(3) Active Public Participation: Key Points

Key points regarding active public participation

-- To realize a sustainable smart city based on regional needs, it is necessary to create a situation that allows each resident to actively participate in smart city initiatives as a person concerned.

-- Creating such a situation will lead to the creation of services that meet residents' needs, expand the utilization of various data from public and private sectors including personal data, which will then lead to the creation of an ecosystem in which data creates further services.

➢ Activities to attract interest from residents and deepen their understanding

- At present, the term 'smart city' itself may be unfamiliar to most of the residents.
- It may be advisable to gain support from specialists, including advisers, and start with disseminating information such as 'What is Smart City? What kinds of effects can it have?' from the standpoint of residents so that they can easily understand, while collaborating with universities, community centers and school education.

➢ Activities to deepen interactive dialogues with residents

- You have probably addressed public participation as the foundation of local administration. It may be a good idea to take a further step by, for example, utilizing civic tech while making use of the conventional frameworks of public participation, such as workshops and public comments.
- For example, it may be appropriate to ensure transparency through information disclosure as well as openness, which allows anyone to participate, and show a willingness to respect the opinions of residents; then, on the basis of these, take an interactive approach that actively invites proposals for needs rooted in the lives of residents as well as policy proposals.

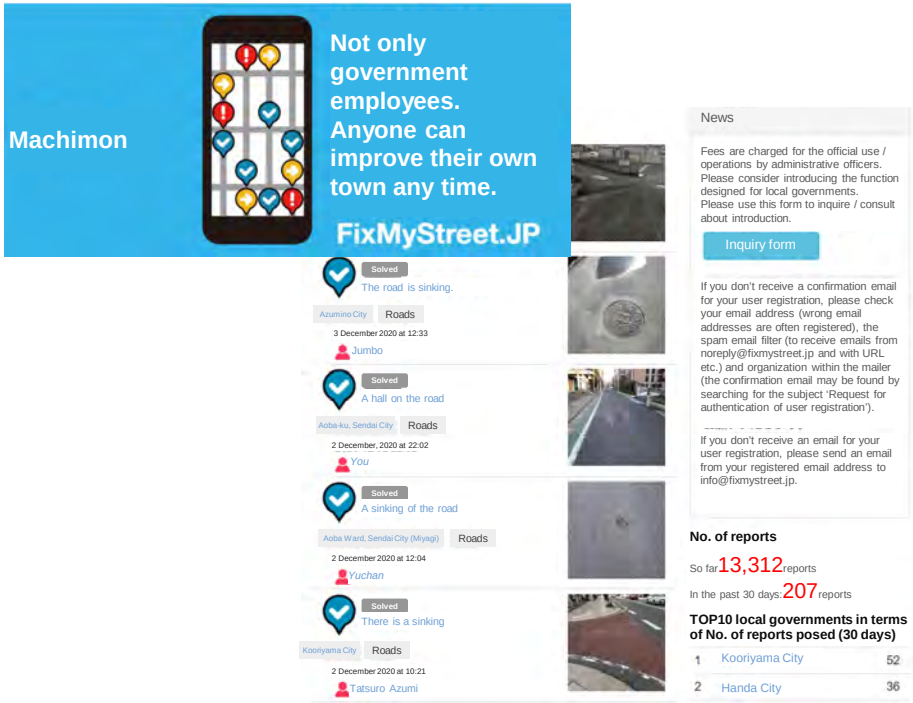
➢ Long-term activities to realize public participation

- It will take a considerable period of time to gain active public participation in smart city initiatives, which are currently not well known.
- It may be helpful to start with gaining support from the community development organization, which has been engaged with residents for a long time, and steadily advance activities that encourage public participation, which may include starting with activities that interest residents in a surrounding living space and carrying out repeated activities that can give residents a successful experience, albeit small.

(3) Active Public Participation: Examples of Initiatives ①

Machimon (FixMyStreet Japan)

- FixMyStreet Japan - *Machimon* is a system for solving / sharing challenges facing communities / towns, including damage to / graffiti on roads, broken street lights and illegal dumping, through collaboration between residents and the government using a smartphone.
- Public participation in community development has improved administrative services. More than 20 local governments around the country have introduced the app.



(Source) *Machimon* website https://www.fixmystreet.jp/

Utilization of Decidim (Barcelona, Spain)

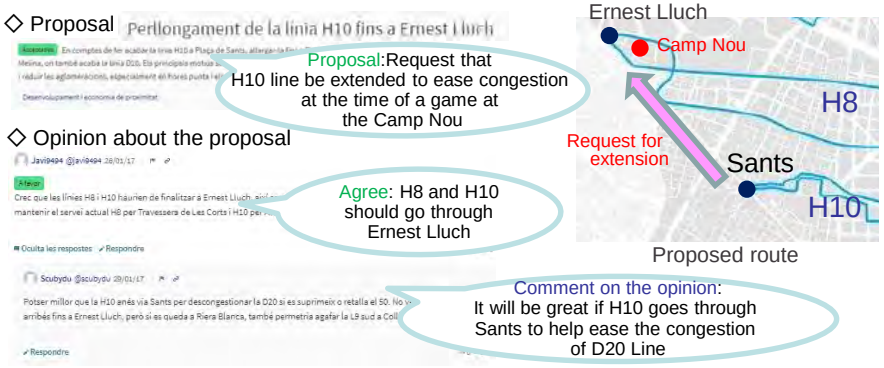
- Barcelona City has introduced the participatory consensus building platform (Decidim) to support public participation.
- At the planning stage from 2015 to 2019, more than 40,000 residents participated and made 10,860 proposals, of which about 1,500 were adopted.
- In addition to Barcelona, Decidim is utilized in more than 30 local governments around the world, including Helsinki.

Example of the utilization of Decidim: Bus network planning for the future (July 2016 to April 2017)

Phase 1: Presentation of the restructuring of the bus network"
(13 July to 30 December, 2016)
- The three-layer structure consisting of the main line bus service, including BRT (Bus Rapid Transit), the conventional bus routes and the neighborhood bus routes.
- It will be able to cover 65% of the city and benefit 95% of the population.

Phase2: Meetings to explain the proposal to residents
(11 January to 1 March, 2017)
- Opinions of residents and organizations from ten districts were studied (there were 14 meetings).
- In the meetings, the result of a simulation of the area covered by the public transportation was presented using an app on tablets.

Phase 3: Feedback about the study process
(28 February to 29 April, 2017)
- Details were publicized regarding how a total of 384 proposals made were studied.



