Open Lecture at Higher School of Economics

October 10, 2018
Myasnitskaya Street 20, Moscow

Strategy of applying latest concept of “smart cities” in the metropolis (challenges and tasks for Moscow)

Michinaga Kohno
President and Chief Executive Officer
Michi Creative City Designers Inc.

About the Speaker

Hitachi Ltd.

40 years' experiences in Hitachi, Ltd.

- Manufacturing technologies (Research)
- Internal information systems (Operation)
- Strategic planning and Technological strategies

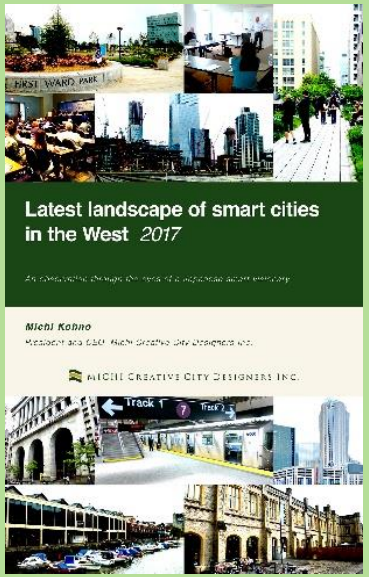
Freelance Consultant on Smart Cities

Eastern Economic Forum
(Vladivostok, 2016)

Smart City Seminar
(Kazan, 2018)

"**ОСТРОВ**"
(Vladivostok, 2018)

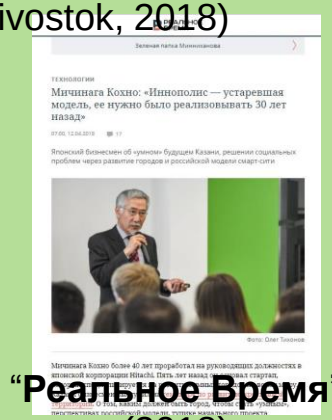
Moscow Climate Forum
(Moscow, 2018)



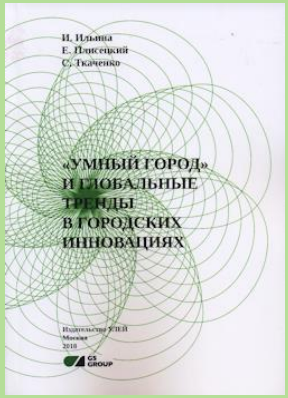
"Latest Landscape of Smart Cities in the West 2017"
(2017)

Smart Cities Week
(Washington DC, 2017)

APEC Smart City Workshop
(Jakarta, 2017)



"**Реальное Время**"
(2018)



"Introduction" to **«Умный город»**
by Professor Irina Ilyna of ВШЭ
(2018)

Changing Images of Smart Cities (1)

First Hype

2008 - 2012

Two extreme models

“Networked City”
Networking of urban infrastructure to create new value

“Energy-efficient City”
Use of renewable energy and EMS

EMS: Energy Management System

Changing Images of Smart Cities (2)

First Hype

2008 - 2012

Two extreme models

“Networked City”
Networking of urban infrastructure to create new value

“Energy-efficient City”
Use of renewable energy and EMS

EMS: Energy Management System

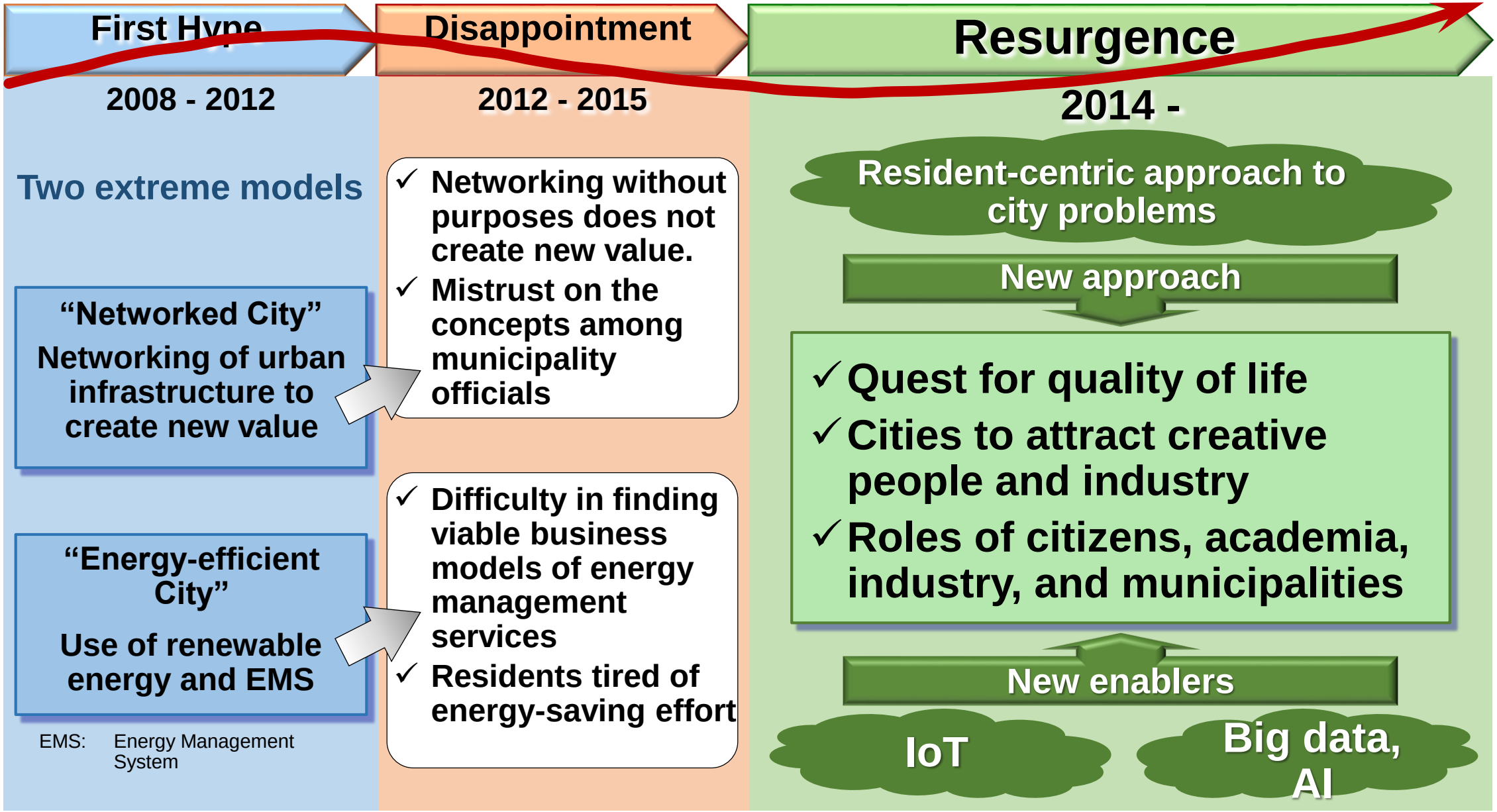
Disappointment

2012 - 2015

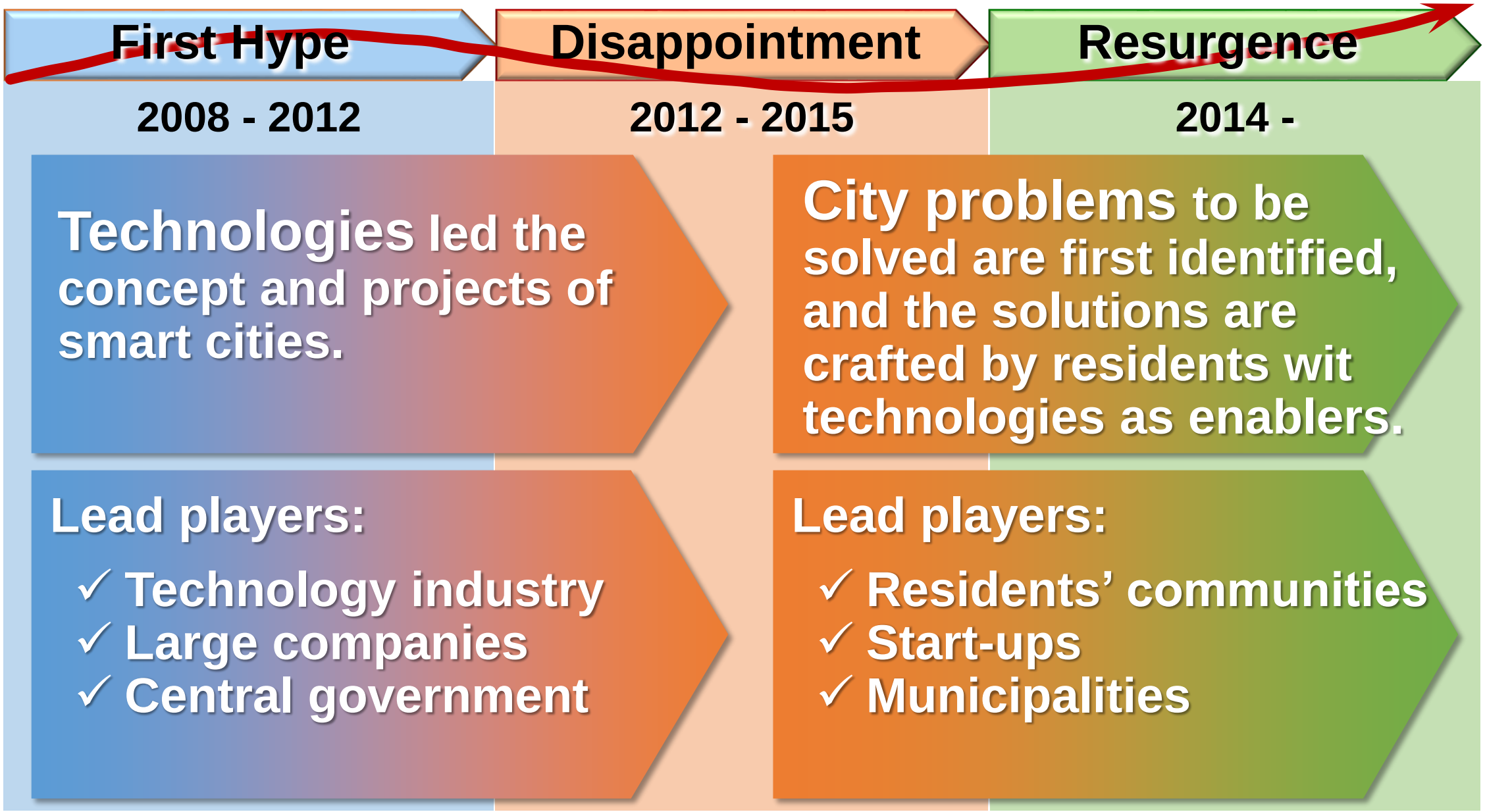
- ✓ Networking without purposes does not create new value.
- ✓ Mistrust on the concepts among municipality officials

- ✓ Difficulty in finding viable business models of energy management services
- ✓ Residents tired of energy-saving effort

Changing Images of Smart Cities (3)



Changing Images of Smart Cities (Summary)



Examples of Past Smart Cities

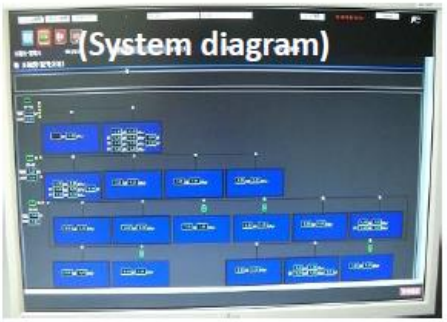
City	Country	Characteristics
Kita-Kyushu	Japan	Energy-focused (Social experiment with governmental funding)
Tianjin	China	Mostly Energy-focused (Joint project of Chinese and Singaporean Governments)
Dubuque, IA	USA	IBM-led pilot project with municipality
Lyon	France	Mostly Energy-focused (Combination of areal energy management, ZEB, and electric vehicles)

