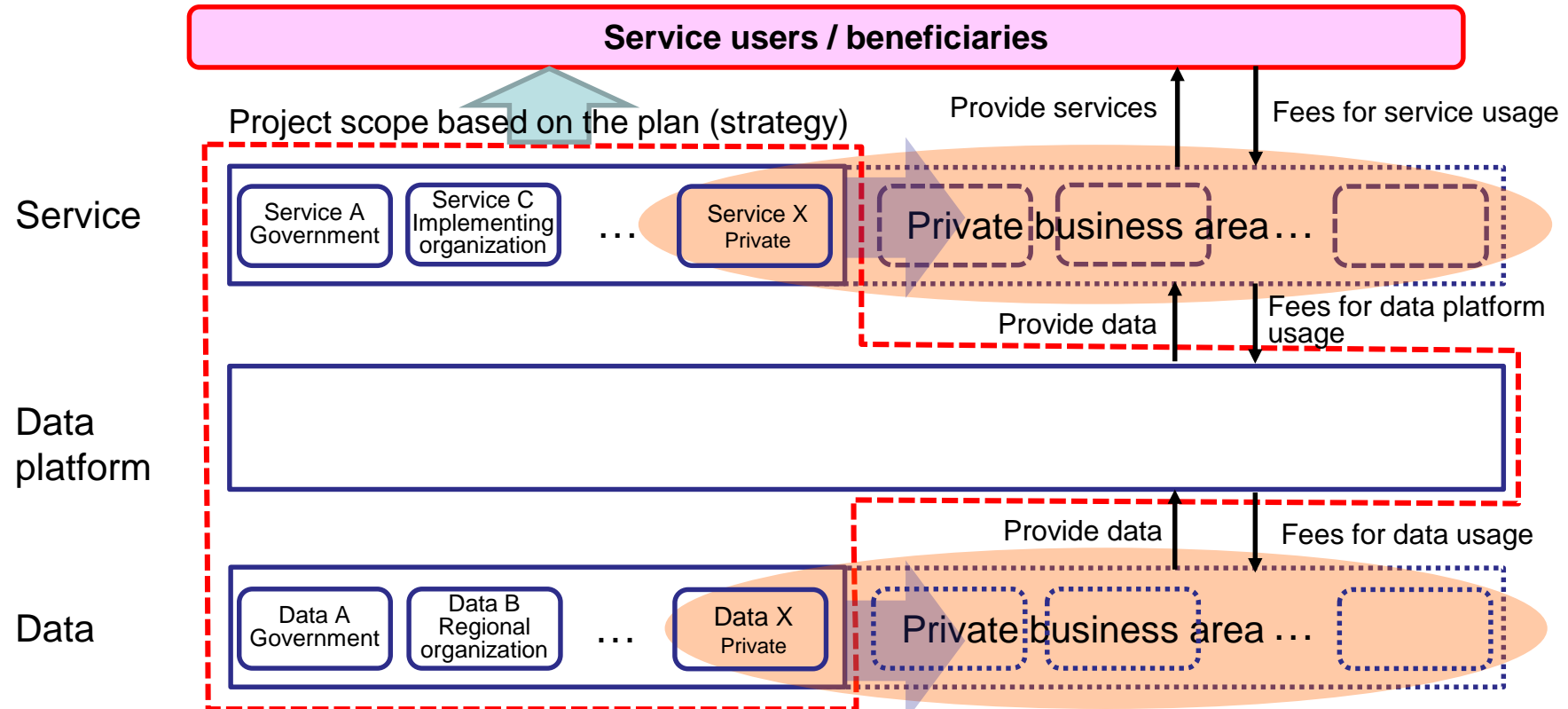


(2) Ensuring Financial Sustainability: Outline

- To realize a sustainable smart city, ensuring financial sustainability is a key point.
- To achieve this, it is ideal to realize a self-sustained smart city depending mostly on private funds, in which various data from public and private sectors are distributed, forming a cycle to create new value and services (ecosystem) and generating revenue from, for example, usage fees of data, services and data platform.
- However, given that this ecosystem is immature at present, in order to implement a smart city project based on the first phase of the plan (strategy) and sustainably operate data platform, which serves as a data and service platform, the first step is for the government to bear appropriate cost in consideration of direct and indirect benefits of the project, which may include expenses necessary to reduce administrative cost and provide various high-quality administrative services.
- To take this first step, the key is how the financial sustainability of the project can be enhanced.



(2) Ensuring Financial Sustainability 1. Project scope and major items of expenses

- Described below are providers, operators and the cost incurred at each layer of a general smart city project.
- Although some services, such as those provided by private organizations, can produce certain revenues, the cost of data platform and data are not expected to bring in sufficient revenues at present.
- However, the roles of data platform, which collects various data and link them to create a variety of urban services, and data are very important, so a major challenge is how to cover these initial and operating costs.

