100th ANNIVERSARY
Celebrating 100 years of the Hitachi Group

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Weddell -Tropical, Sustainable, Livable
Toward 2030: Conference and Design Forum

Hitachi and Smart City

September 28, 2010

Michinaga Kohno
Senior Chief Engineer,
Group Management Planning Office,
Smart City Business Management Division
Hitachi, Ltd.

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Contents

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1

Introduction of Hitachi

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1-1. Corporate Foundation

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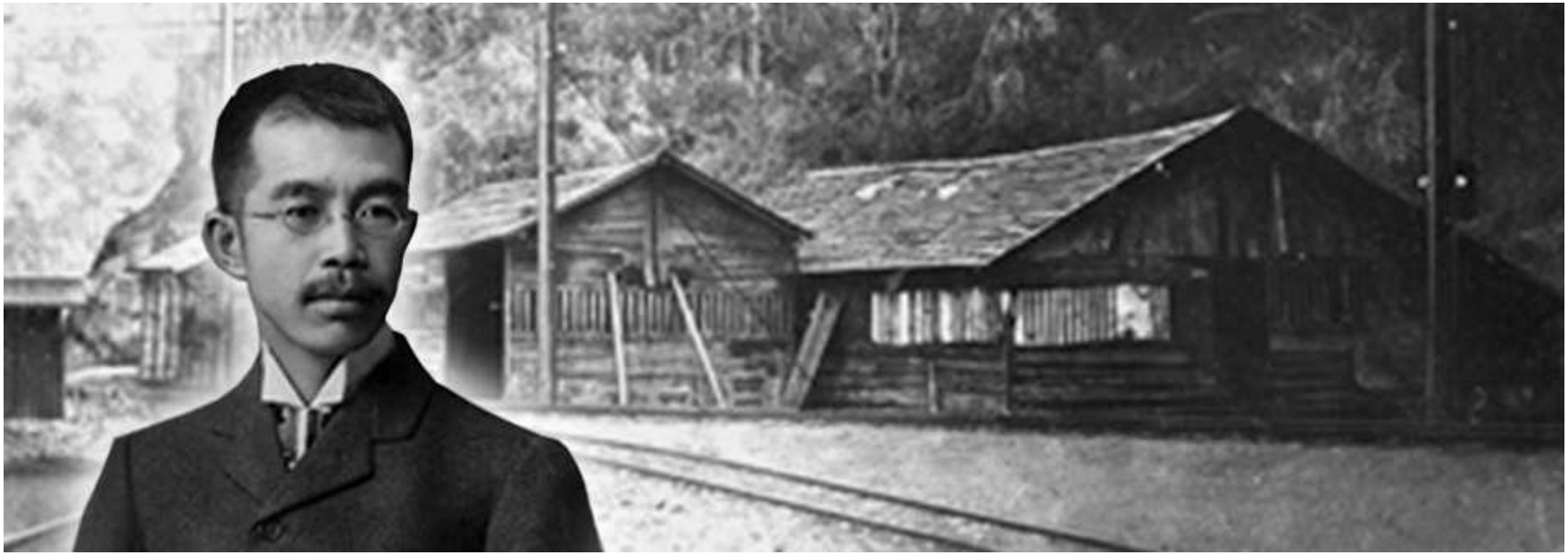
- Hitachi was founded in 1910 as a machine repair shop at Kuhara Mining Company in Hitachi City, Ibaraki Prefecture, Japan (Incorporated in 1920)
- First product: 5hp electric motor
- Corporate credo: Contribute to society through the development of superior, original technology and products
- Hitachi founding spirit: Harmony, Sincerity and Pioneering spirit



Founder Namihei Odaira

Original repair shop in Ibaraki (1910)

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Operate in more than 40 countries and has 360 thousand employees

Social Innovation Business

Fiscal year ended
31 March, 2010

Energy Systems

Societal &
Industrial Systems

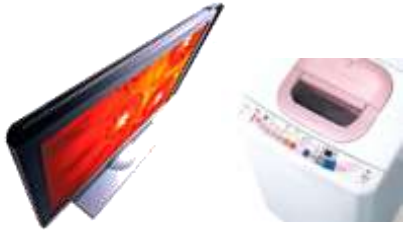
Information & Telecommunication Systems

Others

Financial Services

Functional Materials

Digital Media / Consumer Goods

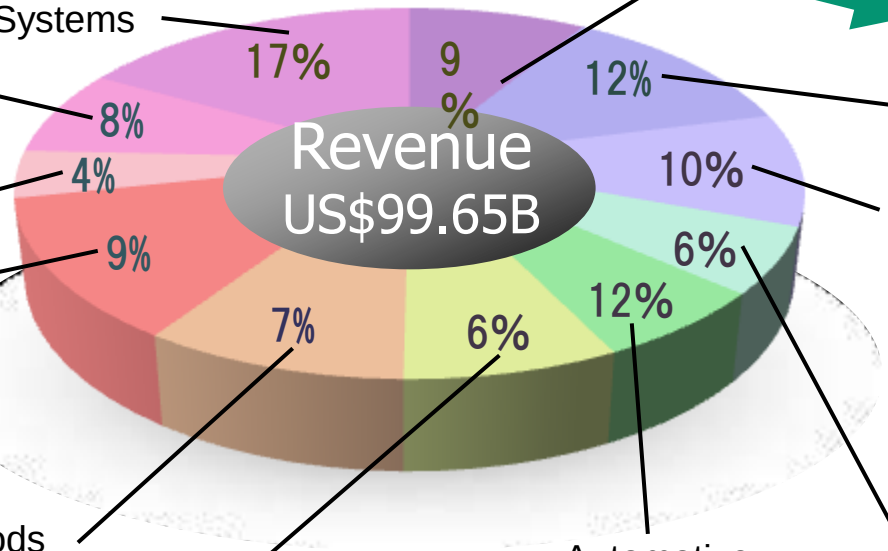


Components /
Devices

Automotive
Systems

Construction
Machinery

Electronic Equipment
& Systems



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Industry, Transportation and Urban Development Systems

- Eco-city Development (Water Treatment)
- Construction Machinery
- Building, Elevators
- Green Mobility
- Health Care
- Cloud Computing
- Consulting
- Data Centers
- Storage
- Smart Grid
- Energy (Steam powered, atomic power, renewable energy)

Information & Communication Systems

Electric Power Systems

+

Materials and Key Devices

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1-4. South Africa Coal-fired Power Generation

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- Provide 12 orders of 800,000 kW boilers utilizing supercritical pressure technology
- Aim to achieve 1.2 times the power generation capacity of South Africa by 2017
- Contribute to relieving the serious power shortages

State of construction at Medupi

State of construction at Kusile

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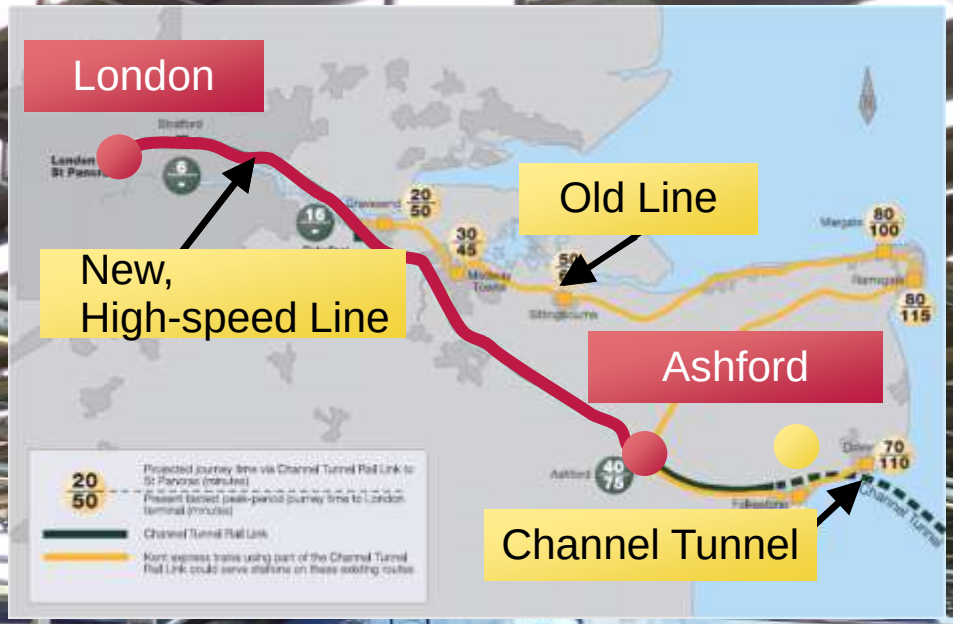
CTRL: Channel Tunnel Rail Link