Kita-kyushu City

- Next-Generation Energy and Social System Demonstration: METI

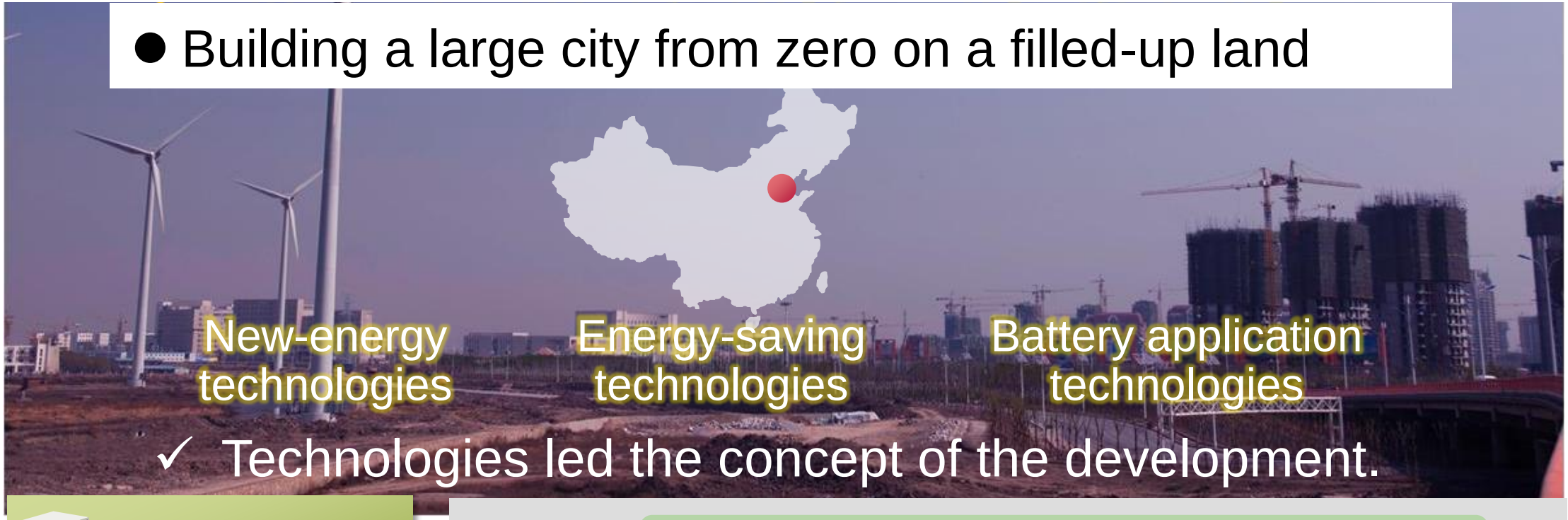
✓ Dynamic pricing of electricity and behavior of the residents

Examples of screens for CEMS

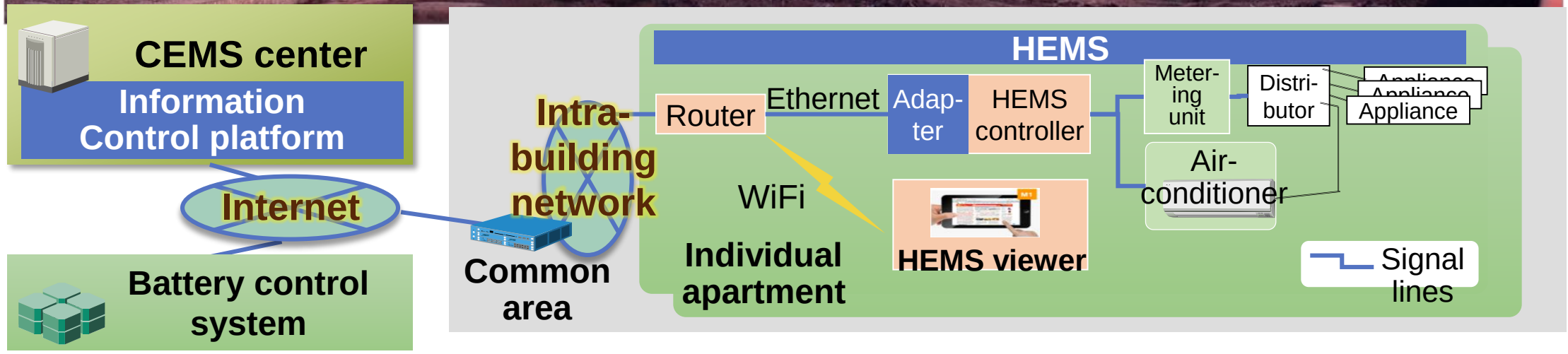


Tianjin Eco-City

- Building a large city from zero on a filled-up land



✓ Technologies led the concept of the development.

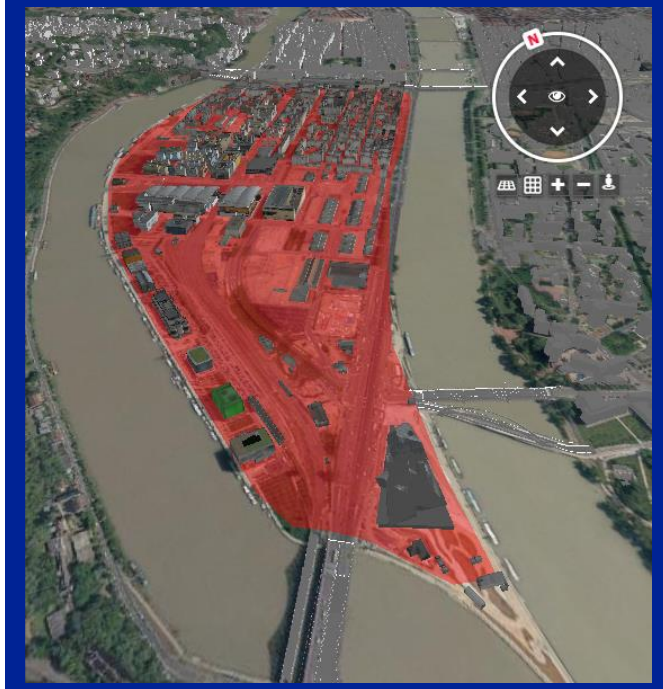


Dubuque, Iowa, USA

✓ IBM selected Dubuque as a pilot city of “Smarter Cities”

- After the experiments ended and reports were published, no further investment has been made.
- IBM, which opened a new factory to secure employment, closed the factory after the pilot project finished, and the local employees lost jobs.

Lyon, France



- Local renewable energy
- Reduction of use of conventional cars
- Refurbish of existing buildings to reduce energy consumption
- Affordable dwellings and convenient public spaces
- Data platform to monitor generation and consumption of energy

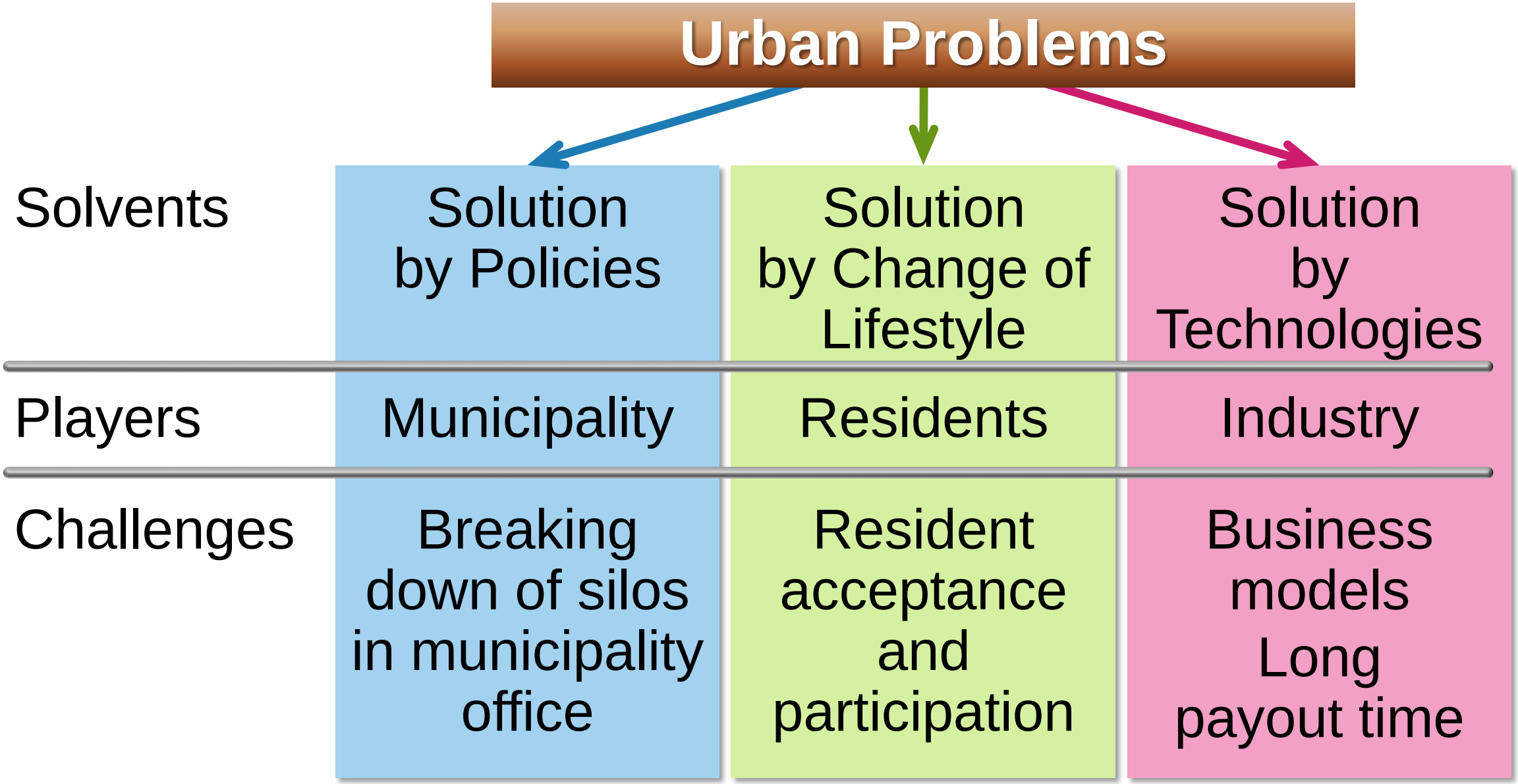
✓ Joint project with NEDO's overseas demonstration programs

(*) NEDO: New Energy and Industrial Technology Development Organization, a Japanese governmental agency for granting industry

