2019 International Open Data Summit
October 8, 2019

\Orchestrating a brighter world NEC

Data Sharing in Smart Cities toward Collaborative Innovation

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NEC Corporation

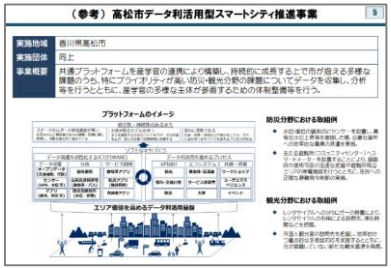
Takamatsu City, Japan

Smart City initiative kick-started with data exchange platform and regional public-private-academia consortium

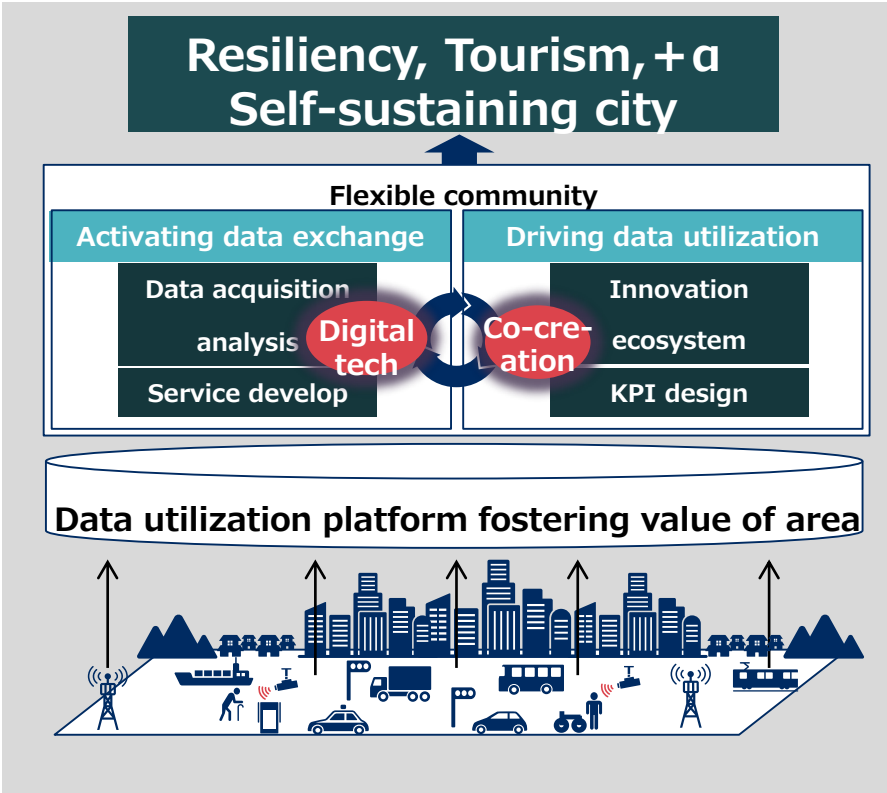
Regional Public-Private-Academia Partnership

高松市・NEC・STNet・香川大学・香川高専、スマートシティ実証環境の構築・活用に向けた基本合意書を締結
https://jpn.nec.com/press/201802/20180227_05.html

