Kumagaya Smart City Initiatives

Feb. 2025 Kumagaya City Mayor's Office
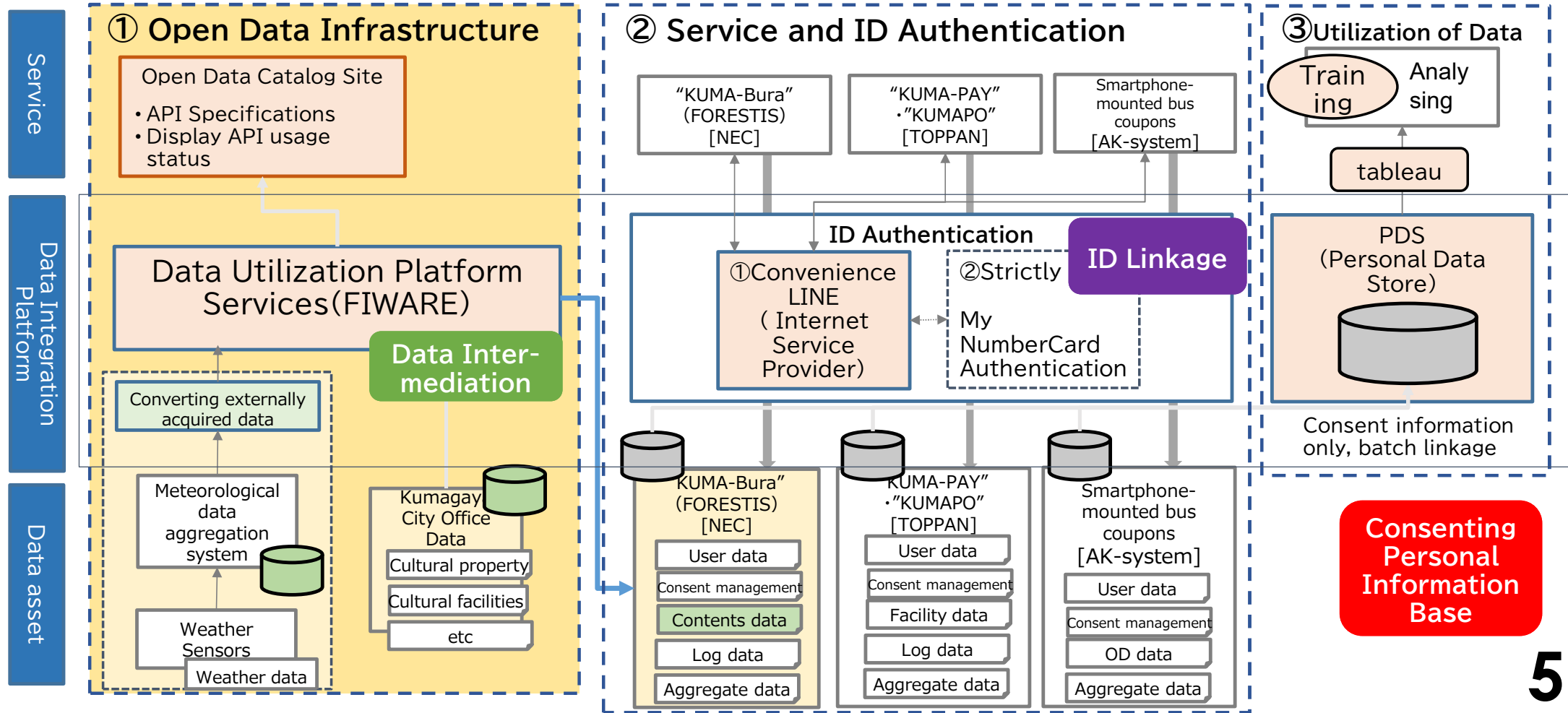
Kumagaya City Overview
～ Northern Saitama base ～

Population (households)	190,950 (90,704 households)
area	159.82 km2

【As of January 1, 2025】

(Reference) Old Nakasendo
(Kumagaya-juku)

Wide-area access by Shinkansen, etc.

