



Orchestrating Internet-of-Things (IoT), Smart Devices, Open-source Software, Cloud Computing and Standards for a Smart-City

Tutorial

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Orchestrating IoT, ..., for a smart city.

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Orchestrating Internet-of-Things (IoT), Smart Devices, Open-source Software, Cloud Computing and Standards for a Smart-City.

❖ IoT.

- Definition.
- Platform based approaches.
- High speed communication – 3G, 4G, 4G LTE, LTE-A, 5G,

❖ Smart Device.

- Embedded systems.

❖ Open source software.

- Linux.

❖ Cloud computing.

❖ Standard.

❖ Smart city.



The Smart City Consortium for Seoul

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

Cf. 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.**

**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

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

- “Through the exploitation of identification, data capture, processing and communication capabilities, the IoT makes full use of things to offer services to all kinds of applications, whilst ensuring that security and privacy requirements are fulfilled.”
- “From a broader perspective, the IoT can be perceived as a vision with technological and societal implications.”

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

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

ITU Committed to connecting the world

What would you like to search for?

ITU General Secretariat Radiocommunication Standardization Development ITU Telecom Members' Zone

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

Webcasts

MEETINGS IN FOCUS

Next meeting:
Geneva, 25 July - 5 August 2016

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

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

오후 8:10 2016-03-17

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

● Is the IoT Really ‘Internet of Sensors’?

❖ May 8, 2015 by George Leopold

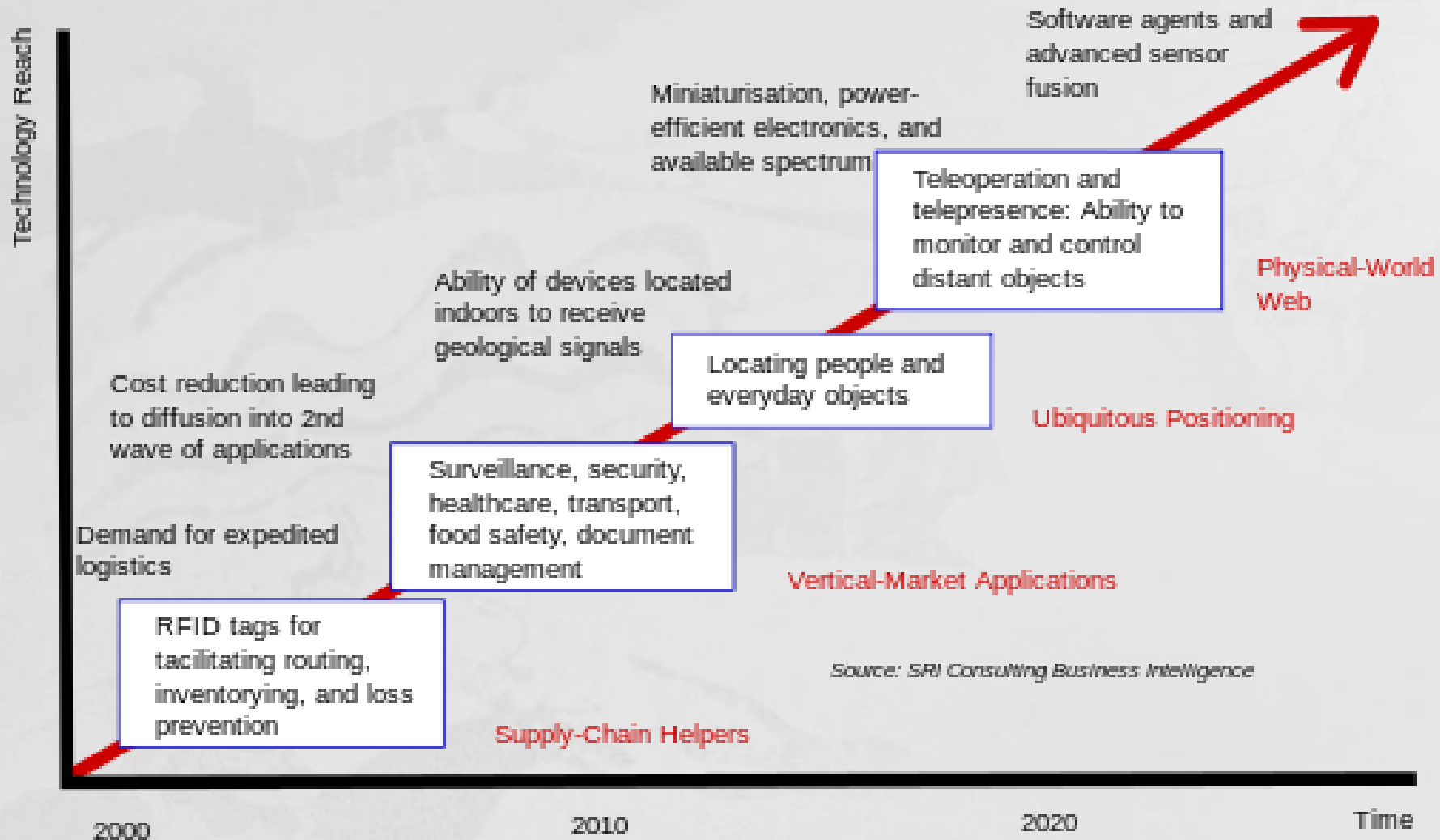
- ❖ “A contrarian view of the conceptual framework known as the Internet to Things asserts that it should really be called the Internet of Sensors. “Companies that embrace the IoS and not the IoT will be the winners in the connected world,” claims the U.K.-based technology and development organization called The Technology Partnership.”