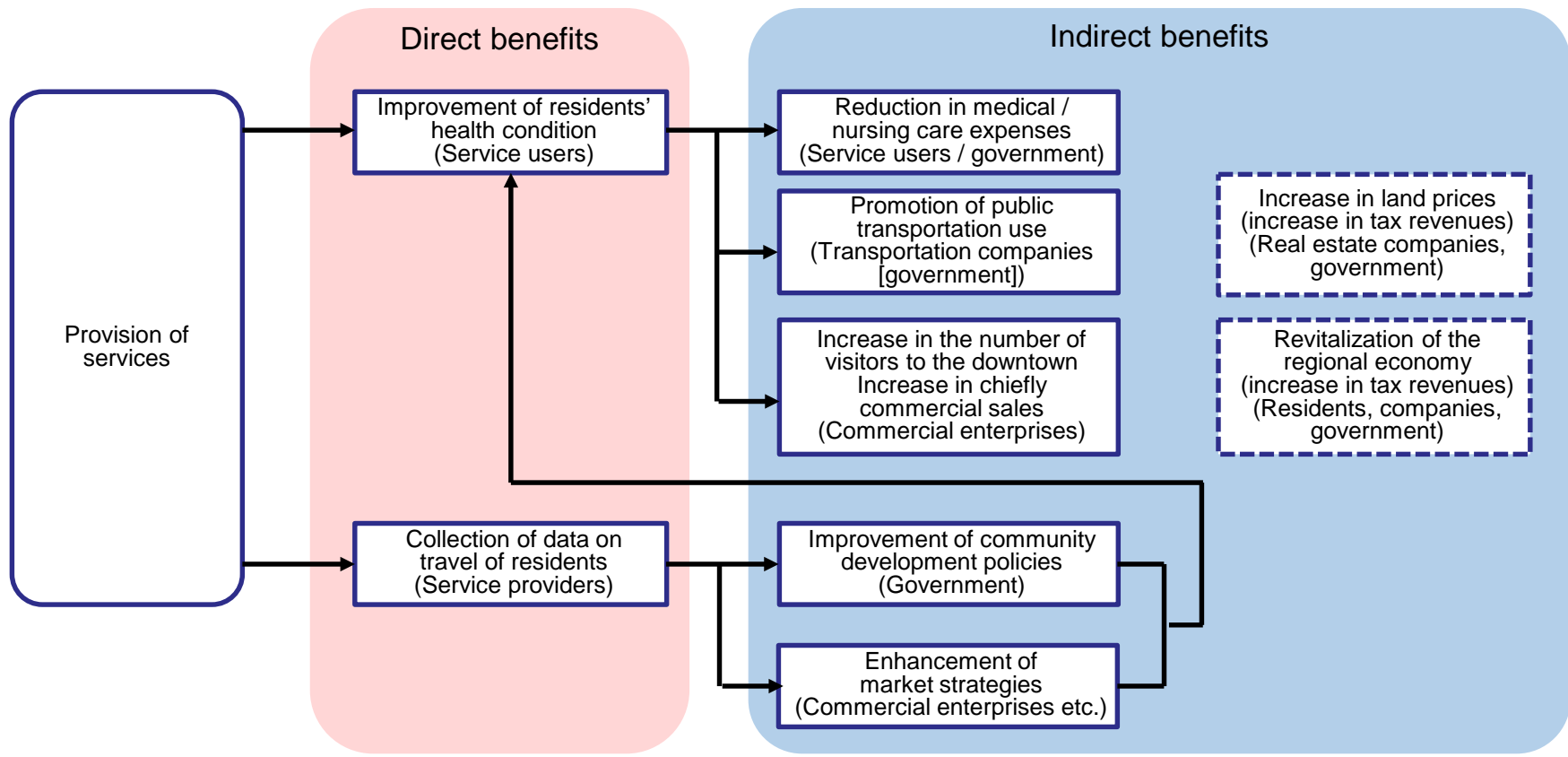
Layer	Major providers / operators	Initial cost	Operating cost
Service	<p>Government-initiated type Local government, Corporation operating smart city*¹, Private sector</p> <p>Area management type Community development organization*², Local government, Private sector</p>	<ul style="list-style-type: none"> ○ Cost of developing apps and systems 	<ul style="list-style-type: none"> ○ Cost of updating apps and systems ○ Cost of service purchase Note: If a private service is purchased
Data platform	<p>Government-initiated type Local government, Corporation operating smart city*¹</p> <p>Area management type Community development organization*², Local government</p>	<ul style="list-style-type: none"> ○ Cost of introducing data platform 	<ul style="list-style-type: none"> ○ Cost of operating data platform
Data	<p>Government-initiated type Local government, Corporation operating smart city*¹, Private sector</p> <p>Area management type Community development organization*², Local government, Private sector</p>	<ul style="list-style-type: none"> ○ Cost of installing devices such as sensors and monitors ○ Cost of preparing and purchasing data 	<ul style="list-style-type: none"> ○ Cost of device management renewal ○ Cost of preparing and purchasing data ○ Cost of data quality management

*1. Corporation operating smart city: A corporation (e.g. joint stock company, corporate juridical person) that is specifically set up under the driving entities to operate smart city
 *2. Community development organization: An organization consisting of stakeholders in a specific district, including an area management corporation and a Town Management Organization (TMO), and engaging in activities to revitalize, and improve the quality of, the district.