Source: Created based on the contents of Decidim Barcelona (https://www.decidim.barcelona/processes/xarxabus/steps)

(3) Active Public Participation: Examples of Initiatives ②

■ Smart city promotion through dialogues with residents (Kakogawa City, Hyogo Prefecture)

Consensus building for the installation of monitoring cameras

- The city installed 1,475 monitoring cameras mainly around school routes to create an environment in which residents can raise their children with peace of mind.
- The monitoring camera with a built-in beacon tag (BLE [Bluetooth Low Energy] tag) is used to monitor elderly people as well.
- Prior to the installation of monitoring cameras, the city established an ordinance and concluded an agreement with the Kakogawa Police Station to clarify proper operating rules.
- At open meetings (12 venues in the city) in FY2016, the mayor himself explained the objectives of the installation. In a questionnaire survey of residents, 98.6% (850/862) of the respondents expressed their agreement on the installation, reflecting the city's focus on dialogues / consensus building with residents.

Utilization of Decidim in the formulation of a smart city initiative

- In FY2020, Kakogawa City launched a participatory consensus building platform (Decidim) in cyberspace as a space to collect and discuss opinions of residents and reflect them in policies.
- In formulating the Kakogawa City Smart City initiative (proposal), the city solicited opinions and ideas from the residents.

Appearance of a monitoring camera

Scene of an open meeting

■ Source: Kakogawa City website

Kakogawa City version of Decidim

Kakogawa City, in collaboration with Code for Japan, has launched an online space to collect and discuss opinions of residents and reflect them in policies (a participatory consensus building platform: Kakogawa City version of Decidim).

We solicit your opinions and ideas to realize a better town.

New registration | Log in

decidim
free open-source participatory democracy for cities and organizations

Different people may have different opinions on what senior-friendly community development specifically means. I thought measures to address frailty among elderly people might be used as a guide. As the three pillars of measures to address frailty, nutrition (oral hygiene), exercise and social participation are recommended, and I thought it might be a good idea to pursue these measurers using ICT technologies in ways that suit individual needs and circumstances.

Hide replies

Secretariat_

Thank you for your opinion.
'The three pillars of measures to address frailty' was a very helpful idea.
We would also like to consider what we can do utilizing ICT technologies amid the COVID-19 pandemic.

■ Source: Website of the Kakogawa City participatory consensus building platform

(3) Active Public Participation: Examples of Initiatives ③

Kashiwa-No-Ha Living Lab (tentative)
(Around the Kashiwa No Ha Campus, Kashiwa City, Chiba Prefecture)

- In the Kashiwa-No-Ha Smart City, the 'Kashiwa-No-Ha Living Lab (tentative)' was launched in December 2020 to create innovation through public participation at various levels.

■ Source: Kashiwa-no-ha Urban Design Center website

Living Lab in Yokohama City
(Yokohama City, Kanagawa Prefecture)

- The three types of Living Labs are ongoing, namely, 'Community Welfare Type', 'Area Management Type' and 'Corporate Marketing Type'. Living Labs that meet challenges faced by each district, such as nursing care and education, are deployed in various places in Yokohama City.

■ Source: Yokohama City website, the YOKOHAMA LIVING LAB SUPPORT OFFICE website

Resident-oriented smart city initiative
(Kobe City, Hyogo Prefecture)

- Kobe City aims to develop a 'Human × Smart' city that solves social challenges from a human-centric perspective.
- **A participatory design thinking workshop** was held as an opportunity to consider the ideal image of a Kobe Smart City and essential services for residents. Ordinary residents played a central role in coming up with ideas about services to be provided in a Kobe Smart City.

- To realize a resident-oriented smart city, 'Company participation rules' applicable to the participating companies are under consideration.

Company participation rules (draft)

1. To provide services for residents in accordance with the 'User-centric principles'.
2. To be sure to obtain consent from residents before collecting their data (ensure the opt-in process).
3. To consider / develop services for residents in a responsible manner by taking into account not only verification tests but also releases / operations.
4. To follow the principle that the data collected from residents 'belongs to residents', and return benefits to residents through the development of new services and the improvement of existing services.
5. To make collected data available at other companies, organizations and communities that participate in Kobe Smart City initiatives.
6. To link services for residents with the data linkage platform in accordance with the standard API specifications specified by the Kobe City Smart City promotion council.
7. To use the company's know-how for the development of next-generation human resources in the community and actively contribute to human resource development.

■ Source: Kobe City website, a document of the 4th Kobe City Smart City promotion conference (22 February, 2021)

(3) Active Public Participation: Examples of Initiatives ④

Hack My Tsukuba

(Tsukuba City, Ibaraki Prefecture, The University of Tsukuba)

- Pseudo-data was created on the basis of open data as well as operation data owned by the city, and in FY2019, an ideathon was held to discuss solutions to challenges with a focus on welfare for the elderly.
- In FY2019, there were about 30 participants including those with professional knowledge, such as former doctors, former university faculty members, consultants and city government employees. GIS and Excel were used to discuss the visualization of data as well as ways to utilize data to solve regional challenges.
- In FY2020, solutions were discussed with under the common theme of 'Creating a community that allows the residents to live with COVID-19'.

■ Source: Website of Hack My Tsukuba, a document of Tsukuba City, a document of NEC

Urban Data Challenge

(The University of Tokyo, Association for Promotion of Infrastructure Geospatial Information Distribution, The Japan Society of Civil Engineers)

- With the goal of solving regional challenges, the project has been continued since 2013; it consists of the two parts: data-driven community development utilizing publicly owned data, mostly from local governments, and a solution contest with public participation.
- The accumulation of useful data utilization examples and the formation of a community based on residents' collaboration are promoted by conducting interactive workshops (study meetings, ideathons and hackathons) at each of the regional bases around the country (41 regional bases participated in FY2019) and inviting entries for solutions (162 solutions in the same fiscal year).

■ Source: Website of URBAN DATA CHALLENGE

(4) The introduction of data platform Overall picture

Summarize points to Note during different stages from the review of data platform introduction to social implementation as an overall picture

How to Proceed with Smart City

(Preliminary action stage) / preparatory stage → Planning (strategy) formulation stage → Demonstration stage / social implementation stage/ establishment and development stage

Identify community challenges

How to proceed with dataplatform

1. Understand the need for data platform → 2. Develop the basic design of data platform → 3. Finalize the operation of data platform

Services Data

Effect of data linkage

① Linkage between sectors

② Linkage between cities

Service linkage

③ Search for services / apps

Clarify data handling rules

See 2-2(1)2. Clarify data handling rules

④ Enhancement of data

Cost

Initial cost arising from development

Running cost arising from operation

See 2-2(2) Ensuring financial sustainability

(4) The introduction of data platform 2. Finalize the basic design of data platform

①Linkage between sectors (cross-sectoral use of data)

- Most ICT-based city planning to date has been based on the construction of silo-type systems where data and services are used only on a one-to-one basis, and the effects have been achieved through individual optimization. - However, in order to respond to the increasing complexity of regional issues and the diversification of residents' needs, it is important to think in terms of total optimization by fully extracting the value of data while utilizing a wide variety of data, for example, by utilizing data from one field in other fields to produce a variety of services, or by combining data from multiple fields to deepen existing services.
- There are two broad patterns of data linkage between sectors via data platform: ① **one to many (data in single sector is used in multiple sectors in local government policies and corporate businesses)** and ② **many to one (data in multiple sector is used in single sector in local government policies and corporate businesses)**. Linkage between sectors is expected to create new services and deepen existing services.
- In order to realize linkage between sectors, it is also important to think across organizations to share data that has until now been locked away in one department of a local government or one company.
- However, 'linkage between sectors' serves as only one of the perspectives when developing services that contribute to solving regional issues, and **care must be taken to avoid it becoming a self-objective**.

