

ONLINE EVENT

# 2<sup>ND</sup> Southeast Europe Smart Society Conference

*A comprehensive approach to building smart societies*

13th January, 9 AM to 12:30 PM CET, Livestream



ONLINE EVENT

# 2<sup>ND</sup> Southeast Europe Smart Society Conference

Japan's Journey Toward Smart Society  
Yasunori Mochizuki, NEC Fellow, NEC Corporation



**SMART SOCIETY**

**NEC**

# Introducing my background .....

COCN: policy proposal consortium for Japan

- Pj - “Building Digital Smart Cities” (2018-2019)
- Advocating interoperability and openness under global harmonization (OASC MIMs / FIWARE-NGSI)



WEF, Center for the Fourth Industrial Revolution (Fellow, IoT Robotics and Smart Cities)

- Technology governance policies for global well-being
- G20 Global Smart City Alliance (2019~)



FIWARE Foundation (BoD member)

- NEC working for cities in EU, JP and IN
- Technical contributions to FIWARE including API standardization (ETSI ISG CIM)



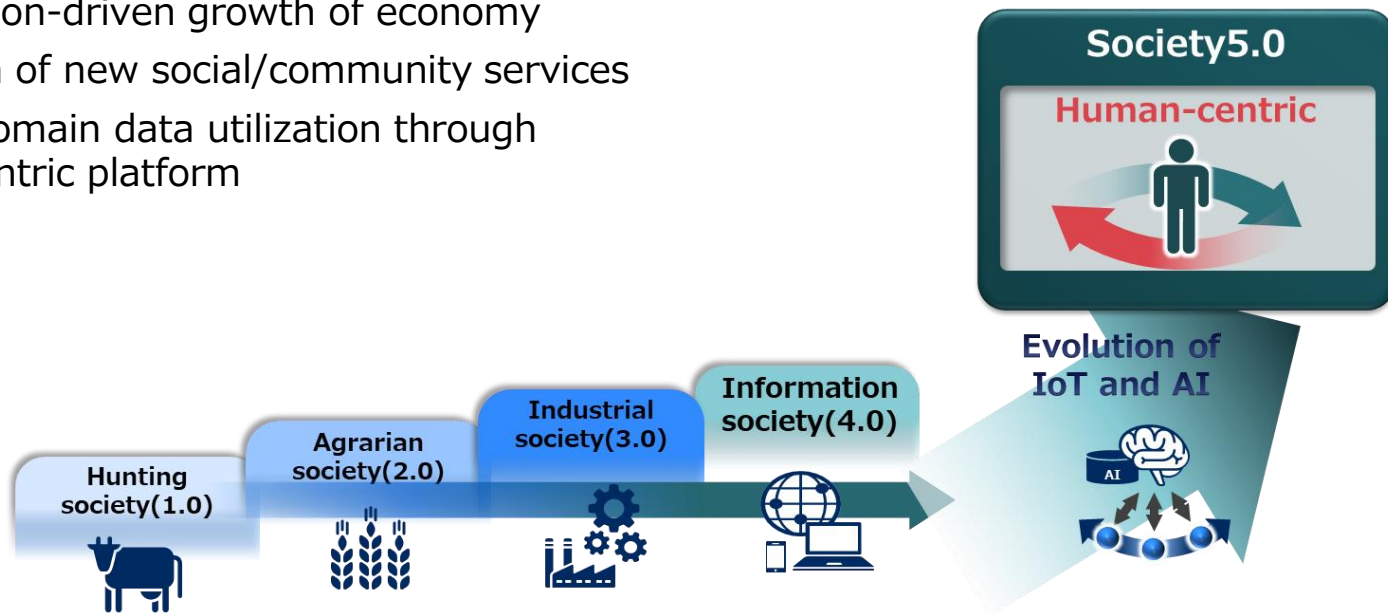
# "Society5.0" – Japan's innovation vision

Highlight of Gov.'s 5th Science and Technology Basic Plan formulated in 2016

- Formulated by Council for Science, Technology and Innovation (chair: Prime Minister)

Emphasizing realization of **Human-centric super-smart society** through,

- innovation-driven growth of economy
- creation of new social/community services
- cross-domain data utilization through data-centric platform





# Where does Japan stand? Ready for smart society?

## Facing mid/long-term societal challenges

- How to address aging population/society
- How to achieve economic (re-)vitalization

Yes, lots of high-techs out there. However, .....

