

# Fujitsu Smart Cities in action

Action cluster business models finance and procurement of the European Innovation Partnership on Smart Cities and Communities. This webinar will be in the framework of the action cluster.

FUJITSU

shaping tomorrow with you

Human Centric Innovation

*Driving Digital Transformation*

- What is a Smart City/Digital Place?
- Analysts view on Japanese developments
- What is the addressable market?
- Fujitsu Focus
  - Assisted living
  - Transport - SPATIOWL Demo
  - Energy
  - Water
  - Artificial intelligence
  - Globoranger (RFID)

# Definitions of a Smart City

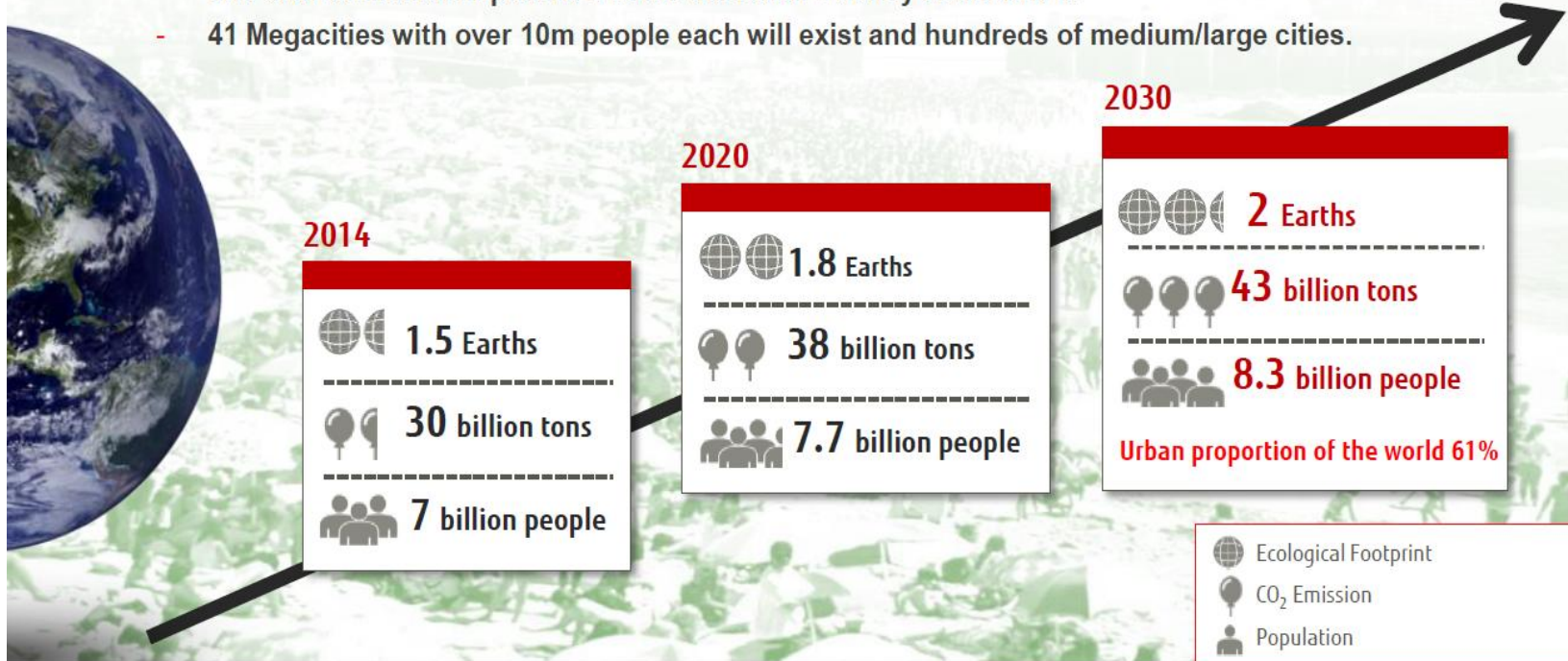
- **BSI:** A city is smart when it displays effective integration of physical, digital and human systems in the built environment to deliver a sustainable, prosperous and inclusive future for its citizens.
- **ISO:** A 'Smart City' is one that..... dramatically increases the pace at which it improves its social economic and environmental (sustainability) outcomes, responding to challenges such as climate change, rapid population growth, and political and economic instability ..... by fundamentally improving how it engages society, how it applies collaborative leadership methods, how it works across disciplines and city systems, and how it uses data information and modern technologies.....in order to provide better services and quality of life to those in and involved with the city now and for the foreseeable future, without unfair disadvantage of others or degradation of the natural environment
- **Japanese Smart Community Alliance :** "A smart community is a community where various next-generation technologies and advanced social systems are effectively integrated and utilized, including the efficient use of energy, utilization of heat and unused energy sources, improvement of local transportation systems and transformation of the everyday lives of citizens."

**A Smart City is one where it's easier to live.**

# The Challenge of Smart Cities

## Global Challenges

- By 2030, the world's population will reach 8.3 billion pushing up the resource demand and environmental impact to 2 times the Earth's ability to absorb it.
- 41 Megacities with over 10m people each will exist and hundreds of medium/large cities.