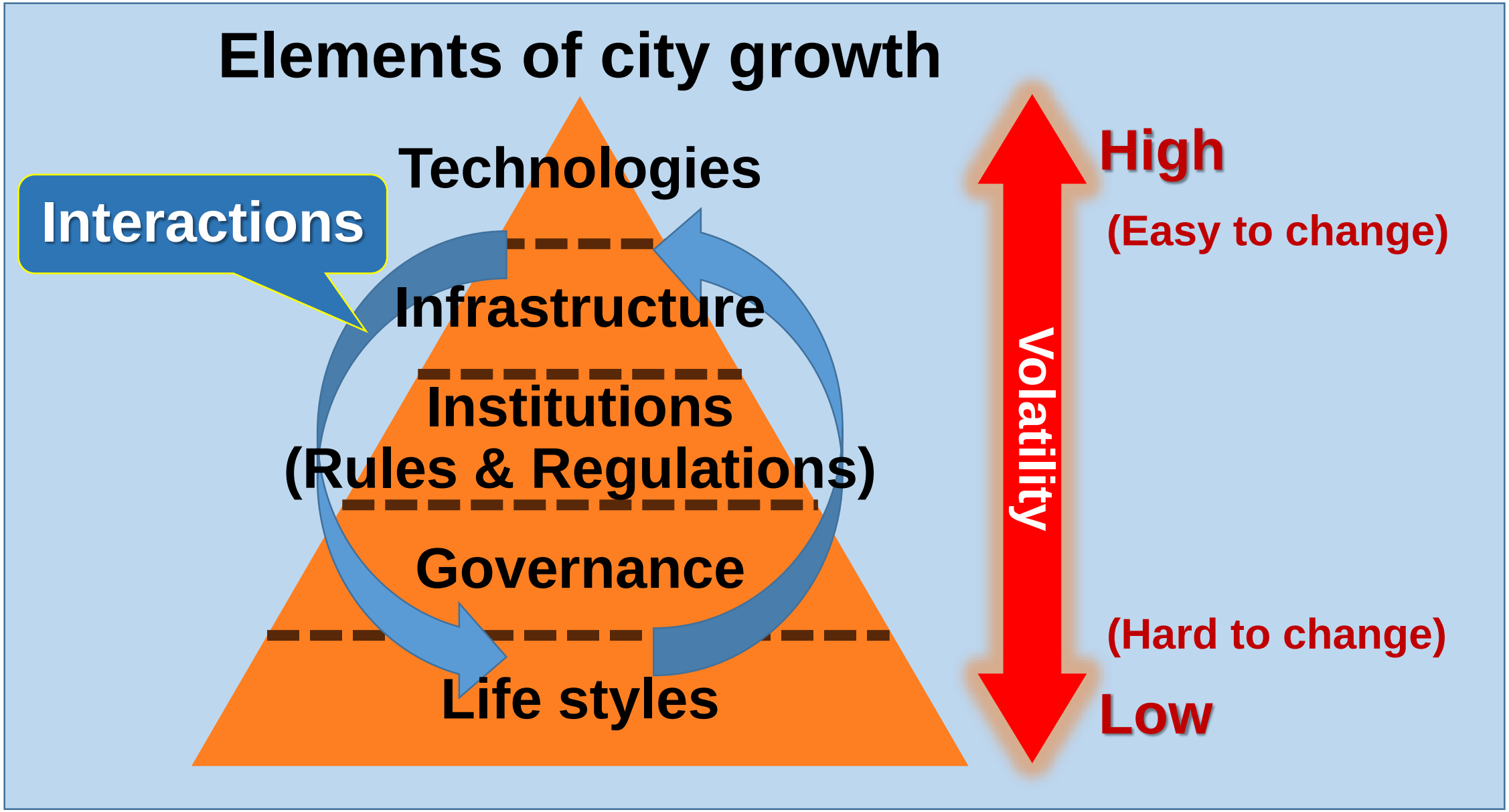
What are smart cities?

- ***A smart city is*** an "**Eco-system**", in which the city has developed a system (1) to **identify its problems** to reach the quality of life the people want to have, (2) to **find the solutions** to the problems with the people, (3) to **implement the solutions** to reach the higher level of quality of life, and (4) to **keep repeating the process** to continuously improve the quality of life of the people and residents as well as the level of services the municipality offers to the people.