Niigata
1 hour 22 minutes
37 minutes
Tokyo
熊谷
1 hour5 minutes
Nagano

Urban structure and population distribution

KUMAGAYA SMARTCITY

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4 Next Stories under construction:**Robot**

1 Kumagaya City's vision of a smart city

1. Key phrase is "city of tender future discovery" (July 2023)

2. The concept of smart city infrastructure development in the key phrases
   (1) Focus on advanced technologies that have reached the threshold of widespread use,
   (2) By presenting a utilization policy that emphasizes community and storytelling,
   (3) We will seek to utilize it with the sympathy of the citizens,
   (4) Ensure the sustainability of the city
       (Smart City Declaration "Bringing Society Forward with the Power of Digital and People")

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(Reference) Implementation Status of Data Linking Infrastructure in Kumagaya Smart City

① Open Data Infrastructure

Open Data Catalog Site
- API Specifications
- Display API usage status

Data Utilization Platform Services(FIWARE)

Data Inter-mediation

Converting externally acquired data

Meteorological data aggregation system

Weather Sensors / Weather data

Kumagay City Office Data
- Cultural property
- Cultural facilities
- etc

② Service and ID Authentication

"KUMA-Bura" (FORESTIS) [NEC]

"KUMA-PAY" ・"KUMAPO" [TOPPAN]

Smartphone-mounted bus coupons [AK-system]

ID Authentication

①Convenience LINE (Internet Service Provider)

②Strictly My NumberCard Authentication

ID Linkage

KUMA-Bura" (FORESTIS) [NEC]
- User data
- Consent management
- Contents data
- Log data
- Aggregate data

KUMA-PAY" ・"KUMAPO" [TOPPAN]
- User data
- Consent management
- Facility data
- Log data
- Aggregate data

Smartphone-mounted bus coupons [AK-system]
- User data
- Consent management
- OD data
- Aggregate data

③ Utilization of Data

Training / Analysing

tableau

PDS (Personal Data Store)

Consent information only, batch linkage

Consenting Personal Information Base

Service

Data Integration Platform

Data asset

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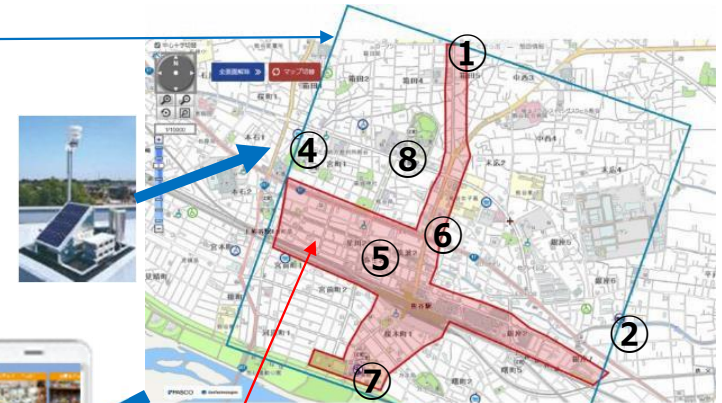# 2 First story: **Cool City** (Measures against Heat climate)

1. Kumagaya City has the highest percentage of clear skies in Japan and also recorded the highest temperature ever recorded in Japan, 41.1 degrees Celsius, on July 23, 2018.
We have conceived of various ways to live with the heat.

2. Re-branding the existing heat strategy as "Cool City" from a digital perspective and positioning it as the first smart city story.

3. Combined with community point "Kumapo," a circulating (not redeemed by cash) digital local currency system, the company is working to create a climate-compatible community that responds to heat in a unique way.

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SMARTCITY

(Reference) Implementation on "Weather Observation and Data Application

① Weather sensors were installed at eight locations in the urban area around Kumagaya Station.

② Weather simulation using a 3D city model.