## Catching-up position for “Digitalization”

- Japan **#27/63** @“World Digital Competitiveness Ranking” (IMD, 2020)
  - Strong: technology framework (such as broadband), education, science promotion policy
  - Weak: agility in business transformation, regulatory framework, talent resource

## Citizen’s lives not under immediate threat, already

- Tokyo **#1/60**, Osaka **#4/60** @“Safe City Index” (Economist, 2019)

# (2017~) "Data utilization-oriented ICT smart cities" Project

## Target

- address region-specific challenges
- regional vitalization

## Approach

- apply ICT (AI, IoT) and harness cross-domain data by utilizing Data Federation Platform
- Formation of regional multi-stakeholder ecosystem

Ministry of Internal Affairs and Communications (MIC)



# Data-leveraged outcomes via regional collaboration



<b>Prompted decision &amp; evacuation</b>	<b>Nationality-dependent marketing</b>	<b>13% boost Cases rescued within 10min</b>	<b>81% says risk map/alert To be useful</b>
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Real time visualization of Disaster info	Analysis of rental bike trajectories	Vital signs and kinetic info	Gov-owned accident record vehicle locations
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Data sharing

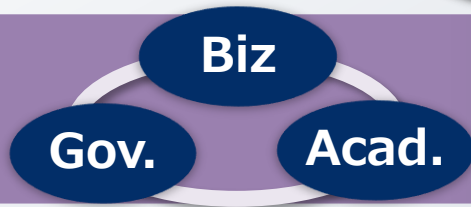


Disaster resiliency	Tourism	Welfare	Traffic safety
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## Common IoT Platform

Shared issues

flooding by typhoon	invite inbound tourists	watch over elderlies	top-ranked car accidents
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**Smart City Takamatsu Council**  
(6⇒) 80+ member organizations



(420k)

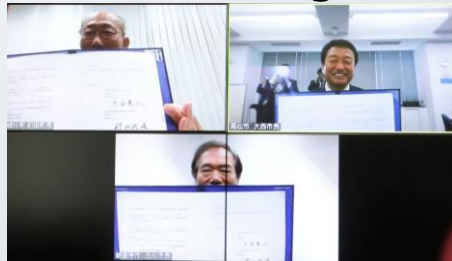
Takamatsu

# Step further: Wide Area Disaster Management

Support prompt decision making through situation analysis by integrating disaster-related information



Shared use of IoT platform under agreed cost-share model



Press announcement by the three mayors (March 28, 2020)

Kan'onji

Takamatsu

Ayagawa

**FIWARE**  
Open APIs for Open Minds  
Data federation platform for wide-area disaster management



Data sharing on disaster management by three municipal governments



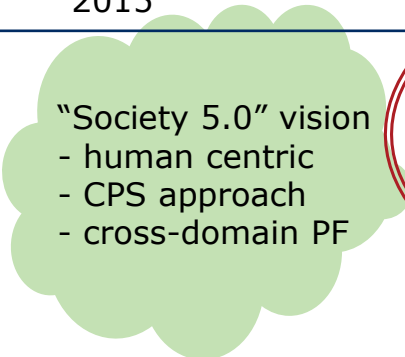
# Smart City journey in Japan

2010

## Early Smart Cities

- Smart grid
- Eco-town
- .....


2015


- 
- "Society 5.0" vision
  - human centric
  - CPS approach
  - cross-domain PF

2020

M. Internal Affairs

"Data utilization-oriented ICT Smart Cities" PJ

- 
- PJs by 5 Ministry/Dept
  - Cross-Ministry PJ coordination
  - Shared Ref. Architecture

- 
- Efficiency-focused
  - Technology-driven
  - Vender-led
  - Domain-siloed
  - Project execution



BSI-PAS181  
FIWARE  
OASC  
EU projects  
• • •

- Citizen/sustainability-focused
- Ecosystem-driven
- Multi-stakeholder-led
- Interoperable & open
- Problem-solving, try & scale