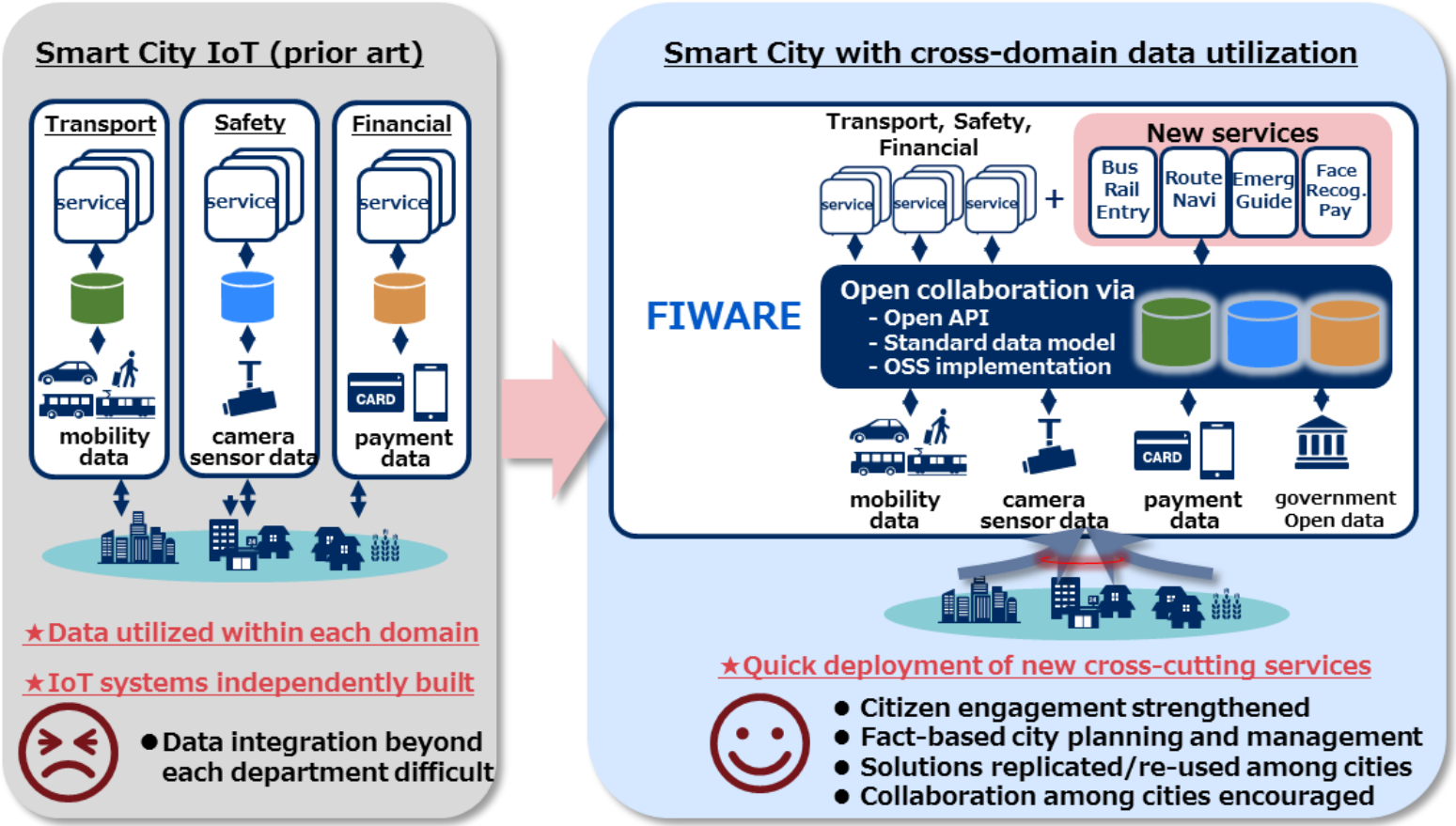
Government call awarded



出典：
総務省 データ利活用型スマートシティ推進事業の公募結果の概要
http://www.soumu.go.jp/main_content/000497085.pdf



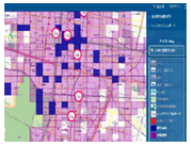
FIWARE for Next Generation Smart Cities



Takamatsu City, Japan

Data utilization is taking off via data-sharing enabler (FIWARE) and regional ecosystem sharing regional challenges (Council)

