Intelligent ICT Implementation Project in the Takahashi River Basin

Kurashiki City

Background and Reason for the Project

The main source of employment of Kurashiki City is manufacturing from leading manufacturers in industrial and textile industries in Japan. On the other hand, a study by Regional Economy (and) Society Analysing System (RESAS) found that the specialisation coefficient (the rate when that of Japan was set as 1.0) of the number of employees in the information services business in the city is 0.13, which shows the employment level in this area, where future growth is expected, is significantly low and the city therefore needs to put more effort into nurturing and developing ICT industry business.

Project Aims

The city aims to engage in a project to develop and create human resources and businesses who can lead data utilisation in the region and vitalise the region by promoting data utilisation through collaboration between the public and private sectors.

Project Outline

This is a complex project consisting of various elements including open data engagement, IoT project, implementation of AI-related projects, events and seminars utilising regional data, and human resource development in the data utilisation area.

● Takahashi River Basin Data Portal Site

Takahashi River Basin Data Portal Site "data eye" (https://takahashi-riv.dataeye.jp/) is an open data catalogue site related to seven cities and three towns including Kurashiki City in the Takahashi River basin, and publishes visual content of analysed regional features.

● People-flow analysis by IoT

This analyses images taken by the cameras installed in several spots in the Bikan Historical Quarter, a notable tourist spot of Kurashiki City, and collects coordinated information and attribute information (gender and age) to figures on the screens as data. It is designed to collect only such data but not the images themselves to avoid retaining personal information.

The acquired data is visualised as People Flow, which is published as a content of "data eye" called People-Flow Now in Kurashiki Bikan Historical Quarter.

It also estimates and shows in a graph future visitor traffic by computing regression analysis of combined past accumulated data and weather data.
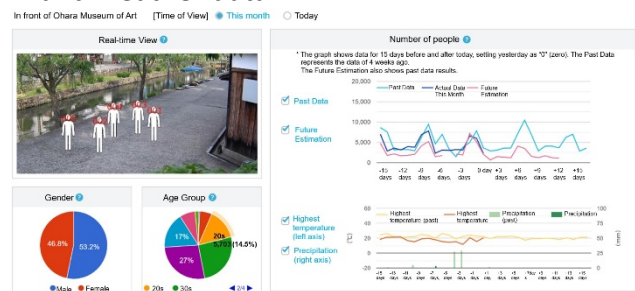
People-Flow Now in Kurashiki Bikan Historical Quarter

●AI application
(1) Takahashi River Tabi Concier (travel concierge) Tabit
Tabit is a voice-response AI application developed as a smartphone app and designed to provide local tourism and culture-related recommendations.
(2) FAQ Chatbot "Coton"
This is an AI chatbot that auto-responds to queries from citizens on general government services, based on FAQ information released by Kurashiki City.
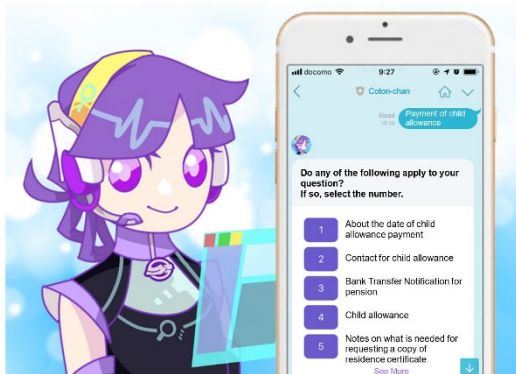

FAQ Chatbot "Coton"

●Human resource development-related
The city runs an e-learning platform, data eye Web Lesson, which allows citizens to take online lessons on data utilisation techniques, to nurture citizen data scientists. The city has also held a lot of events to promote effective use of data and regional data and seminars to promote teleworking and entrepreneurship.

