖ Or, more than human beings?

- ❖ The same ways as the human beings do?
- ❖ Or, different ways?
 - See, airplanes, cars,

- ❖ The AlphaGo vs. LEE Se-Dol's five go-matches.

The AlphaGo vs. LEE Se-Dol's five go-matches

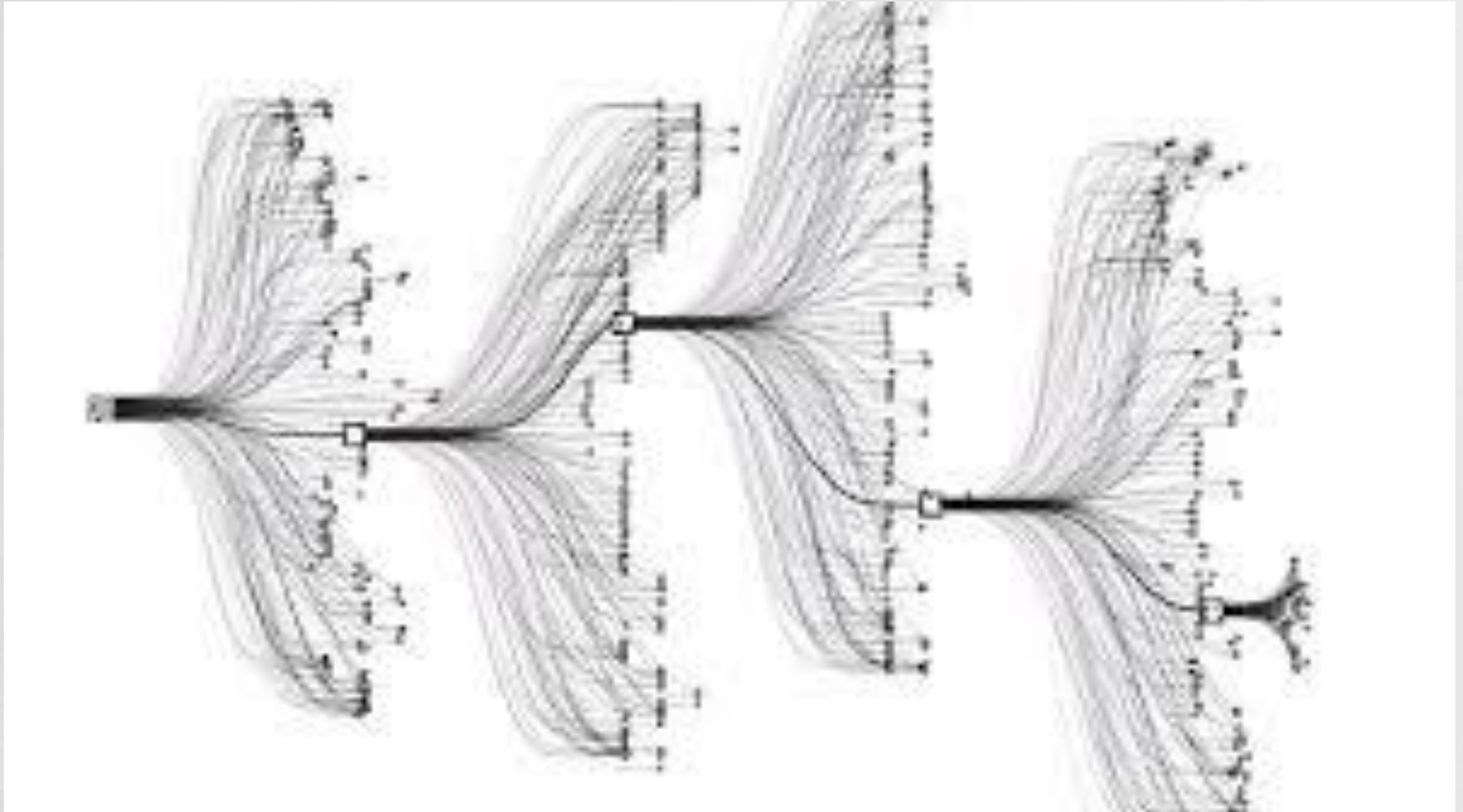
- ❖ Google DeepMind (vs. IBM Big Blue for chess.)
- ❖ 4 to 1 results.
- ❖ Machine learning with tree search techniques
- ❖ Deep Neural Network.
- ❖ The Monte Carlo Algorithm
- ❖ XILINK's FPGA & NVIDIA's GPU, not DRAM.
- ❖ 3000 cpus
- ❖ 264 Tflops



The AlphaGo vs. LEE Se-Dol's five go-matches



The AlphaGo machine learning with neural network



Smart Devices



Smart cars

Google driving to be driverless

Google's modified Toyota Prius uses an array of sensors to navigate public roads without a human driver. Other components, not shown, include a GPS receiver and an inertial motion sensor.

Laser-guided mapping

A rotating sensor with lasers called a LIDAR on the roof scans more than 200 feet in all directions to generate a precise three-dimensional map of the car's surroundings.

Video camera



A camera mounted near the rear-view mirror detects traffic lights and helps the car's onboard computers recognize moving obstacles—such as pedestrians and bicyclists.



Position estimator

A sensor mounted on the left rear wheel measures small movements made by the car and helps to accurately locate its position on the map.