1-6. US (NASA) Storage

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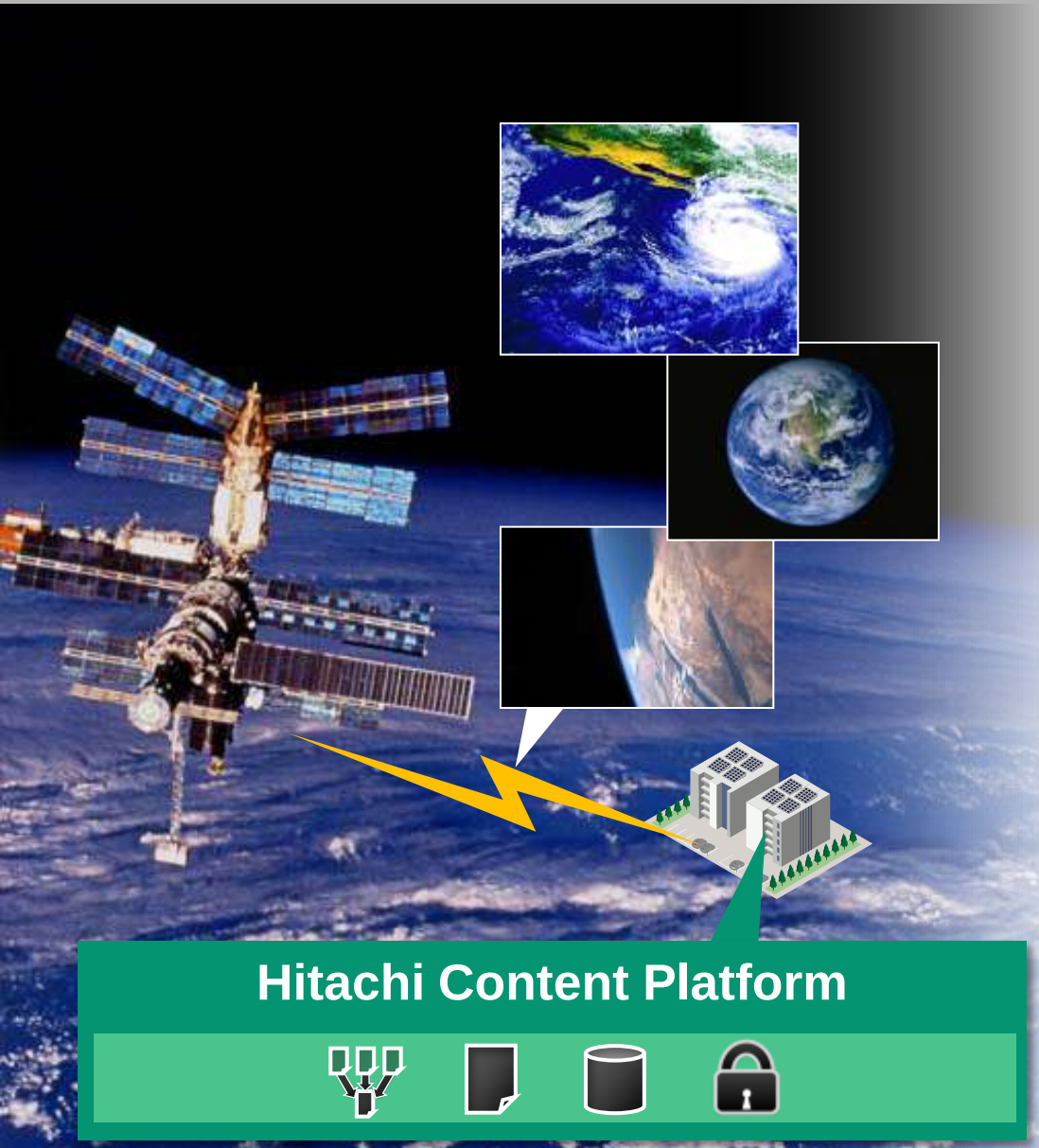

NASA uses sophisticated instrumentation mounted on earth-observing satellites to better understand global environmental conditions that affect the long-term health of our planet.

During system deployment in 2008 70TB of satellite information was ingested into the system with a daily growth rate of 50GB/day.

Key Points for Use

- Simplified management
- Easily and transparently support HW upgrades
- Standards based protocol support
- Advanced content mamagement policies

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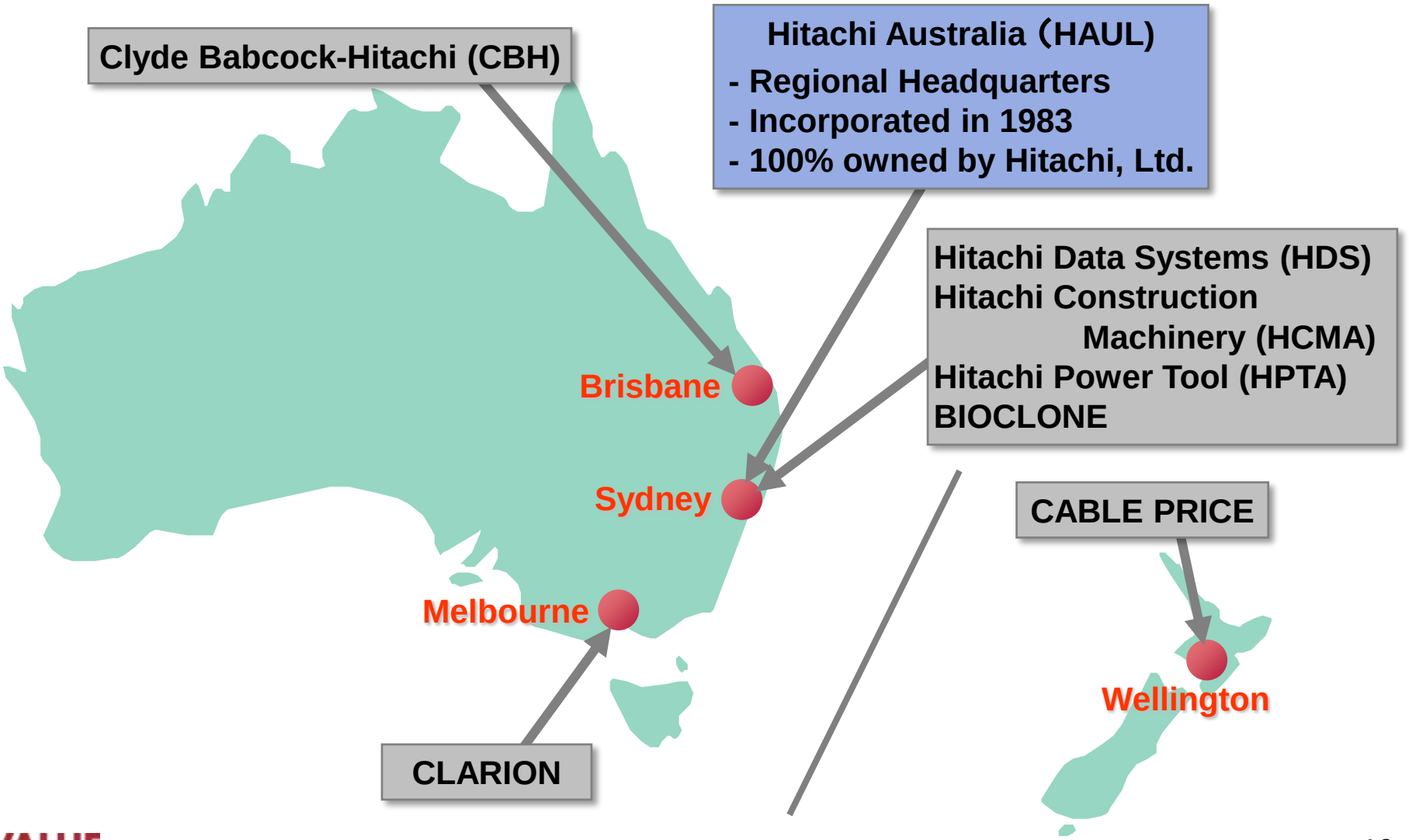
Annual Sales : AU$1,441M (FY10 Budget)
Total Staff : 1,496



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Hitachi's Concept of Smart Cities