②Linkage between cities

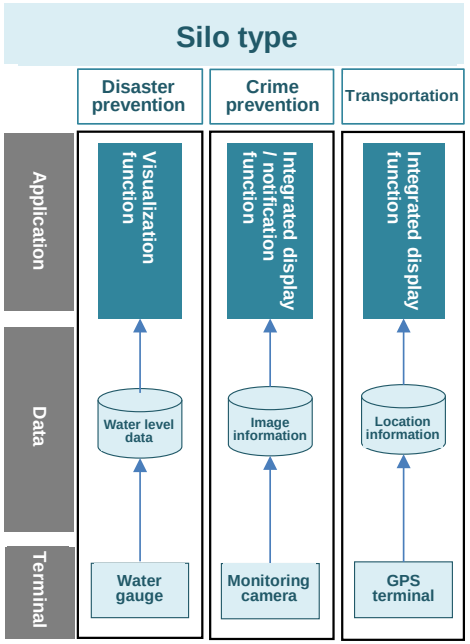
- The increasing cost of maintenance and management of infrastructure and the shortage of professional human resources, as well as the spread of residents' daily lives and economic activities beyond administrative areas, have resulted in the need for wide-area collaboration not only in smart cities, but also in local governments in general. (See the 32nd Local Governance System Study Group's Report on the Local Governance System Necessary to Respond to Emerging Issues from Around 2040 (26 June, 2020)).
- In the same way, **linkage between cities is critical** for smart cities **from the perspective of addressing wide-area administrative issues** such as disaster prevention, transportation and tourism**, providing common services to residents regardless of region, ensuring efficient system operation, and achieving a sufficient market size.**
- As for specific methods of data linkage between data platforms, they may be easier to understand by dividing them into two major patterns: (1) interconnection of data platforms (inter-data platform collaboration) pattern and (2) shared use of data platforms (wide-area collaboration) pattern.
- (1) The interconnection of data platforms (inter-data platform collaboration) pattern is expected to provide services in a wide area across regions, improve convenience for residents through data sharing between regions, and contribute to the creation of new businesses and industries anchored in the region through analysis of regional characteristics.
- (2) The shared use of data platforms (wide-area collaboration) pattern is considered to have advantages in terms of initial investment and operational cost burdens for data platforms.

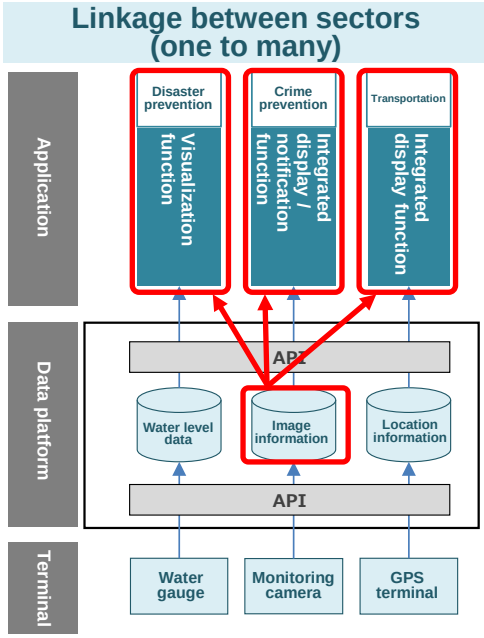
(4) The introduction of data platform 2.① Cross-sectoral use of data

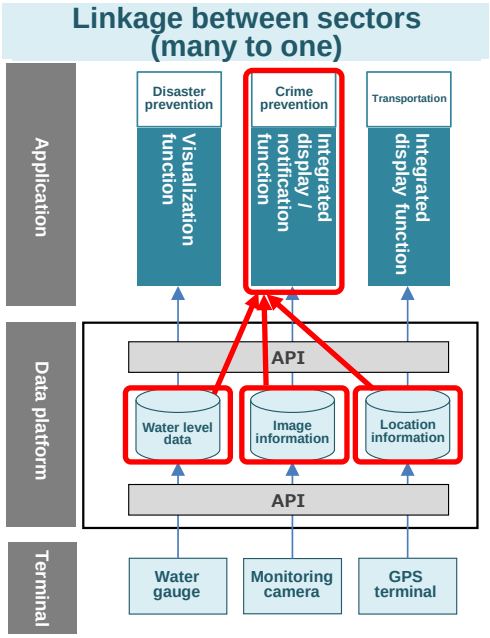
○Patterns of linkage between sectors

- There are two broad patterns of data linkage between sectors via data platform: ① **one to many** (data in single sector is used in multiple sectors in local government policies and corporate businesses) and ② **many to one** (data in multiple sector is used in single sector in local government policies and corporate businesses).
- Linkage between sectors is effective for creation of new services / apps or deepening existing services / apps.