# Smart Cities Market

## ■ Smart Cities is EMEA-Wide. We have live opportunities in

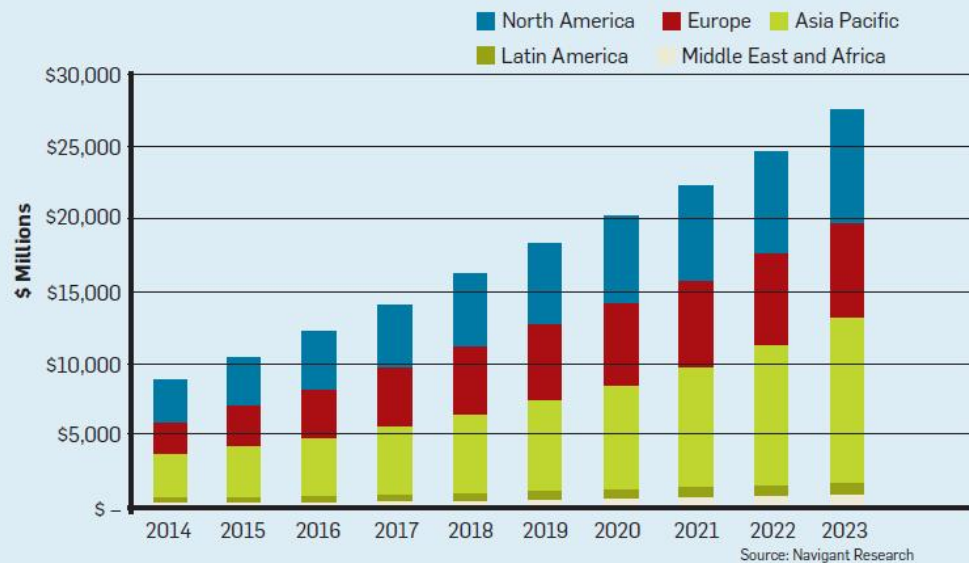
- Poland (Lodz)
- Germany (Heidelberg, Hamburg)
- Spain ( Barcelona, Canary Islands)
- Switzerland (Accenture)
- UK (Greenwich, Aberdeen and others)
- Republic of Ireland

## ■ Smart Cities is Fast IT

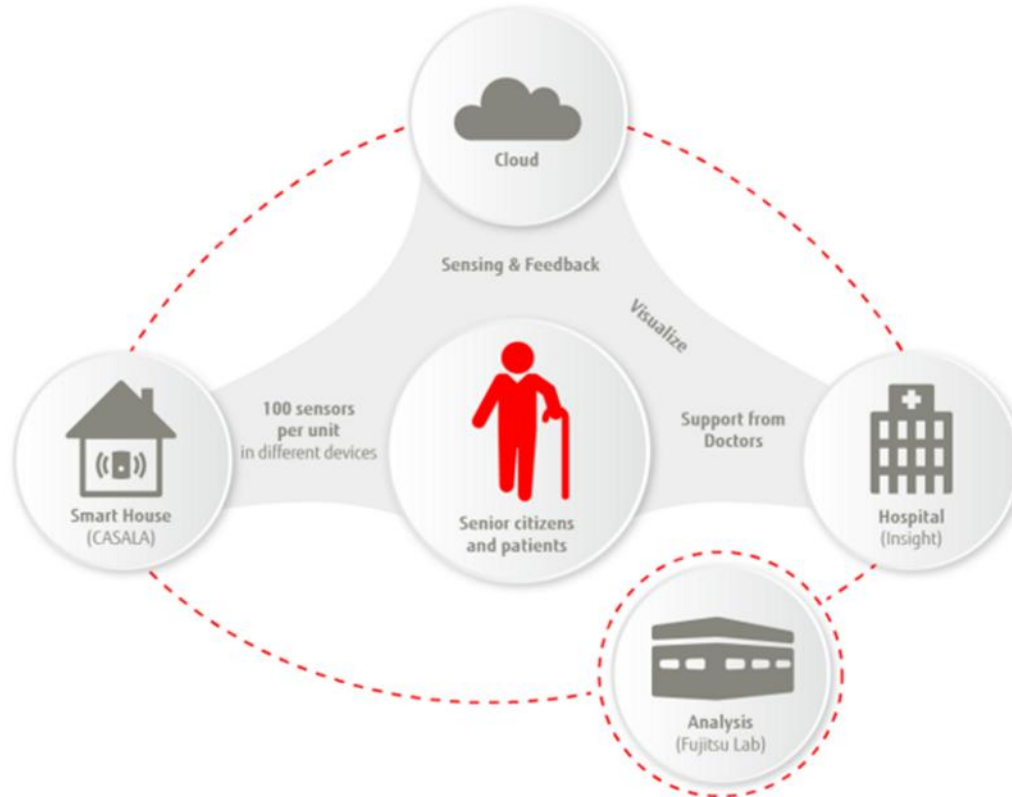
- Cloud Platforms for distributed applications
- Protect your data !
- Big Data Analytics - SPATIOWL
- Internet of Things – RFID, LORA, fast networking