Three Ways to Solve Urban Problems

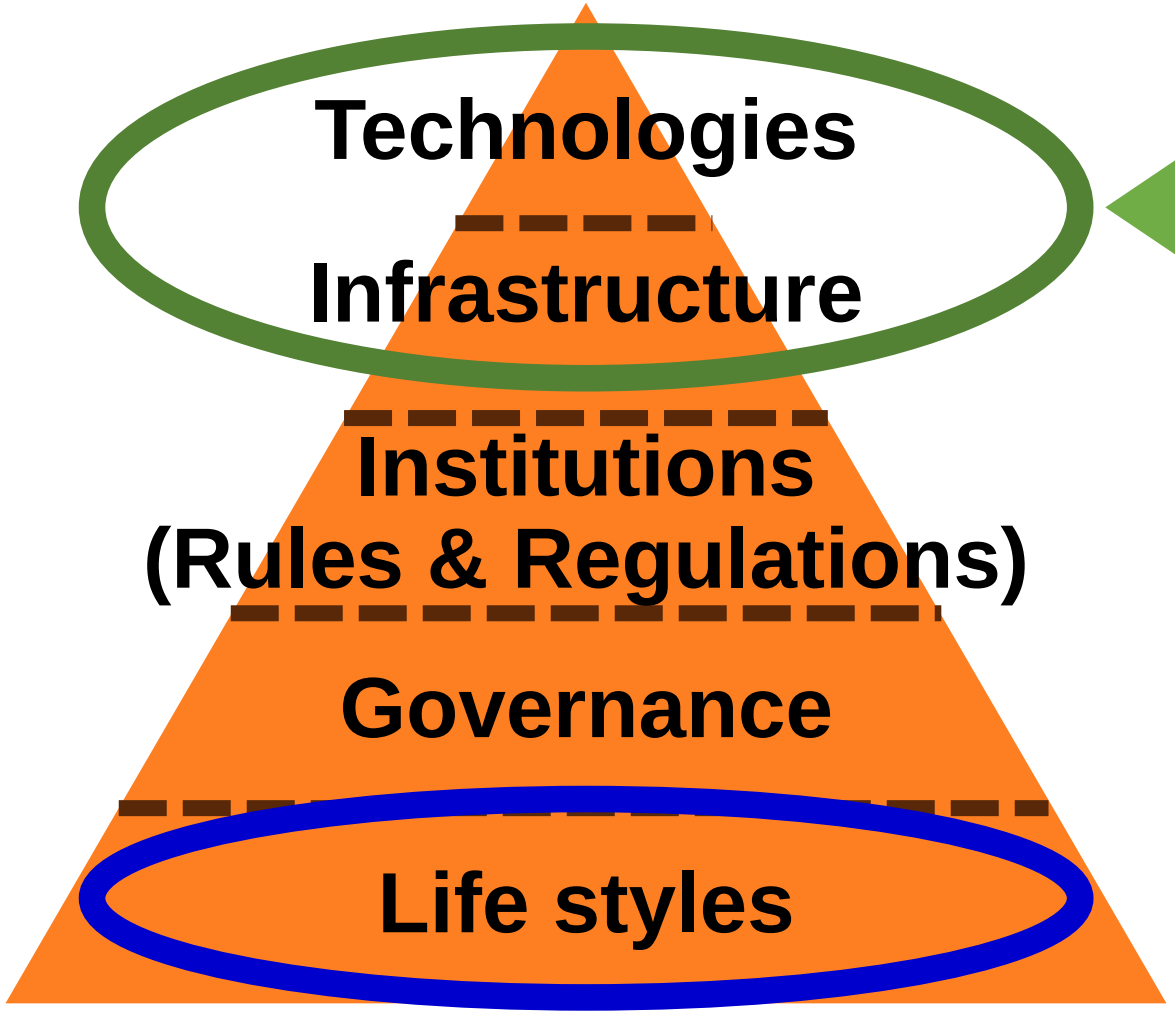


Layers of Elements of City Growth



Smart Cities are All About Life Styles

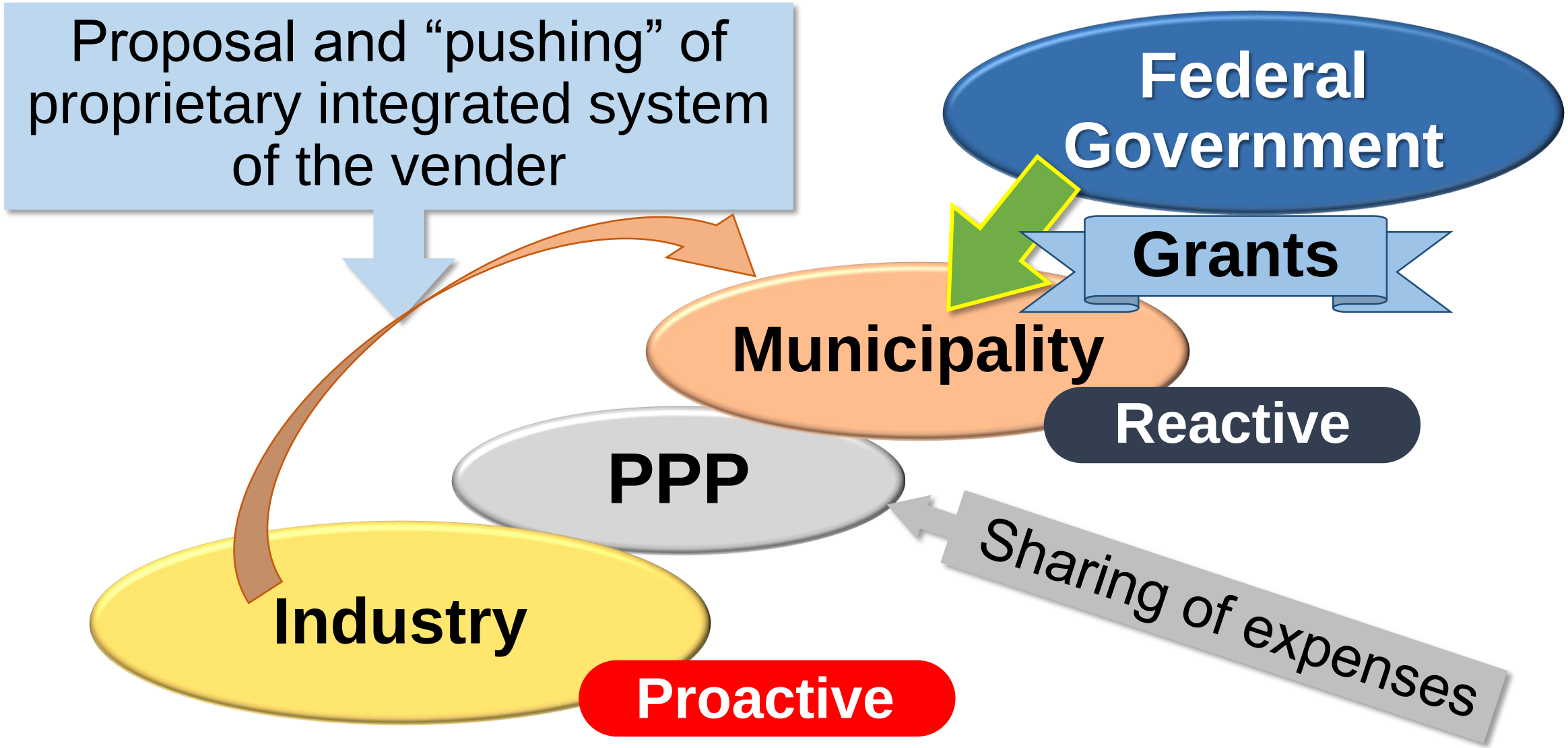
Focuses of Smart Cities



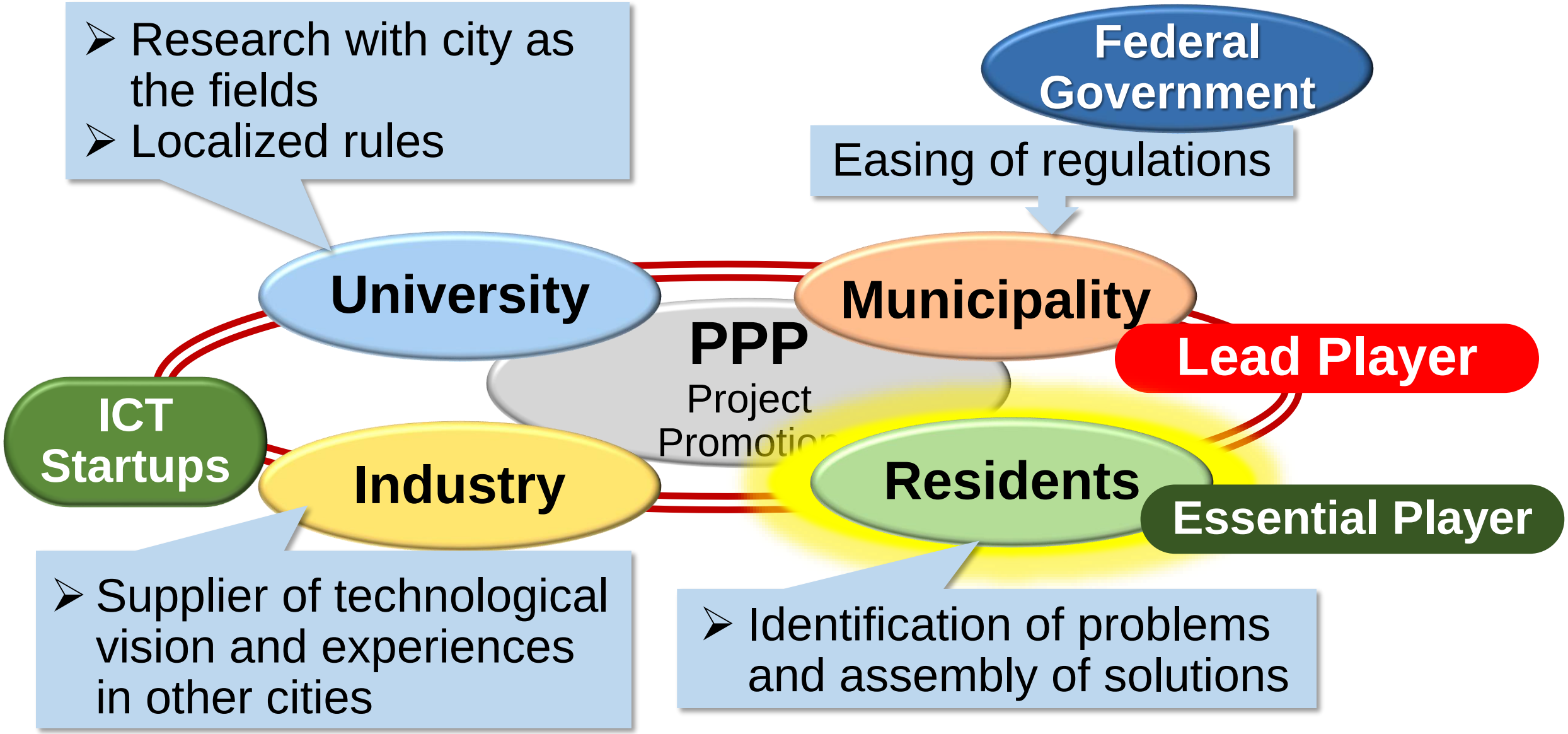
Conventional understanding of smart cities

The "smart city model" creates new life styles of the future.

Old Model of Public-Private Partnership



New Model of Public-Private Partnership



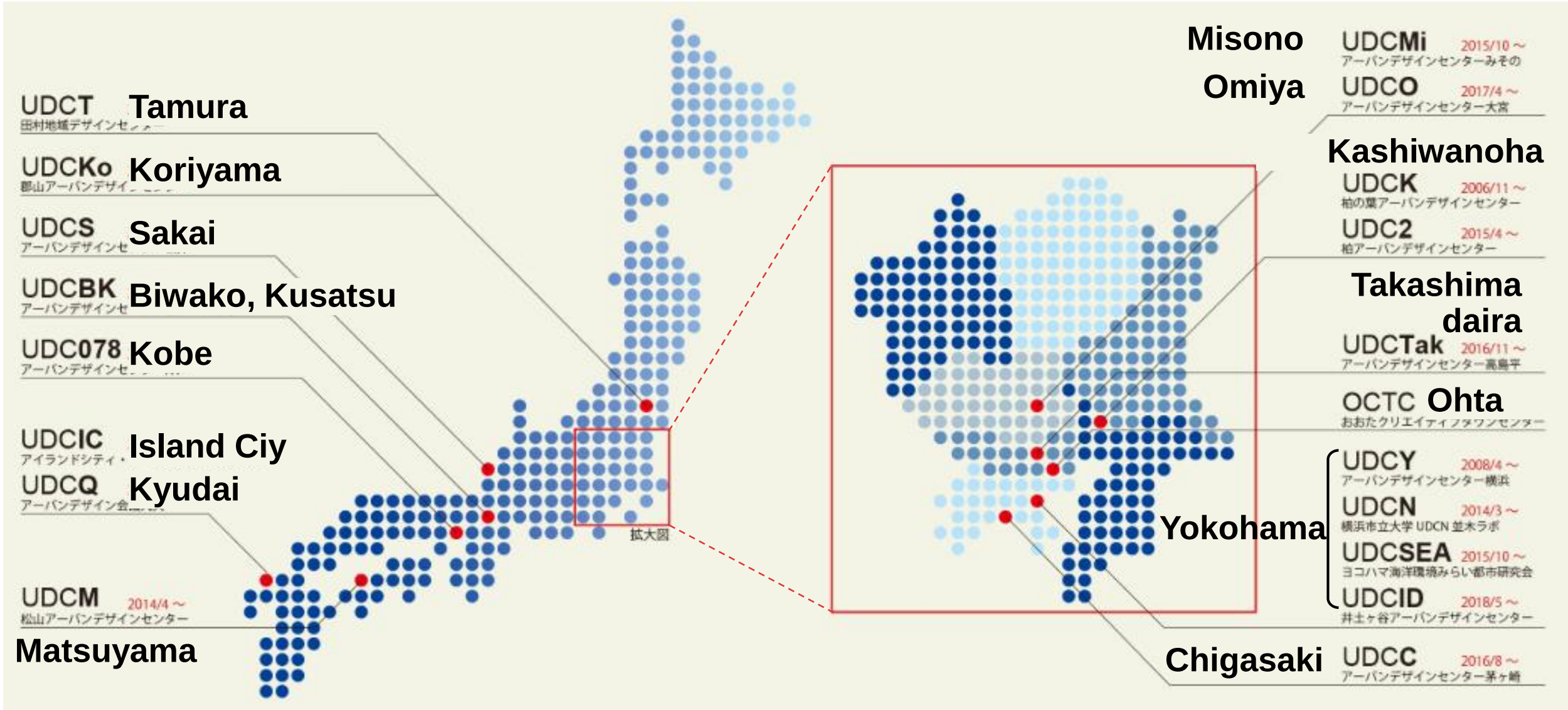
"Smart City Model" to Open the Future Society

"Smart City" is not just an urban development.

Sustainable Growth

The "Core" structure

“Urban Design Center” Activities



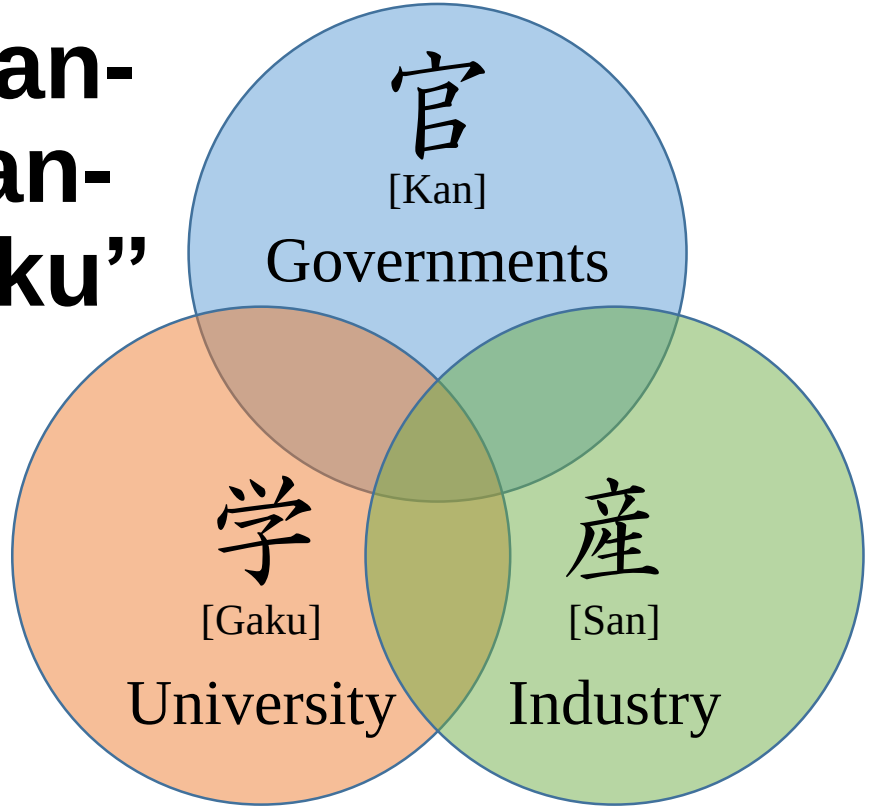
“UDC” Agenda

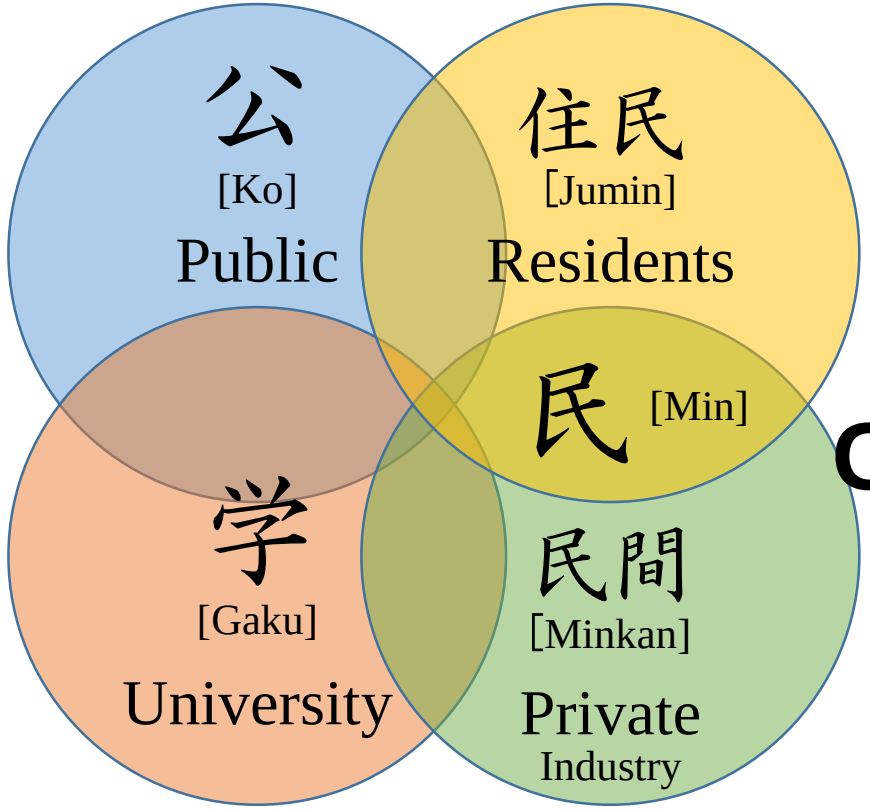
1. To be the hub of public-private-people-university partnership,
2. To establish clear targets and strategies, and execute them,
3. To act always on actual fields (not on desk),
4. Professionals on urban space design to lead the activities,
5. To keep challenging new ideas,
6. Everyone to enjoy the activities,
7. To open and share the latest information,
8. To expand the UDC Network to nationwide and worldwide

Advocator of Urban Design Center

The late Professor Takeshi Kitazawa (1953-2009)
The “Inventor” of “Urban Design Center” and the “Ko-Min-Gaku” concept.
1977-1997 Urban Design Bureau, Yokohama City
1997-2009 Professor of Tokyo University (Department of Urban Engineering, and School of Frontier Science)

“San-Kan-Gaku”