	Silo type	**Linkage between sectors (one to many)** **Multiple services by local governments or private companies are created**	**Linkage between sectors (many to one)** **Services by local governments or private companies are deepened**
Service / App	Sector A	Sectors A, B, C…	Sector A
Data platform	**No need** for linkage	Link data in Sector A to services / apps used in Sectors A, B, C…	Link data in Sectors A, B, C… to services / apps used in Sectors A
Data **(Asset / existing system)**	Sector A	Sector A	Sectors A, B, C…







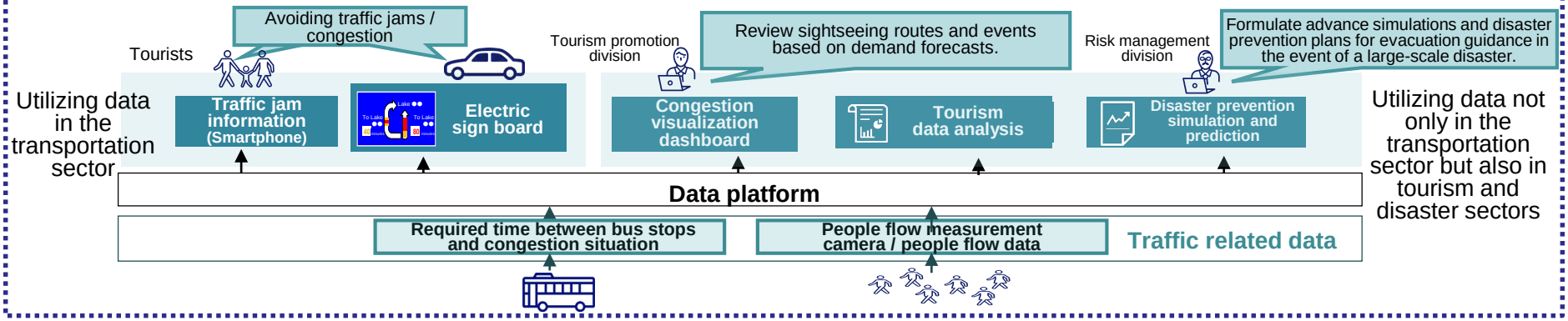
(4) The introduction of data platform 2.① Cross-sectoral use of data

○Image of linkage between sectors

■Utilizing traffic related data for tourism and disaster (one to many type)

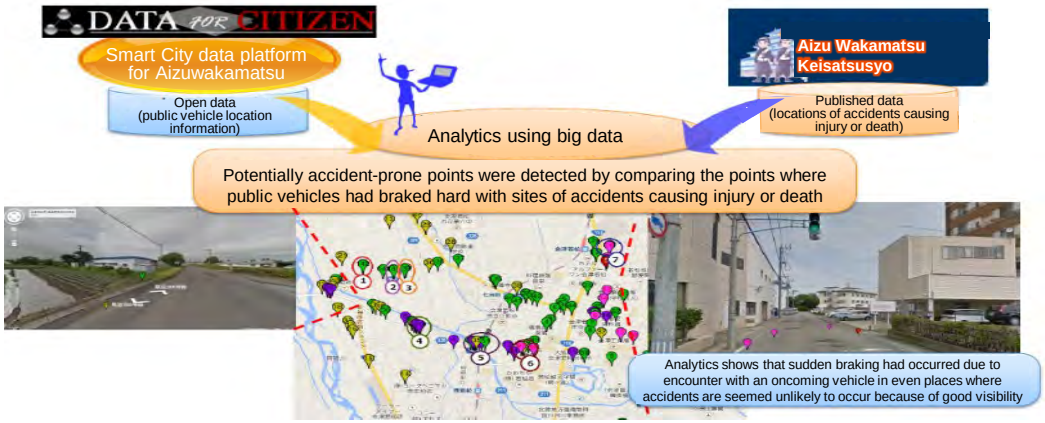
Challenge: Struggling to cope with heavy traffic congestion or vehicles waiting in a line to enter parking lots due to heavy inbound traffic and parking shortage during the seasons of cherry blossoms and autumn leaves

- Transport Policy Division of local governments ⇒Work with police to reduce congestion by displaying the time required to reach destinations on smart phones and electronic displays based on collected data.
- Tourism Division ⇒Analyze past traffic congestion and congestion information, and study tourism routes that can alleviate congestion during peak tourism demand, and tourism measures to attract visitors.
- Risk Management Division ⇒Based on past traffic congestion and human flow data, simulate the movement of people and vehicles in the event of a large-scale disaster, and consider temporary evacuation centers and evacuation guidance as part of the disaster prevention plan.



■Detecting potential accident occurrence points (Aizuwakamatsu City, Fukushima Prefecture) (many to one type)

- Detecting 'potential accident occurrence points' through mashup between public vehicle location information (GPS location information and acceleration information) and public information on locations of accidents causing injury or death by the police



* Data platform is not used for this case.

■Source: Smart City Aizuwakamatsu Promotion Council (https://www.soumu.go.jp/main_content/000452041.pdf)

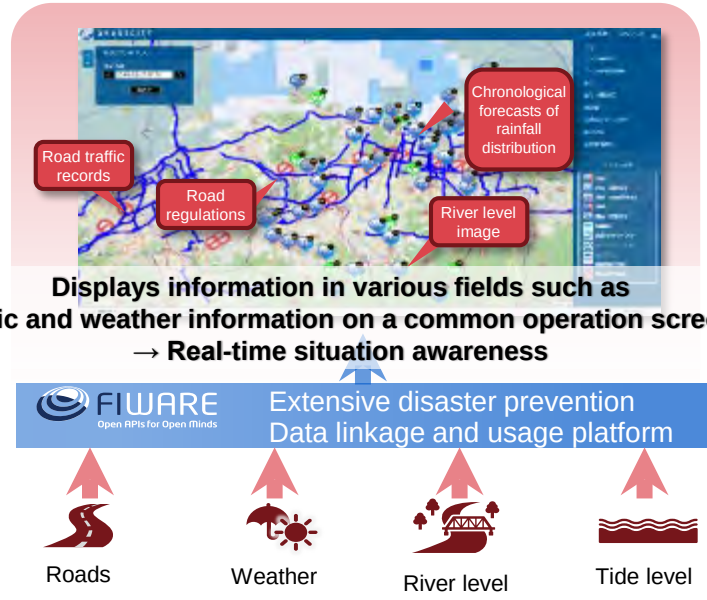
(4) The introduction of data platform　2. ② Linkage between cities

■ Cases of **shared use by peripheral local governments** of the data linkage platform introduced by core cities began to appear.
⇒ **Advantages in a wide-area disaster response** by neighbor local governments along the coast, rivers and roads, and **costs**

■Pattern ② of Linkage between cities: Shared use of data platform (Takamtsu City, Kagawa Prefecture)

Takamatsu City built data platform as FY2017 subsidy project of Ministry of Internal Affairs and Communications

Shared use of data linkage platform introduced by Takamatsu City by 2 neighbors, a city and a town



Displays information in various fields such as traffic and weather information on a common operation screen
→ Real-time situation awareness

(Reference) NEC Corporation

■ **Sharing operation and maintenance costs by fees**
⇒ **Beneficial for each local government (2 neighboring municipalities can use the service at a low cost)**

■ **Unifying disaster-related information** such as road traffic information, weather information, river level, tidal level **by data linkage**
⇒ **It becomes possible to grasp the situation from a bird's-eye view to disasters that occur over a wide area etc. and support policy decisions such as an evacuation advisory**

Data linkage for disaster prevention in 3 of Takamatsu City, Kan-onji City and Ayagawa Town

(4) The introduction of data platform 2. ② Linkage between cities

○Cases involving prefectures

- Although a small number, there are still cases of prefectures establishing councils and developing their own data platform, or leading regional coordination.
- One method is for prefectures to develop their own data platform, especially in areas other than ordinance-designated cities and core cities.