Radar

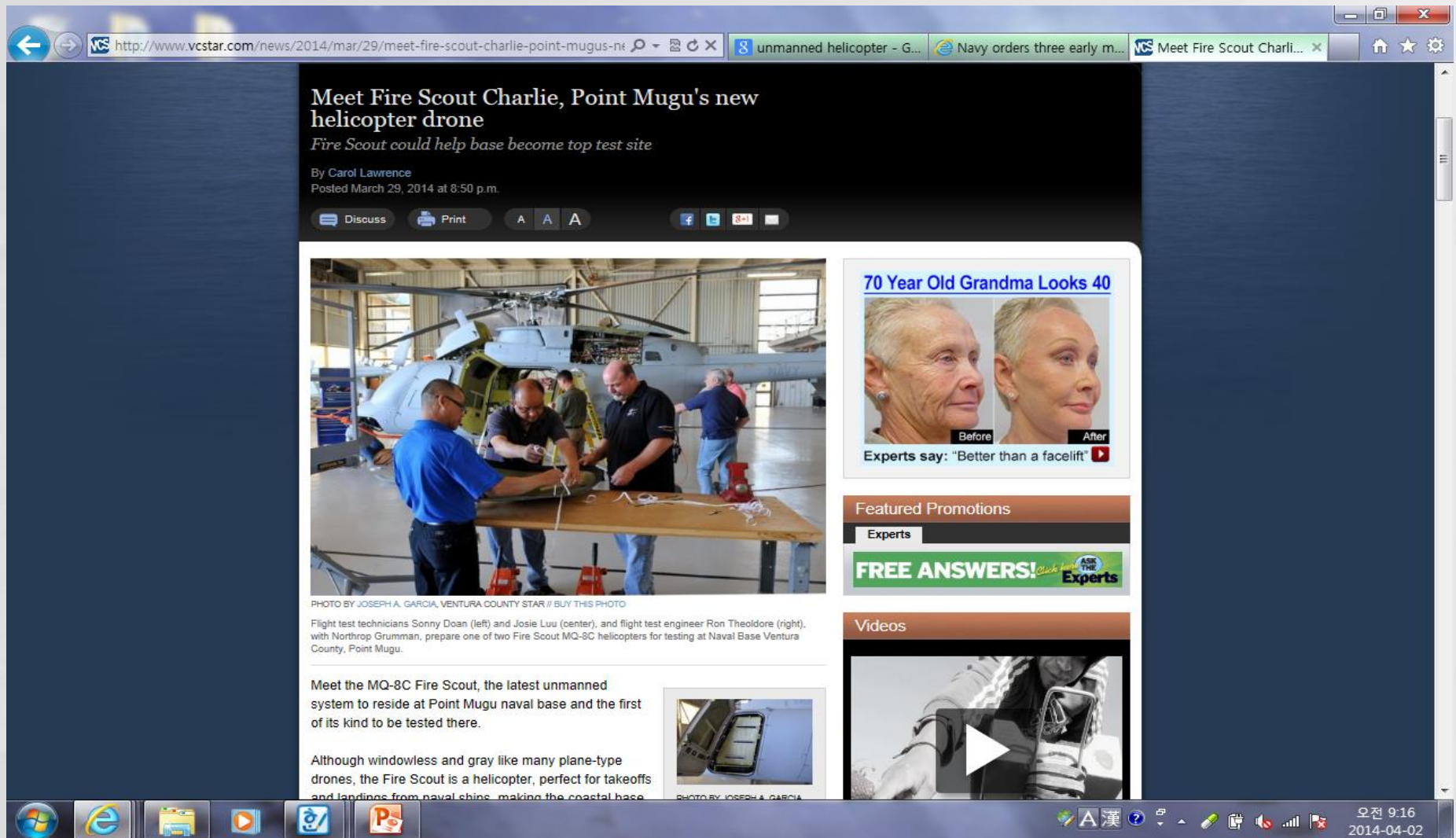
Four standard automotive radar sensors, three in front and one in the rear, help determine the positions of distant objects.



Source: Google

NEW YORK TIMES; PHOTOGRAPHS BY RAMIN RAHIMIAN FOR THE NEW YORK TIMES

Unmanned Helicopter Drone



The screenshot shows a web browser window displaying a news article from the Ventura County Star. The article is titled "Meet Fire Scout Charlie, Point Mugu's new helicopter drone" and is subtitled "Fire Scout could help base become top test site". It is written by Carol Lawrence and posted on March 29, 2014, at 8:50 p.m. The article features a large photograph of technicians working on a Fire Scout helicopter in a hangar. To the right of the main article, there is a sidebar with a "70 Year Old Grandma Looks 40" article, a "Featured Promotions" section with a "FREE ANSWERS!" offer, and a "Videos" section with a video player showing a person in a flight suit. The browser's address bar shows the URL "http://www.vcstar.com/news/2014/mar/29/meet-fire-scout-charlie-point-mugu-n...", and the Windows taskbar at the bottom shows the date as "오전 9:16 2014-04-02".

Meet Fire Scout Charlie, Point Mugu's new helicopter drone

Fire Scout could help base become top test site

By Carol Lawrence
Posted March 29, 2014 at 8:50 p.m.

Discuss Print A A A

PHOTO BY JOSEPH A. GARCIA, VENTURA COUNTY STAR // BUY THIS PHOTO

Flight test technicians Sonny Doan (left) and Josie Luu (center), and flight test engineer Ron Theoldore (right), with Northrop Grumman, prepare one of two Fire Scout MQ-8C helicopters for testing at Naval Base Ventura County, Point Mugu.

Meet the MQ-8C Fire Scout, the latest unmanned system to reside at Point Mugu naval base and the first of its kind to be tested there.

Although windowless and gray like many plane-type drones, the Fire Scout is a helicopter, perfect for takeoffs and landings from naval ships, making the coastal base

PHOTO BY JOSEPH A. GARCIA

70 Year Old Grandma Looks 40

Before After

Experts say: "Better than a facelift"

Featured Promotions

Experts

FREE ANSWERS! Ask The Experts

Videos

오전 9:16 2014-04-02

Drones & robots

http://finance.yahoo.com/blogs/daily-ticker/not-so-crazy-for-facebook-and-google-... | google drone - G... | techtimes.com | Google and Face... | Why it's not s...

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Unexpected Returns
The Exchange
Hot Stock Minute
Just Explain It
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Featured
Currency Converter
Mortgages
Taxes

Scottrade
Get Up To \$1,000
See Details

The Daily Ticker

Why it's not so crazy for Facebook and Google to pursue drones, robots and more

By Aaron Pressman
11 hours ago
Daily Ticker

Sponsored by Scottrade

Y + X t f t w e

0:16

YAHOO! FINANCE

The Daily Ticker covers the most important business stories of the day -- the economy, investing, corporate leadership and politics. The Daily Ticker is hosted by Aaron Task, Henry Blodget and Lauren Lyster. Often serious, sometimes irreverent and always interesting, The Daily Ticker gives viewers a unique take on the business world's most crucial stories.

Top Stories

- CEO Barra calls GM's actions on deadly defect 'unacceptable'
- S&P 500 closes at record after manufacturing data
- Caterpillar defends taxes attacked by U.S. Senate Democrat
- Watch the fight that stopped trading at the NYSE
- Facebook's Mark Zuckerberg earns \$1 salary in 2013

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오전 9:21
2014-04-02

Smart Robots



Smart Robots



Smart OS - CHAPPIE



Smart OS – Big Hero 6



Smart-Cities

- **Based on Internet of Things (IoT).**
 - Smart devices

Internet of Things (IoT): Internet of Everything (IoE)