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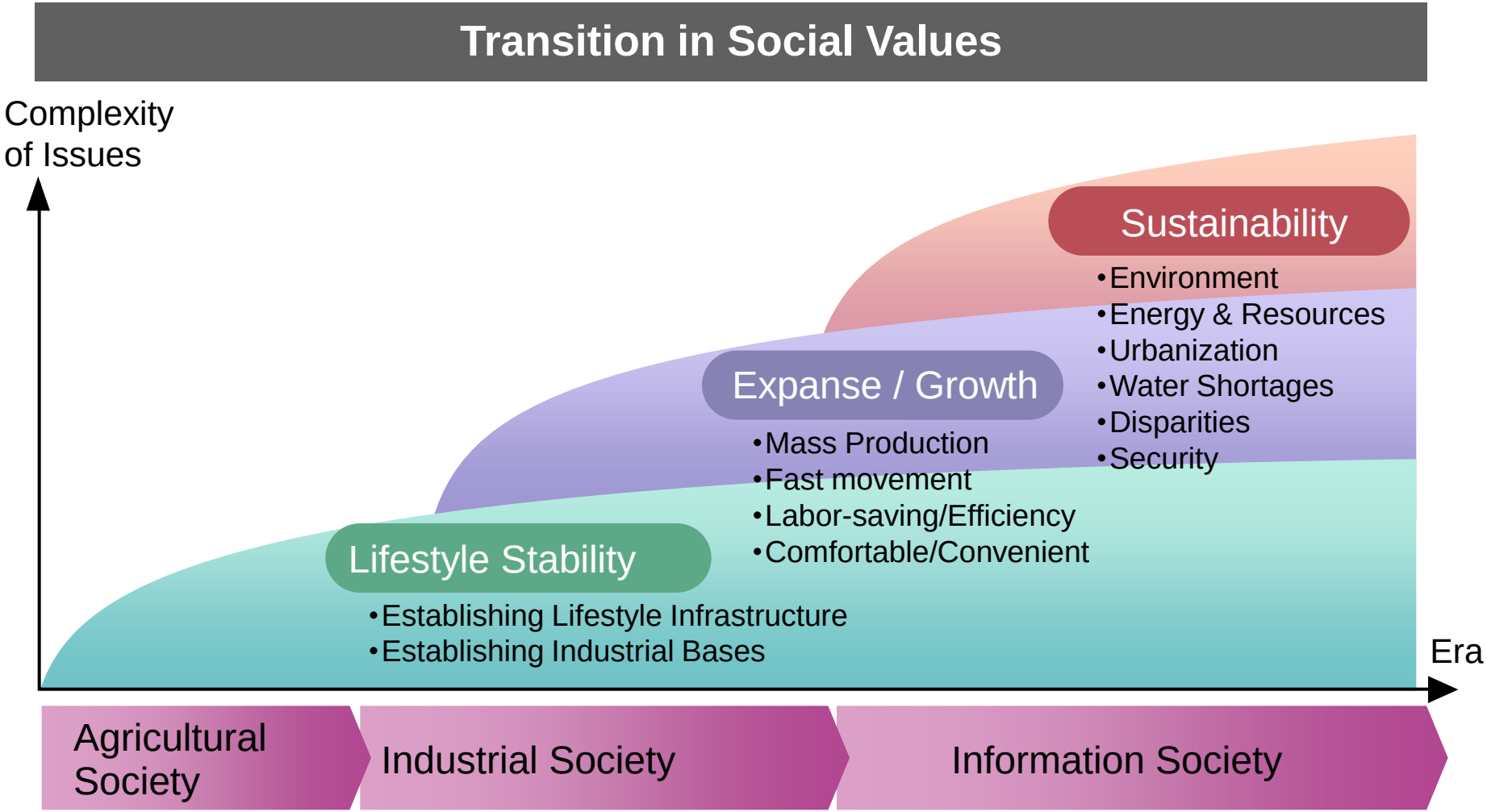
- Sustainability is necessary for dealing with the more complex and important issues



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Vigorous Cities to Attract People

- Integrated development of transport and information systems
  - ✓ Vitalization of urban activities by high integration of offices and shops
  - ✓ Seamless connection of long-distance railways, area transit and lifts

Cities with Sustainable Development Capability

- Sustainability of global environments
  - ✓ Entire functions and facilities to support urban activities are eco-friendly
  - ✓ Zero emission means of transportation and mobility
- Intelligent urban infrastructure by combining energy & information
  - ✓ High-efficiency energy management by smart grid technologies
  - ✓ Information networking of entire urban activities
- Sustainability of residents
  - ✓ Safe, secure and comfortable cities for residents and visitors
  - ✓ Generation-free cities to accommodate ageing urban population

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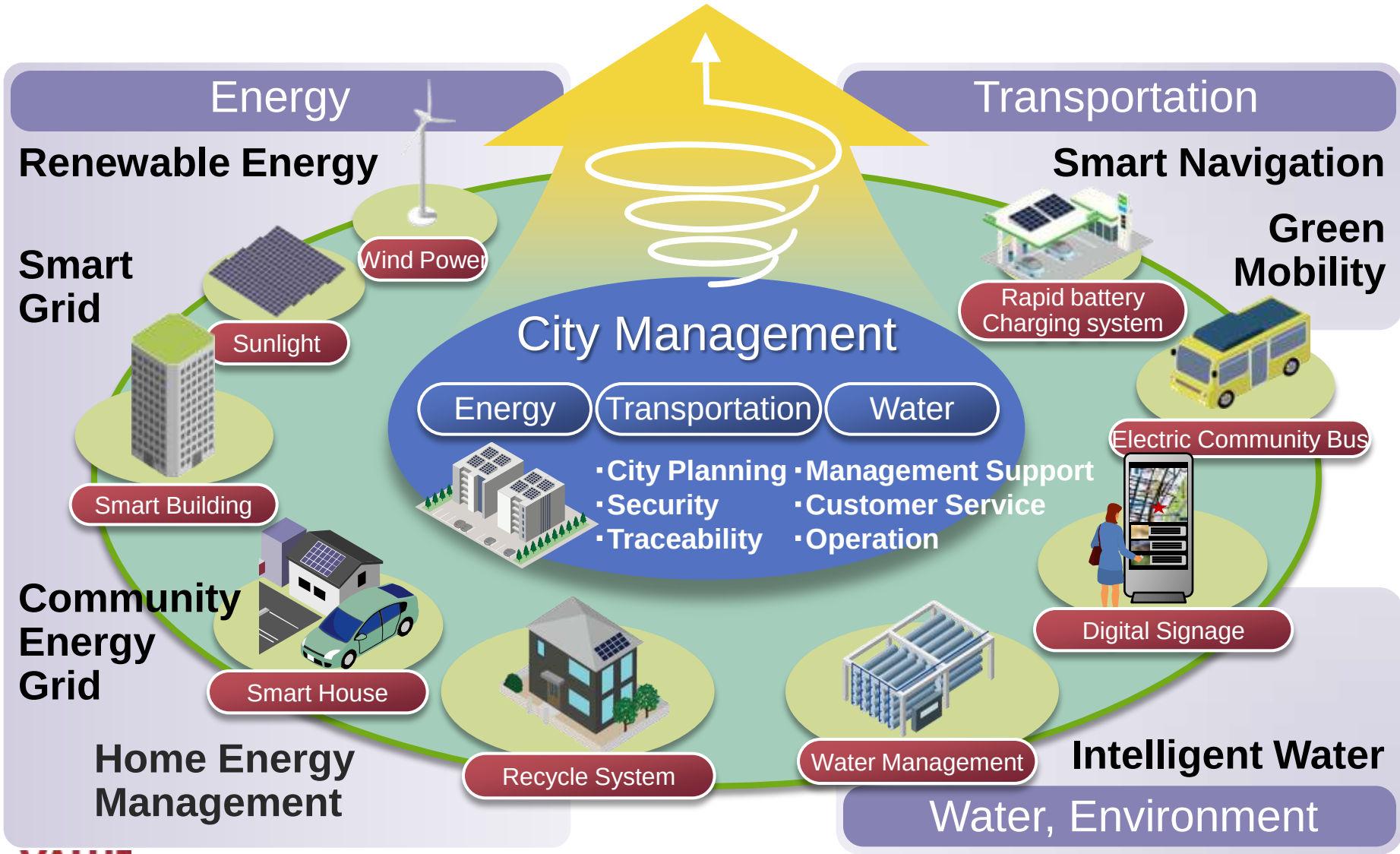
Growing City



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2-4. Hitachi's Concept of "Smart Cities"

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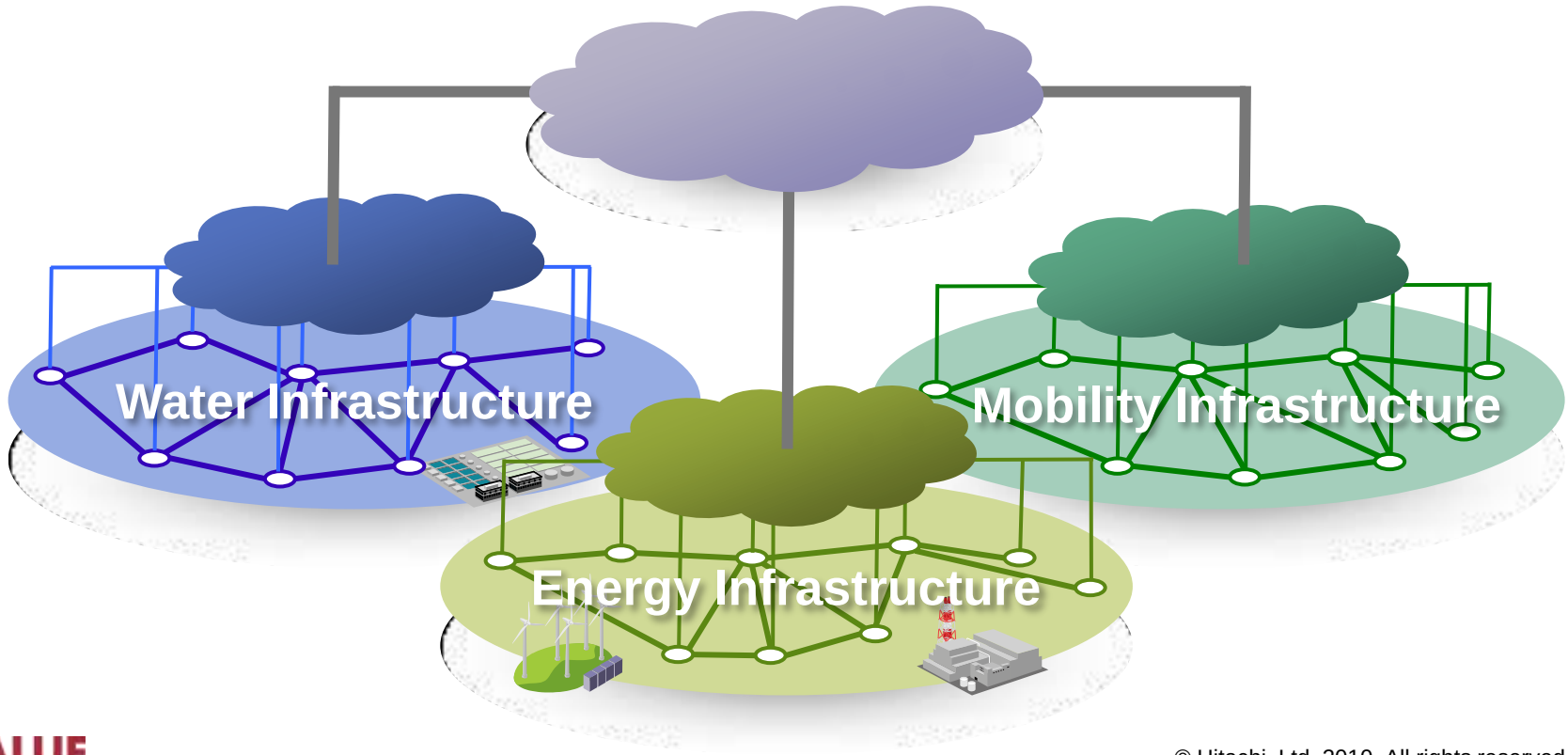
- Sensors and information & telecommunication systems provide intelligence to Urban infrastructures
- Several Intelligent infrastructures collaborate mutually to improve the quality of life of the residents in turn.