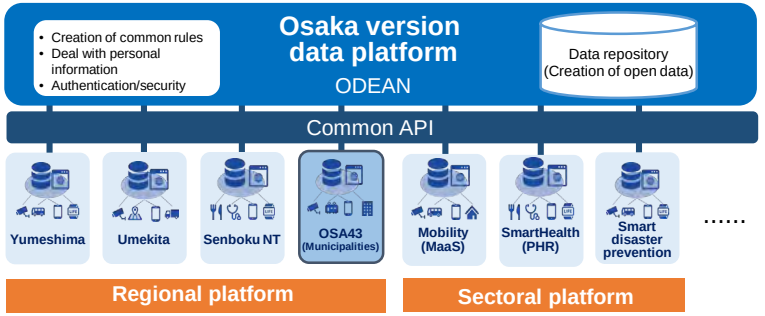
①Smart cities are being promoted by taking the initiative, such as by developing their own data platforms in all areas.

■Osaka prefecture (whole prefecture [all municipalities])

・The Osaka Smart City Strategy Council was established jointly with Osaka City (August 2019), and the 'Osaka Smart City Strategy' was formulated.
・The aim is to build the Osaka version data platform (ODEAN) which links data platforms by field and region, as well as an open data platform for the 43 municipalities in Osaka Prefecture (OSA43, in operation since February 2021) established by the Osaka Prefectural Government.

(Reference) Service mounting by OSA43: 'Baby station map' and 'Available childcare facility map'
http://www.pref.osaka.lg.jp/smart_somu/data-platform/index.html

* ODEAN: Osaka Data Exchange Alliance Network



■Source: Osaka prefecture (Note) This image is just a tentative assumption at the moment

■Nagasaki prefecture (whole prefecture [all municipalities])

・Launched 'Nagasaki Society 5.0 Promotion Platform' in the prefecture for ICT use and DX promotion (September 2020, all 21 municipalities, private companies (groups), universities, financial institutions etc.).
・To solve regional challenges and create new services based on the accumulation, sharing and usage of different types of data from a wide range of areas, the prefecture will first establish a data linkage platform (data platform) in FY2021 and then aim to build a joint operation system between the prefecture and 21 cities and towns. (Private sector engagement is also expected in the future)

②Led the promotion of Smart Cities in some regions

■Kyoto prefecture (mainly Keihanna Science City [Seika & Nishikizu District])

・Established Kyoto Smart City promotion council (in September 2018, consists of the prefecture and private companies), and built signages and park smart equipment in prefectural area centering around Keihanna Science City.
・Established Kyoto big data utilization platform (in November 2018, about 100 groups consist of private companies, universities, municipalities etc.), and promoted public and private data linkage.

③Implemented general coordination in some regions

■Ibaraki prefecture (Tsukuba City)

・Ibaraki Prefecture, Tsukuba City, Tsukuba University, and private companies jointly established the Tsukuba Smart City Council (June 2019).
・The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is implementing a demonstration project in the district.

■Hyogo prefecture (Higashi-Harima District [Kakogawa City, Takasago City, Inami Town and Harima Town])

・The Higashi-Harima Prefectural Government established the Higashi-Harima Area Smart City Promotion Council (in July 2020, two cities and two towns in the Higashi-Harima Prefectural Government).
・The council is studying wide-area collaboration within the region and sharing advanced case studies from within and outside the region.

Points to note

③Search and development of apps on data platform
④Enhancement of data distributed on data platform

■Establish data platform for post-implementation (services / data, running costs etc.)

- A data platform is only a foundation, and introducing a data platform does not necessarily mean that all local issues can be solved. As the name suggests, a data platform is similar to the 'operating system (OS)' of a PC or smartphone, and in order to solve local issues, it is necessary to enhance the services, applications, and data that make them stand out.
- However, **services and applications cannot be gathered by simply creating an 'OS' and waiting for them to arrive**. It is necessary for the operator of the data platform to cooperate with other parties involved in urban management to actively involve and encourage the players who can develop services and applications.
- The same applies to data. If the 'OS' has been prepared and everything else is optional, nothing will come together. In addition to providing a technical intermediary function (broker), data platform operators must not remain passive, but **must be aware of the data required and be active in searching for and matching that data**.
- The chicken-and-egg problem of service / data is often discussed, saying that 'if data is not collected, there is no way to develop services,' or 'if services are not finalized, the necessary data is unclear and there is no way to collect it. Neither has priority over the other. It is important to take both perspectives into account; service development and data collection.
- Also, in terms of cost, data platforms require running costs. It is necessary to be aware of this from the planning stage of construction, and to envision how to secure financial resources and bear the costs.

○Horizontal spreading of applications introduced by other local governments

■ One of the advantages of introducing a data platform is that applications introduced by other local governments can be easily deployed horizontally (e.g. introduced without customization or with necessary customization). Identify the conditions of local governments that are working on smart cities ahead of others, and the conditions of vendors and service providers that offer applications, and ascertain whether the implementation will be suitable for one's own region.

Examples of horizontally deployable applications implemented on the data platform

See also Separate volume ①: Services provided through smart city

Area	Name	Summary	State of implementation of data platform
Disaster prevention	Disaster prevention IoT (Takamatsu City, Kagawa Prefecture)	Acquire water level data etc. from water level sensors originally installed in rivers and bank protections or from the Kagawa Prefecture web site, and display on WebGIS. During disasters, the status of evacuation shelters is also displayed.	Completed
	Snowplow location information service 'Snowplow Navi' (Aizuwakamatsu City, Fukushima Prefecture)	Running situation of snowplows of the day (about 270 plows) is shown on the map. The actual location is updated and displayed every 20 seconds, too.	Completed
Nurturing / education	Aizukko + (plus) (Aizuwakamatsu City)	Notify information issued by schools where children attend (e.g. school newsletter, event results) to smartphones by push communication.	Completed
Health / Medical care	Iizuka Smart Wellness City Planning (Iizuka City, Fukuoka Prefecture)	With the aim of creating a lively town and supporting the most effective use of public facilities, a health application that measures the number of steps taken will be installed in the smartphones of residents participating in health events, and the travel history data obtained from the GPS function of these smartphones will be used and applied to smart planning.	Will be supported in the future
	Maternal and child health information service (Aizuwakamatsu City)	This is a computerized version of the Maternal and Child Health Handbook, which allows users to view height and weight growth curves, immunization status, and other information without the need to input the data themselves.	Completed
Tourism / Regional revitalization	'Unified traffic information providing' service for tourists (Sapporo electronics and industries cultivation foundation)	Utilizing digital devices such as digital signage and web pages (available in multiple languages), the site displays not only tourist information, but also traffic information, including information on service suspensions due to accidents and other reasons.	Completed
One-stop service for residents	Information providing platform for residents 'Aizuwakamatsu + (plus)' (Aizuwakamatsu City)	As a gateway to local information, the system picks up and displays recommendations based on personal attributes (age, gender, family structure, interests etc.), picking up information necessary for that person. Information and services can be provided not only by the government, but also by local businesses.	Completed

■Source: FY2020 survey results by the Ministry of Internal Affairs and Communications. Applications recognized by responders as 'Horizontally deployable to other local governments'.