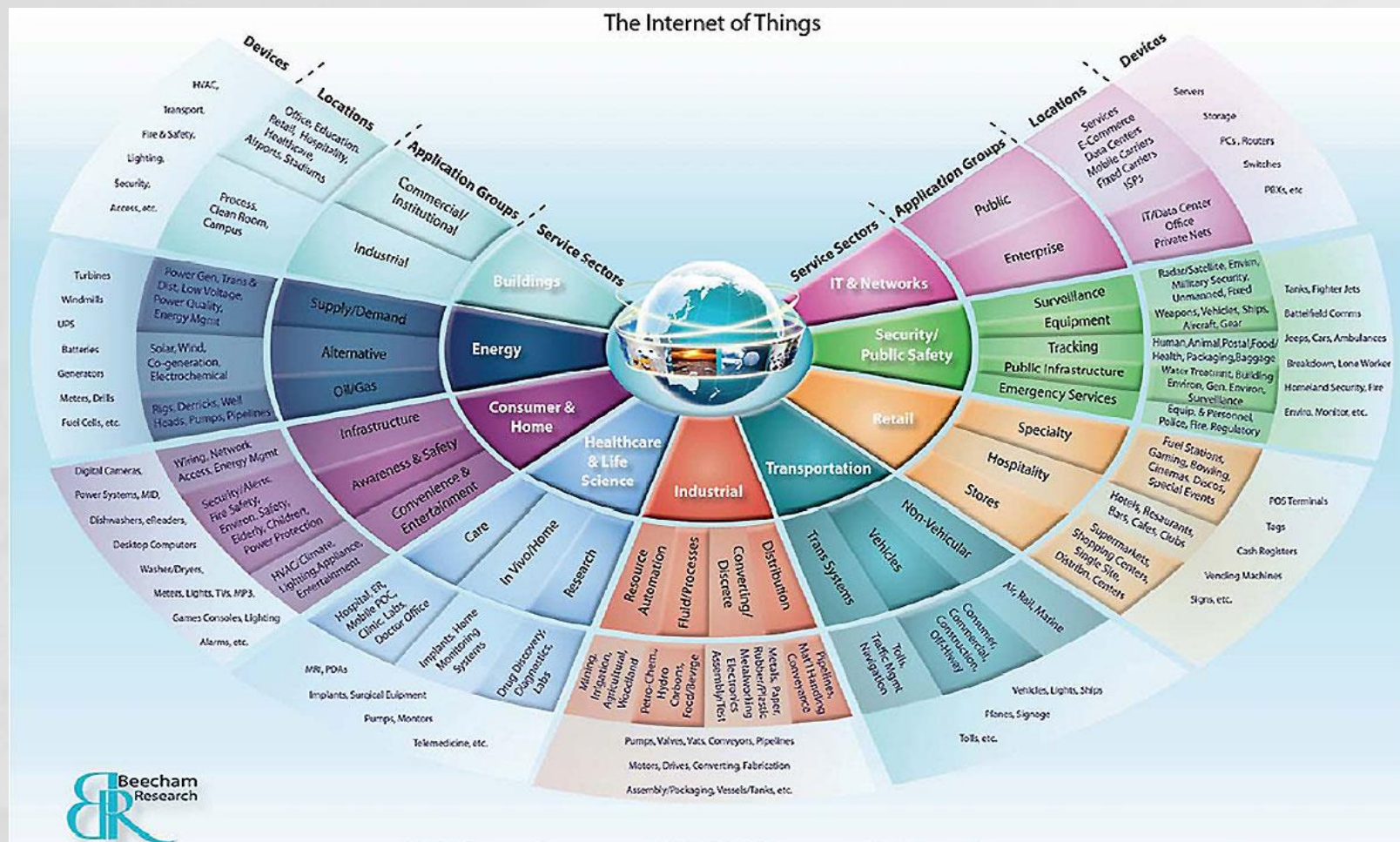
IoE

- The **Internet of Things (IoT)** refers to uniquely identifiable objects and their virtual representations in an Internet-like structure.
- Smart Device + Virtual Representations

IoE

- Companies and organizations explain the Internet of Things in various ways, but the Internet of Things, or IoT, is most commonly described as an ecosystem of technologies monitoring the status of **physical objects**, capturing meaningful data, and communicating that information through IP networks to software applications.
- The recurring themes in all definitions of the Internet of Things include **smart objects**, machine to machine communication, RF technologies, and a central hub of information.
- See more at <http://blog.atlasrfidstore.com/internet-of-things-and-rfid#sthash.maX6z58Z.dpuf>

Cisco & Beecham Research



IoT by iStockphoto/chris_lemmens

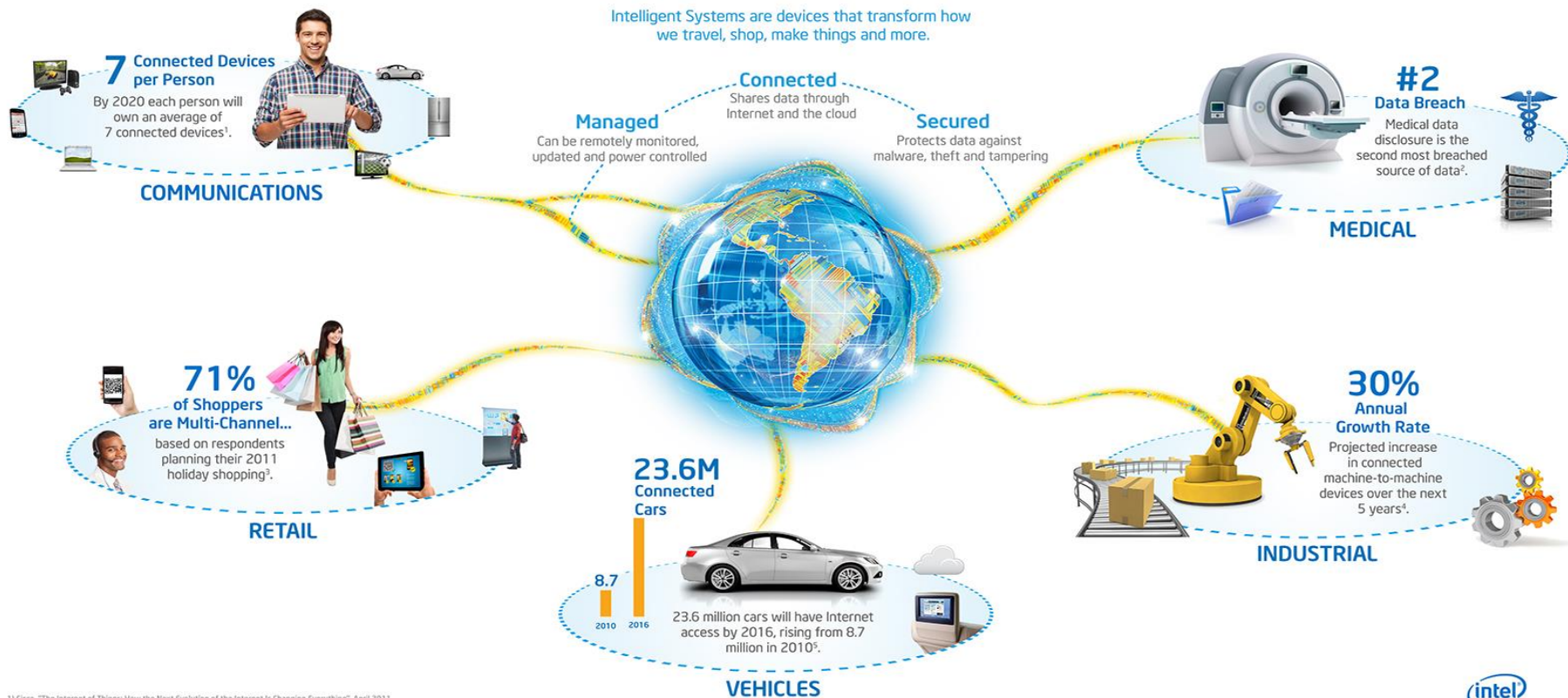


IoE by Intel

Intelligent Systems for a More Connected World

WHAT ARE INTELLIGENT SYSTEMS?