(2) Ensuring Financial Sustainability 2. Major points ①

- **Clarify those who directly / indirectly enjoy benefits**
- While services provided through smart city are aimed at solving various policy challenges and realizing a vision, in many cases, there are multiple indirect beneficiaries as well as direct beneficiaries who are directly linked to these challenges..
- Therefore, the point is to clarify beforehand who will directly / indirectly enjoy benefits through the smart city project in considering the burden of expenses.

For example, in the case of a service for residents, which gives points to walking, use of public transportation, visiting a downtown etc.



(2) Ensuring Financial Sustainability 2. Major points ②

➤ **Basic ways to address the burden of cost**

Cost burden of services for which compensation is paid

-- It is important to take various efficient measures so that services for which compensation is paid, including those for residents and private companies, will become financially independent as much as possible.

Example: collecting usage fees from service users, recovering the money by utilizing data collected through the service and collecting contributions from those who indirectly benefit from the service

Cost burden of the other costs (public services, data platform and data)

-- For the expenses of these services, which are unlikely to achieve sufficient profitability independently under the present conditions, it is necessary to properly share the costs among the government, the local business organization, commercial enterprises, real-estate business owners, the members of the driving entity, or other organizations in consideration of direct and indirect benefits of the smart city project

(Examples)

- ✓ Reduction in administrative costs, benefits extensively enjoyed by a large number of residents and companies: Government
- ✓ Maintenance of / increase in sales and land prices due to the revitalized regional economy: Local business organization, commercial enterprises, real-estate business owners
- ✓ Contribution to SDGs and improvement of regional / corporate images: Members of the driving entity

-- For the two layers of data platform and data, which serve not only as the foundation in providing services but also as the essential platform for drawing various data-based services from the private sector and establishing a smart society, it is desirable to build a stable and sustainable framework for cost burden.

➤ **Cost reduction for sustainable initiatives**

-- It may be a good idea to take a small start approach, which starts with a small-scale social implementation and expands areas and the scale in phases, and thereby curb the cost of the initial phase.

-- Other effective ways to reduce costs include sharing data platform among multiple local governments or multiple districts and jointly introducing a service.

(2) Ensuring Financial Sustainability 2. Major points ③

○ Concerning the (initial and running) expenses of public services, data platform, data etc., which are unlikely to achieve sufficient profitability under the present conditions, it may be helpful to identify and accumulate the direct or indirect benefits of each service that constitutes the project in order to make a certain clarification of the direction of each entity's benefits and cost burden based on the overall effects of the project.

Government-initiated type

Examples of services provided

Government (e.g. going online), medical care / welfare / health, disaster prevention, infrastructure management, mobility (e.g. regional transportation), industries (e.g. agriculture, regional currency), education (e.g. GIGA school)

Entity	Direct benefits	Indirect benefits
Residents	Improvement of the convenience and comfort of life Ensuring safely and security etc.	Receiving sustainable administrative services Maintenance of / increase in income due to the revitalized regional economy
Government	Reduction in administrative costs Improvement of the quality of administrative services	Increase in tax revenues (e.g. municipal tax, business facility tax, property and city planning tax) Curbing population decrease by net migration, or population increase by net migration
Providers of services etc.	Compensation for services and systems	Enhancement of the corporate brand (members of the driving entity)
Local private companies	Improvement of the convenience of administrative procedures etc. Increases in sales and production through services	Increases in sales and production due to economic revitalization
Real-estate business owners	Improvement of the convenience of administrative procedures etc.	Increases in land prices and rents due to the revitalized regional economy