## ■ Smart Cities Market is Maturing

- Horizon 2020 funding alone is 77 Billion Euros for 2014-2020

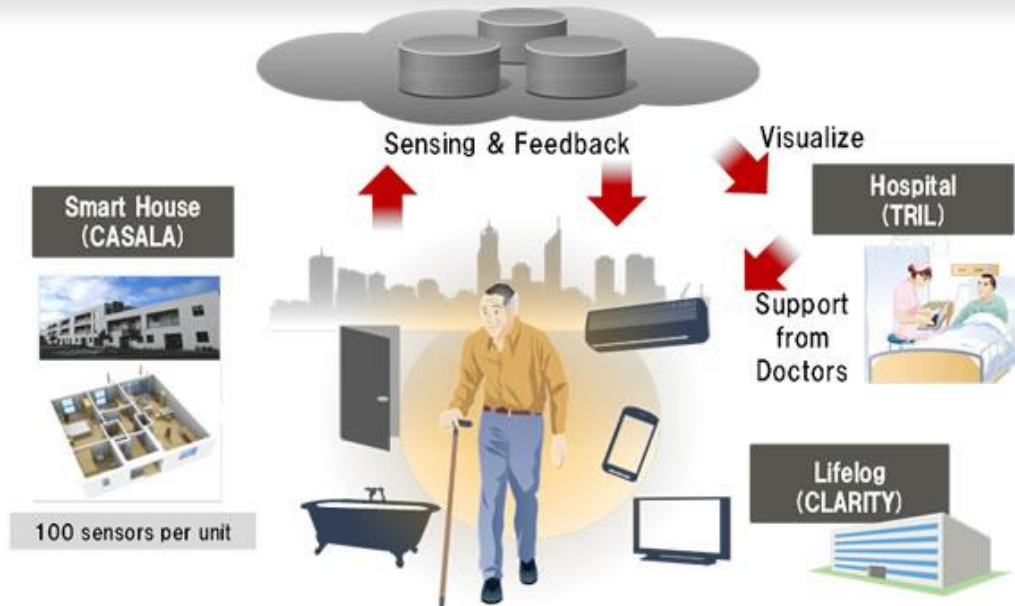


Smart City Market by Geography



# Assisted Living KIDUKU Project

- Joint project with hospital and smart house
- Monitoring and assisting independent living for senior citizens and patients
- Application of various sensing technologies on Fujitsu Laboratories' processing platform



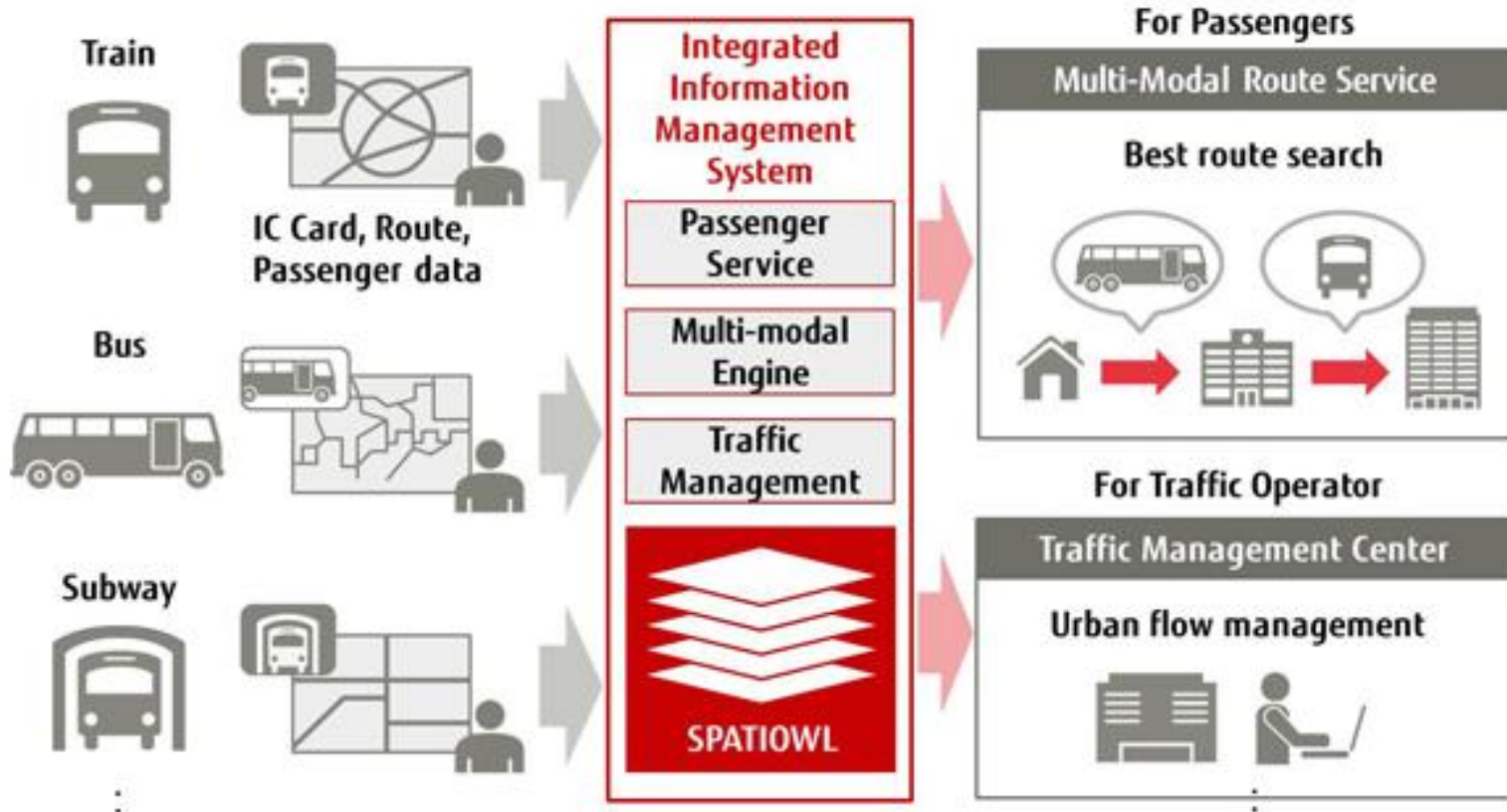
- Building sensors
- Vital signs
- Sleep patterns
- Gait analysis
- Behaviour patterns

- Japanese Culture of embrace technology, accept monitoring, engage with authority, pro active healthcare system
  
- Some technology was not deemed acceptable in this project
  - GPS tracker wearables / tech
  - Camera tech for medical monitoring
  - How do you “make “someone wear a wearable.....
  