Intelligent Systems are devices that transform how we travel, shop, make things and more.



1) Cisco, "The Internet of Things: How the Next Evolution of the Internet is Changing Everything", April 2011
 2) Bloor Research, "Security challenges in the US healthcare sector" White Paper, December 2010, <http://www.mcfee.com/us/resources/white-papers/wp-bloor-healthcare-security.pdf>
 3) Deloitte U.S., 2011 Annual Holiday Survey, http://www.deloitte.com/assets/Content-Unit/Assets/Documents/Consumer%20Business/us_retail_AnnualHolidaySurvey_2011_pr_102611.pdf
 4) McKinsey Global Institute analysis, "Big data: The next frontier for innovation, competition, and productivity", June 2011
 5) Wall Street Journal, <http://online.wsj.com/article/SB10001424052702304066504576349763614933844.html>, estimate from research firm, Frost & Sullivan

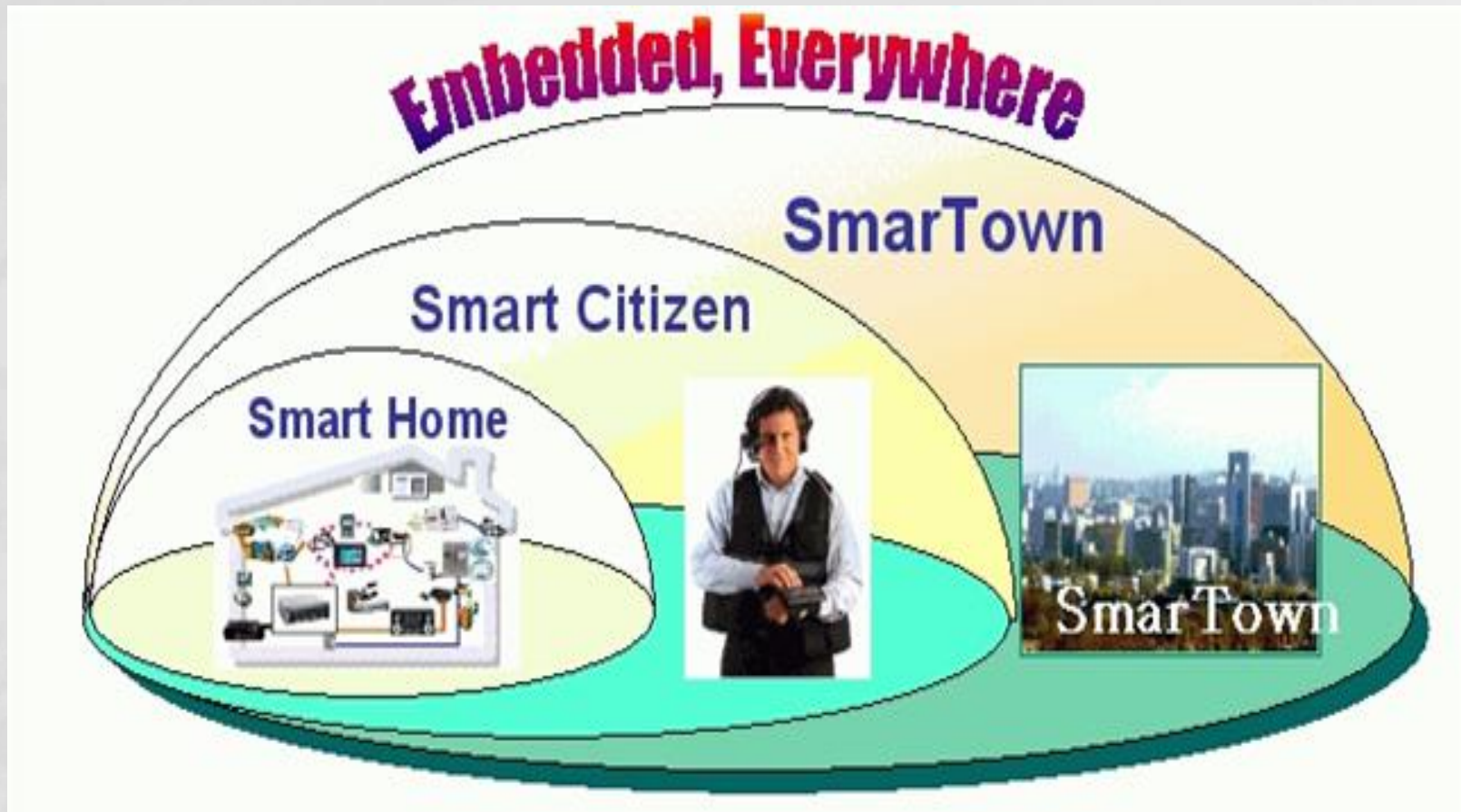
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Smart Devices.



The Smart Society

We need smart devices for it.



Internet of Things / Everything

- The Internet of Things (IoT) is the network of physical objects—devices, vehicles, buildings and other items—embedded with electronics, software, sensors, and network connectivity that enables these objects to collect and exchange data. - wiki.

Internet of Things / Everything

"Internet of Things Global Standards Initiative". ITU.
Retrieved 26 June 2015.

- The Global Standards Initiative on Internet of Things (IoT-GSI) concluded its activities in July 2015 following TSAG decision to establish the new Study Group 20 on "IoT and its applications including smart cities and communities".
- All activities ongoing in the IoT-GSI were transferred to the SG20. For more information see SG20 webpage or contact tsbsg20@itu.int.

Internet of Things / Everything

- IoT-GSI aimed to promote a unified approach in ITU-T for development of technical standards (Recommendations) enabling the Internet of Things on a global scale.
- ITU-T Recommendations developed under the IoT-GSI by the various ITU-T Questions - in collaboration with other standards developing organizations (SDOs) – will enable worldwide service providers to offer the wide range of services expected by this technology.
- IoT-GSI also aimed to act as an umbrella for IoT standards development worldwide.