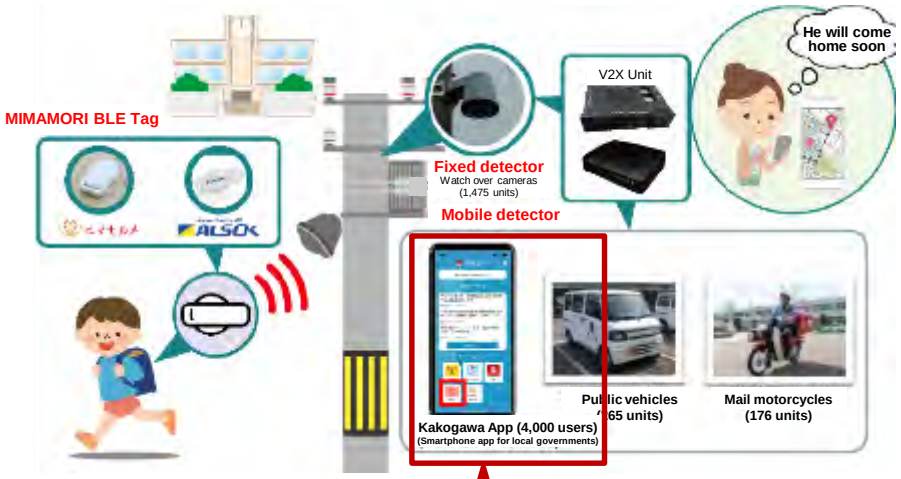
○Horizontal spreading of applications introduced by other local governments

Wide-area cooperation for MIMAMORI Tag detection app (Kakogawa City, Hyogo Prefecture)

- Made the app more open for sharing Kakogawa Application with a watching function
- Additionally, developed a structure that can easily introduce a watching function into existing local government apps, too.

Provide a wide-area watching system, not limited to Kakogawa City

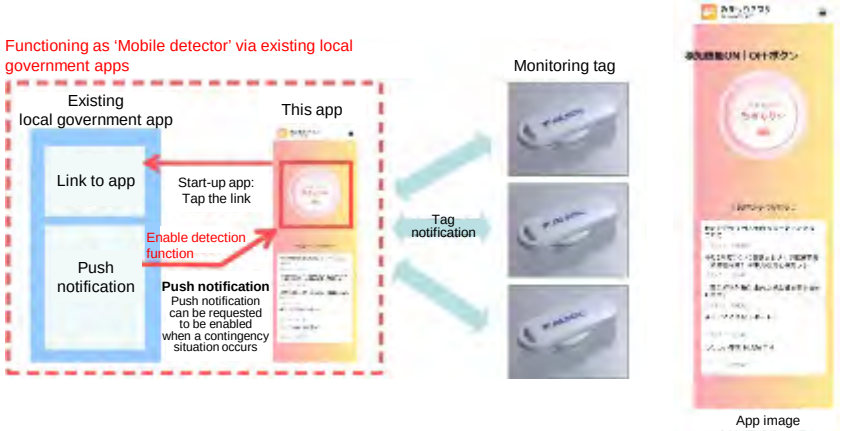
Watching service using BLE tag



Everyone can act as a watching volunteer by enabling the watching function of the app

(Note) No linkage with data platform

Efforts for wide-area cooperation



■ Development of MIMAMORI Tag detector
- A simple MIMAMORI Tag detecting app with detection function (ON/OFF) was developed
- Structure that makes a detecting function to be easily introduced later in cooperation with the existing local government apps

■ Source: Kakogawa Prefecture

○Provision of demonstration experiment environment to private businesses

Toyama City Sensor Network (Toyama City, Toyama Prefecture)

See 2-3(1)3. Reference to ensured sustainability and expansivity by participating in projects operated by various agents

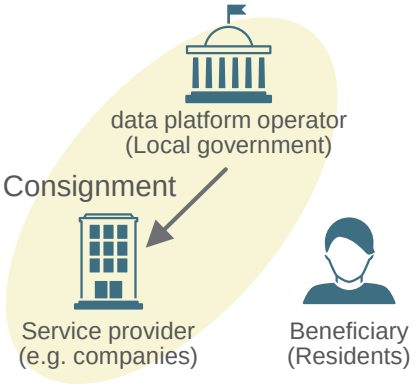
(4) Introduction of data platform　3. ③④ Enhancement of services / data

○Establishment of living Labs

- Under the horizontal segregation system of the European model (in which the data platform operator and the servicer are different), the challenge is that the data platform operator cannot grasp the servicer's ideas and the data it needs.
- European data platform operators actively utilize 'living labs' to create and foster services.

Traditional service creation and cultivation

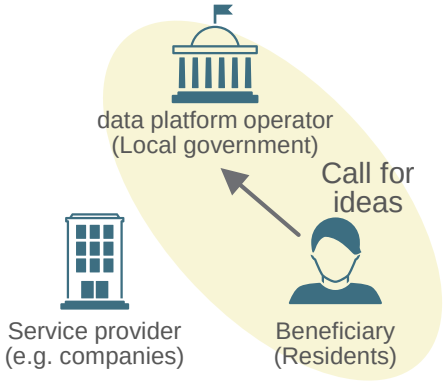
Public offering for verification project



Private companies commissioned by local governments are entrusted with idea generation

- Tendency to lack user-oriented service design exists
  (tends to be mere technology testing)

Call for ideas from residents

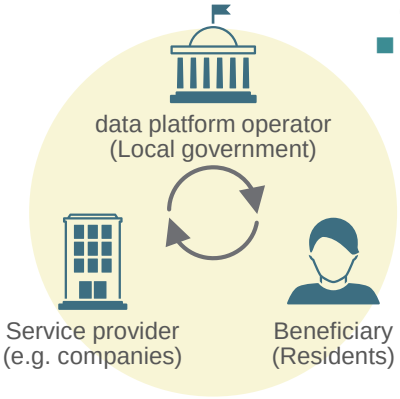


Residents (end-users) are entrusted with idea generation

- Lacking a sustainable business model perspective

Service creation and cultivation using Living Labs

Typical examples
- Copenhagen (Street Lab)
- Amsterdam (Amsterdam Smart Citizens Lab)