- Expectation setting
  - Explain long term benefits
  - Explain gains v perceived freedom intrusion
  - Be very clear on what monitoring will take place
  
- White paper to be released by end 2016



- Field Lab set up by Gelderland Health Valley and Oost NV to improve cooperation between Healthcare and private companies
  
- Use of sensing technology in hospitals to provide real time info on patients vital signs to medics
  - ECG
  - Blood pressure
  - Heart and respiratory rates
  - Sleep patterns
  
- Uses VitalinQ Lifestyle guidance application
  - Reduces bedside visits
  - Better patient experience (less intrusive)
  - Early release
  
- Phase 2 in mid 2017 will look specifically at sensors to help and inform stroke patients.

# Smart Transport (Mobility as a Service)



## ***SOC Mobilitat: The Union of four leading partners in innovation and technology***



- Leader in retail and electronic banking. Largest card issuer in Spain, with the most extensive ATM network.



- Intelligent technology for transport management and broad experience in ticketing and access controls.



- Public transport operator, experience in integrated fare systems and development of technologies applied to transport.



- Application of different Payment method technologies and implementation of information management systems.

**Their combined capabilities will provide the T- MOBILITAT project with the most advanced transportation technology, experience in the operation of public transportation, and the mass deployment and maintenance of all installed equipment, as well as a solid financial base.**

# What was attractive about project

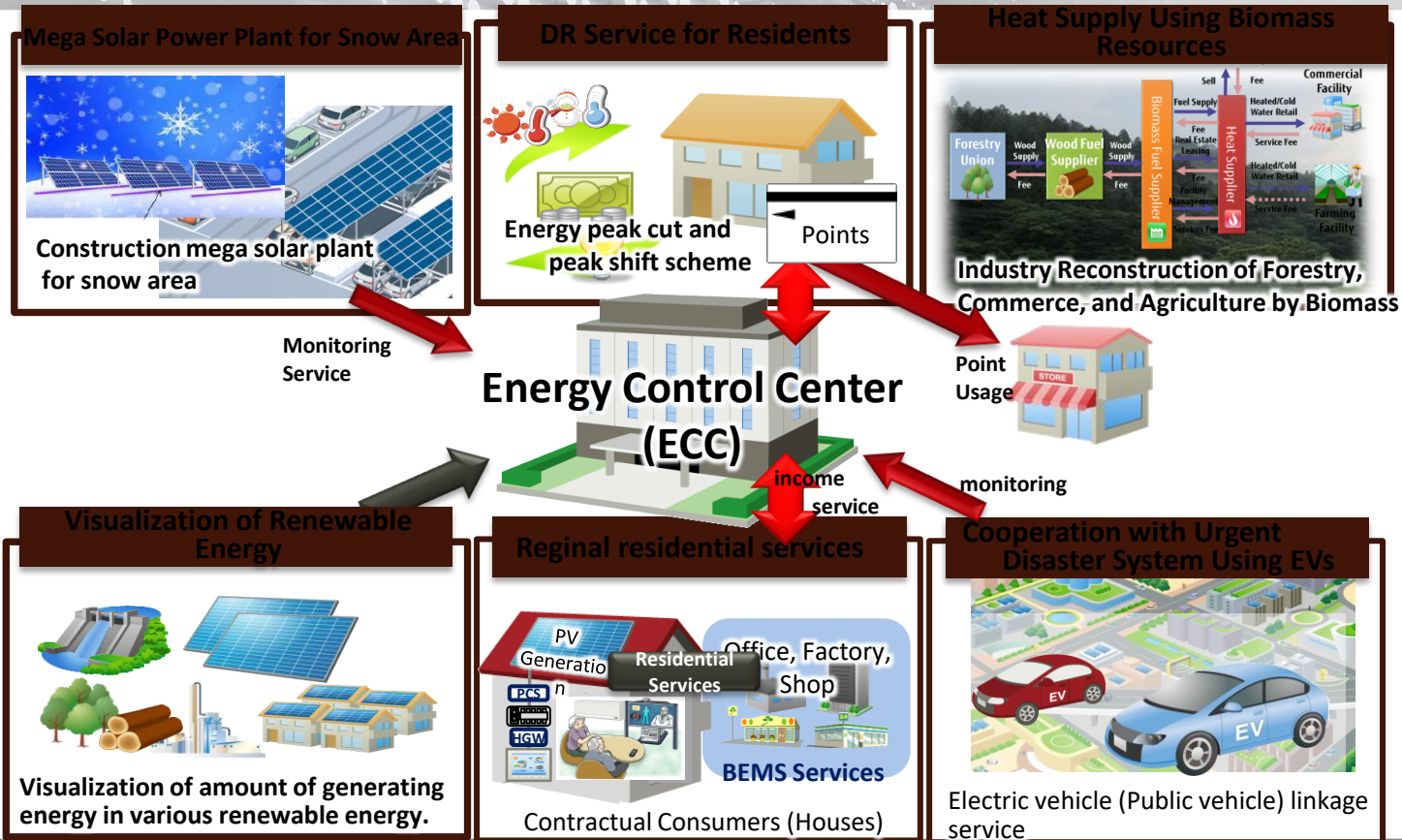
- Real, At Scale, Mobility as a service project in a key European City
- All aspects of a true mobility project
  - Use of IOT and sensing
  - Real time data analytics
  - Multi modal
  - Multi fare
- PPP model
  - Paid for success (by ticket purchased)
  - Cap and collar (lowers risk)
  - Progressive City reference
- Co-opetition working (the future of Smart City projects)
  - Work with competitors and industries not previously partnered