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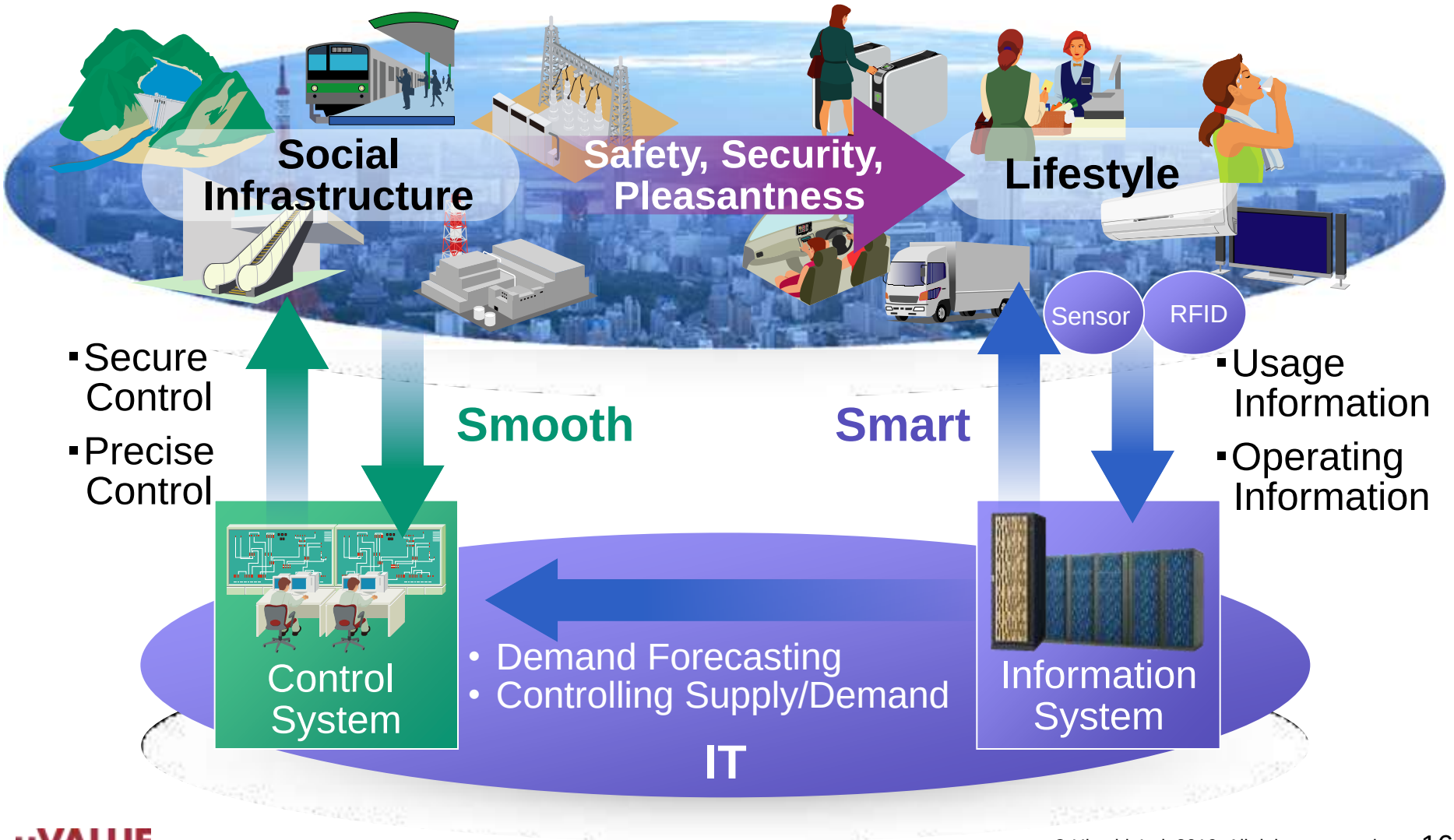
- Information systems and control systems collaborates to create a secure and pleasant social infrastructure



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Elements of Smart Cities

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3-1. Elements of Smart Cities

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	Electric Power	Railways	Road Traffic	Water
	Smart Grid	**Next-Generation Traffic Systems**	**Green Mobility**	**Intelligent Water**
Systems	•Generation & Storage •System Stabilization •Automated Meter infrastructure (AMI) •Energy Management	•Traffic Control •Operation Management •IC Card Train Ticketing •User Behavior Support	•ITS/ETC •Vehicle Management •EV Linkage	•Water Purification/ Circulation •Operations/Control •Facilities Management
Products	•Generation Plants •CO_2 Collection Equipment •Batteries for Storage	•High-speed Trains •Commuter Trains •Monorails	•On-board Batteries •EV Recharging Facilities •Car Navigation Devices	•Pumps •Desalination Facilities •Sewage Treatment Facilities
Technology & Know-how	•Sensing Technology •Image Processing Technology •Simulation Technology	•Real Time Control Technology •Autonomous Decentralized Architecture •Network Technology	•Data Management Technology •Security Technology •Environmental Technology	
	•Service Planning	•Large-scale System Design	•Project Management	•Maintenance & Management

EV: Electric Vehicle

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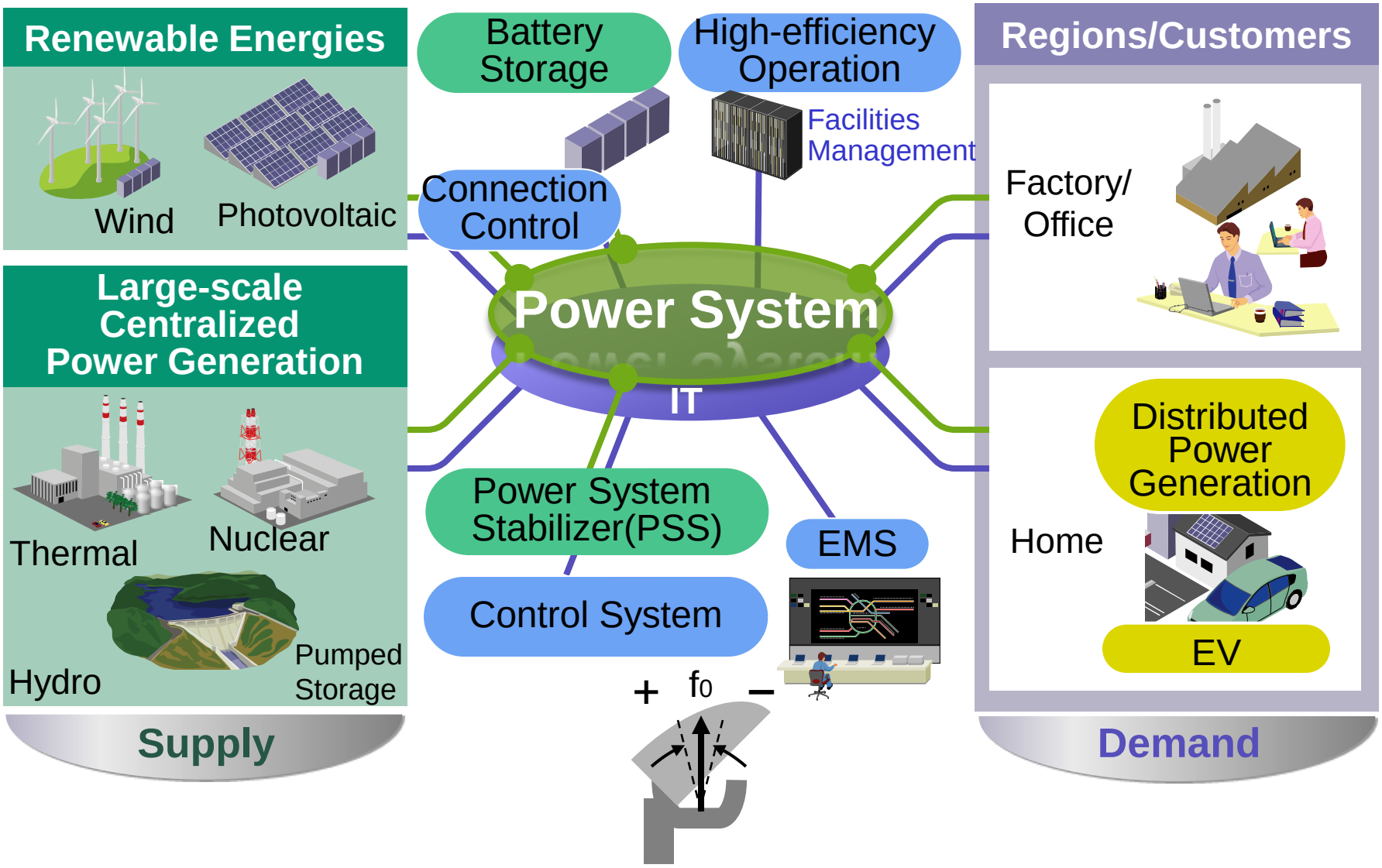
- Supplying low-carbon, high-quality, economical power