Internet of Things / Everything

- CGI's UK blog
- <http://www.cgi-group.co.uk/blog/iot-its-more-than-just-connecting-a-sensor>
- IoT – It's more than just connecting a sensor.
- November 9 2015 @10:30 AM

Internet of Things / Everything

Technology roadmap: The Internet of Things



Internet of Things / Everything

IoT platforms

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 Winter Olympic Game in Korea.

What is being smart?

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.
- ❖ 264 Tflops.



The AlphaGo vs. LEE Se-Dol's five go-matches: images from www.



Smart Devices

- * Smart Cars
- * Smart Drones
- * Smart Robots

.....



Open Source Software Standard

- Essential.
- With Samsung, LG, KT, SK, Google,
- With ISO.
- With Linux.

A Linux Standard Project Plan

ISO

Yong Woo LEE, Korea



Cloud Computing

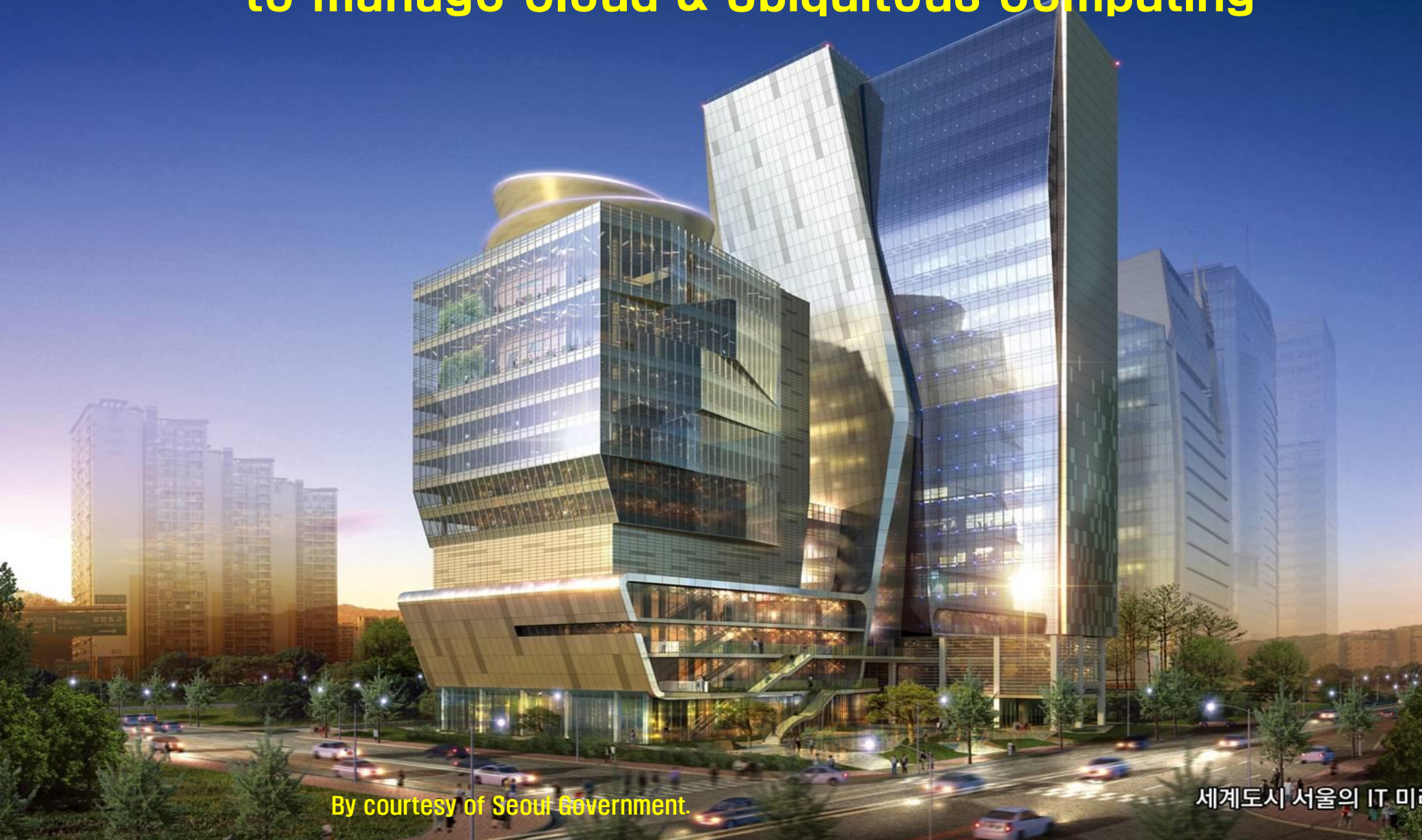
- Essential for smart devices in IoT/IoE.

