Project PLATEAU and Walkable Street

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1. Digital Twin Technology in Japan: Project PLATEAU

G7 Sustainable Urban Development Ministers' Meeting

Ministers' Communiqué– Achieving Sustainable Urban Development Together –
9 July 2023 in Takamatsu, Kagawa

I. Preamble

II. Net-zero and resilient cities

III. Inclusive cities

IV. Digitalisation in cities

Benefit of digitalisation:
for human-centred urban development
for decision making and participatory process

Enablers of digitalisation in cities

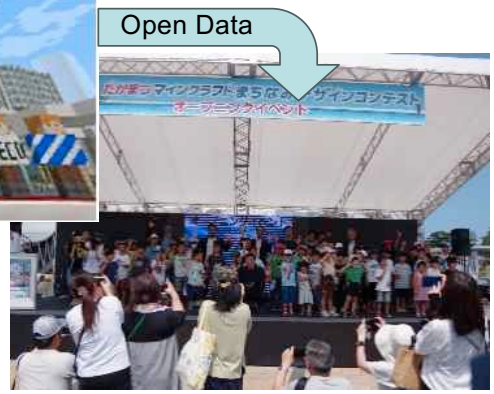
Working together

V. Conclusion

G7 2023 HIROSHIMA SUMMIT
KAGAWA TAKAMATSU
Sustainable Urban Development Ministers' Meeting

Virtual G7 Ministerial Photo Session

City Design Contest



What is PLATEAU?

PLATEAU by MLIT

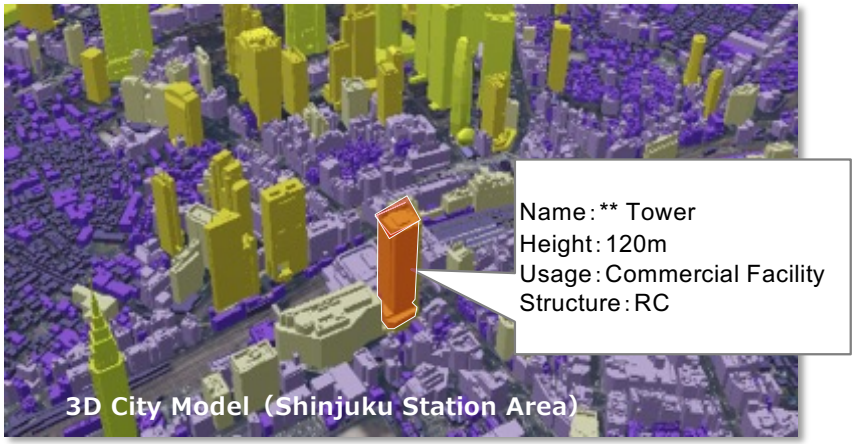
In the book "A Thousand Plateaus" (Mille PLATEAUx) by French philosopher Gilles Deleuze and psychoanalyst Félix Guattari,
the node of the psyche that is neither beginning nor end is called a plateau.

Project PLATEAU
Launched in 2020 as a project of the Ministry of Land, Infrastructure, Transport and Tourism to promote the development, utilization, and open data of 3D urban models that will serve as the infrastructure for the digital transformation of urban development, including smart cities.

CityGML

CityGML 2.0
an international standard is used as the data format to achieve a high level of interoperability that can be used in various fields.

Shape and Attributes
In addition to reproducing the entire shape of the city as data, each object such as a building retains attribute information such as use and structure, etc.

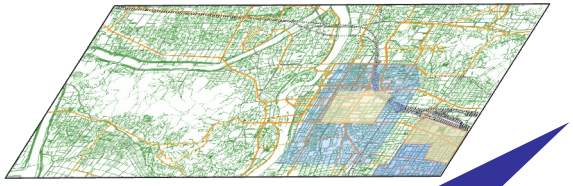


Data development scheme

Creation of new solutions using existing data

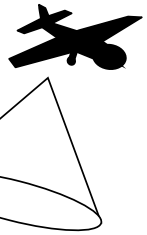
Urban Planning Basic Map

2D map data of
buildings, roads, blocks, etc.