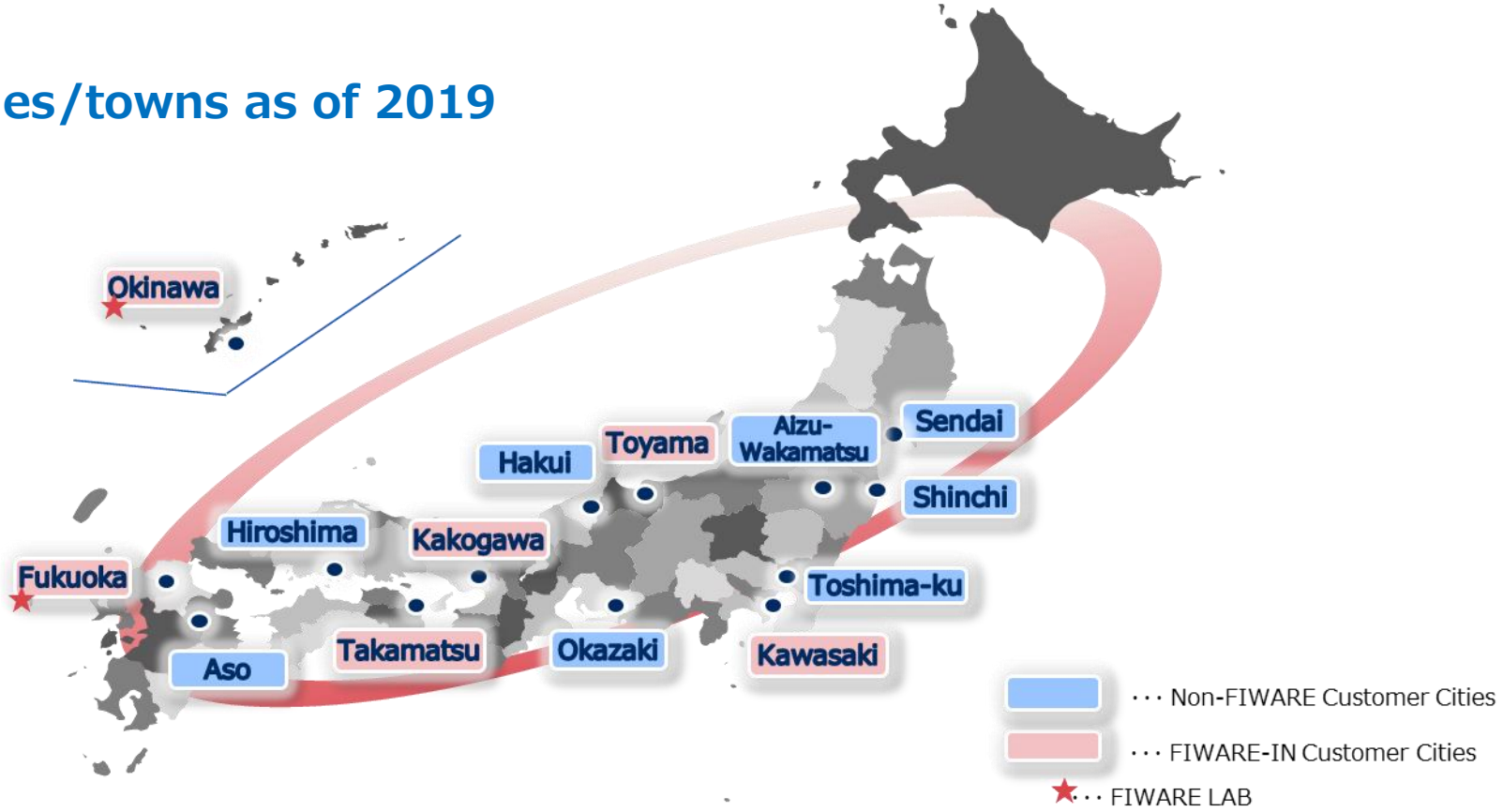
Smart City Takamatsu Council

	ACTIVITY		OUTCOME
Disaster Resili-ency	Issue: flooding ・Real time data visualization ・Info share by officials		**Decision making and alerting were made quicker** by cross-agency data utilization	
Tour-ism	Issue: Foreign visitor experience ・Rental bicycle distribution ・Visualization of dwell time		**Nationality-dependence found for dwell times and routs for sightseeing spots** 滞在時間が60分の地点を■で表示	
Well-fare	Issue: Caretaking of elders ・Acquisition of vital info (breath, heartbeat, etc)		**13% improvement in # of cases for which rescue arrived quickly (< 10min) after an elderly person fell**	
Traffic Acci-dent	Issue: high rate of traffic accidents ・harness gov-owned accident data and private-owned drive-recorder data		**81% of drivers positively evaluated** the factorized danger potential map as easily understandable	
Regiona ltalent	・FIWARE training (Kagawa University)		22 participants. **Positive feedback from most of participants**	