Features and Innovations
• The visual contents published by data eye is characterised by the granularity required for community-based analysis. For example, while analysis by RESAS offered by the national government provides analysis only at the municipal level, data eye's Takahashi River Mirai (future) Map can provide analysis

at suburb or street number level or at a level called 500 meter-mesh.
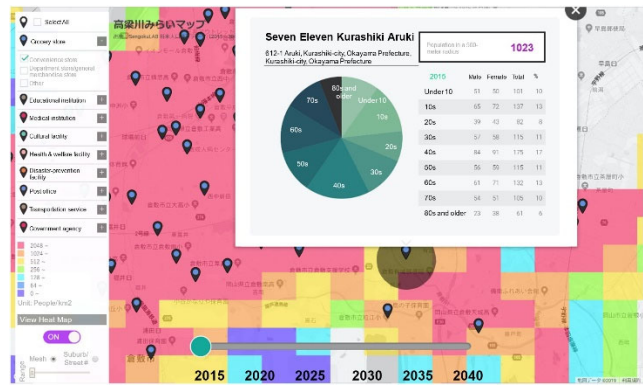
Takahashi River Mirai (future) Map

• Although there are a number of other advanced case examples in other individual projects themed on IoT and AI, this project is a comprehensive project that covers all measures on data utilisation. In particular, it can be said that the project engages in the development of human resources who can effectively use community-wide data, considering human resource development in anticipation of future industrial growth.

Results of the Project
• The project nurtured 46 citizen data scientists over five years, who have mastered the basics of statistics at a level capable of conducting basic practical data analysis.

• Effective use of data and know-how accumulated through this project has helped generate the following data utilisation projects other than city projects.
(1) Victim support project in response to the heavy rainfall disaster in July 2018 based on effective use of data
(2) Data marketing using combined data held by private businesses and stores and public entities

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(3) Classes in local high schools for data utilisation to solve regional issues

Issues, Problems and Responses

- When the project initially started, an issue arose regarding the large amount of man-hours required for primary work such as data cleansing, which resulted in a shortage of human resources for the primary duty, advanced data analysis. To solve the issue, the city has established a work system based on tele-working, which broadened the base of human resource development and allowed students and women who had left their work to raise their children or to take care of a sick relative, to obtain jobs and engage in data processing activities which can be performed with basic skills.

- The people-flow analysis using IoT has received a favourable response from various sectors. However, the current system, which processes big data collected through IoT in real time, is costly and therefore it is hardly implemented by other entities. Therefore, the city is currently considering the implementation of a low-cost people-flow analysis system by replacing the components with lower-priced ones, or replacing the system with a simplified model that focuses on data collection rather than data analysis.

Future Developments (expected effects and project vision and issues)

"Collect data and take actions based on its analysis." This is called data-driven, the fundamental idea of this project.

For example, the analysis of the statistic information based on mobile network revealed that more women visit Kurashiki City than men. Also, People-Flow Now in Kurashiki

Bikan Historical Quarter helps understand the visitor traffic and attributes in Bikan Historical Quarter, while analysis of free-Wi-Fi access allows us to see how people travel around the area. Utilising such data will help develop measures to promote tourism and improve and maintain the beautiful landscape for city development.

For the next step of the Data-driven City Development, the city is considering the "Smart Park & Ride" project for the development of a safe and secure urban environment around Kurashiki Station, and mitigating traffic congestion caused by tourists by forecasting and capturing real-time data of both people and vehicle traffic and congestion using AI and IoT technologies based on the people-flow analysis technology. The city will aim to work hard in the hope of making this plan a reality.

Reference URL

Takahashi River Basin Data Portal Site "data eye"

https://takahashi-riv.dataeye.jp/

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Terminologies and Coined Terms Used

Intelligent ICT

Intelligent ICT is a term described in the report of Study Group concerning the Vision of the Future Society Brought by Accelerated Advancement of Intelligence in ICT by the Ministry of Internal Affairs and Communications in 2015. New significant changes occurring in human society brought by advanced technologies including computer

and communication network called ICT (information and communication technology), artificial intelligence and various data run and are used on such systems and interfaces between such technologies and human beings are referred to as Advancement of Intelligence in ICT. Also, technologies and systems that demonstrate such abilities are overall referred to as Intelligent ICT.

Regional Economy (and) Society Analyzing System (RESAS)

RESAS is a system run by the Headquarters for Overcoming Population Decline and Vitalising Local Economy in Japan of the Cabinet Office to aggregate and visualise so-called public and private big data on industrial structure, demographics and people flow. It is designed for local governments, including municipal governments, to understand the current status and issues of their region based on objective data.

Citizen Data Scientists

Citizen Data Scientists is a concept provided by Gartner in 2016, defined as "a person who creates or generates models that leverage predictive or prescriptive analytics, but whose primary job function is outside of the field of statistics and analytics". Gartner describes that citizen data scientists can bridge the gap between general business users who attempt data analysis and dedicated data scientists with advanced skills.