Aerial survey result

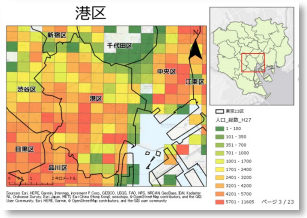
3D data of building heights,
shapes, etc.



3D City Models

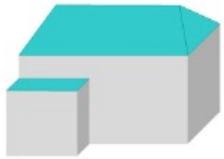
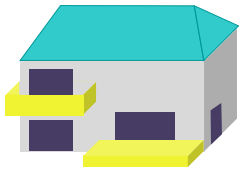
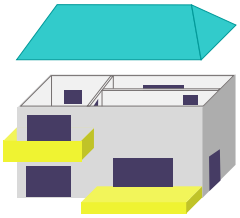
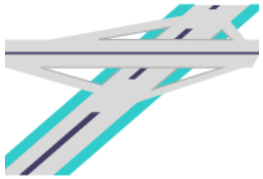
Geometry(shape)

Semantics(attribute)



Urban Planning Basic Survey data, etc.
Status of buildings and land, etc.

Definition of LOD (Level of Detail)

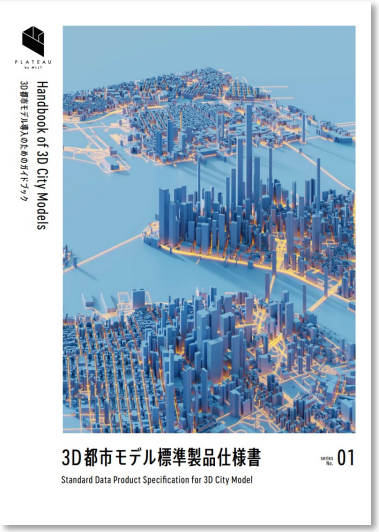
	LOD0	LOD1	LOD2	LOD3	LOD4
Building					
Transportation(Road)					
Vegetation					

Conjunction with BIM

PLATEAU Data Standard

Standardization of 3D city model data products in Japan

- The Standard Data Product Specification for 3D City Model
  developed in March 2021
  updated by version 2.0 in March 2022.
- Unifying the specifications, standards, and quality of 3D city models in Japan.



Compatible with international standards

- The PLATEAU standard data specification
  based on CityGML 2.0; open format developed by OGC
  (Open Geospatial Consortium, Inc: an international standards organization).
  localized standard unique to Japan that adds attribute information and LOD definitions.

Promote development, utilization, and open data of 3D city models

Development of 3D city model for regional cities

Promote technological development for model maintenance, etc., and promote maintenance by local governments through subsidy programs, etc.

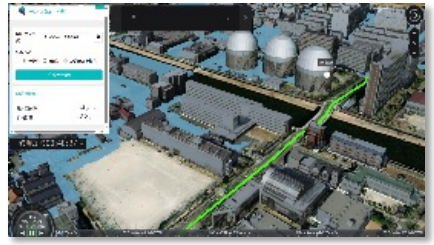
FY2023: Cumulative 200 cities ⇨ FY2027 (Target) : Cumulative 500 cities

3D city models as open data Fostering Digital Innovation

Data is made widely available to the public at the G-Spatial Information Center. Adopting an open license to allow secondary use of the data promotes research and development and commercial use in various fields.

Utilization of 3D urban models (use case development)

Creating use cases in diverse fields such as disaster prevention/crime prevention, environment/energy, urban development, mobility, regional revitalization/tourism, etc., and creating services to solve local issues and meet local needs