FIWARE

NEC Contributing to Smart Cities in Japan

14 cities/towns as of 2019



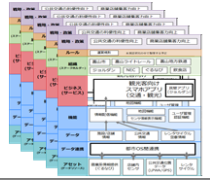
Cities to Collaborate via Shared Architecture Model (Gov. project, SIP)

Provide shared reference for regional smart city ecosystem to solve regional challenges

Investigation

<Arch in overseas>
Cross-sectional type considered in each area or standardization org., etc.

<Use case in Japan/overseas>
Collect and analyze by city types and issues



Standardization

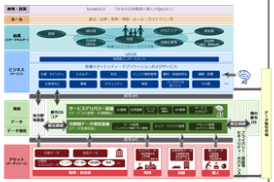
- Evaluation indexes fort he arch
- Standardization for data trading

IEC ISO ITU W3C NIST IEEE

Feedback

Design of Architecture/City OS

<Before>
Make a blueprint based on smart city cases



<point of view>

- Can each case be realized efficiently?
- Can other architectures including overseas be linked?
- What are the requirements to be sustainable?

<After> Reference architecture

Policy
Rule
Org.
Business
Function
Data
Data link
Asset
Security/ Certification

Propose Sustainable Model (Analogue Layer)

Realize the Interworking among Systems/City OSs (Digital Layer)

Feedback

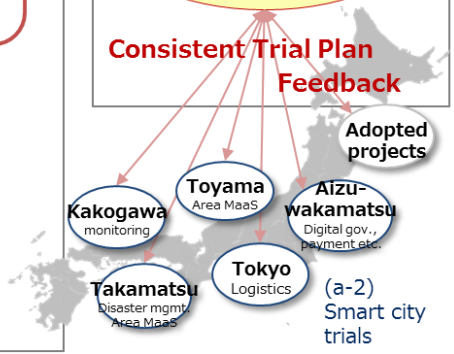
Trial Management

Validate the arch from various perspective

- Interoperability among cities, domains, and systems
- Sustainable business model