EMS: Energy Management System

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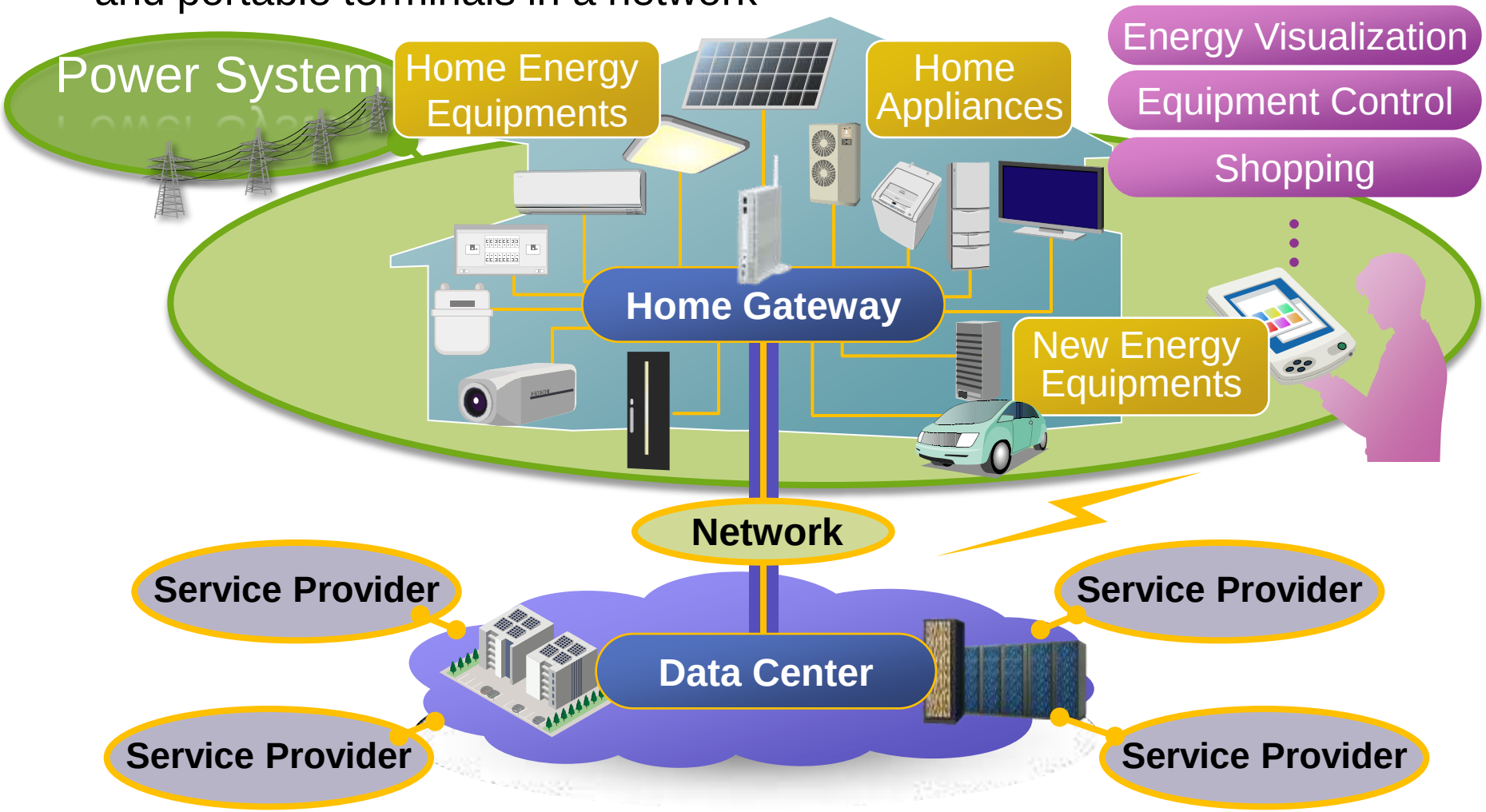
- Achieve a comfortable, ecological lifestyle by using data and linking electrical appliances, home energy equipments, new energy equipments and portable terminals in a network



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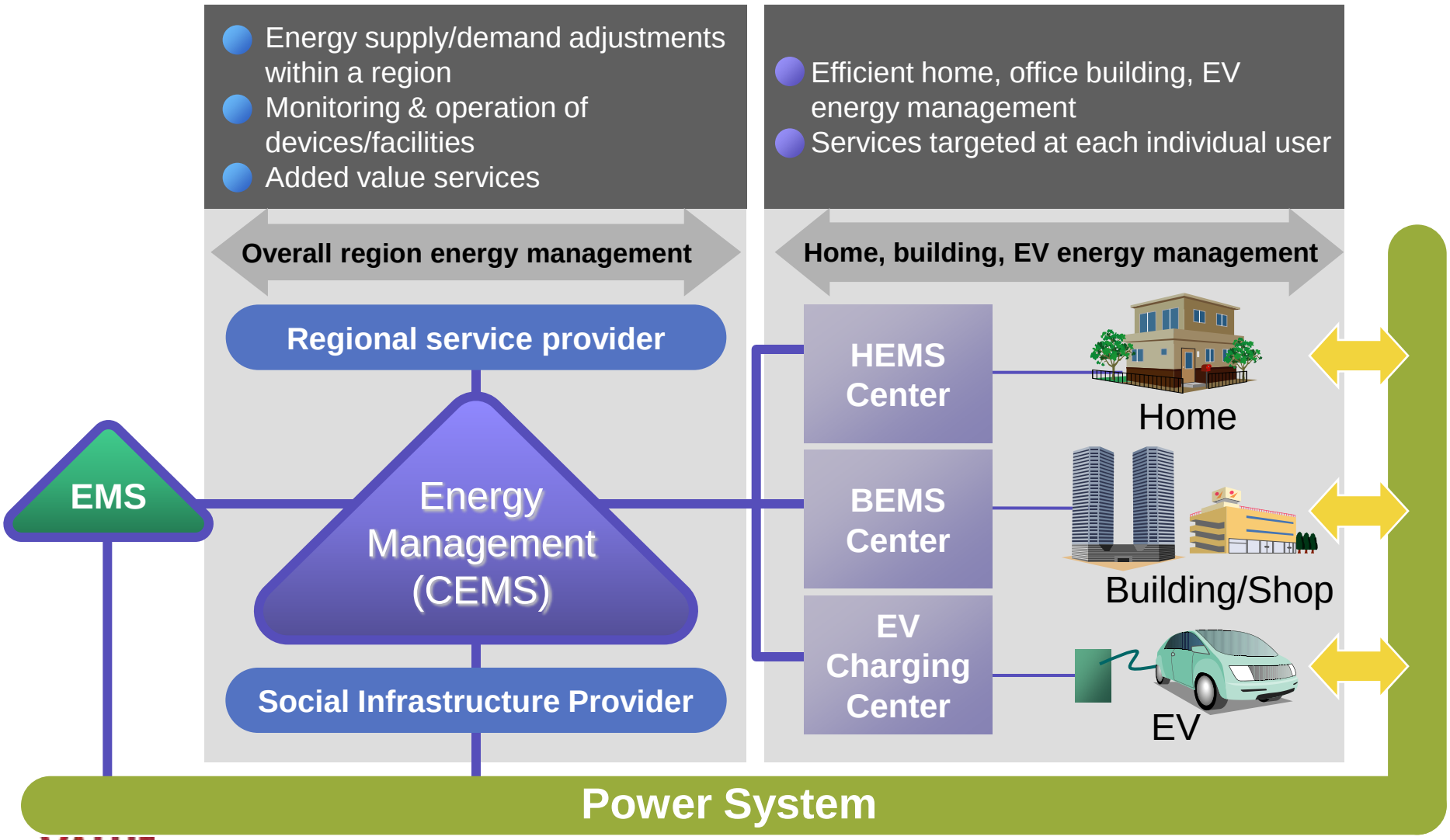
- Contributes to the building of a Smart Grid via undertakings such as the Eco-City project



CEMS: Community Energy Management System

3-5. Railway System in Next-Generation Cities

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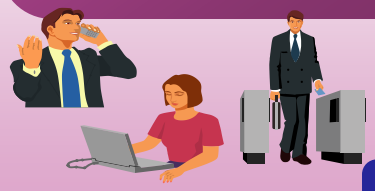
- Flexible Route Guidance for People and Trains based on Predictions
- Quick Recovery from Problems

Better Services by Expanding Communication Channels



Improve Transport Work Efficiency

- Traffic Control
- Rolling stocks Management, etc.