Definition

Place to create new technologies and services by conducting demonstration tests in actual towns

- Conduct ongoing demonstrations **in everyday life**
- **Co-creative activities involving** users and **residents**

Effects

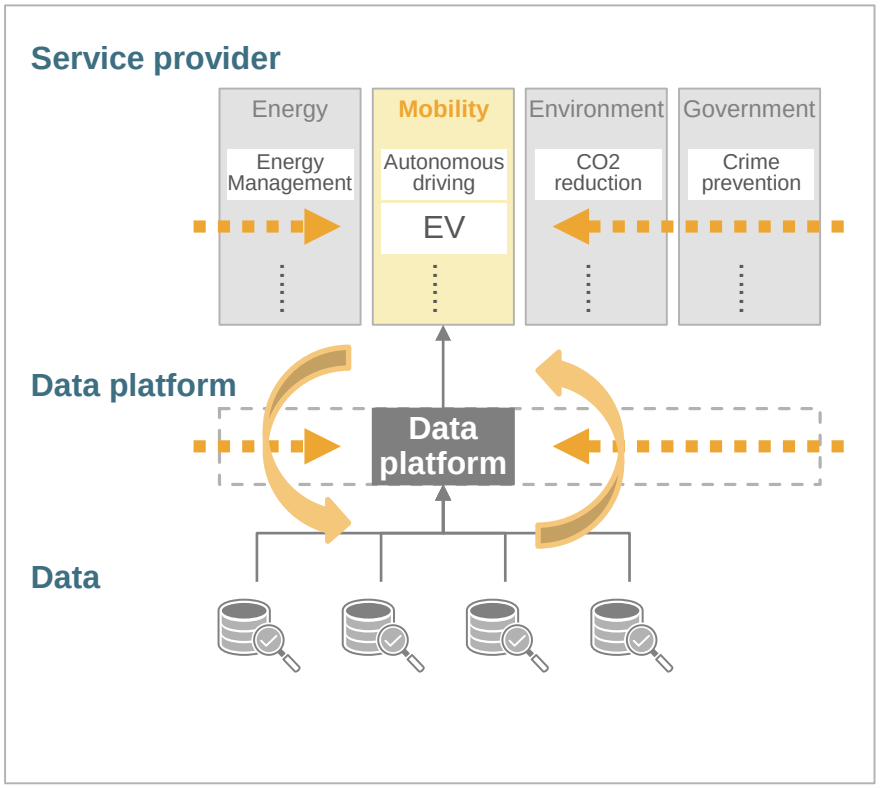
- Upstream residents participation enables **user-oriented service design**
- At the same time, it fosters **a sense of ownership among residents**.
- As a result, data / technology required for backward compatibility can be identified from a **need-driven perspective**.

○Data platform operators becoming ‘active brokers’

- The challenge is that each servicer / data provider is waiting for the other to make a move, and the cycle of data collection and utilization remains deadlocked.
- One way is for data platform operators to actively search for and enhance the data needed to realize their services (active brokerage).

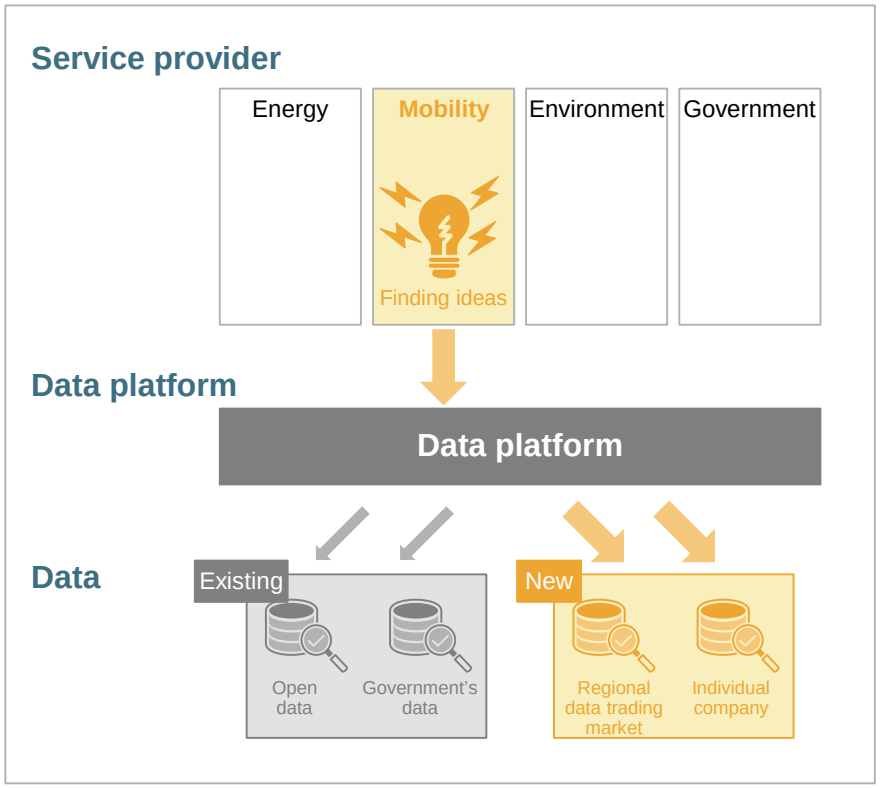
Targeting Platforms

Narrow down the goals and service areas to be pursued in a smart city, and improve matching efficiency through selection and concentration.



Active broker

Data platform operators actively search for data necessary to realize services discovered by Living Labs and others.



(5) Proper project assessment (e.g. KPI) Key points

Proper project assessment

- In order to establish a PDCA cycle for the realization of the project, it is effective to set KPIs to evaluate the progress and effectiveness of the project.
- As stated in the basic philosophy, the main goal of a smart city is to realize ‘well-being’. It is important to start considering indicators that match the goals of the project and the content of the measures, while keeping in mind the ‘ease of living’ of the residents, and to visualize the indicators to explain the progress and effects of the measures to the residents.
- In addition to statistical data, in the current situation where various data can be obtained by using sensing technology etc., KGI corresponding to the major goals of the project and KPI corresponding to the goals and measures for each theme should be set as indicators that can appropriately evaluate the degree of achievement of each goal etc.
- In this case, it is appropriate to consider outcome indicators that show the effects of the initiatives and output indicators that show the amount of activity of the initiatives, as well as to set a time limit to prevent the initiatives from stalling out.
- In addition, the following points should be taken into consideration when setting the indicators.
  - Clear and concrete.
  - Simple and easy measurement without undue burden.
  - Realistically achievable without being too low / high as a goal
- To achieve agile smart city initiatives that respond to technological innovations and the lifestyles of residents, it is desirable to confirm and manage project progress and results through regular KPI and other evaluations, and to return to the basic concepts (three basic philosophies and five basic principles) to update plans (strategies) and improve projects as necessary.