Internet of Things / Everything

- The Internet of Things (IoT) has been defined in Recommendation ITU-T Y.2060 (06/2012) as a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies.

Internet of Things / Everything

ITU-T SG20: IoT and its applications including smart cities and communities (SC&C) - Windows Internet Explorer

http://www.itu.int/en/ITU-T/studygroups/2013-2016/20

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About ITU-T Study Groups Events All Groups Join ITU-T Standards Resources Workshops Regional Presence

ITU-T SG20: IoT and its applications including smart cities and communities (SC&C)

YOU ARE HERE HOME > ITU-T > STUDY GROUPS > STUDY PERIOD 2013-2016 > SG20: IOT FOR SMART SUSTAINABLE CITIES SHARE

Contact

SG20 at a glance

Mandate and lead roles

Structure

Questions under study

Management team

MEETINGS IN FOCUS

Next meeting:
Geneva, 25 July - 5 August 2016

- Announcement - Registration
- Draft agenda
- Draft time plan
- Remote participation
- Webcasts

MEETING DOCUMENTS

- Recently posted | Search
- Documents [All Docs - Cs - TDs - LS In - LS Out]
- Informal documents on ITU-T SG20 SharePoint
- Direct Document Posting

Documentation Tools

- Introductory presentation on SG20 [English] [French] [Arabic]
- Circulars related to SG20
- Collective letters
- All contributions
- Reports
- Liaison statements database:

시작

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2016-03-17

Internet of Things / Everything



Forum on Internet of Things in Smart Sustainable Cities: A New Age of Smarter Living - Windows Internet Explorer

http://www.itu.int/en/ITU-T/Workshops-and-Seminars, Internet o... Forum... x ITU-T S... Internet o...

Singapore, 18 January 2016

Contact: greenstandard@itu.int

FORUM ON INTERNET OF THINGS IN
Smart Sustainable
Cities: A New Age of
Smarter Living

Singapore, 18 January 2016

Hosted by: **iDA** INFOCOMM DEVELOPMENT AUTHORITY OF SINGAPORE

Organiz 

Introduction

Internet of Things (IoT) is a paradigm which includes a widespread "smart" environment of devices or things, connected via wireless and wired connections. This net "things" is designed to provide an exemplary medium within which the components are able to interact with each other and coordinate with other things or devices to services with the aim of improving the overall quality of life (QoL).

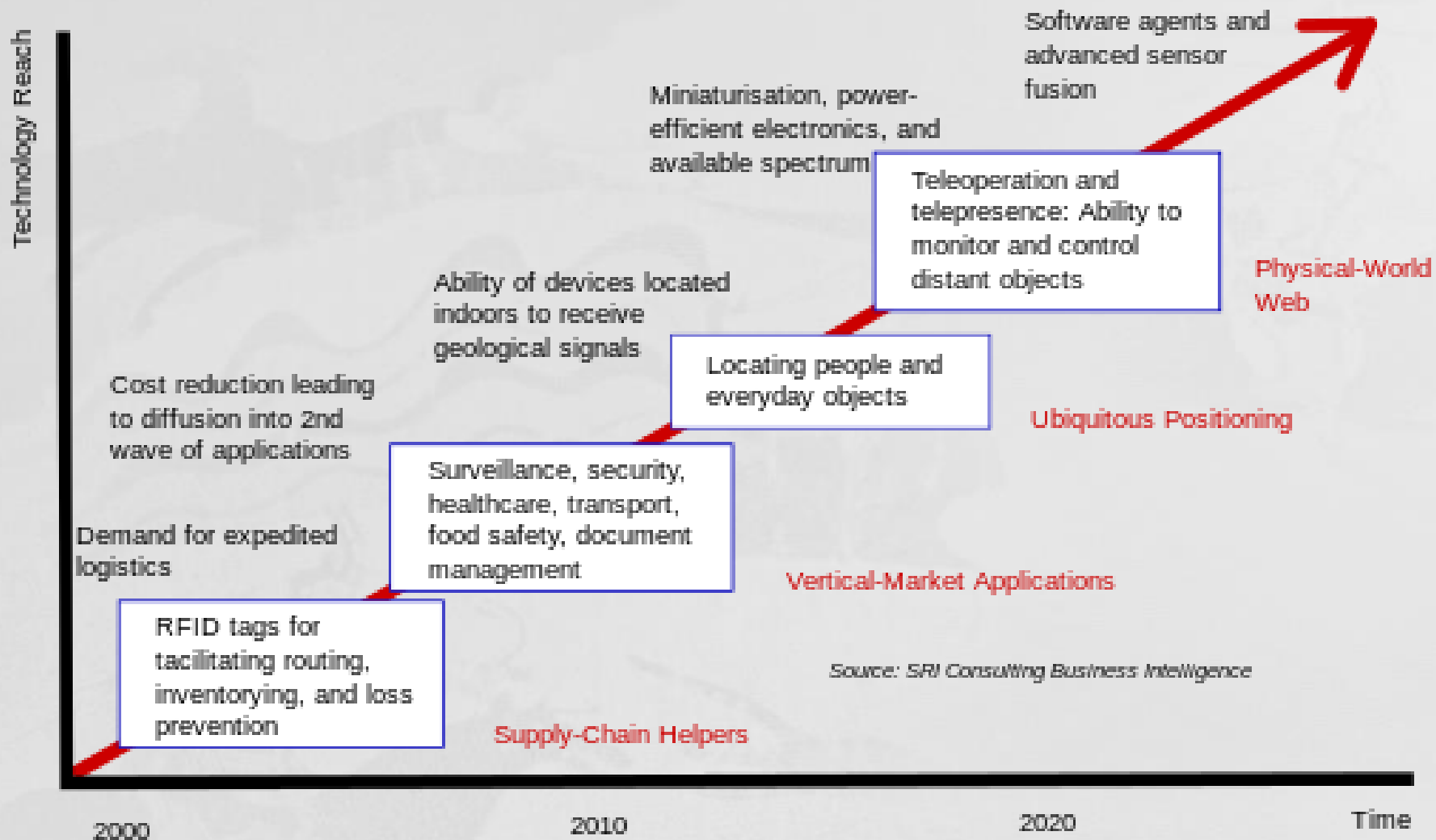
The role of the urban stakeholder is pivotal for IoT deployment. Everyday urban operations and creation of development strategies are expected to drive the implem the IoT. In this regard, cities present an ideal platform for IoT research, based on urban needs and subsequently imbibing them into solutions presented by IoT.

The Forum was held in conjunction with the ITU-T Study Group 20 "IoT and its applications including smart cities and communities (SC&C)" that took place from 18

시작        오후 8:11
2016-03-17

Internet of Things / Everything

Technology roadmap: The Internet of Things



Internet of Things / Everything

IoT platforms

Platform based approaches.