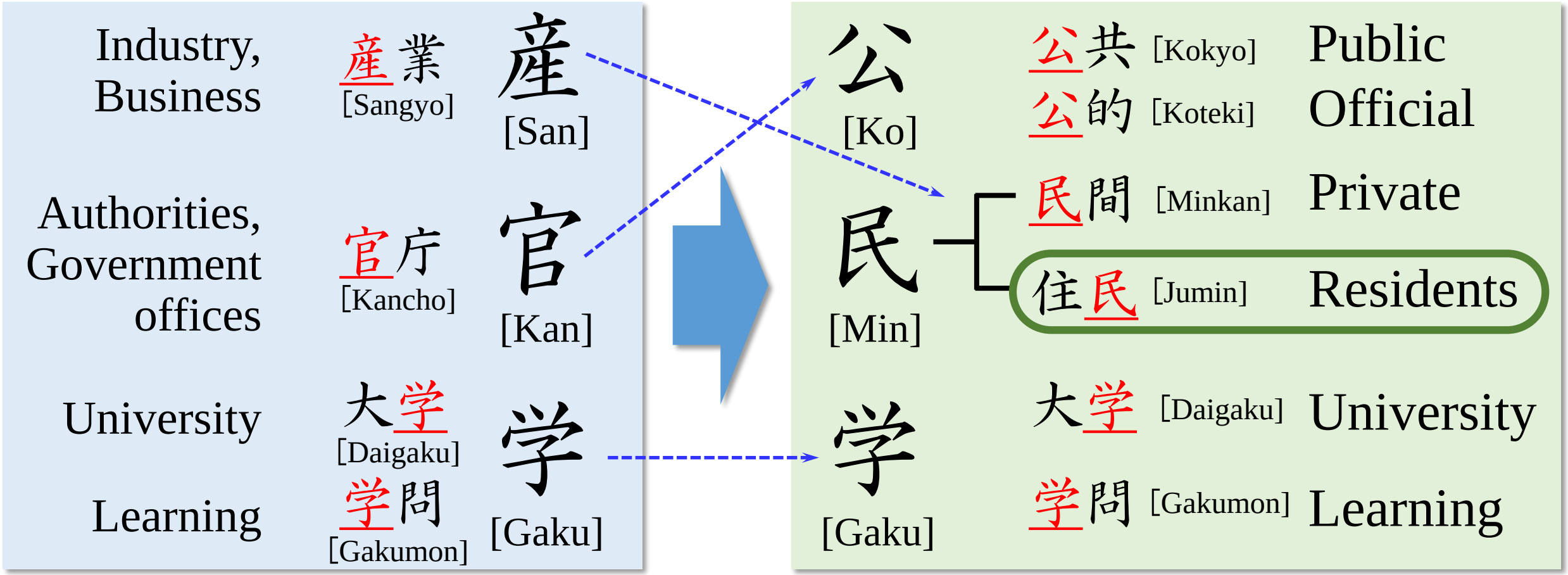


“Ko-Min-Gaku”

“San-Kan-Gaku” and “Ko-Min-Gaku”

「産官学」[San-Kan-Gaku] is most commonly used to describe the cooperation and partnership among government (public), industry (private), and university (academia).

「公民学」**[Ko-Min-Gaku]** is less used, but is defined by the late Professor Kitazawa to include residents.



Streets have become offices and salons

Offices in the past

Enclosed rooms with office furniture

Mobile Devices

- **Laptops**
- **Tablets**
- **Smart phones**

Digital Canopy

Streets, Squares and Parks

- **Streets** were used for moving from one place to another, but now are used for **meeting and talking with others**, and have become the **cradle of innovation**.

Streets to squares in major cities

Osaka, Japan

Times Sq. New York

The Seine, Paris

From "Functional Zoning" to "Mixed Use"

Functional zoning in the conventional urban planning

Mixed-use areas

- ✓ Combination of offices, commercial and residential areas
- ✓ Opportunities of meeting different types of people
- ✓ Ease of commuting

Moscow Smart City Concepts

Goals

- ✓ Quality of Life – better environment for citizens and businesses
- ✓ Efficient Government – data-driven decisions and strategy
- ✓ Solid Infrastructure – high capacity to meet the needs of people and machines

Approaches

- ✓ E-readiness
- ✓ ICT infrastructure

- ✓ City Wi-Fi & mobile internet
- ✓ Smart transport
- ✓ Visit a doctor online

Services

- ✓ Electronic school
- ✓ Electronic document flow
- ✓ Finance
- ✓ Safety
  - ➢ CCTV
  - ➢ Rescue

Citizen engagement

- ✓ Наш город
- ✓ Active Citizen Online Referendum System

Distinctive Features of “Moscow Smart City”

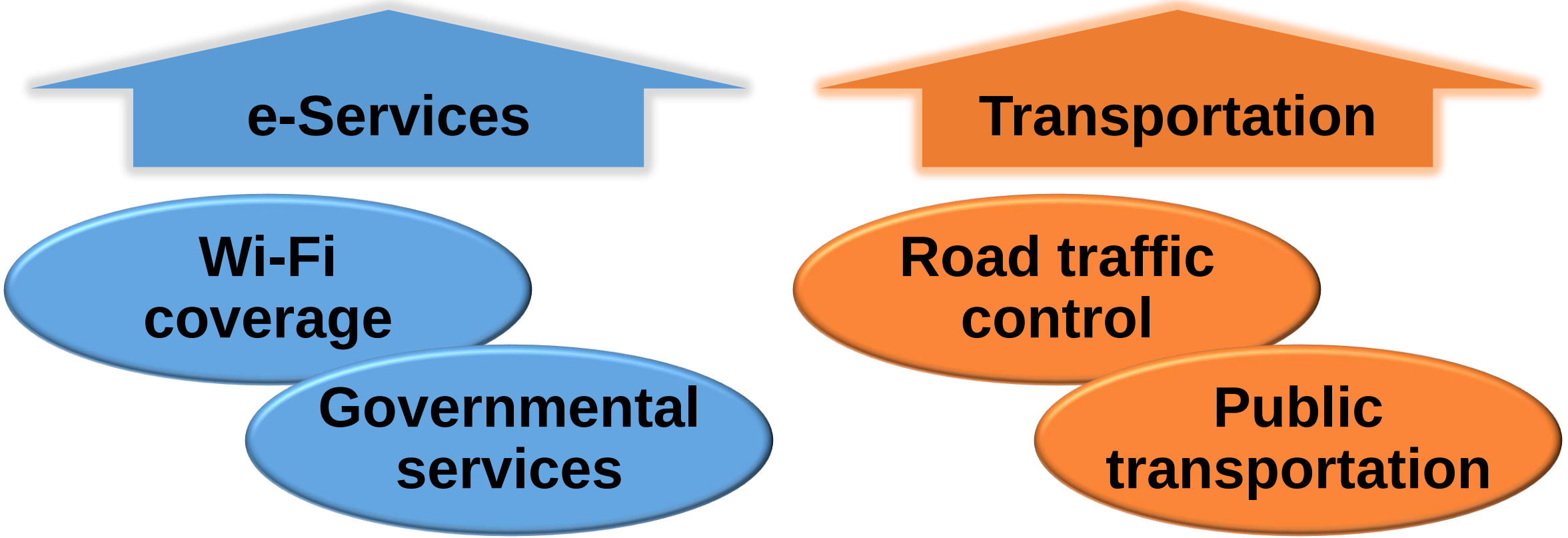
- “E-readiness” and “ICT infrastructure” for better accessibility and reduction of management cost for local government in delivering its services to the residents;
- “E-services” disseminated to healthcare, education, and transportation;
- Significantly improved road traffic and public transportation systems;

☆ Typical “ICT-centric” smart city

Moscow on the “Smart City Model” (1)

Current status

2 pillars of approaches



Moscow on the “Smart City Model” (2)