# Smart Parking - Advanced Image Analytics (Saudi Arabia)

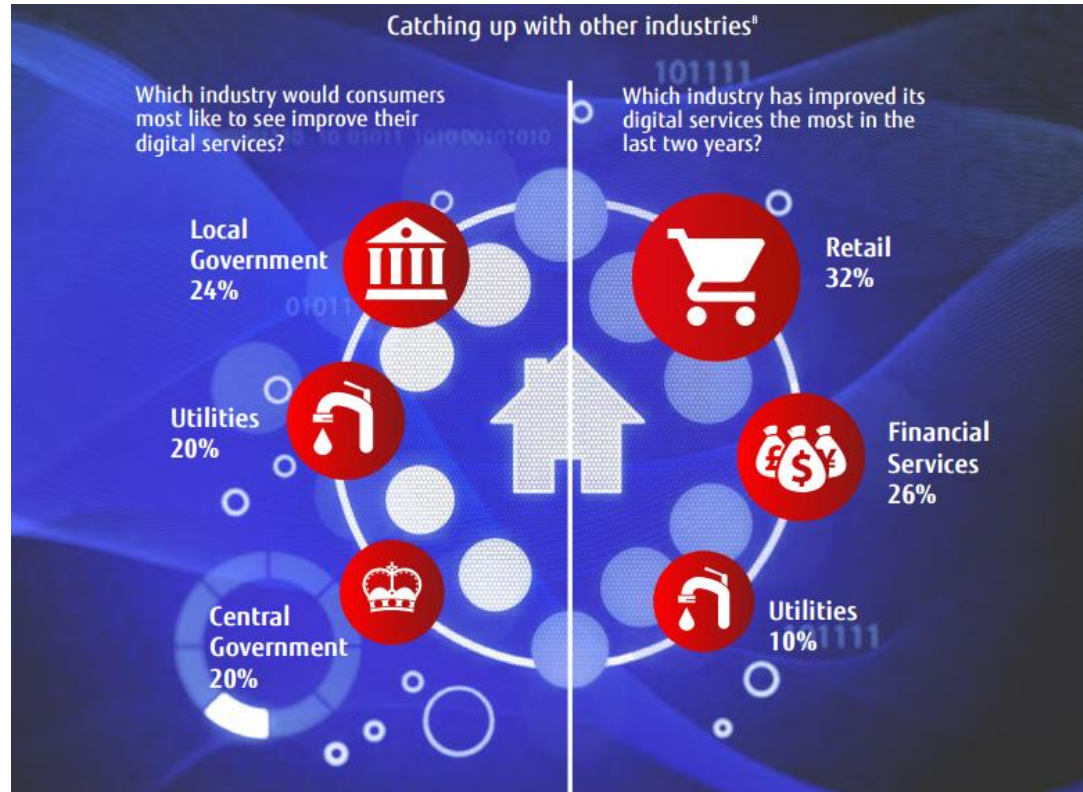




# Overview of the Aizu-Wakamatsu Smart City Pilot Project



# Moving to Digital



# Moving to Digital

## Top 3 benefits of digital to employees in utilities<sup>11</sup>



Ability to work remotely and flexibly

2



Real-time access to information

3



Time savings

### Connecting Assets



Tagging and Sensory Technologies



Network Integration and Services



Edgware Applications

### Connecting Intelligence



Cloud Platform and Integration Services



Data Centre Services

### Connecting Workforces



Actionable Analytics



Complete Service End-User Support



Application Support and Development

# New Opportunities in the Connected Home



 Data captured is fed back to the Smart Grid for accurate demand-supply.

Smartphones become a hub for full-home control. 

 Automated rules schedule maintenance tasks on in-home devices – informing service engineers of problems and parts needed.


Homeowners are given personalised energy-saving advice using insights from smart meters and individual appliances. 




# Connected Assets Transform The Working Day



 All jobs are scheduled for the day in order of importance and based on the most efficient route.

 Vehicles can be scanned to locate stock or assign the right engineer from a shared knowledge base.

 Network-connected sensors enable condition-based maintenance, reducing unnecessary site tasks to increase productivity and reduce CO<sub>2</sub>.

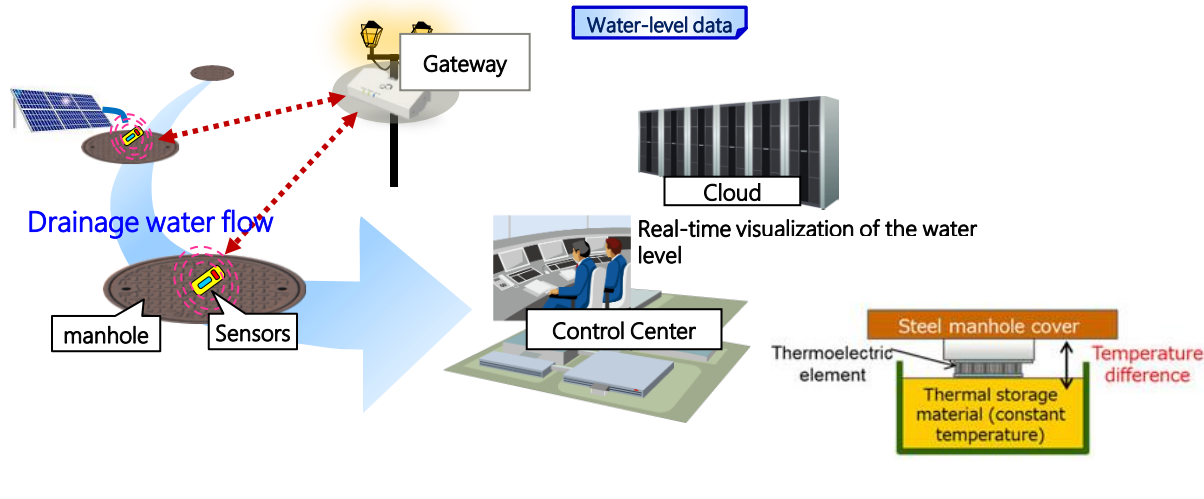
Assets are scanned to record maintenance work, whilst a remote 'how to' library offers engineers over-the-shoulder advice using 2-way video links via head-mounted displays. 