2. Major Use Cases of Project PLATEAU for realizing Inclusive and Walkable Street

Use case 1: Urban Planning and Public Participation

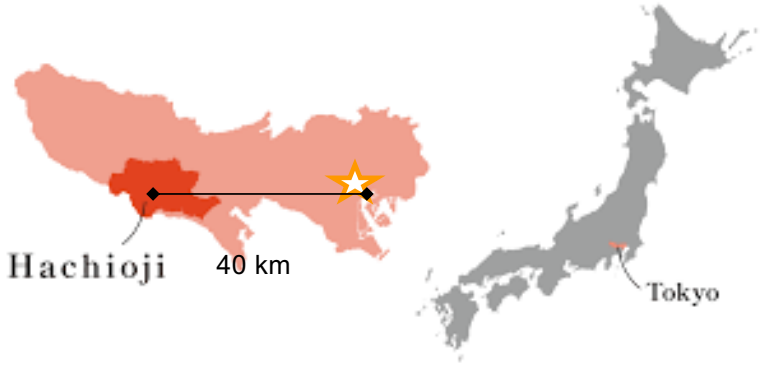
Example of Current Projects

Gifu City: Planning of Walkable Street

1) Use of XR Technology (Hachioji City, Tokyo)

Relocation of Aged Facilities of Waste Management Plant

Starting from FY2022、Residents Workshop is held using data from PLATEAU



New facility plan shown at 3D city model

Use of 3D Digital Twin in Public Workshop

Result of Creative Workshop using AR Technology

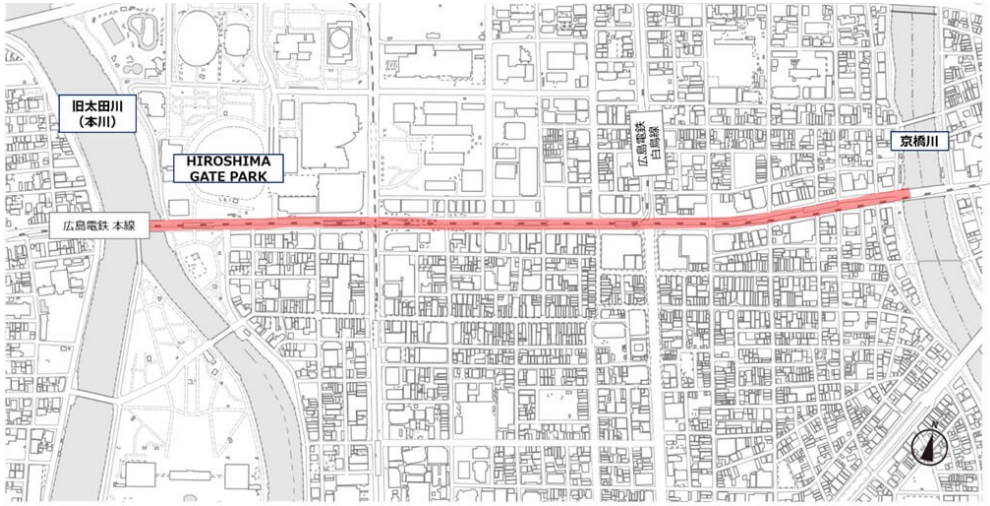
	Usual Projects	Use of AR /XR Technology
Demographic of Participants	Participants of Urban planning workshops where the new facility or redevelopment is considered tend to be aged people or have specific opinion	Demographically various participants ・20s: 33% ・30-40s: 33% ・50s: 26% ・60s: 8%
Evaluation for explaining document	While explaining document including charts and tables, it is sometimes difficult for participants to comprehend	Current and future image of city formation can be presented in a straightforward way. Local authorities and residents can exchange ideas at the sight and save their opinion at the system

＜Other Notable Response from participants＞
・More than half of participants highly evaluates the functional easiness.
・Nearly 90% of participants respond to be “anticipating” the use of XR technology for future workshops.

2) Use of Immersive Visualization (Hiroshima City)

■ Urban planning workshop is held for visualization for urban planning: KamihachiKiteru, which is an an place management organization and consists of private companies and property owners alongside of Aioi Street in the center of Hiroshima city (near Nuclear Bomb Memorial Dome) intends to have a walkable environment.

→ The method of public participation workshop is necessary for the large scale urban renewal by the city and private entity led development.