Basic direction of cost burden

Government's cost burden

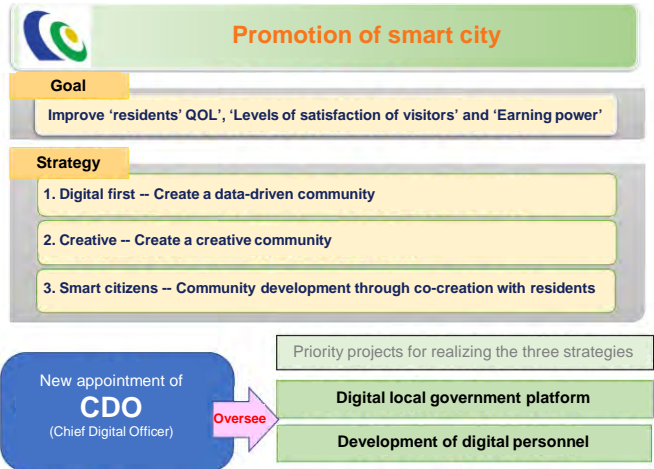
- The government may bear a certain burden in consideration of factors, such as the effect of reduced administrative costs and benefits that a large number of residents / companies can enjoy through various high-quality administrative services.
- It is necessary to pay attention to 'added value' such as the creation of a new service.
- It is effective to consider a variety of ways to finance / pay that are not completed in smart city.
 - Introduction of the Pay for Success / Social Impact Bond (PFS/SIB) approach
 - Utilization of revenues from other areas related to smart city, including digital signage projects, drone delivery services for shopping, parking lot management, energy projects, comprehensive management of public and other facilities.
 - Utilization of crowd-funding, a corporate version of the hometown tax system and other schemes

Driving entity members' cost burden

- They may bear a certain burden in consideration of factors, including indirect benefits, such as the effect of the revitalized regional economy and improved regional or corporate image, and the creation of value through data sharing within the driving entity.
 - Organizations, including the regional business organization, bear supporting member's fees in consideration of the effect of the revitalized regional economy etc.
 - Companies that operate nationwide bear a certain amount of money or use a corporate version of the hometown tax system etc. for their contributions to SDGs.

○ Budgetary appropriation focused on the realization of smart city toward the digitalization of administration (Kaga City)

- Under the strong leadership of the mayor, the promotion of smart city was given the status of the top-priority project in order to improve residents' QOL, levels of visitors' satisfaction and earning power on the basis of a 'Smart City Declaration'.
- Under the supervision of the CDO, budgets for the cost of digital local government platform, including the development of a data linkage platform and verification tests of advanced technologies, and the development of digital personnel were appropriated.



○ Projects utilizing a data linkage platform etc. 31,929,000 yen

• **Expansion of electronic application**
Improve residents' quality of life by expanding electronic application through the utilization of My Number Card and digital ID.

• **Utilization of a data linkage platform**
Develop a platform based on FIWARE for linking different data as well as linking data to various digital services, and conduct a study for electronic voting.

○ Projects for verifying the resolution of regional challenges 45,000,000 yen

Conduct verification tests to solve regional challenges utilizing advanced technologies.

- **Verification of the use of avatars**
Conduct verification tests using five communication-type avatars in various areas including, administration, education, medical care, commerce and tourism
- **Verification of the use of air mobility etc.**
Conduct verification tests using air mobility (e.g. drones)
- **Verification of the use of the 5G (fifth generation mobile communication system)**
Conduct verification tests of MR (1) using the 5G at the Kaga CityInnovation Center. (1) MR (Mixed Reality): The merging of real and virtual worlds
- **Verification test support project**
Invite applications from around the country for verification test projects that are conducted utilizing advanced technologies etc. based in Kaga City, and support the conduct of these tests

Reference: Kaga City website
<https://www.city.kaga.ishikawa.jp/soshiki/somu/zaisei/11/15/6198.html>

and others

○ Budgetary appropriation focused on the need for the realization of smart city through public-private collaboration

- Budgets for the cost of verification tests and other matters based on a smart city Action Plan, which was formulated at a public-private council led by the local government, were appropriated in accordance with the principles below.
 - Smart city needs to be promoted through public-private collaboration to achieve sustainable growth in the community.
 - To this end, the public-private council needs to be supported.

○ Budgetary appropriation focused on the need for the resolution of particular social challenges

Example 1

- Budgets for the cost of introducing services and data platform were appropriated as the cost necessary to provide administrative services aimed at solving particular social challenges such as ensuring the safety and security of residents.
- One of the reasons for the appropriation of a budget for data platform was that it can be utilized for other administrative services once it is introduced.

Example 2

- Budgets for the cost of introducing sensing devices, data analysis and other matters were appropriated as part of implementation of comprehensive public-private efforts to solve particular social challenges such as the revitalization of the downtown.

(2) Ensuring Financial Sustainability 2. Major points ④

○ Concerning the (initial and running) expenses of public services, data platform, data etc., which are unlikely to achieve sufficient profitability under the present conditions, it may be helpful to identify and accumulate the direct or indirect benefits of each service that constitutes the project in order to make a certain clarification of the direction of each entity's benefits and cost burden based on the overall effects of the project.