Smart-Cities

- Based on super-connection.

Based on super-connection Super connected cities

- Everything connected.
 - Integrated devices.
 - Compound connection including mobile comm.

Very high speed communication - Mobile computing

- Anywhere, anytime & any device (3A).
 - 5th Generation : 50 Giga-bps speed.
 - Toward Tera-bps.
 - Giga Korea soon.
 - 2018 in PyungChang Winter Olympic Game in Korea.

5 G Mobile computing

WMC Barcelona 2016.2



5 G Mobile computing

WMC Barcelona 2016.2

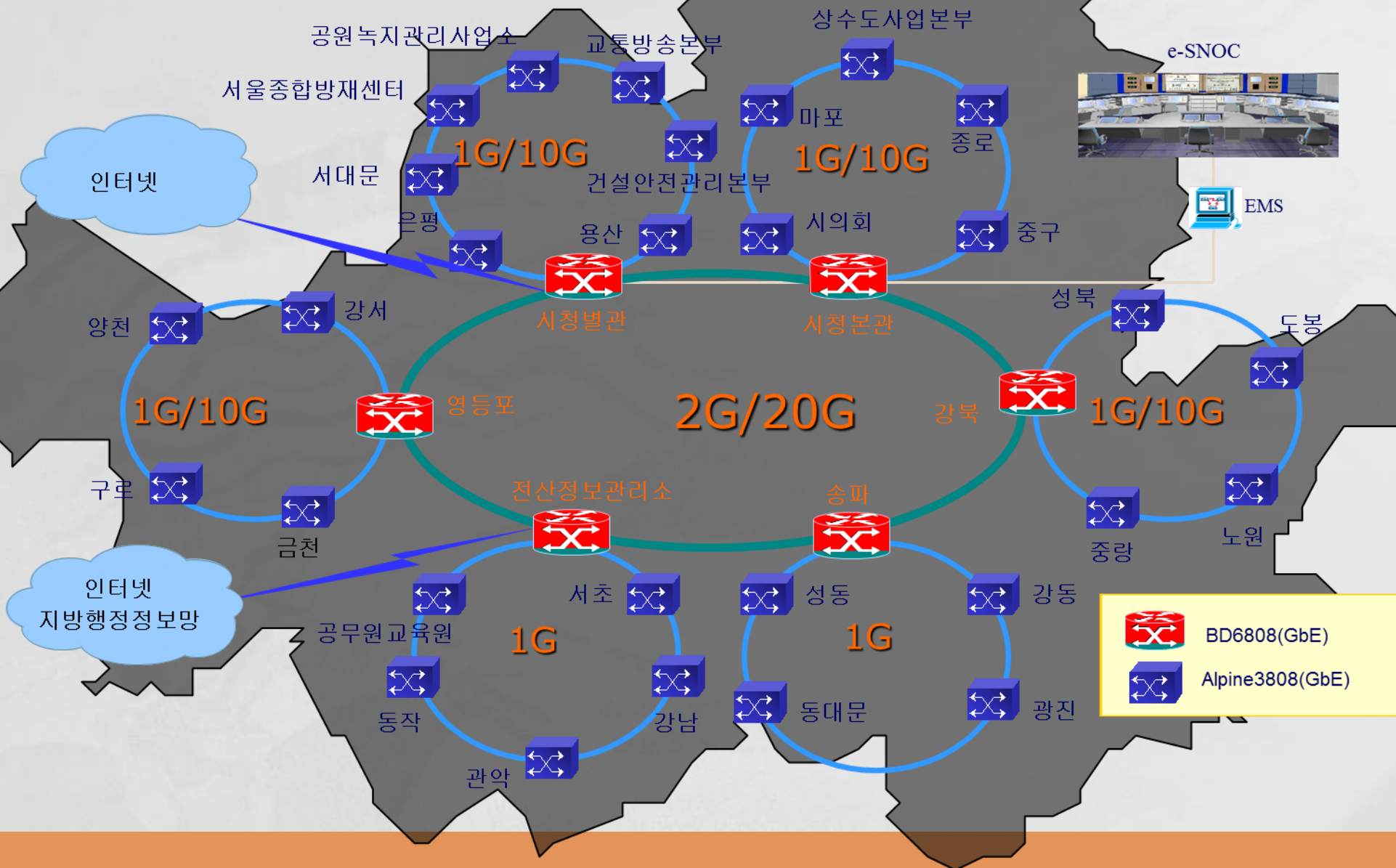


5 G Mobile computing

WMC Barcelona 2016.2



2011 Seoul U-City Network for Cloud & Ubiquitous Computing



The Concept of the Smart-City based on the ubiquitous city..

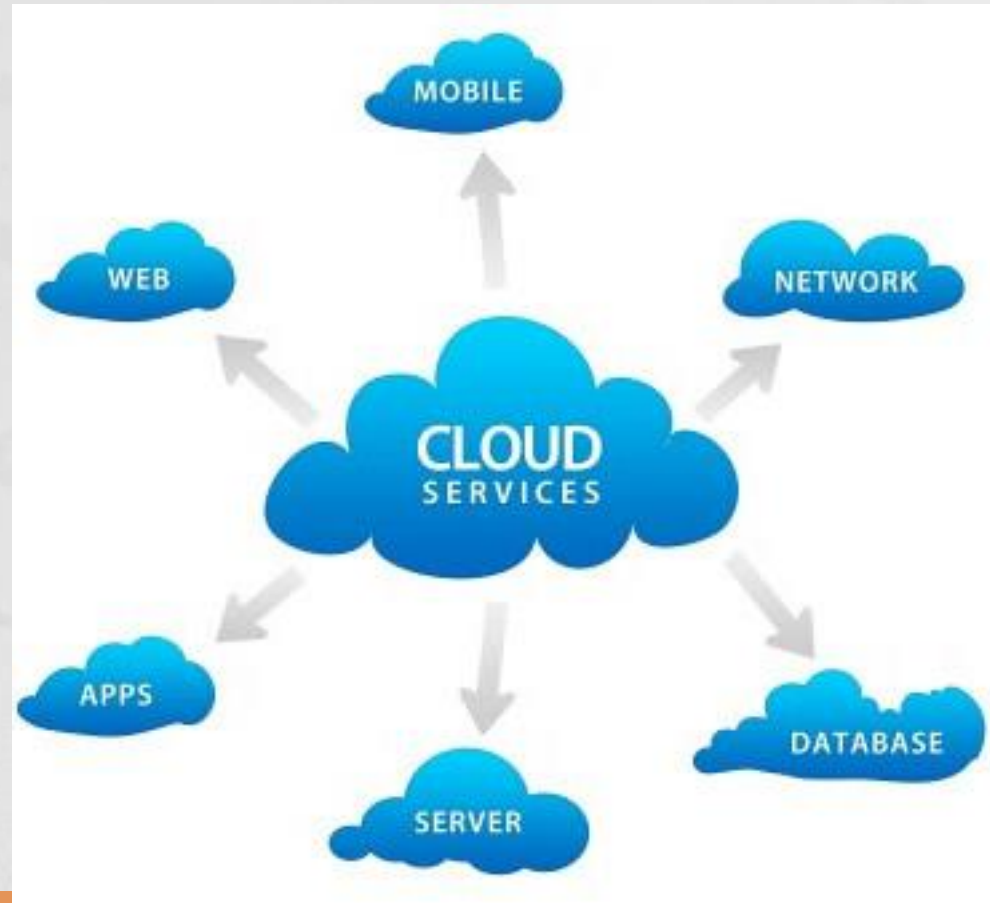


Smart-Cities

- Cloud computing
 - Big data management.
 - Unlimited computing power provided flexibly.
 - Flexible Software sharing.
 - Cooperation.
 - Seamless system integration