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.



The Seoul IT Complex to manage Cloud & Ubiquitous Computing



By courtesy of Seoul Government.

세계도시 서울의 IT 미래

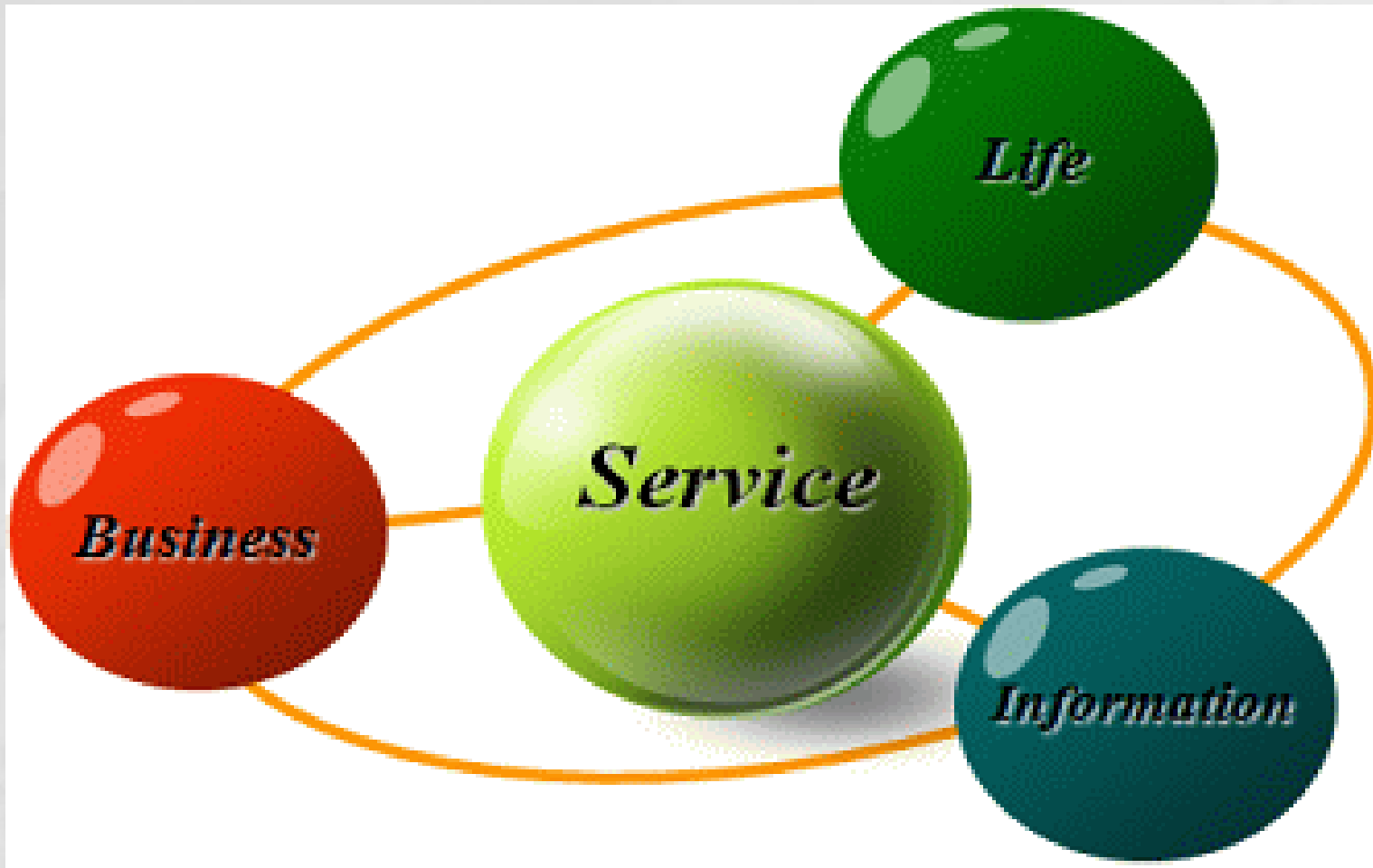


Who works for cloud standards?

What's different?

Ubiquitous city vs. Smart City

The Concept of the Smart-City.



Smart House



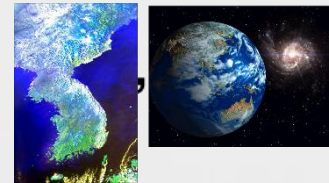
Smart Village Smart Town

The Smart-City based on the ubiquitous city

Smart Korea,
Smart World,
Smart Universe.

e-Government of Korea :

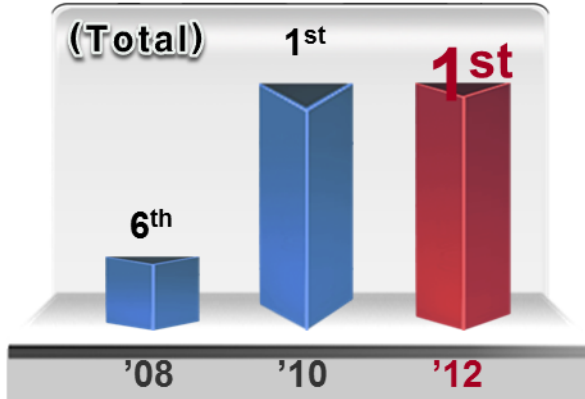
Development Journey and Outcomes



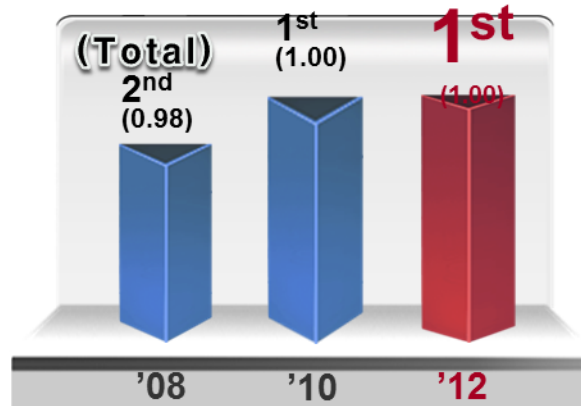
UN e-Government Survey

By courtesy of Korean Government

e-Gov Development Index



Online Participation Index



Level 1

100%

Emerging

- ❖ Limited web presence

Level 2

79%

Enhanced

- ❖ Regularly updated contents and information

Level 3

92%

Transactional

- ❖ Visa, passport, birth records obtained online
- ❖ Taxes & fees paid online

Level 4

87%

Seamless

- ❖ Seamless online service provided by agencies
- ❖ Converged public/civil services

World's Recognitions

By courtesy of Korean Government



Achieving the World's Best e-Government

International Awards



- **KISS** (Immigration)
UN Public Service Award ('07)



- **Invil** (Village)
UN Public Service Awards ('11)



- **KONEPS** (Procurement)
WCIT Global Award ('06)

Model Case Selection



- **HTS** (Tax)
OECD e-Tax Best Practice ('06)



- **e-People** (Petition)
'Online Politics Trophy Top10' ('06)



- **uTradeHub**
'World Advanced' in APEC Report ('05)

International Certifications



- **KIPOnet** (Patent)
WIPO IT Standard ('06)