Weather Simulation Scope Chart
Simulation range Approximately 2 km square within a 15-minute walking distance from Kumagaya Station

LOD2 Maintenance Scope Map
Area around Kumagaya Station
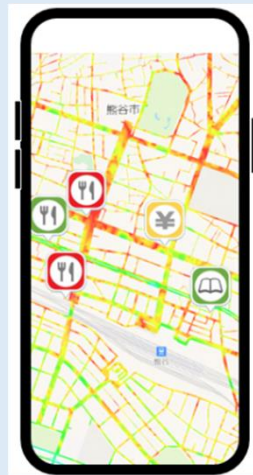(Area: 0.6k m2 Buildings: 2,100)
（Maked by CityGML standard ）

Kumagaya Cool City Smart Package

community point Bonus grant

Cool share spots where community points can be earned, sorted by proximity.

Cool Share Spot coordinated display

You can check the location and detailed information of cool share spots.

Town center heat area. visualization

Displays the results of thermal environment simulations, allowing the user to identify areas that are relatively hot.

Smartphone Services (Kuma Bura)

Using Kumapo for Behavior Change

Optional for users to tip vendors

Real service in the space and time you need (Resting places, provision of water, etc.)

user

Stores, etc.

Flow of Electronic Community Point "kumapo"

Kumagaya City office

Citizens, visitors and stores meke possible
Win-Win Urban center Welcome

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Experience gained and future direction

1. It is effective to obtain a series of experiences of "sensors, systems, implementation of services, and analysis of service use data" in order to develop human resources who will think about "sufficient systems to improve the wellbeing of citizens" .

2. We can make a realistic argument for attracting environmental research and industry only if it considers the balance between "smart enough" and "sustainable".

3. We will promote collaboration with local universities' data science departments. Also, forming a new non-profit organization to expand collaboration with other research institutions, etc.

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Mindset for Making the original smart city (1)Emphasis on Citizens' Security and Empathy

1. Kumagaya SC, together with the community, will emphasize citizen security and empathy.

2. disseminate the following information from the planning stage.

(1) Emphasis on "common data" created together with citizens.
(kumagaya city's own name for extension of "open data," . For example, barrier-free information on facilities is created and released with the cooperation of the private sector.)

(2) Provide platforms for the public and private sectors to utilize those data together. (For example, 3DGIS and "Kumapo Place" a matching website for circulating digital local currencies.)

(3) Provide "Web Common Space". (For example, Kumagaya City office probide a Living-Labo"Community Laboratory" by Slack and on an attempt to use Dicidim for area management.)
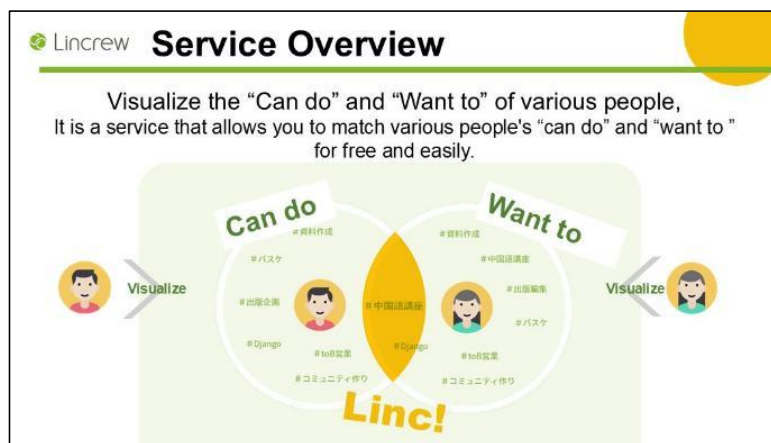
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(Reference) Overview of "Kumapo"&" Kumapo Place"

"Kumapo" are points distributed to participants of "Energize the Town" activities such as community activities. "Kumapo" have no cash value.

The accumulated "Kumapo" can be exchanged for services and souvenirs provided by the city and cooperating organizations.
It is also possible to send and receive between users.

The circulation of "Kumapo" creates human connections and stimulates mutual aid and community activities.