# (March, 2019) Cross-ministry policy coordination

- Harmonization of Projects by related Ministries and Cabinet
- Installation of **Architecture** Council, whose outcome to be reflected to the smart city projects
- Under such a shared platform, Ministries and Cabinet will also promote **global collaboration**

## Common basic policy

Clear **vision**

Build & utilize shared **architecture**

Secure **interoperability**

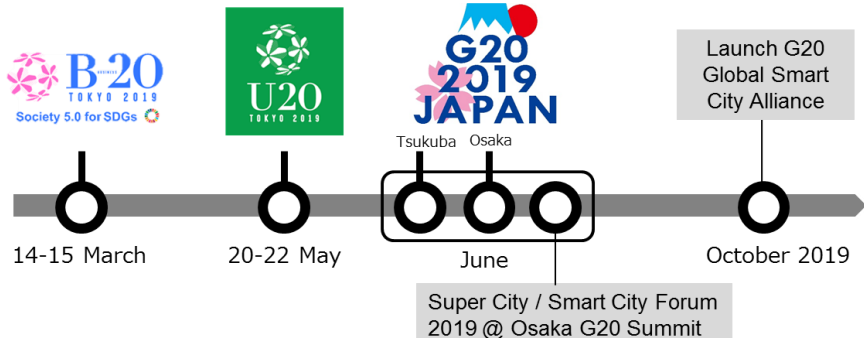
Secure **scalability**

Strengthen organizational framework

## Collaborating ministries/departments

- Cabinet, *Council for Science, Technology and Innovation*
- Cabinet, *Regional Vitalization ("Super City")*
- Ministry of *Internal Affairs and Communications*
- Ministry of *Land, Infrastructure and Transportation*
- Ministry of *Economy, Trade and Industry*

## Agenda for global collaboration



## Global collaboration on Smart City

Practice share of Smart Cities on

- Successful use cases
- Data exchange platform

via **Multilateral and/or Bilateral** processes

# (2019) Designing smart city reference architecture for Japan

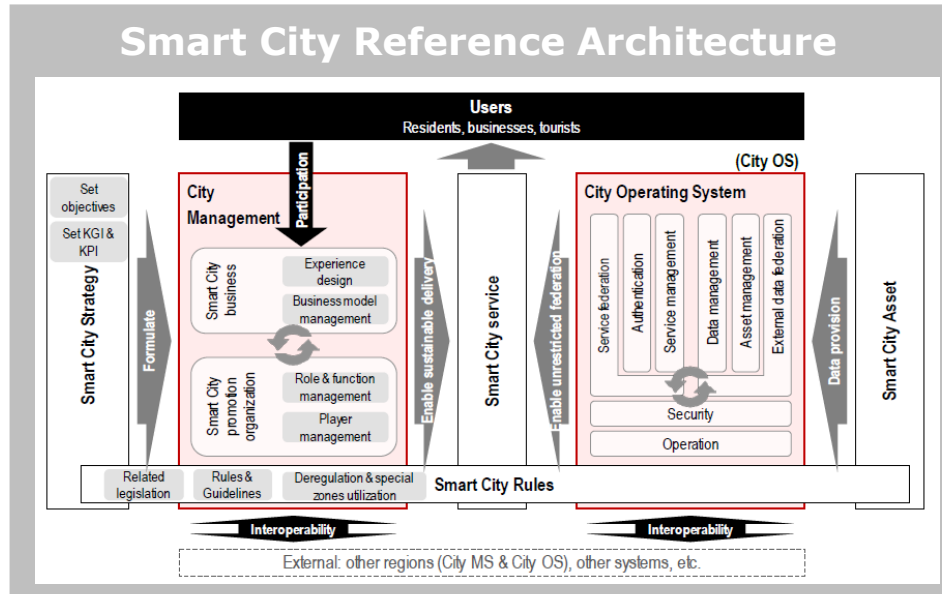
Cabinet, Science, Technology and Innovation

SIP Project (FY-2019): NEC, Hitachi, Kajima, Accenture, AIST, DTA

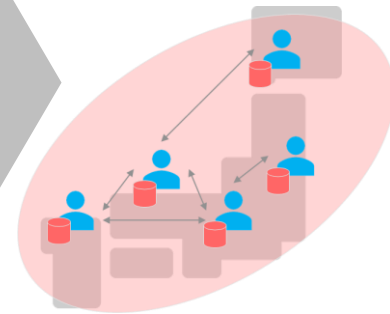
- Translates “Society 5.0” vision into smart cities, with placing citizens at the top
- “City Management” framework for sustainable partnership and business models
- “City OS” as enabler of interoperability, data exchange and service scalability