Cloud Computing

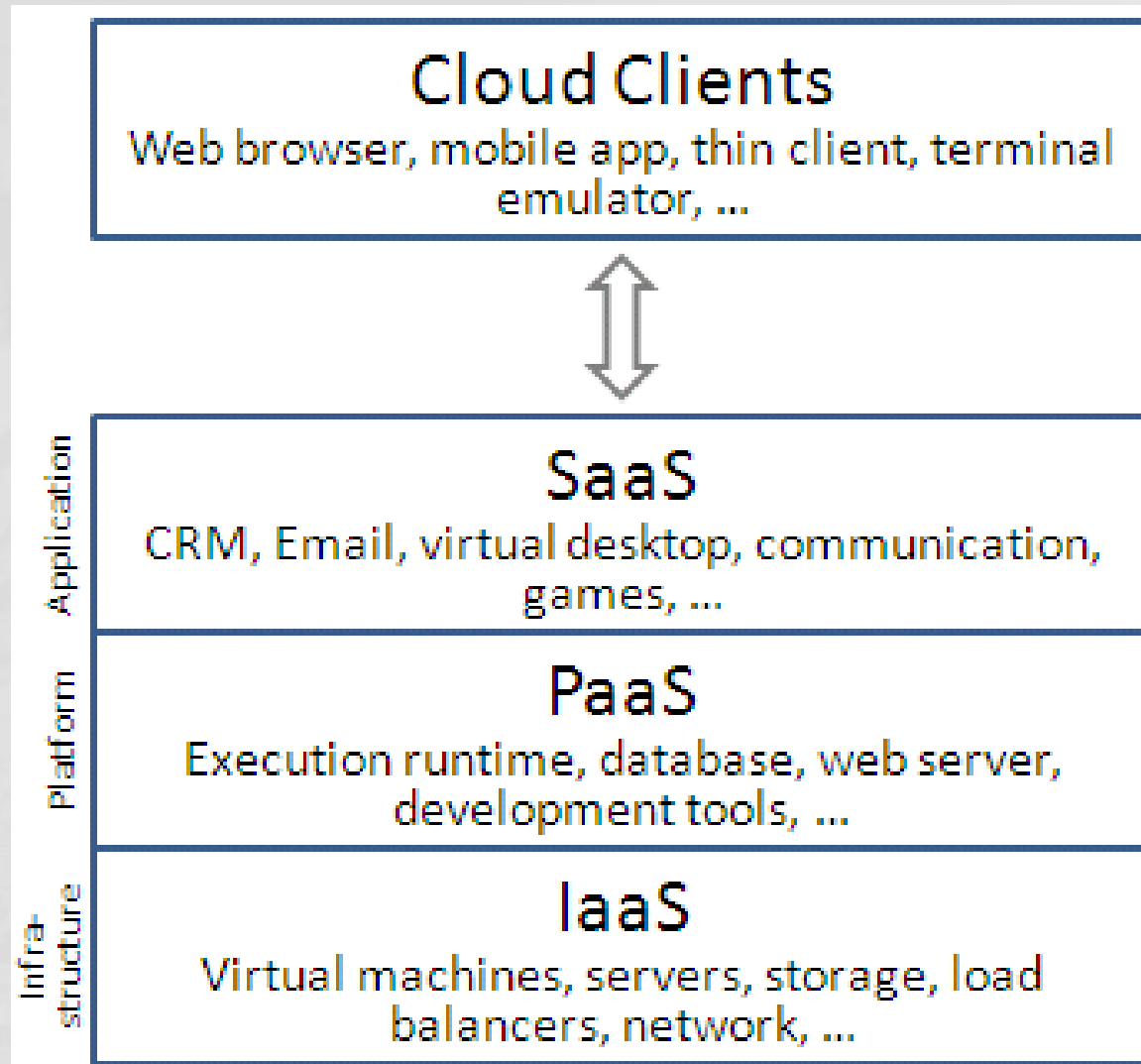
- Essential for smart devices in IoT/IoE and smart-cities.