"Kumapo Place" uses the web service "Lincrew". As with "Kumapo", use of the service is limited to registered users of "Kumabura" which is Kumagaya City's urban service portal web application, to ensure a certain level of security for users.

By allowing Kumapo users to post what they "can do" and what they "want," the project aims to revitalize the local community by building a new community among users connected to the Kumapo community and expanding the existing community.

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(Reference) Kumapo's circulation and community involvement

【Birth】

Circulation generated by the "handing over" function of non-cash (non-shopping) local currency

【Recirculation】

Event participants receive from organizations engaged in activities of a public fields.

Improvement of satisfaction for each members through exchange of contributions.

Each organization will devise its own method of collecting points, such as exchanging them for experiences or accepting donations for specific activities, to re-circulate the points.

Personal Login Bonus

A World Supported by Volunteerism

The city collects points in exchange for experiences provided by the city, entry into prize competitions, etc., and recirculates them.

Expand participation of organizations and individuals in Kumagaya City's data-enabled community maintenance.

(This perimeter circle means the activating the surrounding field of activities rather than encroaching on the Volunteer Values)

Reinforcement of the motive for point collection.

Extinguished by prescription.

Reinforcing the motivation for utilization.

Digital Advantage 1

Acceleration of circulation through evaluation mechanisms, gaming, etc.

(Need to illustrate a model course of smooth circulation at the beginning of implementation)

Digital Advantage 2

Facilitation of circulation through web matching

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Mindset for Making the original smart city (2)Emphasis on Quick Hypotheses and Trials

1. Kumagaya SC emphasizes quick hypotheses and trials.

2. The smart city practices are not only as "an opportunity to develop digital human resources" but also as "an opportunity to gain experience in public-private partnership city planning in a fast-track manner".

3. We are presenting the concept of the OODA (OODA) loop in urban development. Through the practice of "temporary" and "provisional use," which incorporates private sector proposals and operates on a yearly basis, the private sector and the organization at the same time realize that "real change is possible".

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(Reference) Concept of "planning" and "execution" loops that makes possible to respond quickly to change

While the PDCA Cycle is based on the premise that a single cycle is based on a plan, the **OODA Loop,** shown in the figure below, allows for a high degree of flexibility, such as the ability to return to the previous step and resume the loop as needed, and is **more responsive to change.** On the other hand, to take advantage of this characteristic, it is necessary to **be constantly observant and analytical in order to capture changes**.

In editing the "Hoshikawa Future Vision," we decided that the OODA Loop approach was appropriate for promoting communication using digital methods in addition to face-to-face communication, and for practicing city planning that responds to changes in society by utilizing data in city planning.

4 Next Stories under construction:**Robot**

1. While building the image of citizens through dialogue, we plan to start working on the robot industry as a second theme.

2. We use the following methods for dialogue with the public.

   (1) "Community Lab"

      (the name of the Living Lab in Kumagaya City)