Improve Passenger Services

- Station services
- On-board services
- Digital Signage

Improve Environmental Performance

- Reduce CO_2
- Conserve energy

Next-Generation Traffic Systems

Control System

- Rolling Stocks
- Operations Management
- Converter/ Electricity

Information System

- Seat Reservations
- Fares
- Sales

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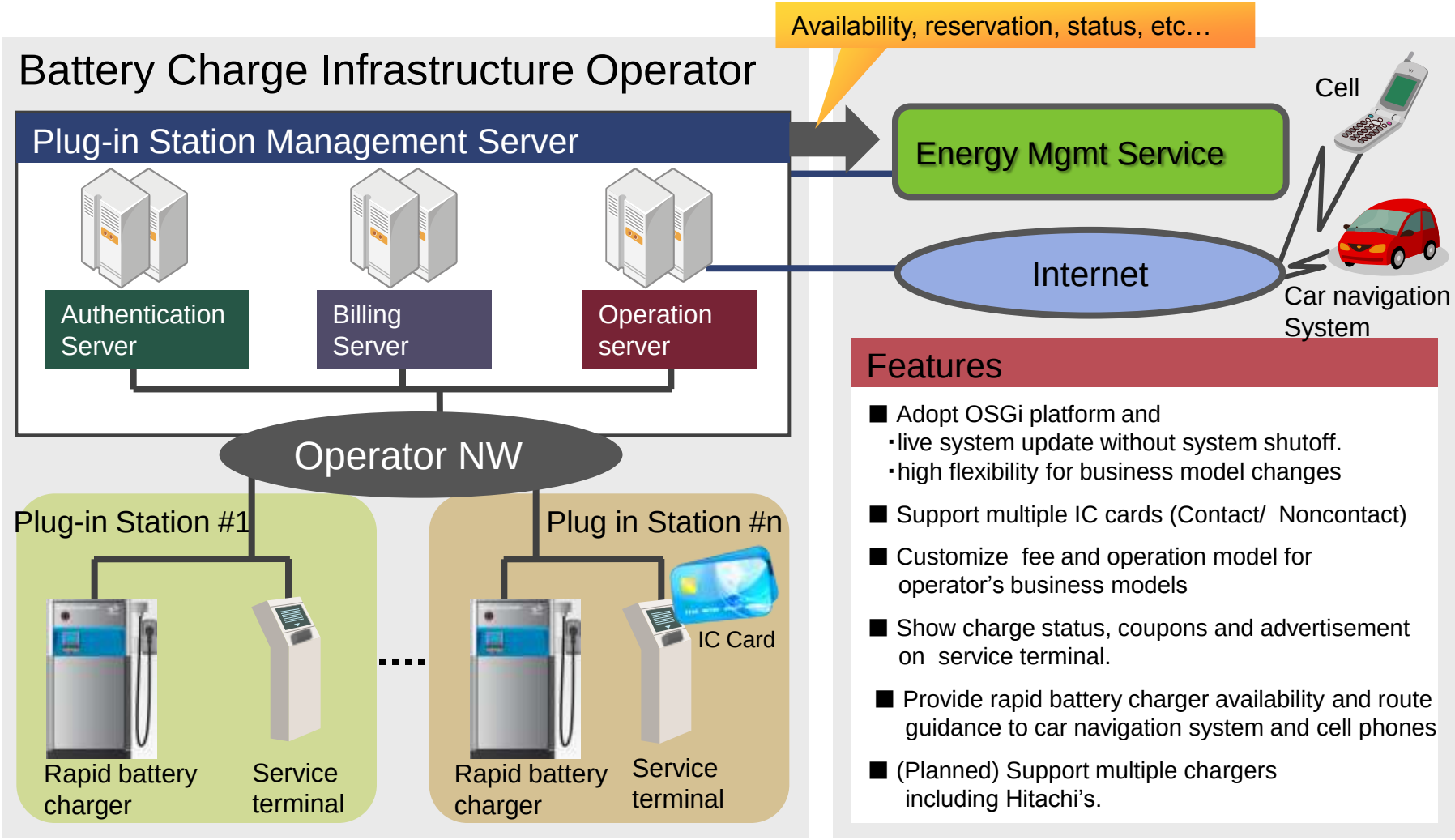
- Integrated management system with rapid battery chargers, service terminals and plug-in stations management servers.



Features

- Adopt OSGi platform and
  - live system update without system shutoff.
  - high flexibility for business model changes
- Support multiple IC cards (Contact/ Noncontact)
- Customize fee and operation model for operator's business models
- Show charge status, coupons and advertisement on service terminal.
- Provide rapid battery charger availability and route guidance to car navigation system and cell phones
- (Planned) Support multiple chargers including Hitachi's.

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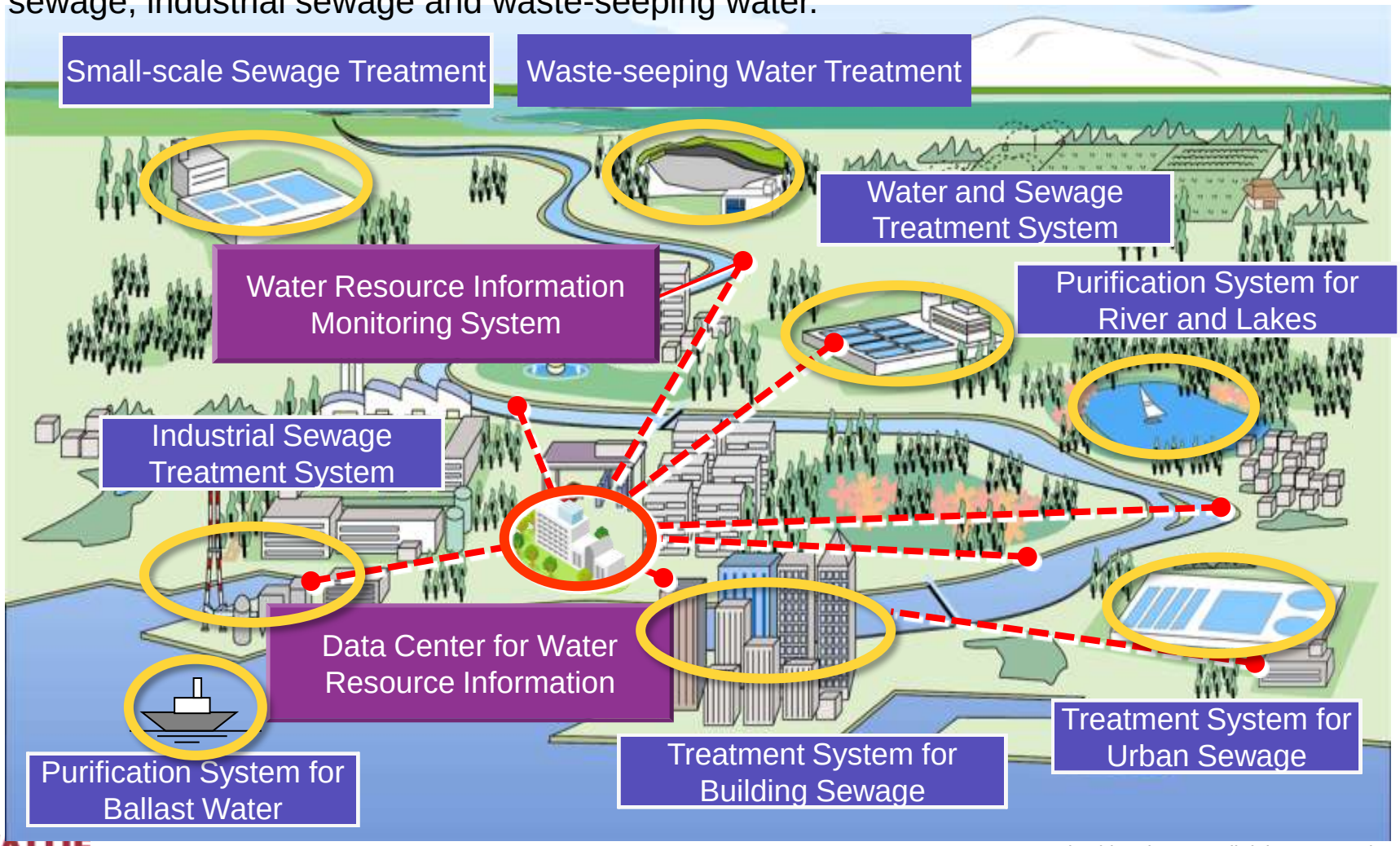
Wide Variety of Water Treatment

Hitachi provides solutions to wide variety of water treatment such as purified water and sewage, industrial sewage and waste-seeping water.