Challenges in:

- practice share
- cross-domain services
- changing issues



**“connected”**  
**“federated”**  
**“future-proof”**



# City OS referencing major overseas Smart City architectures

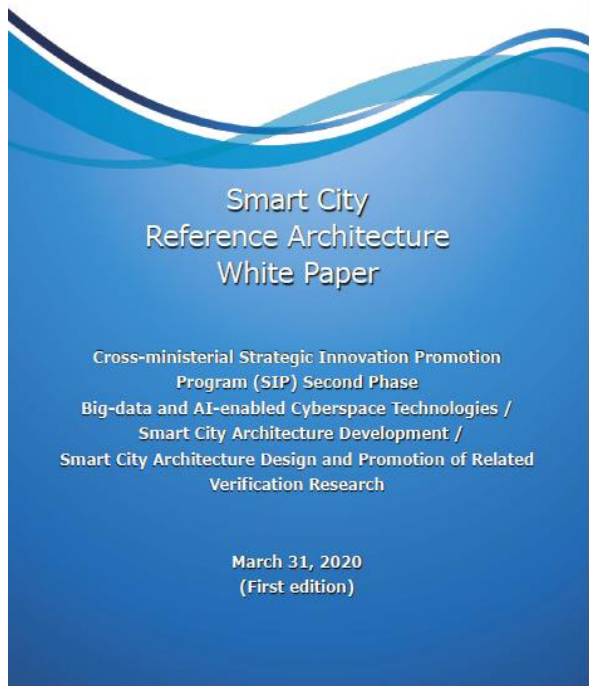


Table 7.1-4 Reference points of overseas Smart City architecture

Architecture	Overview	Reference points	Related chapter
SynchroniCity <sup>35</sup>	European IoT pilot project for Smart City, large scale initiatives with 20 cities currently participating.	<ul style="list-style-type: none"> <li>- Components for the set functions of City OS and definitions thereof</li> <li>- Concept of API and data model in Minimal Interoperability Mechanisms, MIMs</li> <li>- Authentication-related API, data management-related API</li> <li>- Functions of architecture maintenance organization</li> </ul>	7.2 Description of City OS functions 7.3 External federation 9.1.1 Various initiatives enabling maintenance and advancement of the architecture
FIWARE <sup>36</sup>	Platform software developed by FI-PPP for the purposes of enhancing competitiveness of Europe in the next generation internet technology and assisting development of smart applications in the social and public domains.	<ul style="list-style-type: none"> <li>- Components of the functional groups of City OS and definitions thereof</li> <li>- Authentication-related API, data management-related API</li> </ul>	7.2 Description of City OS functions 7.3 External federation
X-Road <sup>37</sup>	Platform for secure data exchange developed by Estonian Government.	<ul style="list-style-type: none"> <li>- Functions of architecture maintenance organization</li> </ul>	9.1.1 Various initiatives enabling maintenance and advancement of the architecture
IndiaStack <sup>38</sup>	Collective designation of Aadhaar and a set of APIs (e-KYC, e-Sign, etc.) to utilize Aadhaar, which was	<ul style="list-style-type: none"> <li>- Authentication of individuals (Individual Authentication)</li> </ul>	7.2.2 Authentication

<https://www8.cao.go.jp/cstp/stmain/20200318siparchitecture.ht>

## ① Super City selection criteria for regions



- ( i ) Provide cutting-edge services in multiple (5+) domains
- ( ii ) **Strong commitment of local government and private businesses** to proposal of regulatory reform as well as implementation of cutting-edge services
- ( iii ) **Assignment of "Architect"** who is responsible for planning the overall strategy
- ( iv ) Public tender by local government to select capable main business operator candidate(s)
- ( v ) **Assessment of citizen's opinion by local government prior to application**
- ( vi ) **Data Federation Platform complying with interoperability as well as security management standard**
- ( vii ) Appropriate management of citizen's personal information