Area management type

Examples of services provided

Dissemination of town information, energy management, mobility (e.g. short-distance services), city block management (e.g. infrastructure management, cleaning, security, logistics), health (e.g. points, advice), immediate response at the time of disaster

Entity	Direct benefits	Indirect benefits
Residents etc.	Enjoying the benefits of a safe, comfortable and high-quality living environment and working environment etc.	Maintenance / enhancement of the value of assets such as a house
Real-estate business owners in the district	Increases in land prices and rents	Improvement of brand power
Community development organization	Improvement of the value of the area	
Providers of services etc.	Compensation for services and systems	Enhancement of the corporate brand (members of the driving entity)
Private companies in the district	Increase in sales, improvement of corporate productivity, maintenance / increase in land prices and rents	Improvement of brand power
Residents / companies in the city		Formation of attractive tourist spots, increase in sales due to regional economic revitalization, etc.
Government	Reduction in administrative costs, resolution of challenges facing the city (e.g. hollowing out of the downtown)	Increase in tax revenues (e.g. municipal tax, business facility tax, property and city planning tax)

Basic direction of cost burden

Community development organization's cost burden

- It bears a certain burden in consideration of factors, such as benefits of the entire district, including increased value of the district as well as vigorous economic activities and the maintenance of / increase in land prices resulting from that
- In doing this, it is effective to finance cost burden using the methods below.
 - Increase independent revenue sources for smart city through digital signage projects, parking lot management, wide-area energy use projects, the designated management of public facilities in the district etc.
 - Collect the share of the cost etc. from the members in consideration of factors, such as increased land prices and the improved business environment, as well as the creation of value through data sharing within the organization (Business Improvement District: BID)
 - In the case of green field, urban developers etc., bear the cost of initial investment using, for example, the framework of ESG investment

Driving entity members' cost burden

- They bear a certain burden in consideration of factors, including indirect benefits, such as the effect of the revitalized regional economy and improved regional or corporate image, and the creation of value through data sharing within the driving entity.
 - Organizations, including the regional business organization, bear supporting member's fees in consideration of the effect of the revitalized regional economy etc.
 - Companies that operate nationwide bear a certain amount of money or use the hometown tax system etc. for their contributions to SDGs.

Government's cost burden

- It bears a certain burden in consideration of the effect of reducing administrative costs and the resolution of social challenges, such as the hollowing out of the city center, enhancement of urban functions in the district and improvement of the environment at old new towns and other places.

(2) Ensuring Financial Sustainability 2. Major points ⑤

Major types of cost burden

	Charging users	Borne by private sector		Borne by government		Donation <small>(A corporate version of the hometown tax system etc.)</small>	Appropriating revenues from other projects
			BID*1		PFS*2 /SIB*3		
Way to recover funds	Charging compensation for services to users	Private companies etc. that enjoy benefits bear	Collect compensation for increased value of a specific area from landowners	Recover the benefits to the whole society through taxation	Create sources of funds by reducing administrative costs	Solicit donations from supporters of the initiative	Appropriate revenues from other public projects etc.
Revenue source	Fees for service usage Fees for data usage	Private companies' burden of project costs, financial sponsorship / membership fees, and capital gains through private urban development	Cost sharing (collected by the government)	Tax revenue	Private investment (PFS)	Donation (individuals / the private sector)	Revenues earned from other public projects, PPP / PFI projects, the comprehensive designated management, advertising projects etc.
Summary	Collect fees for service usage from users of various smart services	Private companies etc. invest in anticipation of direct / indirect benefits	The government collects the share of the cost from landowners etc. in the area and returns it to the private sectors, and thereby provide projects that enhance the value of the area	The government uses tax revenues as a source of funds to provide services that can lead to solving social challenges	Private funds are used to carry out projects aimed at solving social challenges, and compensation is paid according to the outcome.	Companies' donations to the government's regional revitalization projects (tax credit for enterprise tax on corporation and corporation inhabitant tax)	Appropriate revenues from services of other areas related to smart city, which are provided by a government-funded public utility etc.
Major benefits (expectations)	Those who enjoy the benefits are those who bear the cost	Private operation of services, which are efficient and effective	<ul style="list-style-type: none"> •Securing a stable source of revenue •Landowners' independent participation in community development 	<ul style="list-style-type: none"> •Improvement of administrative services •Reduction in administrative costs 	<ul style="list-style-type: none"> •Reduction in administrative costs •Improvement of services through the Pay for Success payment 	Utilization of private funds available for contribution to the community	<ul style="list-style-type: none"> •Securing a stable source of revenue •Economic circulation in the community
Challenge	Whether benefits worth the fee can be provided	Projecting earnings is difficult, so making decisions about investment is difficult	Difficult obstacles to overcome, including consensus formation and the payment of the share of the cost	Due to the single-fiscal-year system, covering operating expenses / investments is difficult	Setting outcome indicators and formulating / managing projects require a certain amount of cost	Collecting the necessary amount of funds is difficult	Independent operation of a smart city project alone has not been achieved