Equipment maintained as per manufacturers' warranties, prolonging life of assets. 

Data flows freely from asset to operational systems, guiding workers via augmented reality tools - displaying insights and historic trend analysis to increase productivity and safety. 



- Real time monitoring of water levels of drainage system
  - Use of network connected sensors powered by energy harvesting power supply (choice of types)
  - Optimisation of sensor location based on usefulness of indication of risk
  - Network usage optimisation to ensure solution fits within power constraints of harvested energy

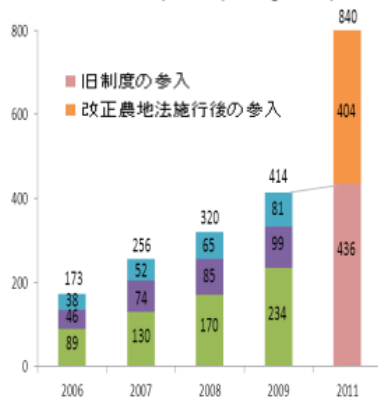


# Japanese Agriculture Innovation

## Corporate entrants into agriculture

- 2009 Agricultural Land Act Amendment energized corporate entrants into agriculture
- 1.5 years after amendment, number of companies doubled to 840 compared to before the amendment

Number of participating companies

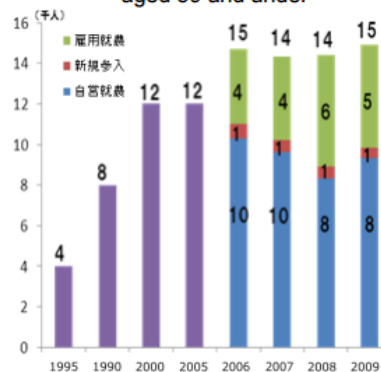


Ministry of Agriculture, Forestry and Fisheries' "2010 White Paper on Food, Agriculture, and Rural Communities"

## Trend in new employment in agriculture among younger workers

- Number of people 39 and under entering agriculture rising for past 10 years
- 34% now work at agricultural corporations

Trends in new agricultural workers aged 39 and under

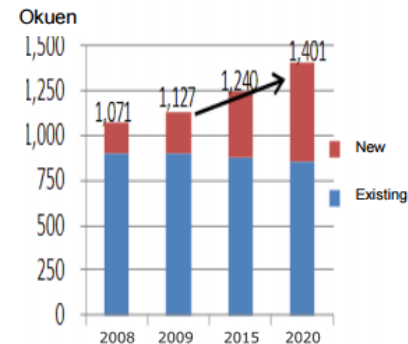


MAFF's "Survey of Trends in Agricultural Employment, Survey of Changes in the Structure of the Agricultural Sector, Agriculture and Forestry Census, Survey of New Employment in Agriculture"

## Projected investments in greenhouse farming

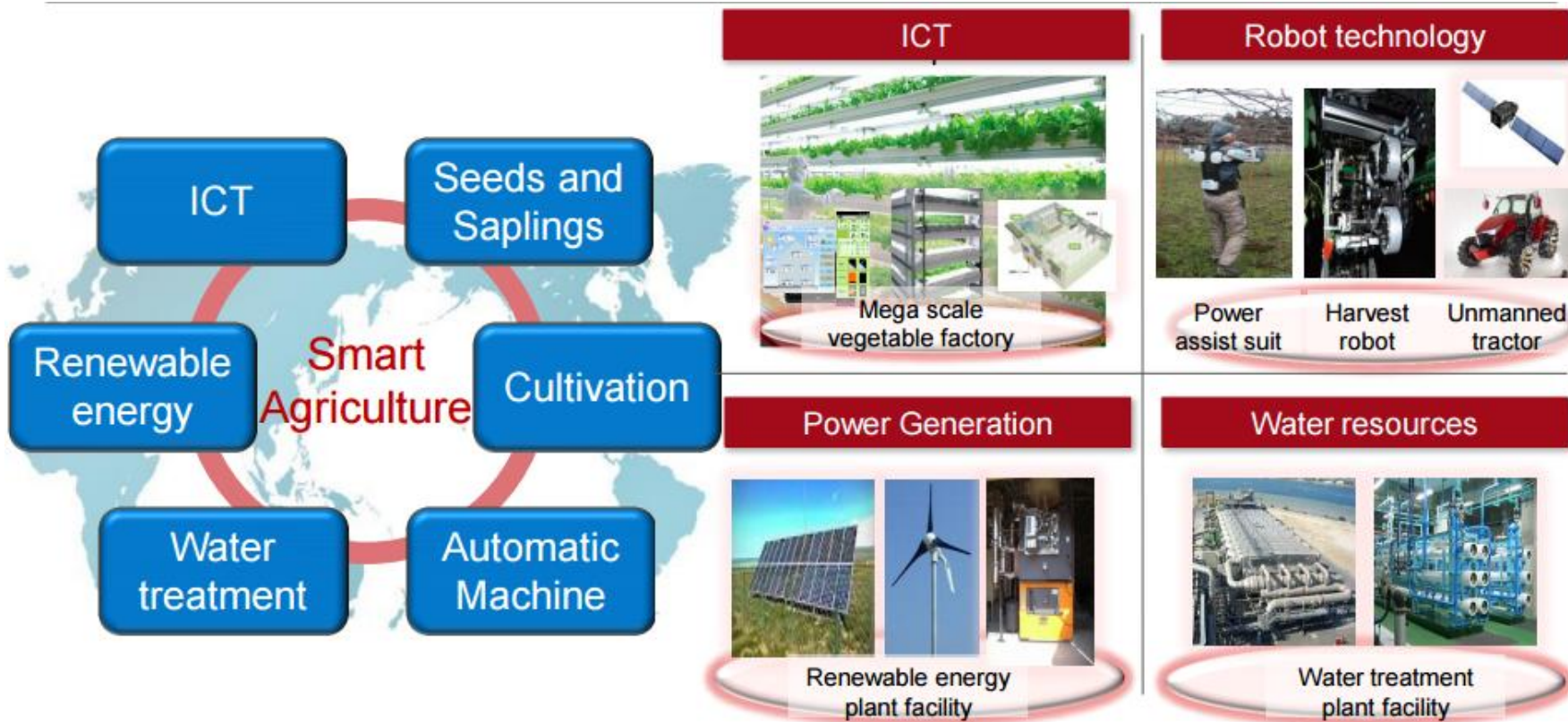
- Growth in greenhouse-farming market, where production can be stable
- Investment expected to grow from JPY 112.7 billion in 2009 to JPY 140.1 billion in 2020