**Local government's  
institutional excellence**

**Collaborative  
relationship with  
citizens**

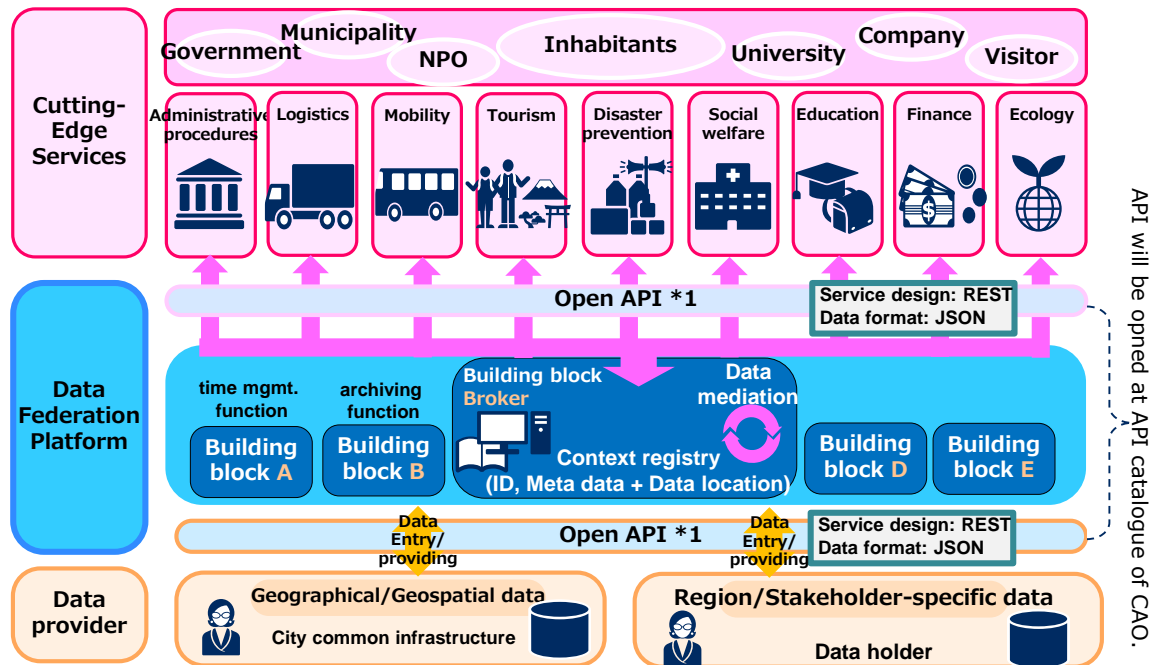
**Interoperability for  
lateral expansion  
(City → Society)**



# (2020~) "Super City" Project call (National Strategic Special Zones)

## Requirements defined for Data Federation Platform for the selected regions

- City data shall be published via open API. (Obligation under National Strategic Special Zones Act)
- Data management design shall be based on decentralized/distributed system, not on centralized storing system, as much as possible. (consideration for securing data sovereignty)
- Compliance shall be mandatory about personal information management, and as for its data security, it shall require the same level security as the security standards that government designate.



API will be opened at API catalogue of CAO.

Cabinet, Regional Vitalization

(2019~)

Expert consultations on interoperability and data federation

**Interoperability guideline**

**Development of data federation infrastructure in FY2020**

- Broker performance evaluation
- Data model standardization
- API standardization

# Japan's initiatives toward smart society: present status

- Multi-ministerial project fundings under harmonization principle
- Early good practices and “to-be”s now shared nation-wide as reference architecture
  - “City-OS” : technical interoperability, scalability (Smart City → Smart Society)
  - “City Management” : Business model, stakeholder ecosystem, regulatory reform
- Still, cities/regions are mostly in the piloting phase
- Some early city-city collaboration/federation also started

# Japan's initiatives toward smart society: way forward

**Pilot phase**

## + Self-sustaining mechanism

- ✓ Financial sustainability
- ✓ Scaled stakeholder engagement
- ✓ Trusted technology governance

**Social implementation phase**

## Clues to Self-sustaining City Management

Federated services with holistic business model



Focus on region-specific challenges and opportunities

Citizen-centric problem-solving (not tech-first approach)



# Thank you !!



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**SMART SOCIETY**