*1: Business Improvement District

*2: Pay for Success

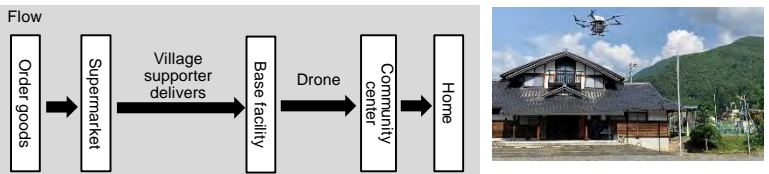
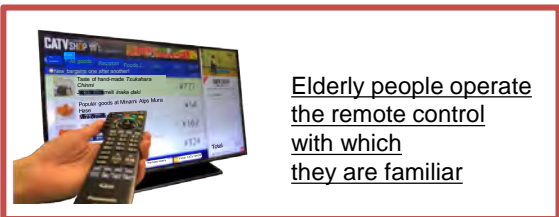
*3: Social Impact Bond

■ Example of fees for service usage (Ina City, Nagano Prefecture)

- Ina City has established an ordinance for drone delivery services for shopping and collects fees for usage from users and sellers.

Drone delivery (shopping service): Outline

Initiative outline	Those who place an order for goods from about 300 items on the cable TV screen by 11:00am can have them delivered by a drone etc. by evening.
Time of implementation	Implemented in 2020
Financing structure	Collect a monthly fee of 1,000 yen from users and 10% of the sales from sellers in accordance with 'Ina City ordinance for a mutual support shopping service' . (Ina Cable TV collects the fees for CATV usage and products together by direct debit on behalf of the city.)
Results	① Users: 47 households 47 × 1,000 yen (Oct. 2020) ② Sellers: 10% of the sales 129,759 yen (Nov. 2020)



■ Example of collection of membership fees (Kyoto Prefecture)

- The Kyoto Big Data Utilization Platform has prepared a large number of membership benefits and collects annual membership fees.

Kyoto Big Data Utilization Platform: Outline

Time of establishment	November 2018
Background of establishment	Established to effectively promote the utilization of data and create new business through business matching etc. with the participation of a wide variety of players from industries, academia and the public sector
Composition of the organization	About 100 organization: private companies, universities, research institutes, government etc.
Annual membership fee	Large company members: 200,000 yen Small and medium enterprise members: 100,000 yen Small-sized business proprietor members: 30,000 yen Of which, start-ups: 10,000 yen

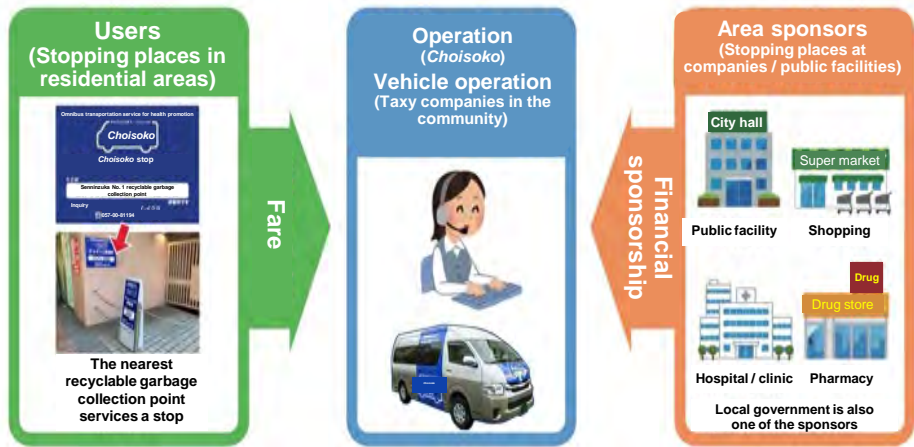
- Benefits of membership
1. Participation in the Kyoto Big Data Utilization Platform meetings
 2. Participation in a working group by issue
 3. Support for business matching
 4. Support for the acquisition of subsidies etc.
 5. Support for verification tests utilizing digital signage etc.
 6. Use of the data integration platform
(* The basic usage fee is free. The use of options, such as a BI tool, is charged separately)
 7. Signage advertisement is offered at membership discount prices

■ Example of collaboration with area sponsors (**Choisoko**)

- On-demand transportation aimed at maintaining profitability and continuity by promoting the creation of 'services' that encourage going out (increase fare revenues) and by gaining sponsorship from area sponsors

Choisoko (On-demand transportation): Outline

Initiative	On-demand transportation intended to eliminate transportation difficulties in the community and contribute to encouraging mainly elderly people to go out
Business model	More profitable operations can be maintained through the creation of 'services' that encourage going out, which leads to health promotion, and sponsorship / advertisement fees from area sponsors (the local government and companies)
Results	No. of the membership: 8,100 people nationwide (Feb. 2021) Fare: 0 to 400 yen / ride Area sponsors: About 100 nationwide (Feb. 2021)



Source: Document provided by AISIN CORPORATION

■ Example of BID(Bath district, the UK)

- In the Bath district, the BID collects / analyzes data, such as the flows and purchase behaviors of residents and visitors, and sends the data to the levy payers.
- Those who are not landowners can also become levy payers and receive services.