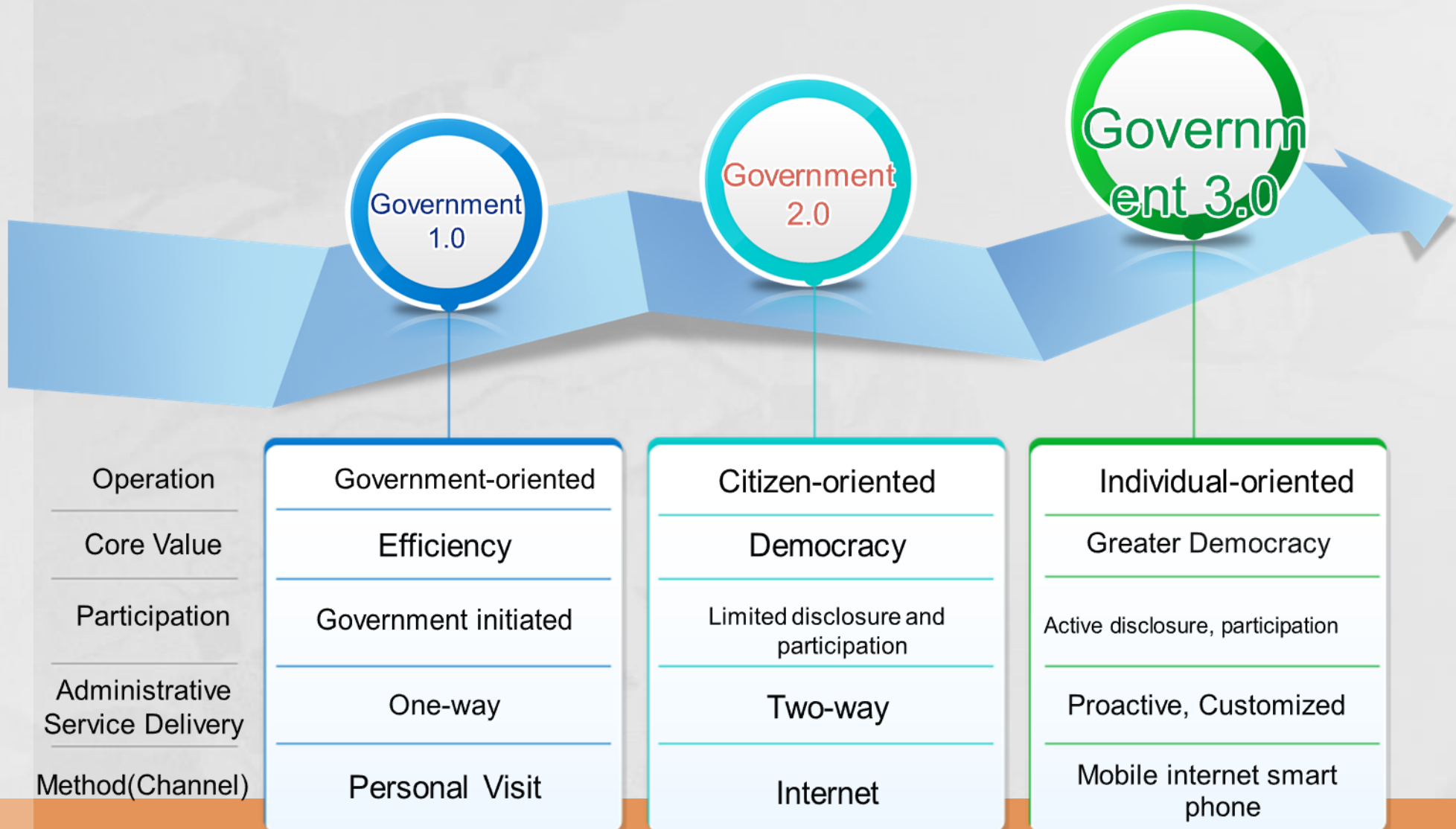
- **UNIPASS** (Customs)
ISO 9001, 20000('06)



- **KONEPS** (Procurement)
UN/CEFACT Int'l Standard ('05)

The evolution of Government

By courtesy of Korean Government





Orchestrating Internet-of-Things (IoT), Smart Devices, Open-source Software, Cloud Computing and Standards for a Smart-City.

- ❖ **IoT.**
- ❖ **Smart Device.**
- ❖ **Open source software.**
- ❖ **Cloud computing.**
- ❖ **Standard.**
- ❖ **Smart city.**