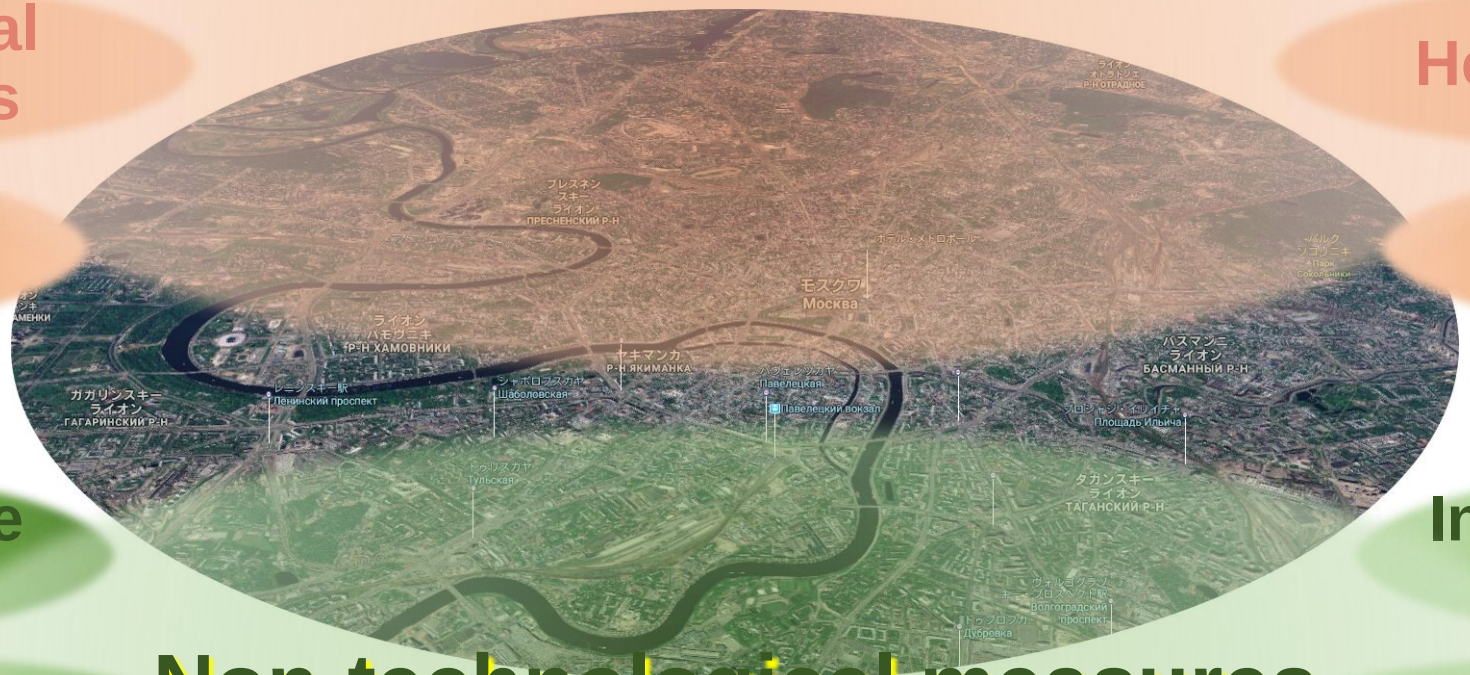
e-Services (IoT) canopy

Municipal services

Healthcare

Infrastructure

Education



Work/life place vicinity

Inclusiveness of elderly

Non-technological measures

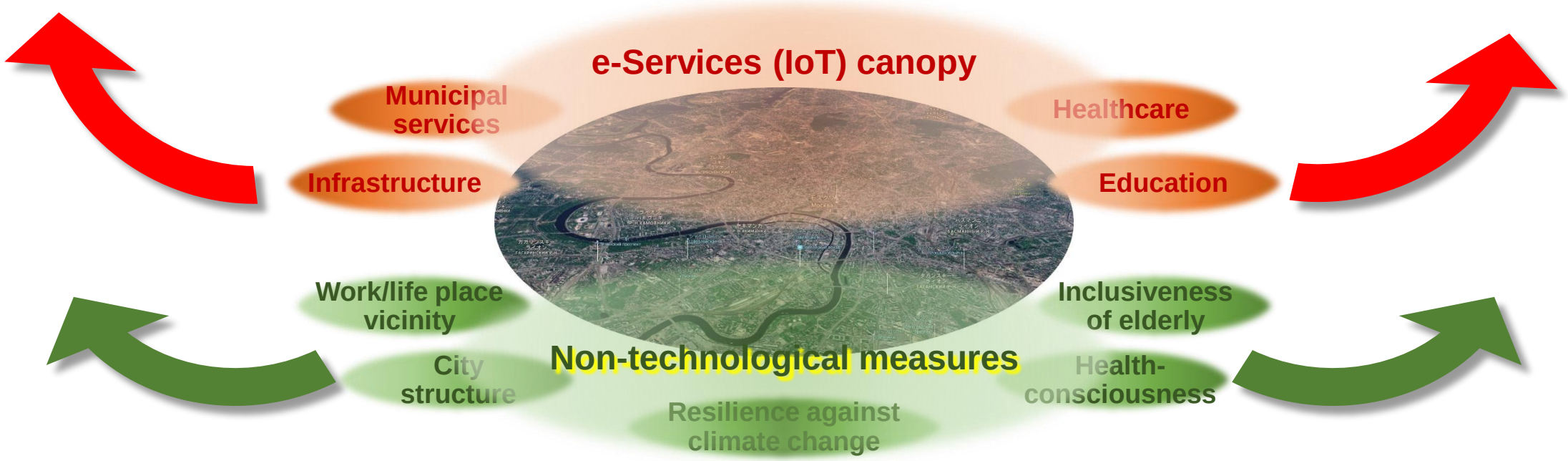
City structure

Health-consciousness

Resilience against climate change

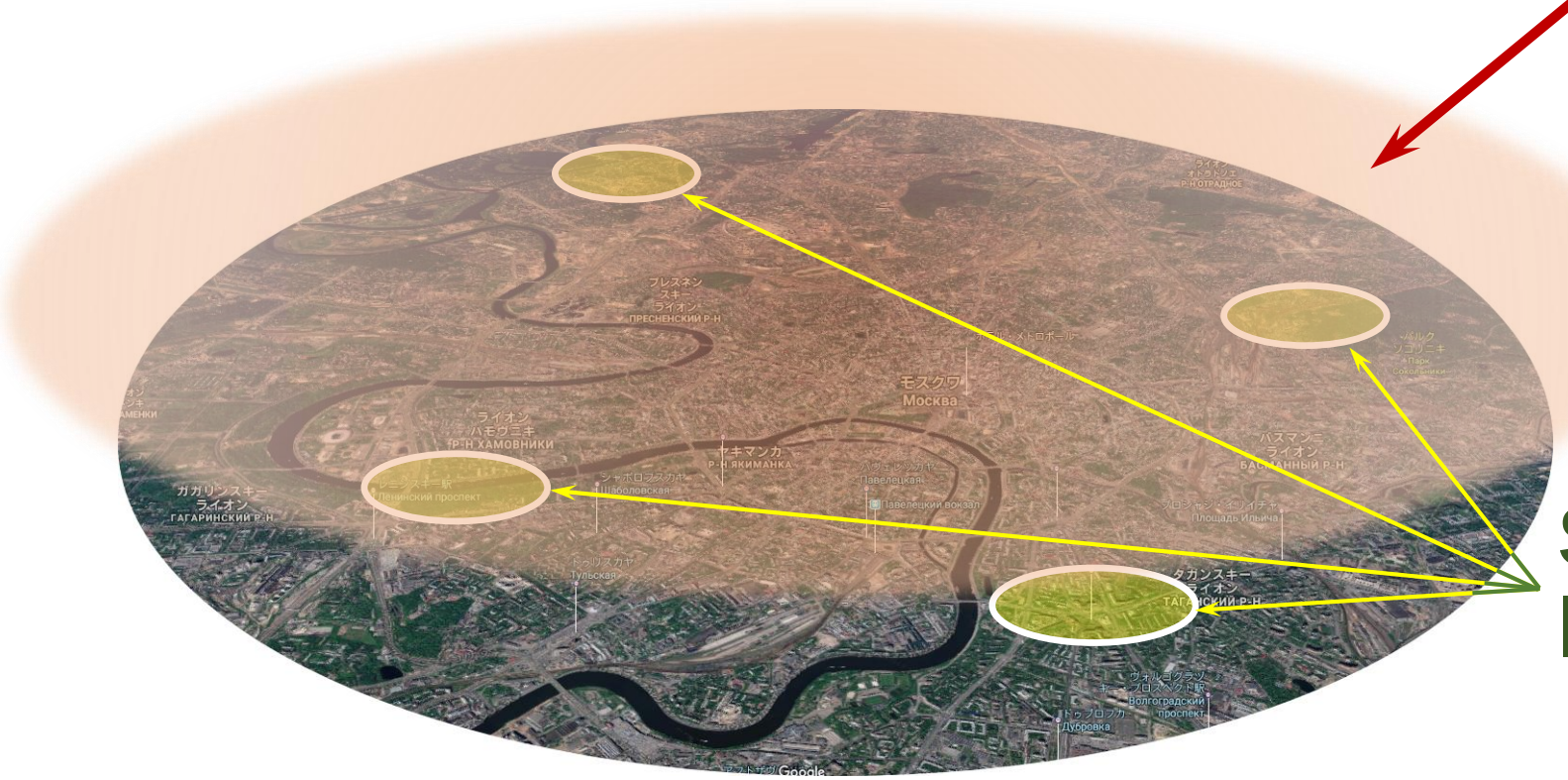
Expectations on the “Moscow Smart City”

- The leading model of “Smart Mega-city” in the “Digital Economy” age
- Creation of new urban life style established on balanced combination of urban renovation plans and connected city plans



Layered Approach to “Smart Mega-City”

- City-wide deployment of platform projects: ICT canopy, Road traffic control
- Demonstration projects in limited pilot areas with limited scale: Health-conscious community, Multi-generation neighborhood



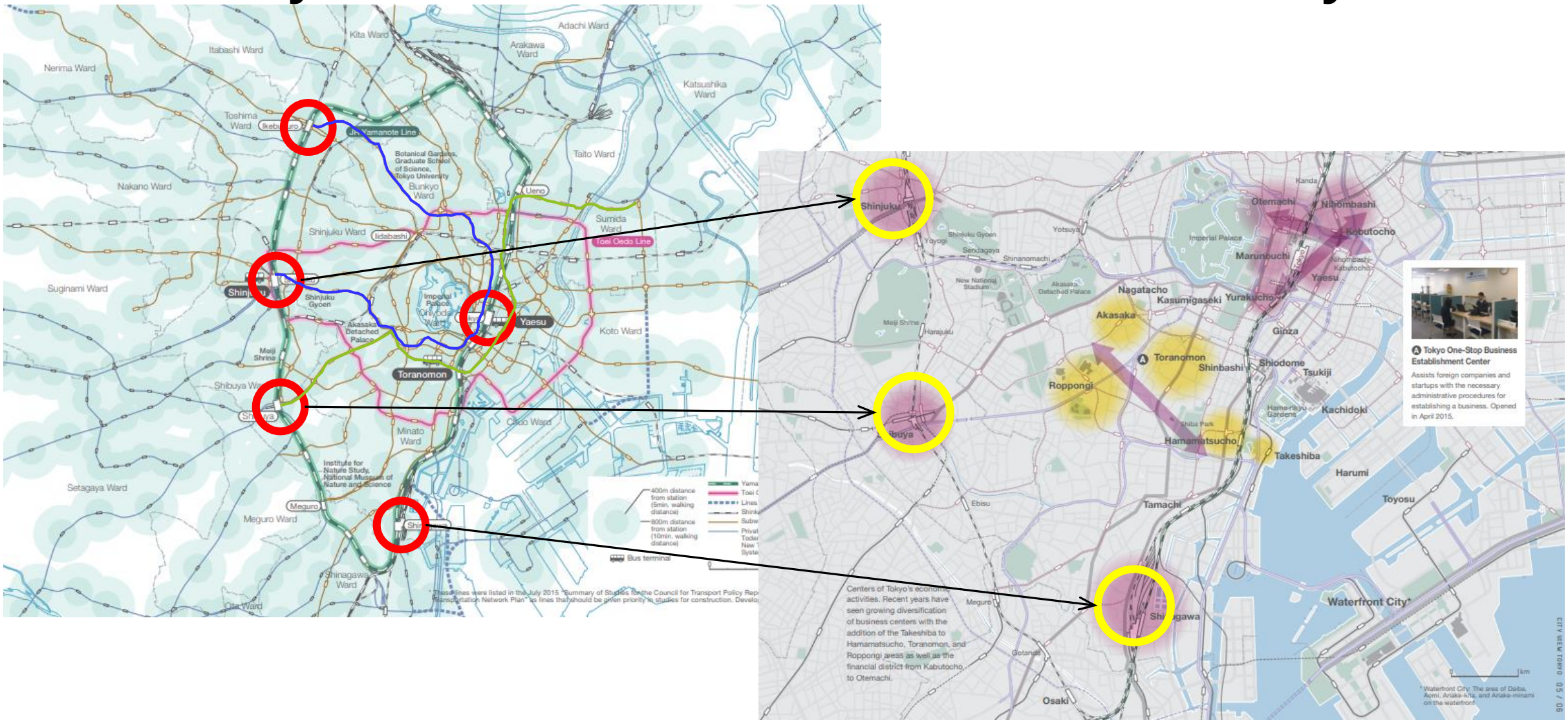
City-wide projects (Thin but broad)

Tactical Urbanism

Specific projects in limited pilot areas (Small but deep)

Tokyo Experiences (1)

◆ Railway Network and Business Centers of Tokyo

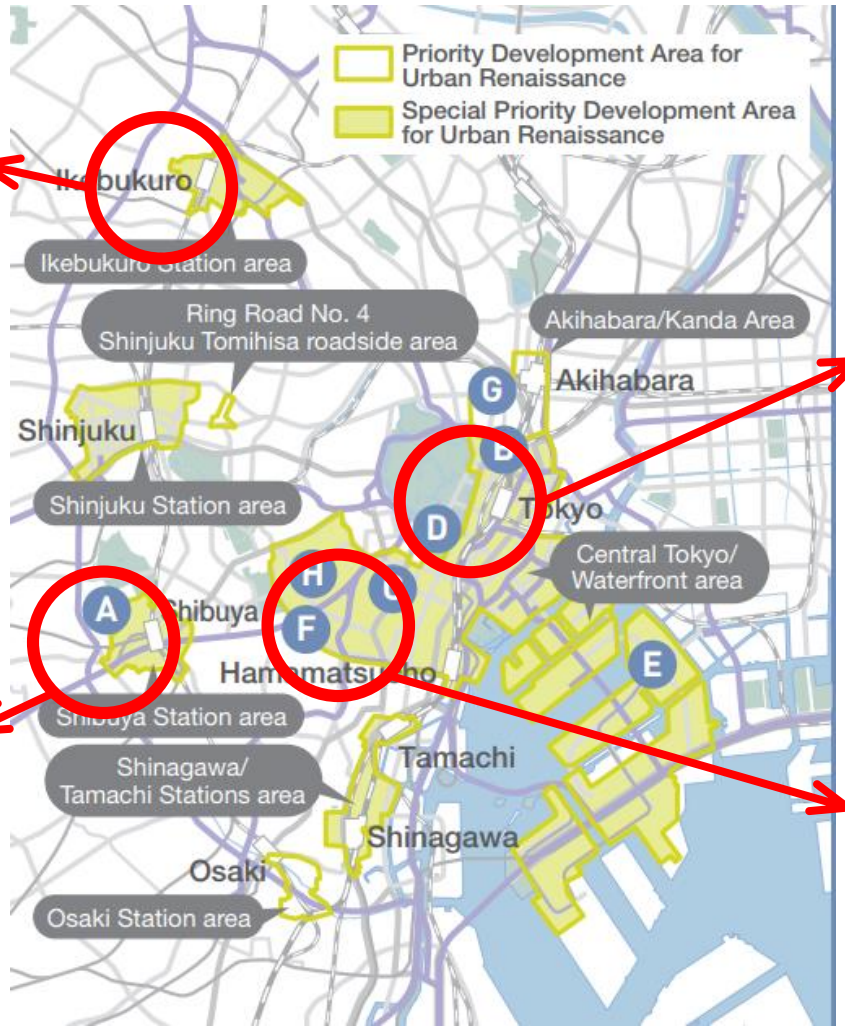


Tokyo Experience (2)

◆ Urban development of hub areas – Public-Private Partnership

Ikebukuro

Shibuya



“Dai-Maru-Yu”