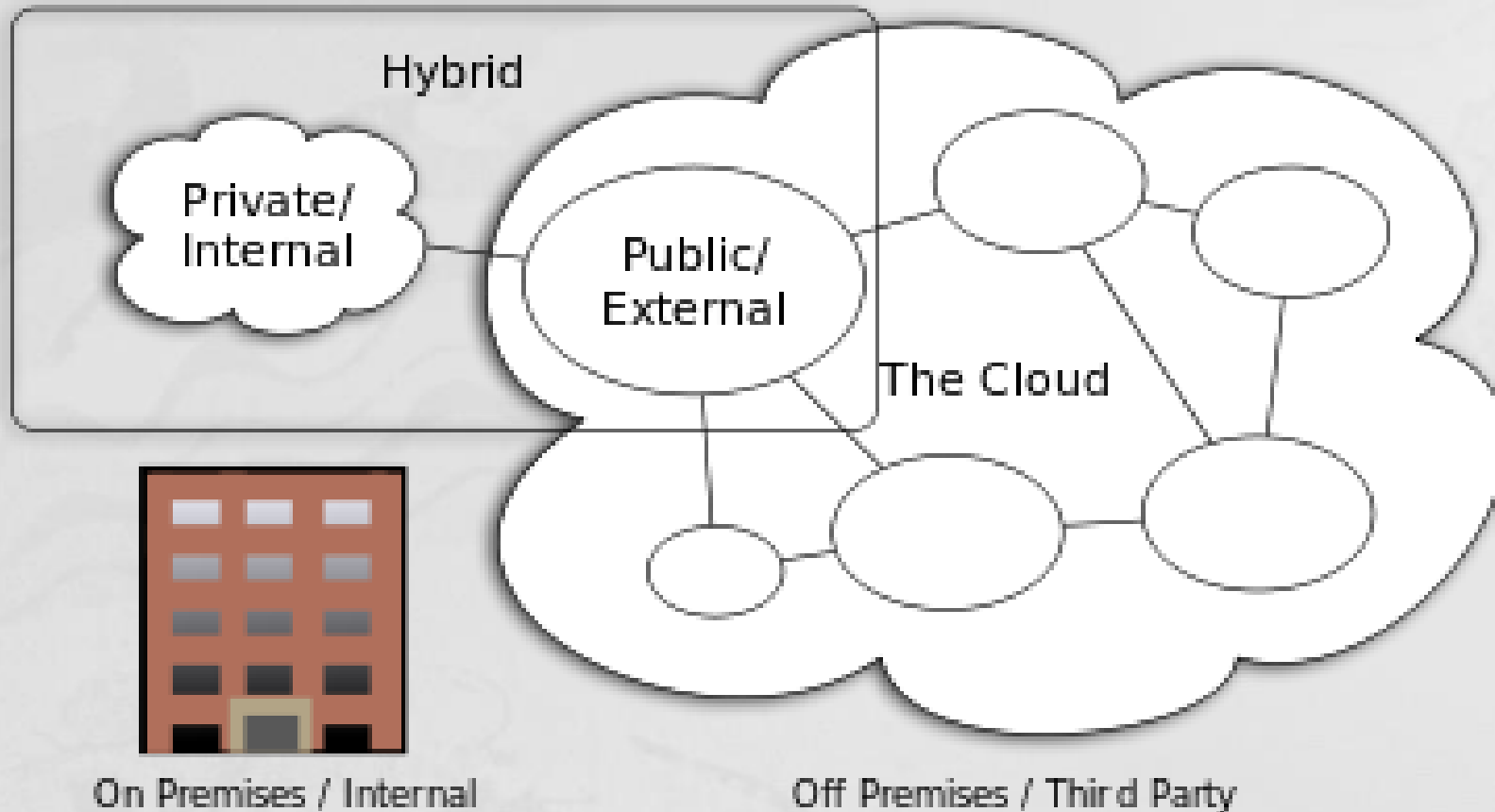
Cloud Computing

- The smart city really needs cloud computing as one of the basic components.
- Cloud computing can show its usefulness in the smart city.

Cloud Computing

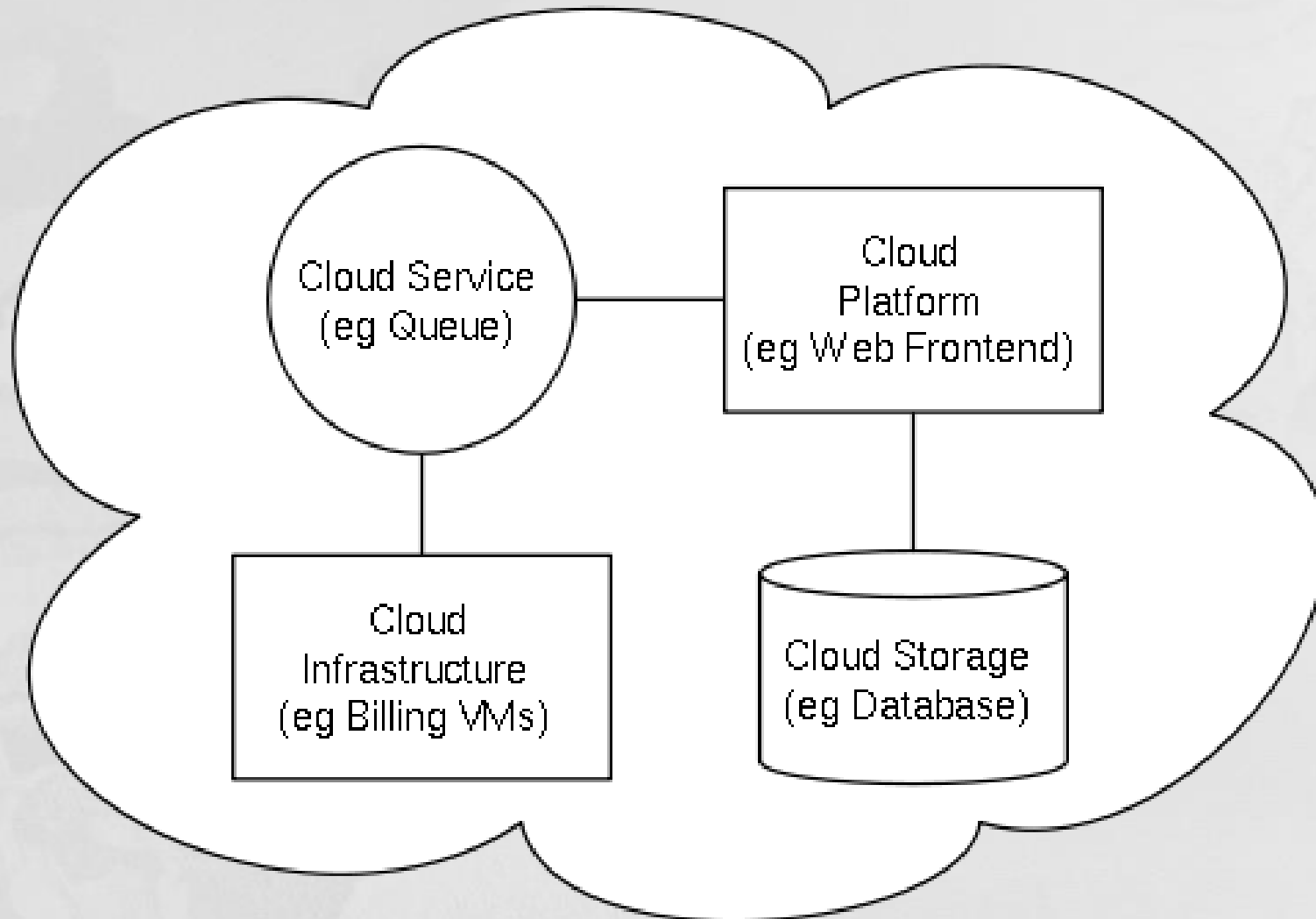


Cloud Computing



Cloud Computing Types

Cloud Computing



Who works for cloud standards?



The Smart City & Internet of Things & E-government & Mobile computing & Cloud Computing

서울시 IT 콤플렉스



- Requires limitless computing power : IaaS.
- Various software in mobile devices : SaaS.
- Smart city deals with huge volumes of data usually and a wide range of data in real time mode usually.
- Human beings are a factor.

서울시 IT 콤플렉스 **The Seoul IT Complex**
to manage Cloud Computing & Ubiquitous Computing



세계도시 서울의 IT 미래

Seoul IT Complex to manage Cloud Computing & Ubiquitous Computing



Thanks you!