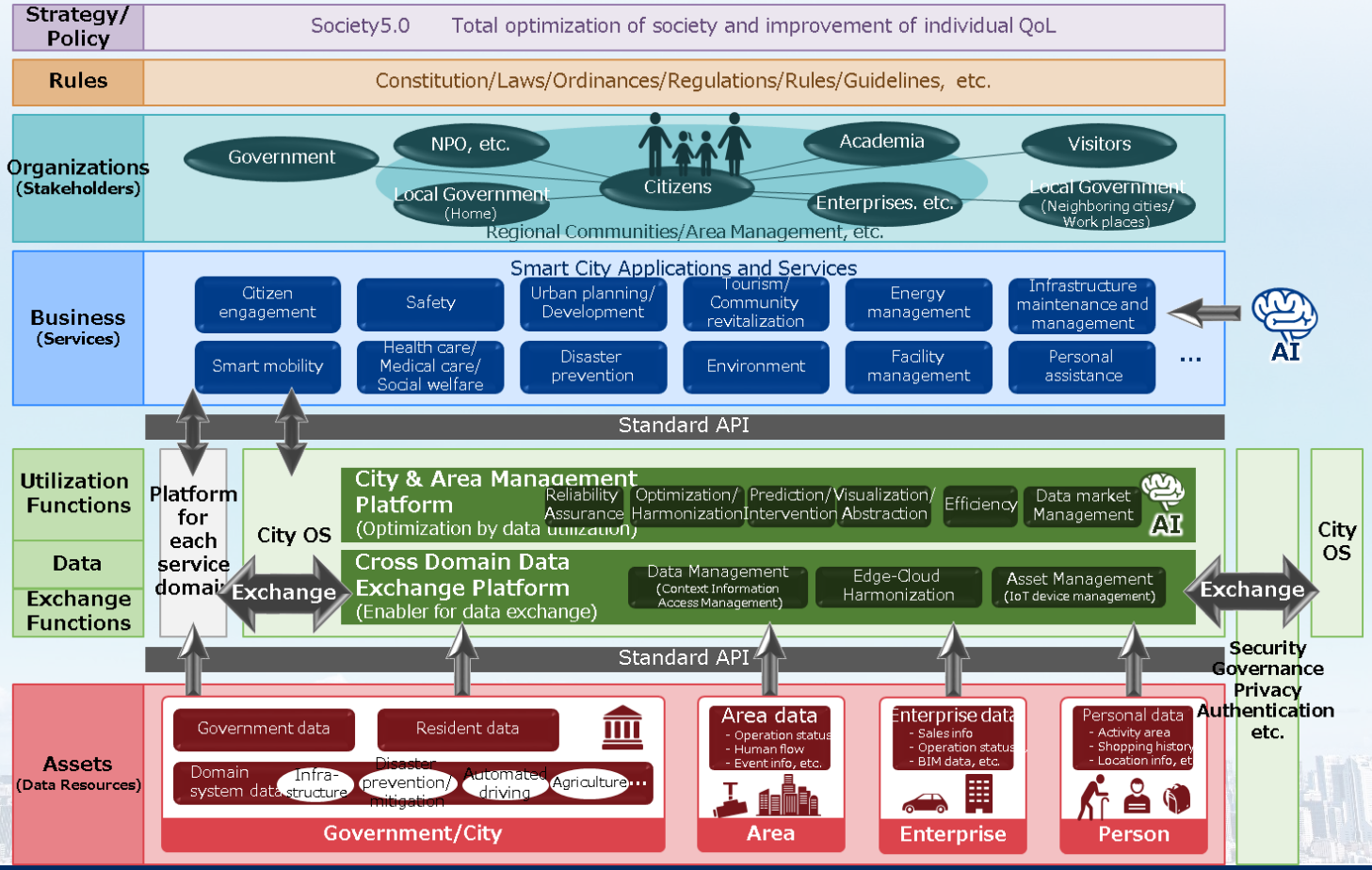
Manage trials on (a-2) projects
*Set liaison meetings