(5) Proper project assessment (e.g. KPI) Action examples: KPI setup

○Haneda Innovation City in Haneda zone 1 (Ota Ward, Tokyo)

○To realize Ota Ward's goal of becoming a 'Sustainable City Ota', productivity improvement, tourism and regional revitalization are set as major goals as one of the issues in the industrial sector, and KGIs are developed based on the ward's issue-specific plans as evaluation indices.
○In order to realize the major goals, the following steps have been established to address the issues within Haneda Zone 1 (HICity) (Phase 1), to spread the initiatives within and outside of Ota Ward (Phase 2), and to resolve the issues in Ota Ward, with KPIs for each step.

Smart robotics

Aim to introduce a wide variety of robots into city management and service provision, as well as to construct an integrated robot control system to improve convenience for visitors to the city and to support and replace work.

FY2020–FY2021	FY2022–FY2023	After FY2024
Step 1	**Step 2**	**Major goal**
Partial substitution of operations by introducing different kinds of robots	Simultaneous / automatic control of multiple units / types of robots by integrated control system	Increased convenience of town visitors and work support / substitution using robots	Productivity enhancement
Number of robots introduced (10 types / 50 units)	Number of alternative operations by robots (10)	Operational efficiency rate (20% improvement relative to current situation) Service user satisfaction (80%)	Growth of value added in the ward (Improvement compared to current situation (≥2.2 trillion yen)) Number of workers in the ward (361,000)

Smart tourism

Aim to effectively attract huge crowds by visualization of tourism resources using robots for remote tourism and AR app-base information distribution etc. and based on data-based area management measures

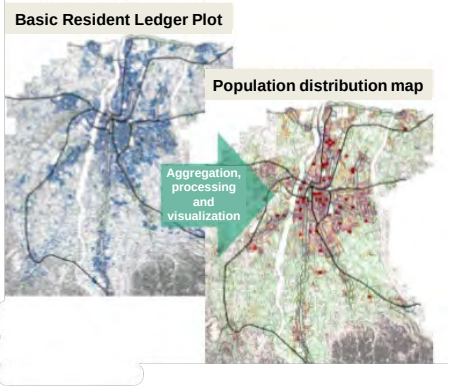
FY2020–FY2023	After FY2024
Step 1	**Step 2**	**Major goal**
Visualization of tourism resources	Attraction of crowds / prosperity improvement by area management measures using people flow data	Visualization of tourism resources Attraction of crowds	Tourism / Regional revitalization
Number of tourist service users (350,000 per year)	Number of HICity visitors (7,000 per day)	Number of tourists who come to the ward from HICity (200,000 per year)	Tourism consumption value (202.5 bn yen per year) Number of visitors (45 million per year)

(5) Appropriate project evaluation (KPI etc.)

Examples of efforts: acquisition of KPI-related data

■ Visualization of changes in the town through GIS based on the residential registry (Toyama City, Toyama Prefecture)

- In Toyama City, **basic resident registers and other information have been deployed in GIS** since FY2011 to grasp, analyze and visualize the urban structure and its changes, enabling the superimposition of a wide variety of information.



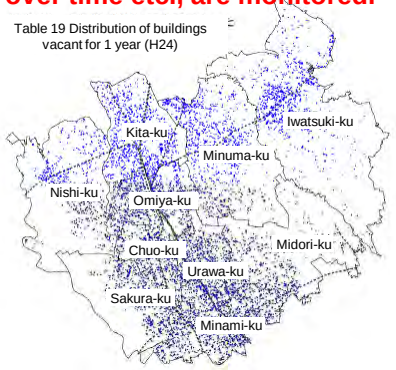
Utilized for planning and verifying the effectiveness of community development measures, such as population coverage of areas where public transportation and commercial facilities are used, and the location of welfare facilities for the elderly.

Source: Toyama City presentation at the 2nd Study Session on Urban Planning for a Data-Driven Society, Urban Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism Toyama City presentation material.

Vacant house identification using water meter data (Saitama City, Saitama Prefecture)

- In Saitama City, **the data on the distribution of vacant houses is compiled by** targeting residential, commercial, industrial and other buildings (excluding public facilities) and **determining that buildings with water meters that have not been under contract for more than one year are vacant**.

The occurrence of vacant houses etc., and changes over time etc., are monitored.



■ Source: Saitama City Plan for Vacant Houses etc. March, 2008 Saitama City

■ Obtaining travel history data through the Kenko App (Sapporo, Hokkaido)

- Residents can install an activity meter with a positioning function in their smart phones and **receive health points based on the number of daily walks they take**.
- By **acquiring residents' travel history data** when awarding health points, it is possible to **measure the increase in the number of steps taken and estimate the effect of reducing medical costs**.
- The obtained travel history data is also **used to examine community development policies**.

To end

- This document has been compiled based on the initiatives of leading smart city projects, while also interviewing the people involved in those projects.
- Although preceding cases have not yet reached their goals, they are still working agilely toward the establishment of smart cities in their respective regions. New challenges will emerge and be solved every day, new wisdom and ingenuity will be put to the test, and new values will be created.
- We believe that this document is not a finished product, and that it must continue to evolve and improve in step with the progress of smart cities in Japan, in response to ‘new discoveries’ made in various regions.
- Smart cities are often accompanied by the use of all kinds of jargons, and as this is an area of government that we have never experienced before, we are often at a loss as to where to start and what to do first.
- However, once we get down to basics, there is only one thing to do, and that is to ‘face the residents’ in the same way that governments have done in the past.
  Even before we think about the required expertise in the digital field, we need to think about what residents want and how to enrich their lives and improve their wellbeing in the stormy waves of digitalization that are transforming society day by day, without leaving a single resident behind.
- It will also take a considerable amount of time for smart cities to take root in society. Furthermore, it is not realistic to expect every initiative to succeed over a long period of time as we proceed on a voyage without a compass, so to speak, as there are no examples of 100% success in Japan or abroad.
- Instead, we should not seek 100% success from the beginning, knowing that there will be ‘failures’. This could be considered as an initiative where a path can be found by taking it easy and continuing it over a long period of time. While this publication still needs to be improved in response to these smart city initiatives, we hope that it will be helpful in one or two ways.