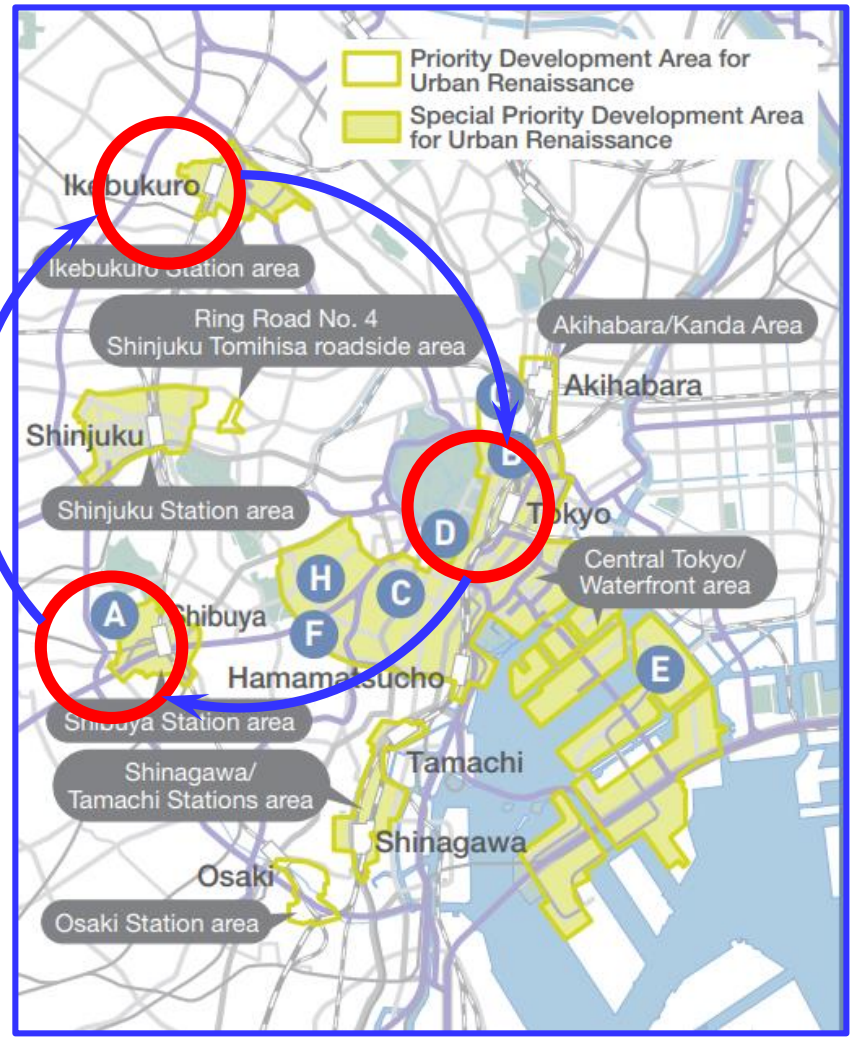
Shin-Tora Avenue

Urban Development in the “Shrine Transfer Model”

- **Circulation of development areas with several decades of intervals**

“Ise” Shinto Shrine

- **The deity is transferred to a new shrine building, which is newly built once in 20 years.**



“Dai-Maru-Yu”

Shibuya

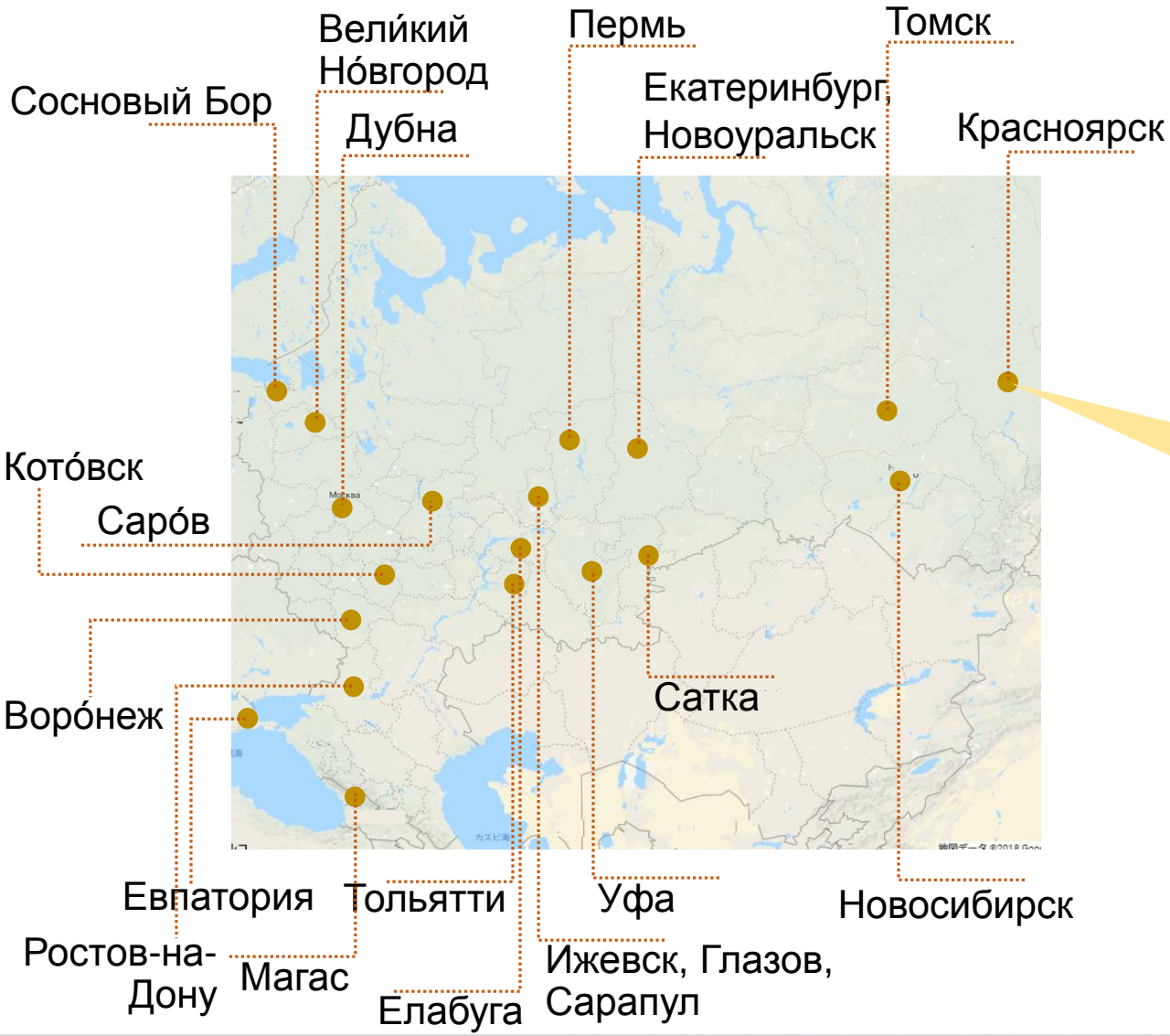
Ikebukuro

Tactical Urbanization and Strategic Planning

- Russian bureaucrats love “Strategy”, but once they obtain the strategies, they would never establish execution plans on the strategy to implement the targets.
- Plans are the basis of all the actions, even if it reminds you of the Soviet days.
- Strategic plans for the entire direction and vision are needed to align the “step-by-step” activities in tactical urbanization.
- Tactical urbanization without base strategy or grand design will fall into catastrophe.

Contrasts

“Smart City” Initiative by Министерство строительства и жилищно-коммунального хозяйства Российской Федерации



Проект «Преображенский»

- ✓ Demand Side
  - ➢ Residential heaters with thermo-control
  - ➢ Heat insulation of house walls and windows
- ✓ Supply Side
  - ➢ Co-generation and energy management
- ✓ General
  - ➢ “Green design” of buildings
  - ➢ Home energy management systems (HEMS)

☆ *Old-fashioned smart city model!*

Thank you for your attention.

Michinaga Kohno

President and Chief Executive Officer

Michi Creative City Designers Inc.

michi@michi-city.com

Back-up

Moscow Smart City Concepts (1)

- ✓ Smart City Goals
  - ➢ Quality of Life – better environment for citizens and businesses
  - ➢ Efficient Government – data-driven decisions and strategy
  - ➢ Solid Infrastructure – high capacity to meet the needs of people and machines
- ✓ Workscope
  - ➢ Schools, hospitals, city administration depts., municipal service providers, traffic police offices, public transport, rescue services
- ✓ Centralization
  - ➢ IT budget – creation of cross-functional structure in charge of technology development and procurements for the whole city
  - ➢ Benefits: economy of scale, better planning, interoperability
- ✓ E-readiness: ICT infrastructure
  - ➢ Wi-Fi in metro, Wi-Fi in city center - seamless handover, public hotspots, broadband >20MBs, 4G coverage, smartphone penetration, connected citizens, connected officials
- ✓ Electronic Document Flow
  - ➢ Faster documents approval and coordination, faster decision-making, reducing labor costs, ensuring safety of stored documents
- ✓ Finances
  - ➢ Unified accounting system
  - ➢ One-click reporting, real time billing and reporting, big data analysis, transparent for supervising authorities

Moscow Smart City Concepts (2)

- ✓ Finances (Government procurements)
  - ➢ Government procurement system
  - ➢ Equal access of suppliers to cities procurements, transparency of cities procurements, budget saving driven by auctions, anticorruption barriers system
- ✓ Housing and public utilities (Resources efficiency)
  - ➢ Smart metering system in 3,500 buildings of governmental institution
    - ◆ Real-time resources accounting, water pressure, grid integrity control
  - ➢ City wide smart metering and control system for 33,000 residential buildings
  - ➢ Unified city vehicles tracking system for 126 municipalities
    - ◆ Routes monitoring, fuel consumption, speed monitoring, operation mode
- ✓ Safety (CCTV)
  - ➢ Centralized city-wide VSAAS
- ✓ Public services
  - ➢ 200 public services available online and via mobile
    - ◆ Online portal, 10 mobile apps, 20 SMS and USSD services
- ✓ E-healthcare
  - ➢ Unified resource management and health monitoring system
    - ◆ Patient flow control, online appointments, cloud-based EHRs, e-prescriptions, cloud-based accounting

Moscow Smart City Concepts (3)

- ✓ Education
  - ➢ Digital environment for teachers, parents and pupils
    - ◆ Online school diaries, online assignments, customizable modular presentations for tutorial sessions, parental notifications and alerts
- ✓ Safety (Rescue)
  - ➢ Unified management system and personal tablets for each of 750 crews
    - ◆ Accident details from help line, Video from CCTV, best route based on traffic situation
- ✓ Citizen engagement (online complaints)
  - ➢ Public control over the quality of city infrastructure
- ✓ Citizen engagement (E-voting)
  - ➢ City-wide e-voting app
    - ◆ Weekly voting regarding city development issues, votings can be targeted to specific districts and streets, all decision should be implemented by government

Emerging Markets Are Catching Up!