Consistent Trial Plan Feedback

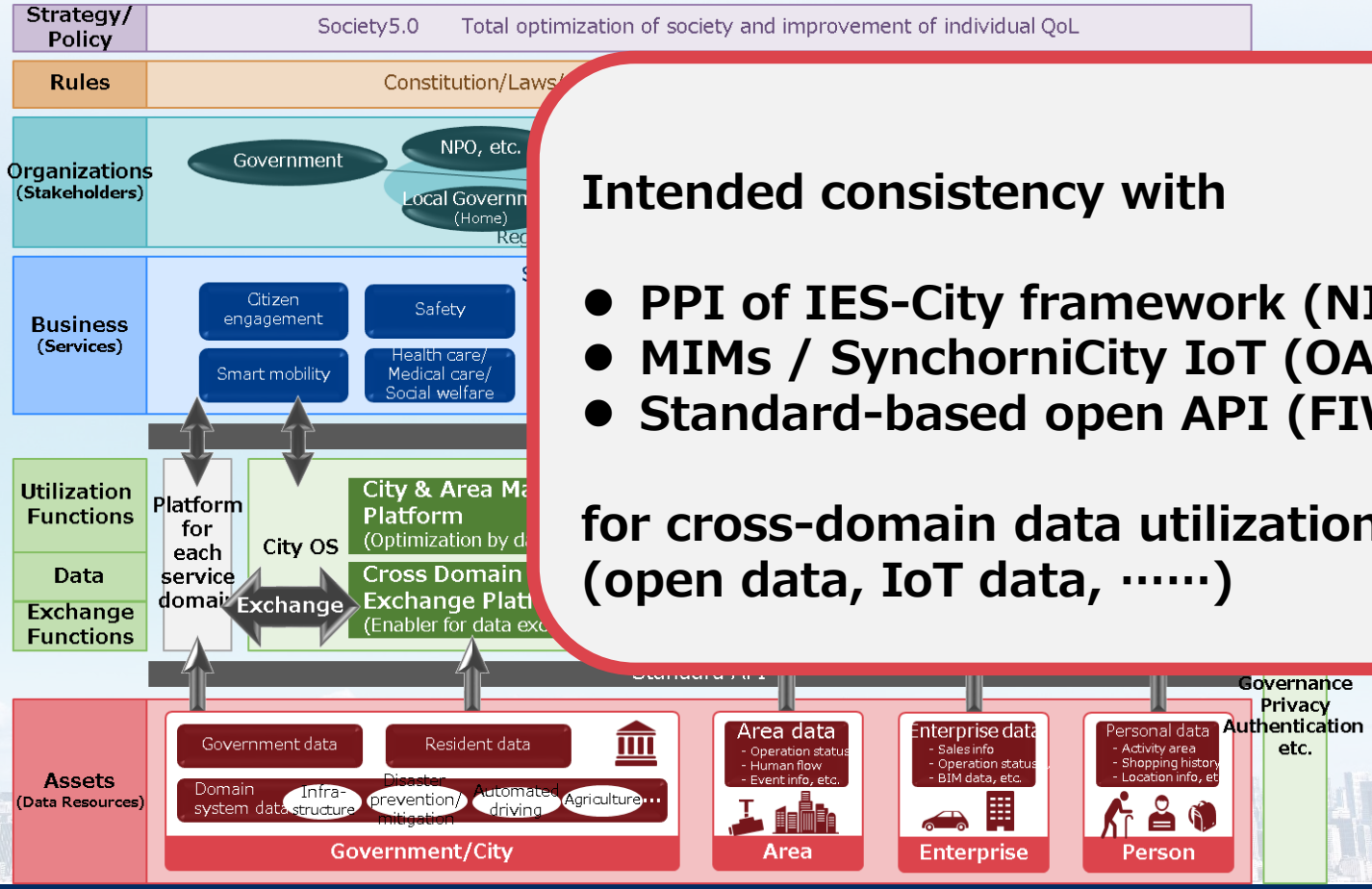


(a-2) Smart city trials

Digital Smart City Architecture in COCN's Proposal



Digital Smart City Architecture in COCN's Proposal



Intended consistency with

- PPI of IES-City framework (NIST)
- MIMs / SynchorniCity IoT (OASC)
- Standard-based open API (FIWARE)

for cross-domain data utilization
(open data, IoT data, ……)

Further Challenges in Data Utilization for Smart Cities

Testbed implementation where diverse data are provided and exchanged

- System environment and operation scheme attractive to App developer's experimentation
- Mechanism for easy data provision even for data providers with insufficient IT literacy
- Incentive model for data providers

Innovation in technology governance/data governance

- How to balance privacy/human rights protection and data utilization
- Innovation of policy/regulatory framework
- Consensus building among stakeholders

Empowerment of regional digital talents

- AI talents leading value creation: ability strengthened only by solving real problems
- Problem-focused way of thinking, discovering root cause
- Design thinking approach for solution development and business model creation

Tackle these challenges via formation of regional public-private-academia ecosystem and pilot activities toward co-creation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Backup slides