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Urban Water Environment System

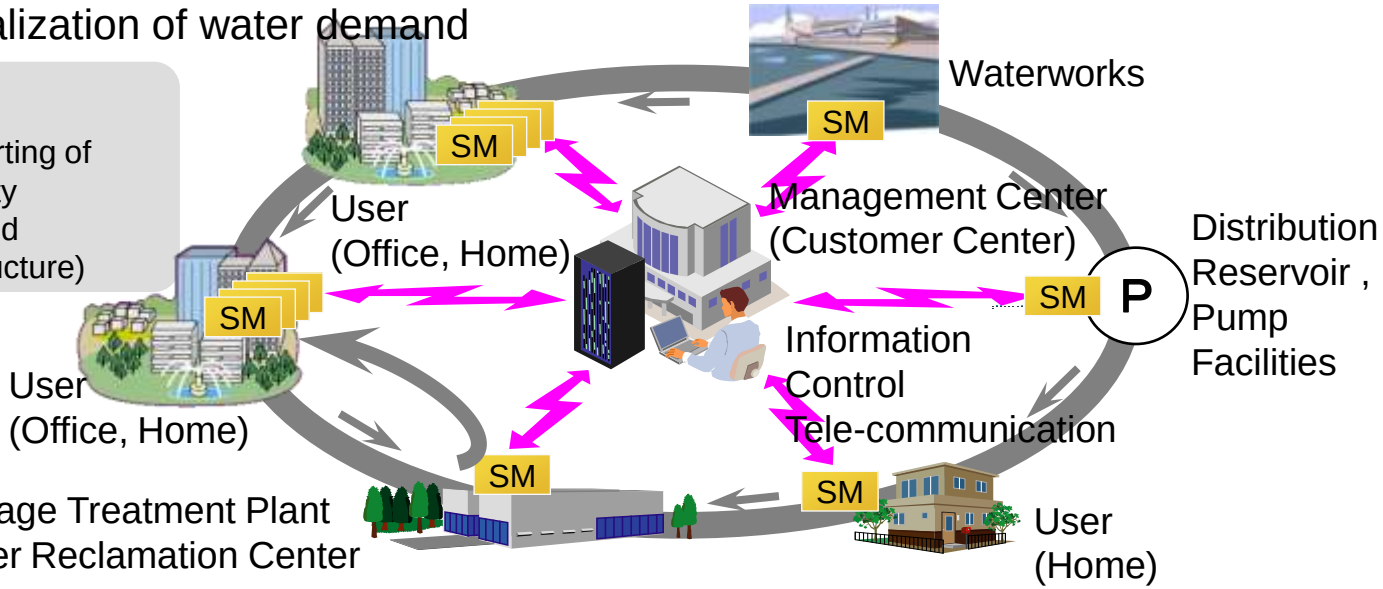
Towards an "Advanced Water Environment City"

1. Efficiency improvement of water/sewage systems by smart meters

Automated metering, reduction of operation cost, adequate management of facilities and equalization of water demand

SM : Smart Meters

Measurement and reporting of water volume and quality (Linkage with power and communication infrastructure)



2. Data integration of maps (GIS) and smart meters

Map Data (GIS)

Smart Meter Data

Integration

(1) Asset Management (Pipes) : Optimization of facility renewal plan, High-Efficiency Management (ERP)

(2) Volume Management : Optimum management of pipe networks based on water operation management

(3) Quality Management : Water safety assurance, Customer satisfaction

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* ERP : Enterprise Resource Planning

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Examples

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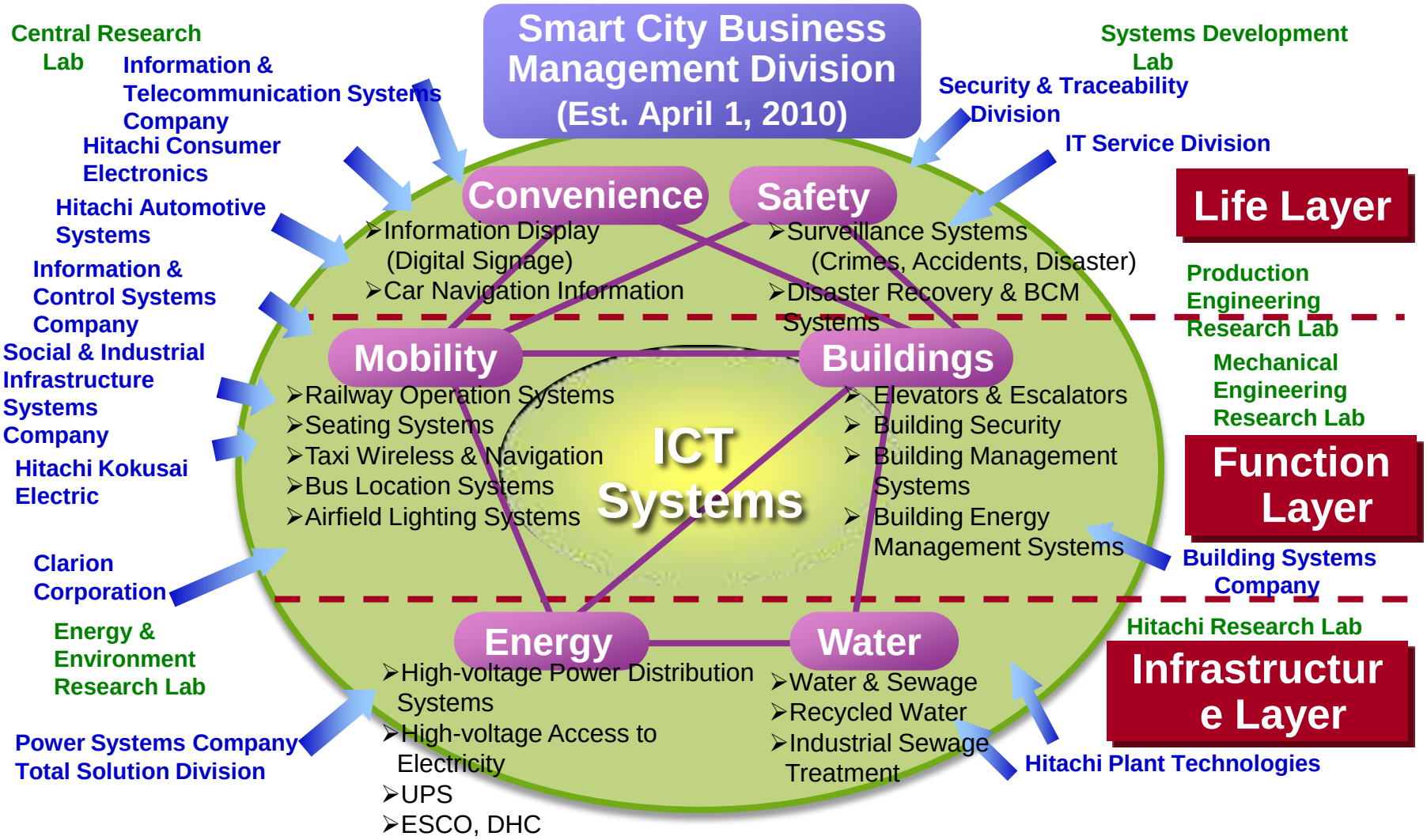
Wide experiences in Smart City Development



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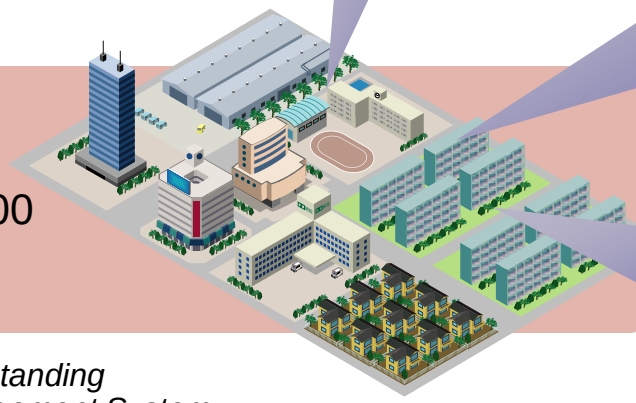
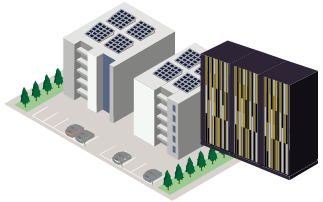
- Companies with ties to the governments of China and Singapore established a joint management enterprise to develop the city
  - Sino-Singapore Tianjin Eco-City Investment & Development Co., Ltd. (SSTEC)
  - SSTEC and Hitachi signed an MoU in May, 2010

About 30 square kilometers
Population: 350,000 with 110,000 households (2020 to 2025)



Regional Energy Management



- Supply/ Demand Control
- Information Hub

BEMS/HEMS

EV Charging System

MoU: Memorandum of Understanding
BEMS: Building Energy Management System
HEMS: Home Energy Management System