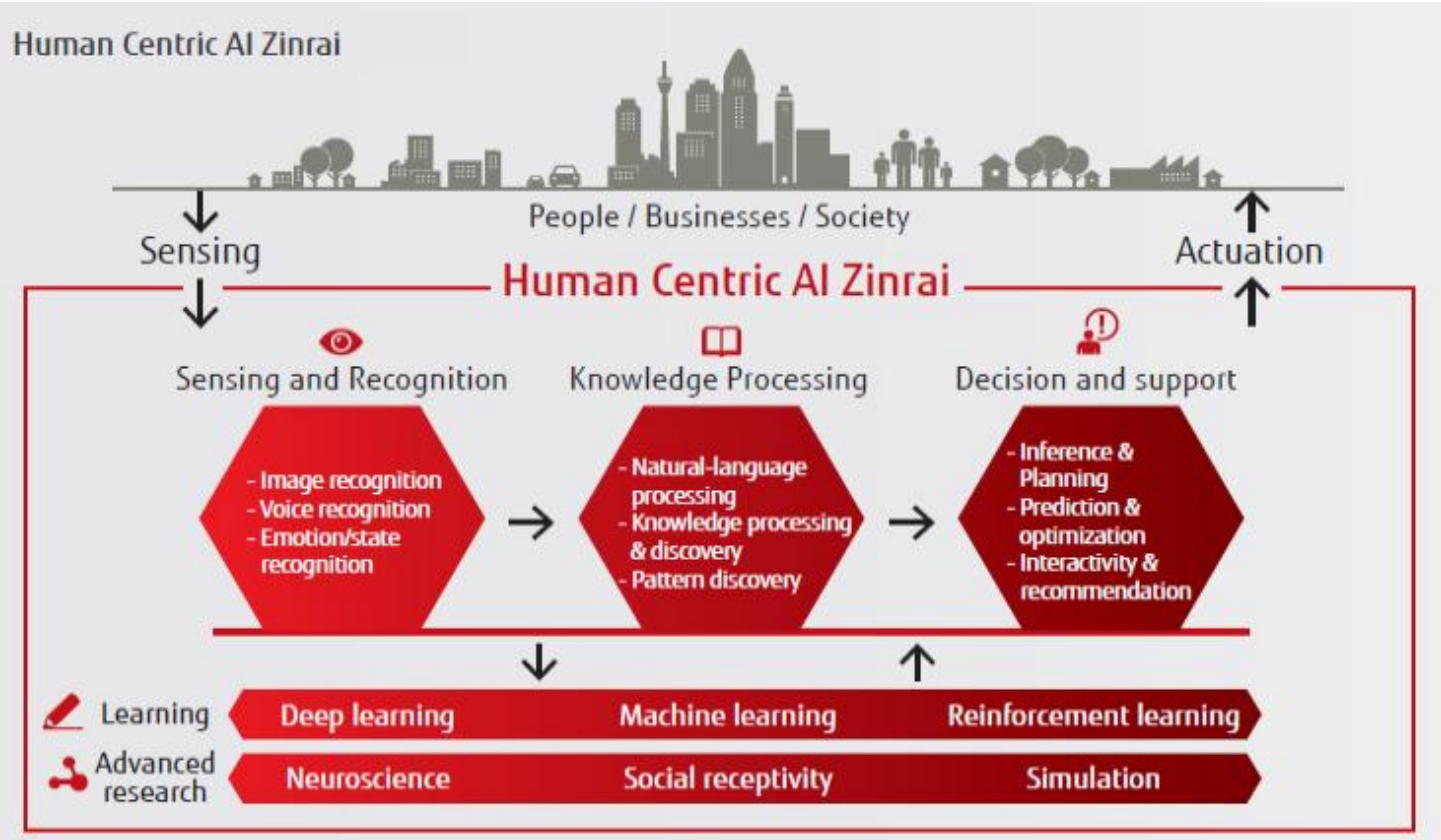
Projected scale of greenhouse farming market