BATH BID: Outline

Target area	The Bath district, the UK (population: about 90,000, No. of tourists: about 5 million per year)
Time of establishment	Established in 2011 - The 2015 renewal voting renewed activity authority by five years - Another voting is taking place by 2021
Background of establishment	Established with a view to maintaining the landscape of the Bath district and improving its value (aimed at enhancing the attractiveness as a tourist site)
Composition of the organization	A total of 655 companies participated as levy payers - Restaurants, bars, retails, hotels etc. - Those who are not landowners etc. can also volunteer to become a levy payer
Operating costs	Annual operating costs is about 100 million yen, with levies accounting for 90% of that



BID district

Smart City Data Project

- Data on the flow of people within the Bath district is analyzed and utilized for marketing planning at companies and organizations. Collection of visitors' data began in 2019
- Anonymized data is collected from positional information and transaction information, and distributed to levy payers (on the members-only website)
 - Partnership with Data consultant Movement Strategies
 - Information is distributed weekly, and reports are prepared quarterly
- Multiple types of information is collected to analyze the purchase behaviors of residents and visitors
 - Sex, age, place of residence, interests, frequency of visits
 - Purchase amount in total and by business type
 - Impression of Bath through Social Listening



Sex and age of visitors (2019)

Source: BATH BID HP, BATH BID ANNUAL REPORT2019/2020

(2) Ensuring Financial Sustainability Examples of Initiatives: SIB

Example of SIB introduction (Hachioji City --Improvement of colorectal cancer screening / thorough examination rates)

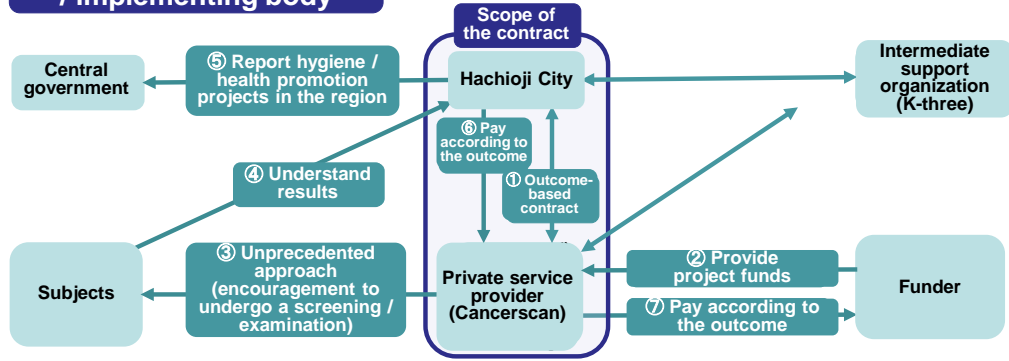
Project objectives

- Improve the colorectal cancer screening rate
- Improve the thorough examination rate among those who were determined to require a thorough examination in the screening
- As a result, extend the healthy life expectancy of residents through the early detection and early treatment of colorectal cancer
- Ensure appropriate medical treatment costs

Subjects

- About 12,000 people sampled from about 65,000 people who did not undergo a colorectal cancer screening in the previous fiscal year among those insured under the national health insurance
- About 3,000 people who were determined to require a thorough examination

Implementation structure / implementing body



Project period / outcome indicators

	FY2017		FY2018		FY2019	
	Project implementation				Evaluation period	
Improve the colorectal cancer screening rate	June Encourage	November Reencouragement/ tailored to individuals	June to August Measure the outcome	August Pay according to the outcome		
Improve the thorough examination rate following the colorectal cancer screening	From June: doctor's intervention/handling out materials		Encouragement to undergo a screening / examination during regular work	January Reencouragement/ tailored to individuals	June to August Measure the outcome	August Pay according to the outcome (* Number of people for whom early cancer was detected)

Results

Improve the colorectal cancer screening rate	Screening rate: 26.8% (3,264 / 12,162 people for whom screening was recommended) The upper payment limit of 19.0% was met and a full payment was made (the past figure was 9% [2015], target value: 19%)
Improve the thorough examination rate following the colorectal cancer screening	Examination rate: 82.1% (2,561 / 3,119 people who were determined to require a thorough examination) The upper limit was not reached and a payment was made according to the outcome (the past figure was 77% [2014], target value: 87%)
Number of additional people for whom early cancer was detected	There was no additional people for whom early cancer was detected (the upper payment limit was set at 11 people)