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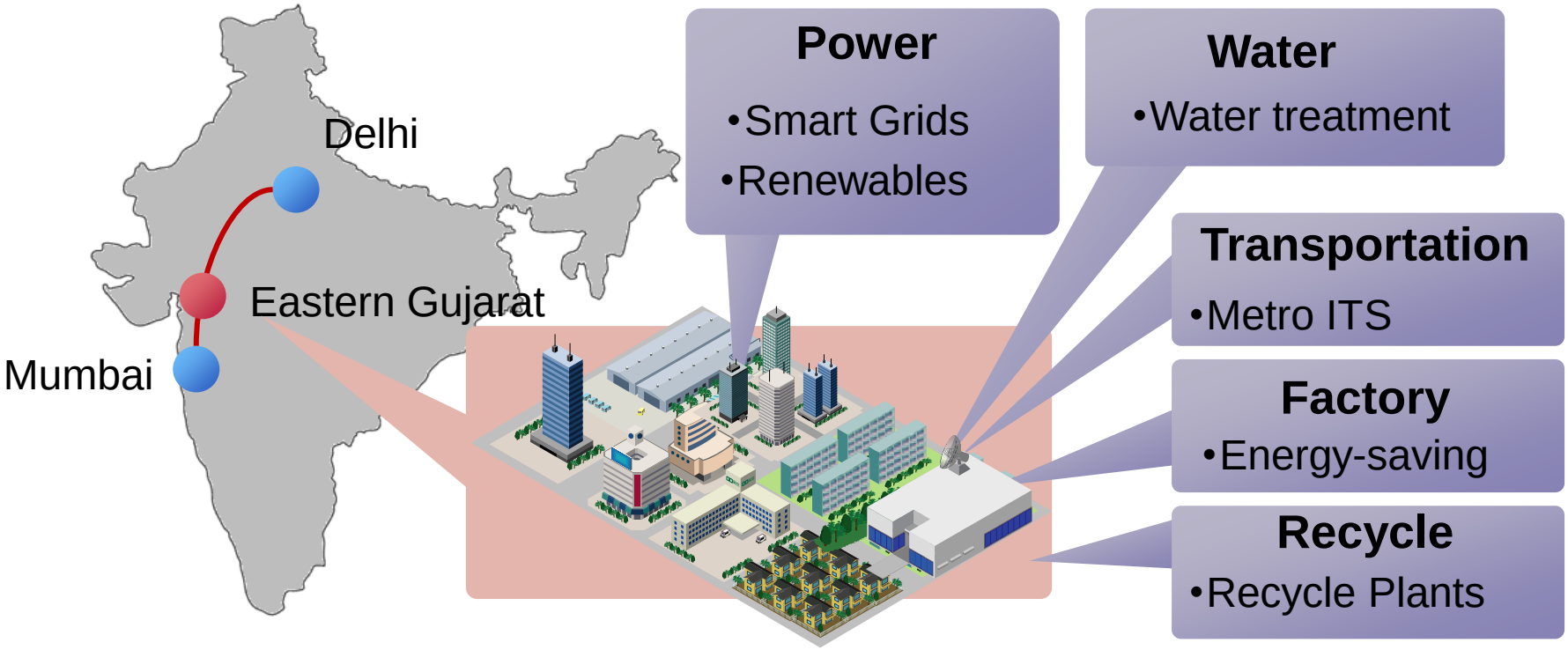
- India-Japan collaboration mega infra-structure project covering an overall length of 1,483 KMs between Delhi and Mumbai.
  - Gujarat government, DMICDC, JETRO and Hitachi signed MOU for feasibility study in Gujarat in April 2010.
  - Hitachi formed a consortium with ITOCHU,TEPCO and Kyosera as a leader.



DMICDC : Delhi-Mumbai Industrial Corridor Development Cooperation
JETRO : Japan External Trade Organization
MoU : Memorandum of Understanding
ITS : Intelligent al Transport System

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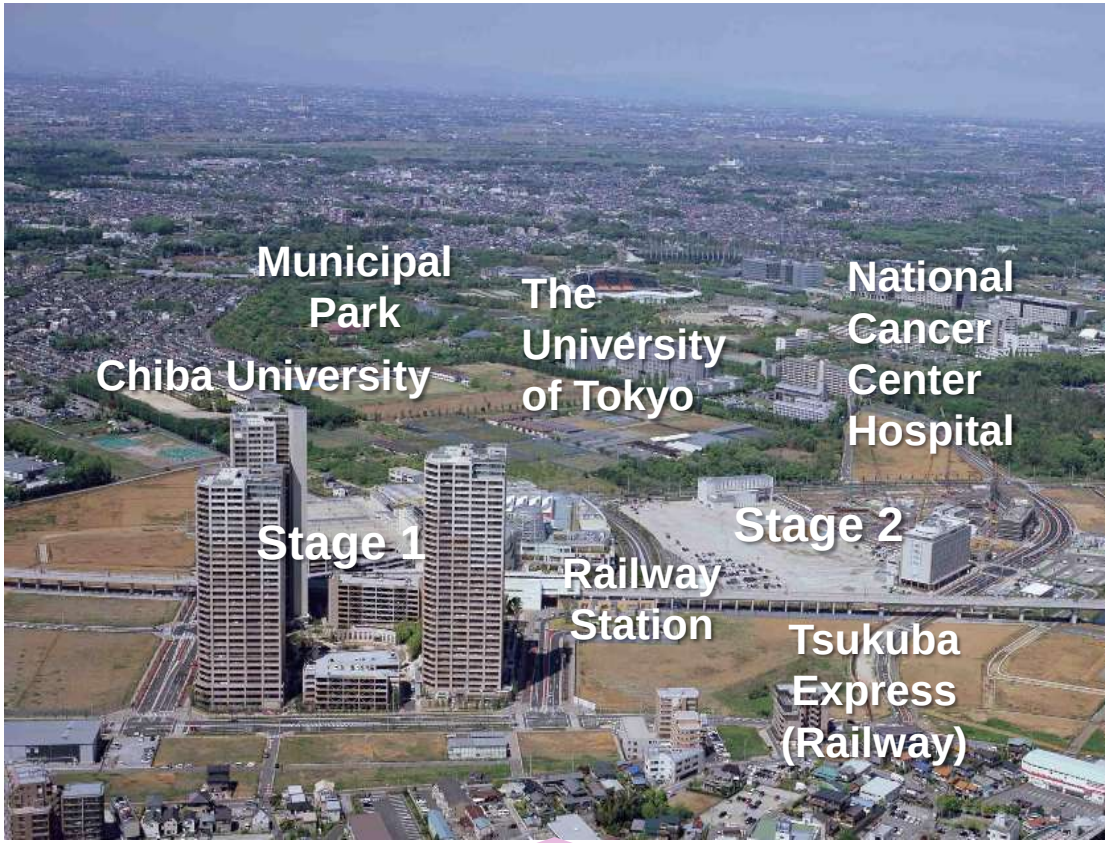
Kashiwa-no-ha Campus City, Chiba Prefecture



Environment-friendliness

- ✓ Community energy management
- ✓ Building/home energy management
- ✓ Renewable energy (PV, wind)
- ✓ Energy self-sufficient rate: 30%

Smart mobility

- ✓ Smart personal mobility
- ✓ On-demand traffic
- ✓ Velotaxi
- ✓ EV sharing

Academic research test-bed

- ✓ Smart mobility (the Univ. of Tokyo)
- ✓ Gerontology (the Univ. of Tokyo)
- ✓ Plant factory (Chiba Univ.)
- ✓ Chem-less town (Chiba Univ.)

Health-oriented community

- ✓ Regional base hospitals
- ✓ Advanced medical services (PBT)
- ✓ Accommodations for patients and family members for rehabilitation

Hitachi contributions

- ✓ Community energy management
- ✓ Personal mobility (Autonomous-driven cart, On-demand bus)

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Contribution

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Industry, Transportation and Urban Development Systems

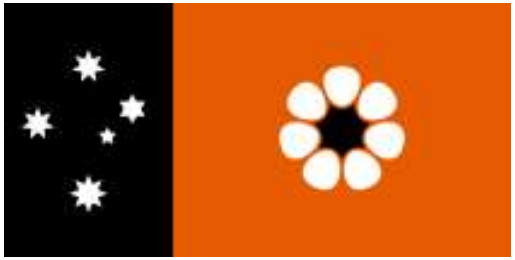
- Eco-city Development (Water Treatment)
- Construction Machinery
- Building, Elevators
- Green Mobility
- Health Care
- Cloud Computing
- Consulting
- Data Centers
- Storage
- Smart Grid
- Energy (Steam powered, atomic power, renewable energy)

Information & Communication Systems

Electric Power Systems

+

Materials and Key Devices...



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Weddell Project Concept
“Tropical, Sustainable, Livable”

Designing urban environmental sustainable city with
- Less dependency on non-renewable energy
- Less dependency on car ownership
- Less impact on natural resources

Hitachi’s Business Concept
“Social Innovation “

Wide experience and capabilities for
- Smart city design
- Smart grid and renewable energy generation system
- Total transportation system
- Intelligent water system

Toward the Next 100 Years with Reliable Technologies

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Technologies for building and operating IT-supported social infrastructure will support social innovations in Japan and around the globe in the coming century

Harmony

Ability to partner with a variety of enterprises & organizations

Pioneering Spirit

Efforts to obtain intelligence, including technology & know-how

Hitachi Spirit

Sincerity

Service provider's user-oriented thinking

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Celebrating 100 years of the Hitachi Group

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