Fujitsu estimates

# Japanese Agriculture Innovation





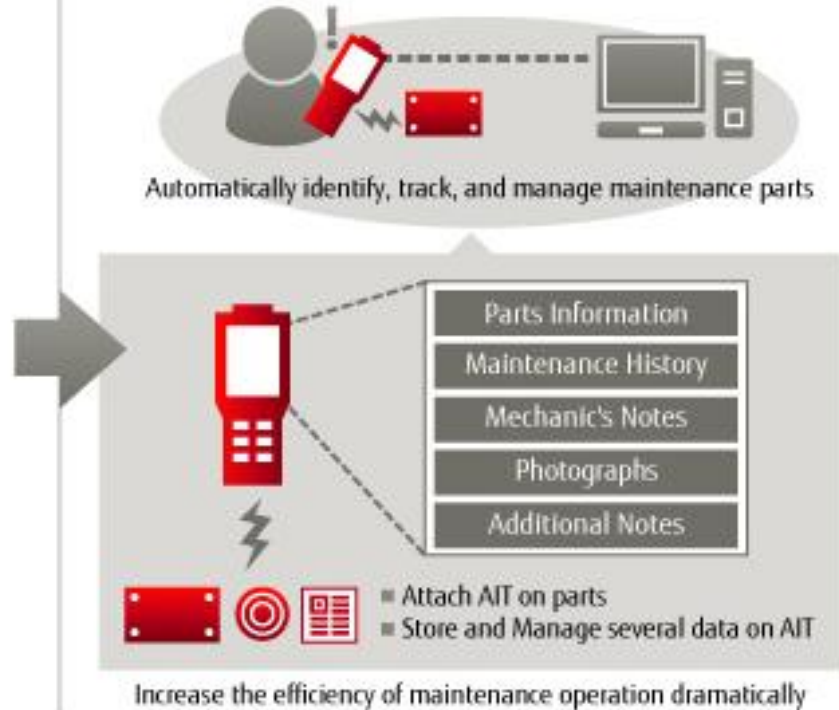


# GlobeRanger in Action: Maintenance Management – what is a “city”

## Current Maintenance Operation

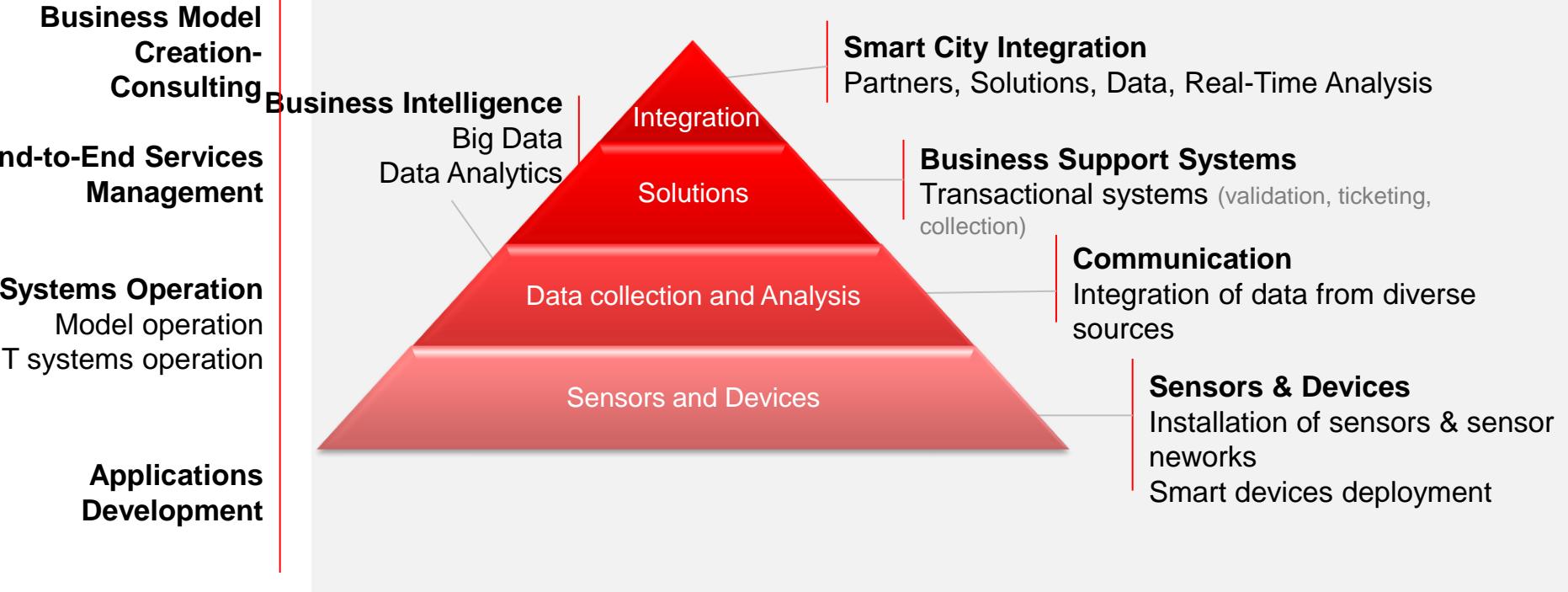


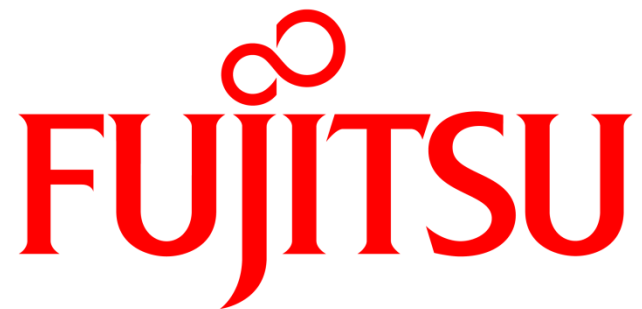
## Maintenance Operation with AIT Solutions





# Fujitsu's Capabilities





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