Outcome indicators and the payment table

1. Colorectal cancer screening rate

Screening rate	9.0 ※	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	(%)				
Amount of payment	No payment										1,109	2,218	2,292	2,366	2,441	(in thousands of yen)

* The screening rate in the fiscal year for those who did not undergo a colorectal cancer screening in the previous fiscal year at the time of contract

2. The thorough examination rate following the colorectal cancer screening

Screening rate	77.0 ※	78.0	79.0	80.0	81.0	82.0	83.0	84.0	85.0	86.0	87.0	(%)
Amount of payment	No payment		740	1,480	2,220	2,960	3,700	4,440	4,588	4,736	4,880	(in thousands of yen)

* The thorough examination rate following the colorectal cancer screening at the time of contract

3 Number of additional* people for whom early cancer was detected

Screening rate	1	2	3	4	5	6	7	8	9	10	11	(people)
Amount of payment	277	554	831	1,108	1,385	1,662	1,939	2,216	2,291	2,366	2,441	(in thousands of yen)

* The incidence of early colorectal cancer was 0.19% at the time of contract. The number of people obtained by multiplying the incidence by those who undergo a screening is regarded as the base (0 base)

Example of the appropriation of revenues from other projects (Higashi Murayama City)

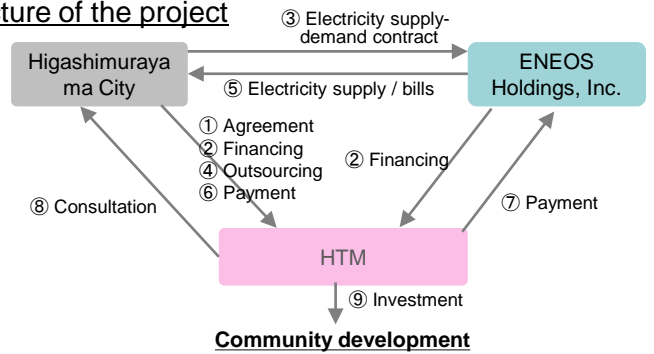
- A structure has been created that utilizes the effect of increased efficiency of power procurement, achieved by Higashimurayama Town Management KK ('HTM'), to make investments to address regional challenges. (Project based on a proposal under the private company proposal system)
- Revenues generated by cost reduction are utilized for community development, including smart city, without posing new financial burden on the city.

Project outline	
Project objectives	Integrate / increase efficiency of the city's power procurement and electricity bill payment operations, and utilize the resulting effects to address challenges facing the city and provide sustainable, high-quality services for residents
Time of establishment	HTM was established in April 2020
Capital provider	Higashimurayama City ENEOS Holdings, Inc. Asia Air Survey Co.,Ltd.

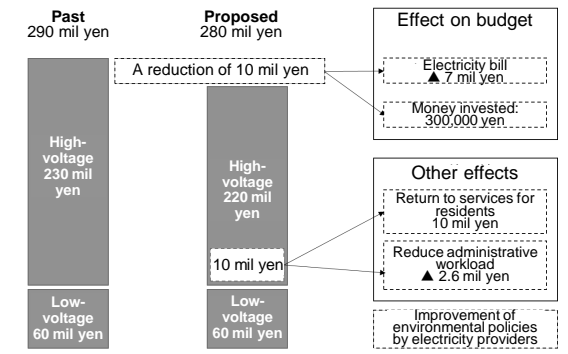
Project implementation status

- Initiative outline**
- The city, ENEOS Holdings, Inc. and Asia Air Survey Co.,Ltd. provided the capital to establish HTM
 - The city and ENEOS Holdings, Inc. concluded an electricity supply-demand contract
 - HTM concluded a service agreement with the city to carry out the city's payment and other operations for the city (comprehensively procure power and pay the electricity bills as a proxy for the city, which was in the past separately arranged for each facility, such as the city hall, school and garbage incineration facility)
 - The city pays the electricity bills + service fees to HTM, and the service fees become HTM's profits**
 - HTM returns the profits to public services
 - The city can reduce administrative workload and obtain manpower

Structure of the project



- Effects**
- Reduce the budget
 - Utilize part of the electricity bills to services for residents (community development)**
 - Reduce the workload of staff by integrating power procurement



* In addition to the above project, Higashimurayama City comprehensively places orders for administrative operations, for which contracts were concluded at each facility, receives proposals from private organizations and promotes smart city initiatives within the budget

➡ FBS CO.,LTD. manages the overall operations to improve productivity by enhancing maintenance levels and reducing the administrative burden on staff, and to promote smart city initiatives with virtually no cost