India

- ✓ 100 “Smart Cities” lead by PM Modi
- ✓ Two approached
  - ➢ Model district approach (80%)
  - ➢ City-wide but shallow (20%)

Korea

- ✓ Central government named Busan and Sejong as model cities.
- ✓ Problem-solving approach while U-Cities were technology-based

Vietnam

- ✓ Parallel promotions in Ho Chi Minh City, Da Nang, and Hanoi regions
- ✓ 3 districts named as pilot areas of Ho Chi Minh City

Smart City plans (2017-2020) unveiled for Ho Chi Minh City in Vietnam

Russia

- ✓ New initiative by Ministry of Construction, Houses and Utility of Russian Federation
- ✓ 21 model cities nominated

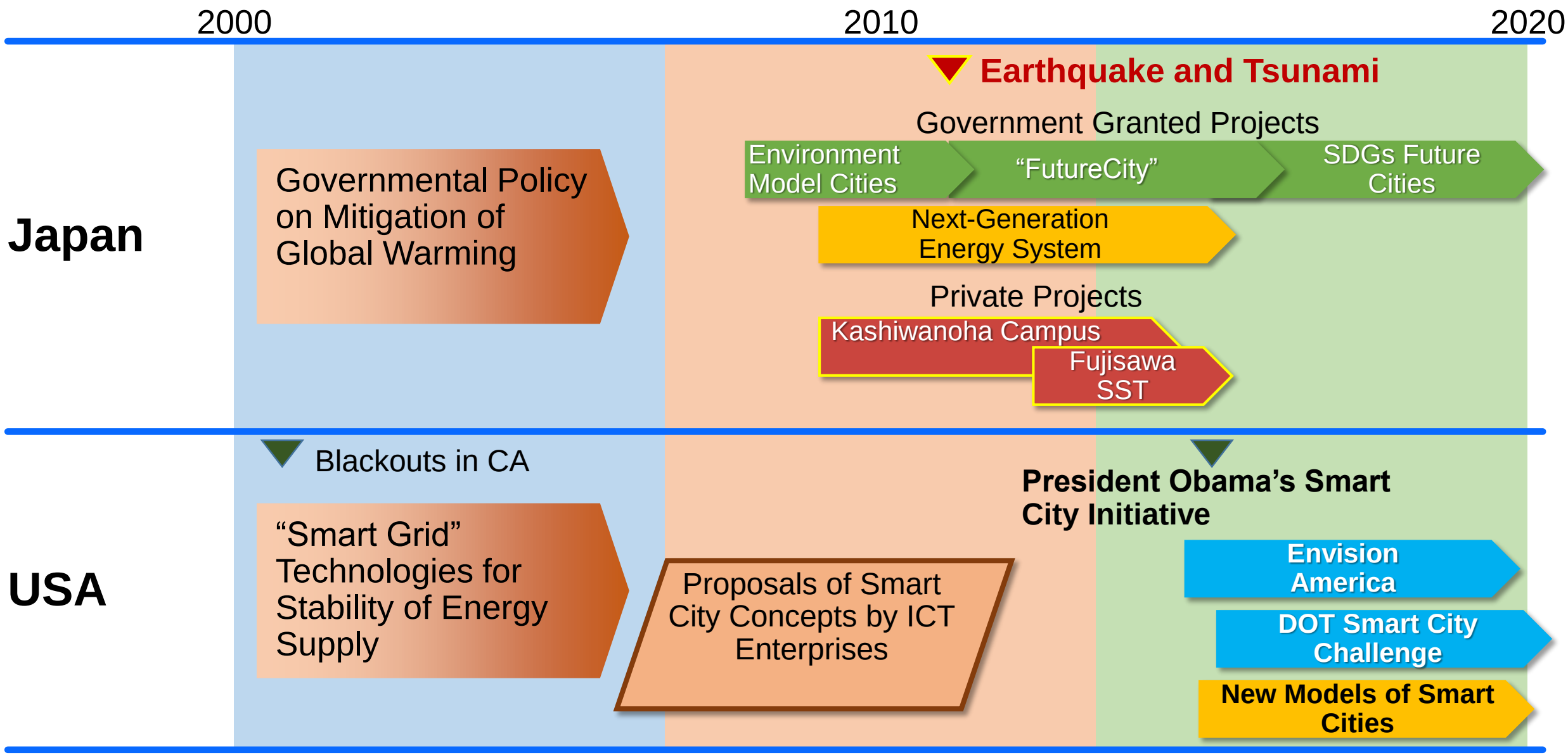
ASEAN Smart City Network

- ✓ Agreement in the 32nd ASEAN Summit, April 28, 2018, in Singapore
- ✓ Objectives include (1) promotion of smart city development, (2) creation of financeable projects for private sector, and (3) securement of loan and support from external partners.

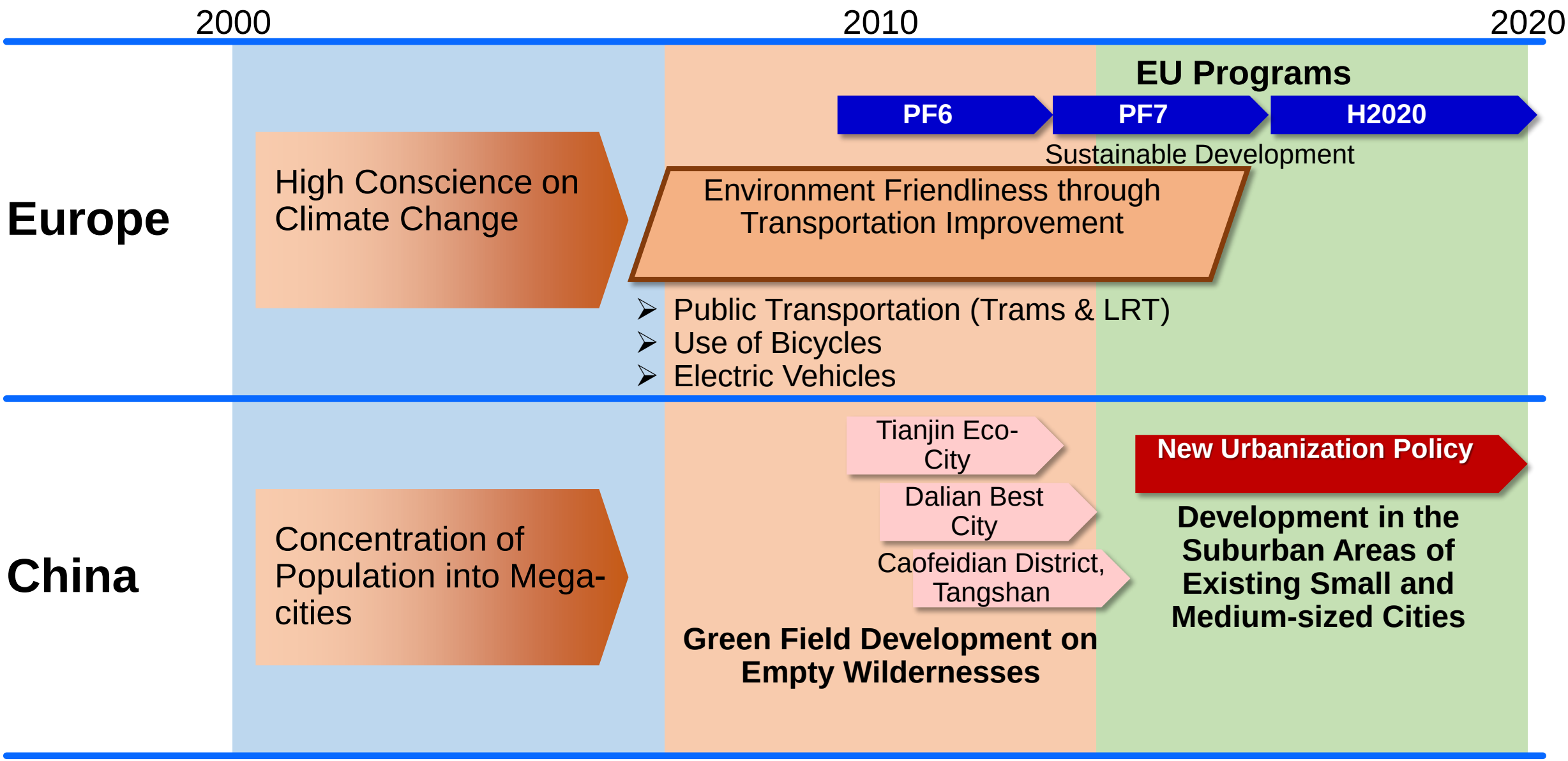
- ✓ 26 pilot cities selected, and 4 measures to be taken.
  1. Each pilot city establish action plans between 2018 and 2025,
  2. Development of guideline to be referred by cities,
  3. Annual meetings to be held,
  4. Each city to form “Twins” with external partners in ASEAN.

Bandar Seri Begawan	Bangkok	Banyuwangi	Battambang
Cebu City	Chonburi	Da Nang	Davao City
DKI Jakarta	Ha Noi	Ho Chi Minh City	Johor Bahru
Kota Kinabalu	Kuala Lumpur	Kuching	Luang Prabang
Makassar	Mandalay	Manila	Nay Pyi Taw
Phnom Penh	Phuket	Siem Reap	Singapore
Vientiane	Yangon		

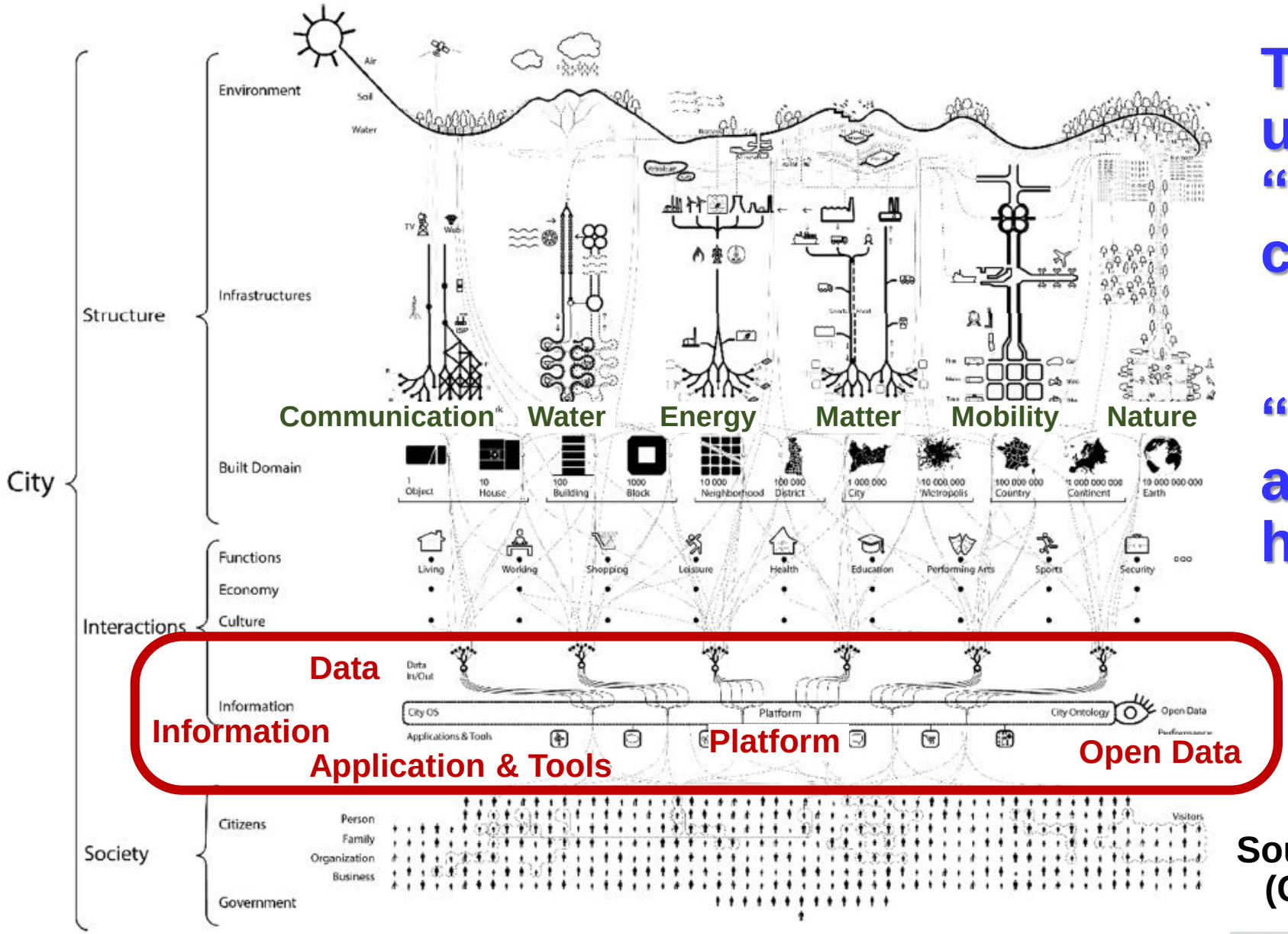
Different Backgrounds of Smart Cites (1)



Different Backgrounds of Smart Cites (2)



Cities as “System of Systems”



The latest trends in understanding cities: “holistic” view of the cities

“Smart Cities” should also be viewed in holistic ways.

Data
Information
Application & Tools
Platform
Open Data

ICT-centric concept in narrow sense

Source: City Anatomy Model (City Protocol Society)