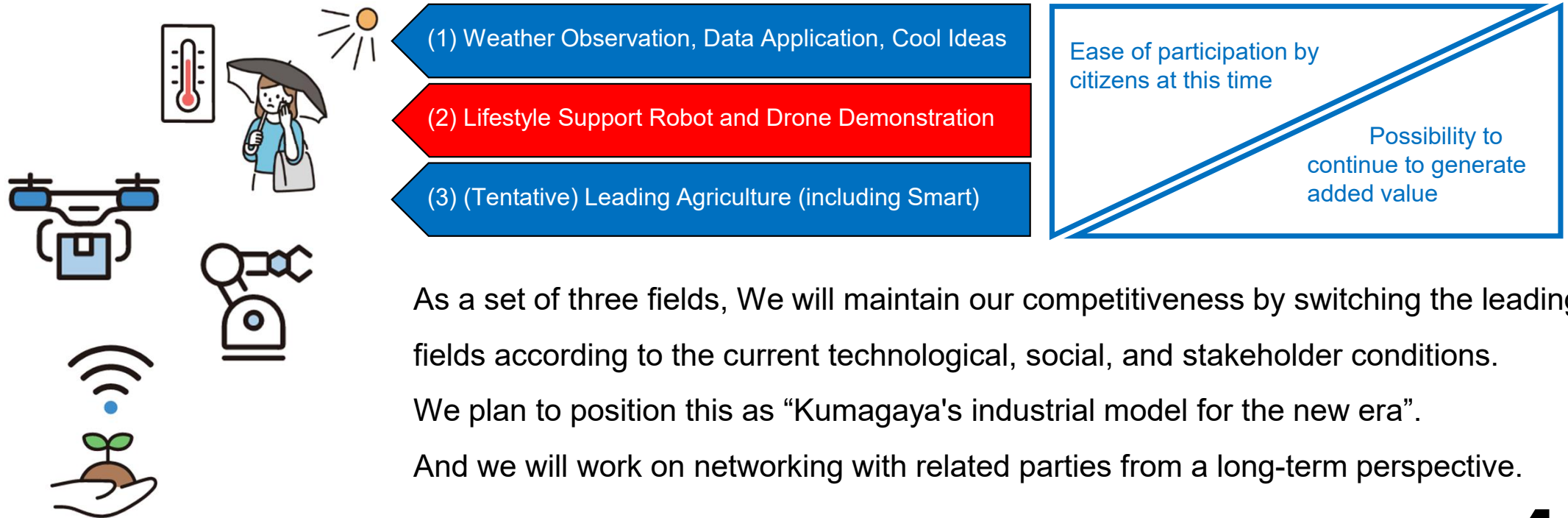   Slack is used as a web-based communication tool.

   (2) "Scene Sketch"

      Utilizing image generation AI, Elementary and junior high school students as well as adults propose "Future Kumagaya City".

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(Draft)Direction of development for industries in the new era

~To develop an appropriate structure and scenario for Kumagaya, we will work on the study with reference to population and industry data.~

The new industries for a new era

(1) Weather Observation, Data Application, Cool Ideas

(2) Lifestyle Support Robot and Drone Demonstration

(3) (Tentative) Leading Agriculture (including Smart)

Ease of participation by citizens at this time

Possibility to continue to generate added value

As a set of three fields, We will maintain our competitiveness by switching the leading fields according to the current technological, social, and stakeholder conditions.

We plan to position this as "Kumagaya's industrial model for the new era".

And we will work on networking with related parties from a long-term perspective.

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(Reference) Outline of the Seen Sketch Contest and Related Initiatives

The "Scene Sketch Method" is a method of expressing the Future Kumagaya City by drawing pictures and adding stories to them, even if it is difficult to express in words only.

The event is held as a method to incorporate the ideas as new ideas to serve as a reference for future policy deliberations by the city office, and to lead to the creation of a new era of industry through public-private partnership.

From the FY2023 entries, ideas such as "Measures against heat, cooling the city" were used as references, and have actually been incorporated as themes for the FY2024 Smart Cool City Workshop.

The same study will be conducted for works in FY2024. Furthermore, with the aim of uncovering more outstanding proposals for FY2025, opportunities will be provided for everyone from students in the PC clubs of junior high schools in the city to university students to exchange opinions, and efforts will be made to disseminate the methods of using image generation AI.

Discussions with the PC club of a junior high school in the city (February 2025)

Examples of winning entries in the Real Division (February 2025)

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(Reference) Relationship between mindset and systems emphasized in Kumagaya Smart City

Social cycle

[legend]

- ⬭ Mode and mindset to be emphasized
- ┄ Three concepts defined in the total branding policy
- ▭ Main methods, systems, etc.

Co-creation of New industries Possibility

Sustainability

| Collaboration with specialist | Scene sketch |

Story

| Cool city | Robot/Drone |

Community

Data cycle

User's cycle

| Community laboratory | Kumapo/ Kumapo Place |

Emphasis on Quick Hypothesis and Trial

Urban center manegement through utilization of existing assets and provisional use

Emphasis on Citizens' Security and Empathy

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