NEC's global activity to deliver FIWARE-based platforms to smart cities

Partnering with front runner smart cities in EU projects

2014～

UK
- Bristol
- Greenwich

Spain
- Santander
- Murcia

Portugal
- Lisbon

FIWARE implementation in Japanese cities

2017～

- Takamatsu
  - Resiliency
  - Tourism

- Kakogawa
  - Safety & Security

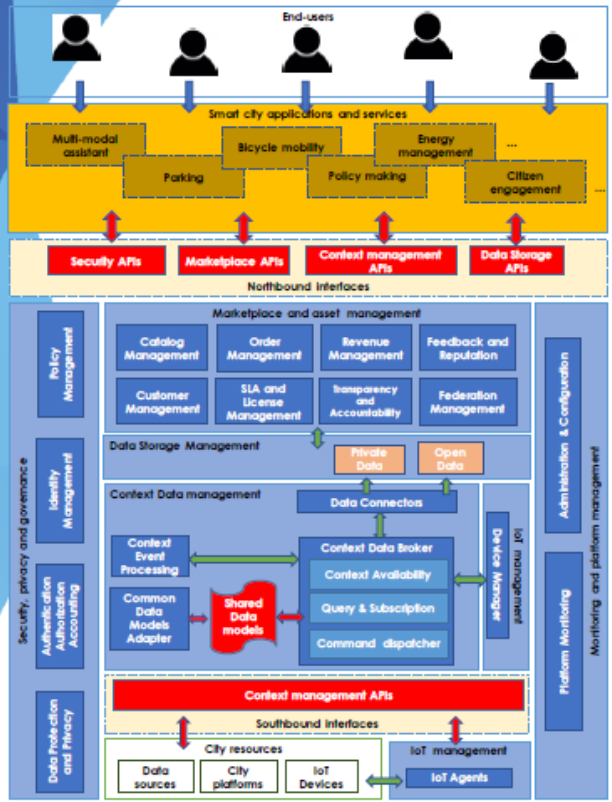
※MIC-project

Offering FIWARE-based open innovation testbeds

India

Japan
- Takamatsu
- Fukuoka
- Okinawa

SynchroniCity Architecture Model



- **IoT Management:** to interact with the devices that use different standards or protocols making them compatible and available to the SynchroniCity platform.
- **Context Information Management:** to manage the context information coming from IoT devices and other public and private data sources.
- **Data Storage Management:** to provide functionalities related to the data storage and data quality interacting with heterogeneous sources.
- **Marketplace:** to implement a hub to enable digital data exchange for urban data and IoT capabilities providing features in order to manage asset catalogues, orders, revenue management.
- **Security**: to provide crucial security properties such as confidentiality, authentication, authorization, integrity, non-repudiation, access control, etc.
- **Monitoring and Platform management**: to provide functionalities to manage platform configuration and to monitor activities of the platform services.

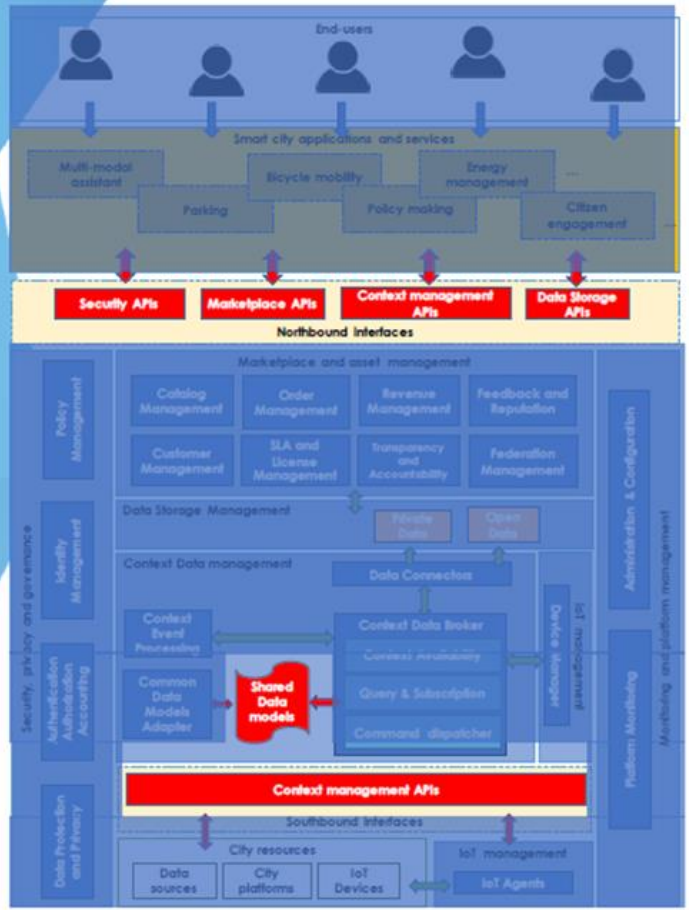
Baseline: SynchroniCity Cities/Reference Zones, OASC, FIWARE, EIP-SCC, NIST IES-CF.

Related standards: ITU-T SG20*/FG-DPM* (*drafts), ISO TC268.

Spec. doc.: Reference Architecture for IoT Enabled Smart Cities (D2.10)
http://synchronicity-iot/docs

Billede 6

Interoperability Points



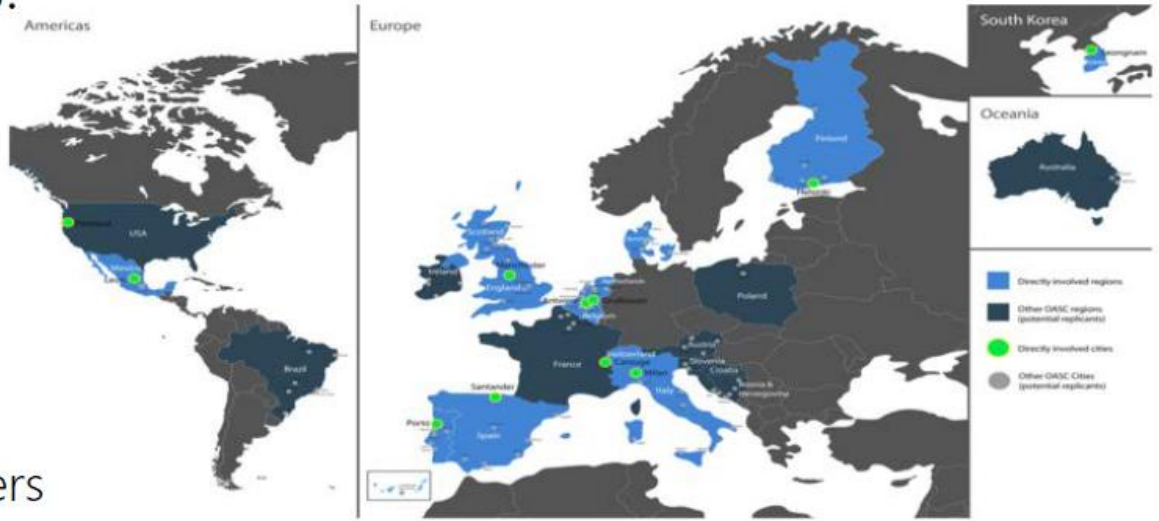
- **Interoperability Points** represent the main interfaces that allow a city (or any Reference Zone, RZ) and applications to interact with SynchroniCity platform
- Interoperability points are independent from the specific software components that realize them and can be implemented by cities in different steps to reach different levels of compliance
- The architecture has been designed following the OASC principles and the definitions of **Minimal Interoperability Mechanisms** (MIMs). MIMs, are the actual specifications of the interfaces at the Interoperability Points: they are standard API and guidelines that have to be implemented by a city in order to be compliant with the SynchroniCity framework

Billede 6

Demonstrating the Power of MIMs

Scaling up across cities:

- 50 services
- 20 cities
- 16 teams
- 6 months



Core project: 20m€ · 40 partners

More information: synchronicity-iot.eu

OPEN & AGILE SMART CITIES

SYNCHRONICITY

Japan's Gov. Policy for Smart City (March 29, 2019)

- 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 organizations

- Cabinet, *Council for Science, Technology and Innovation*
- Cabinet, *Regional Revitalization ("Super City")*
- Ministry of *Internal Affairs and Networks*
- 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