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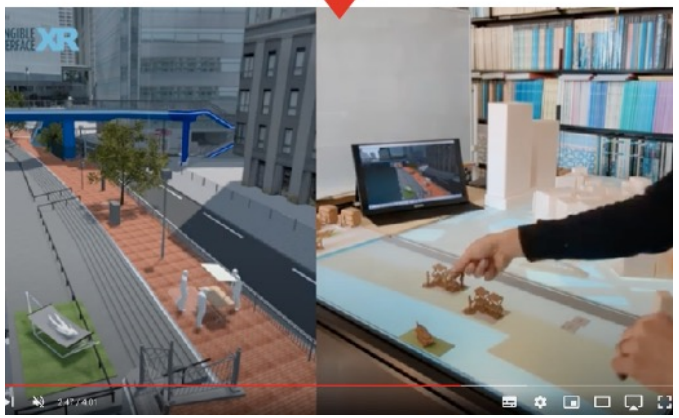
3) Use of Tangible Interface (Yokohama City)

Tangible Interface :
Simulation method of physical model and virtual reality

Workshop

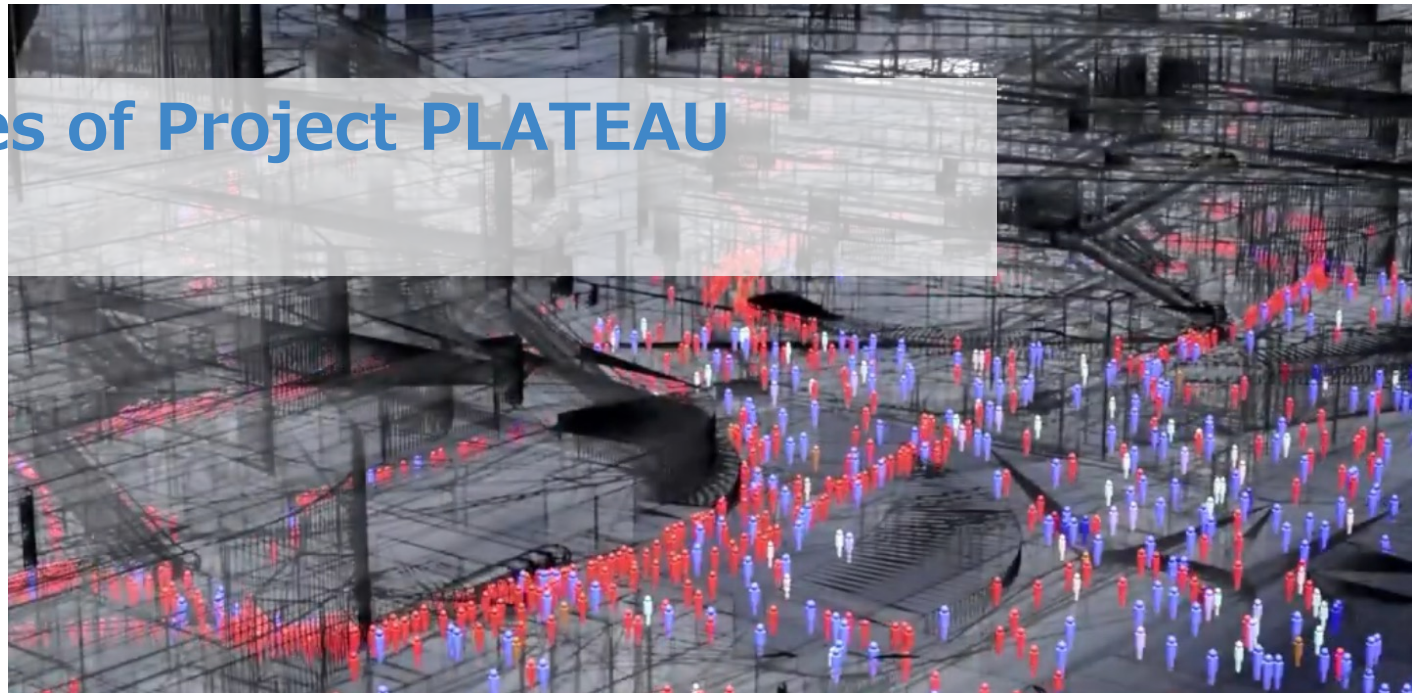
Various generation is participating

Moving the physical model of street furniture, the image in virtual object is coordinating the movement



4) Simulation of Designing Walkable Street (Shibuya, Tokyo)

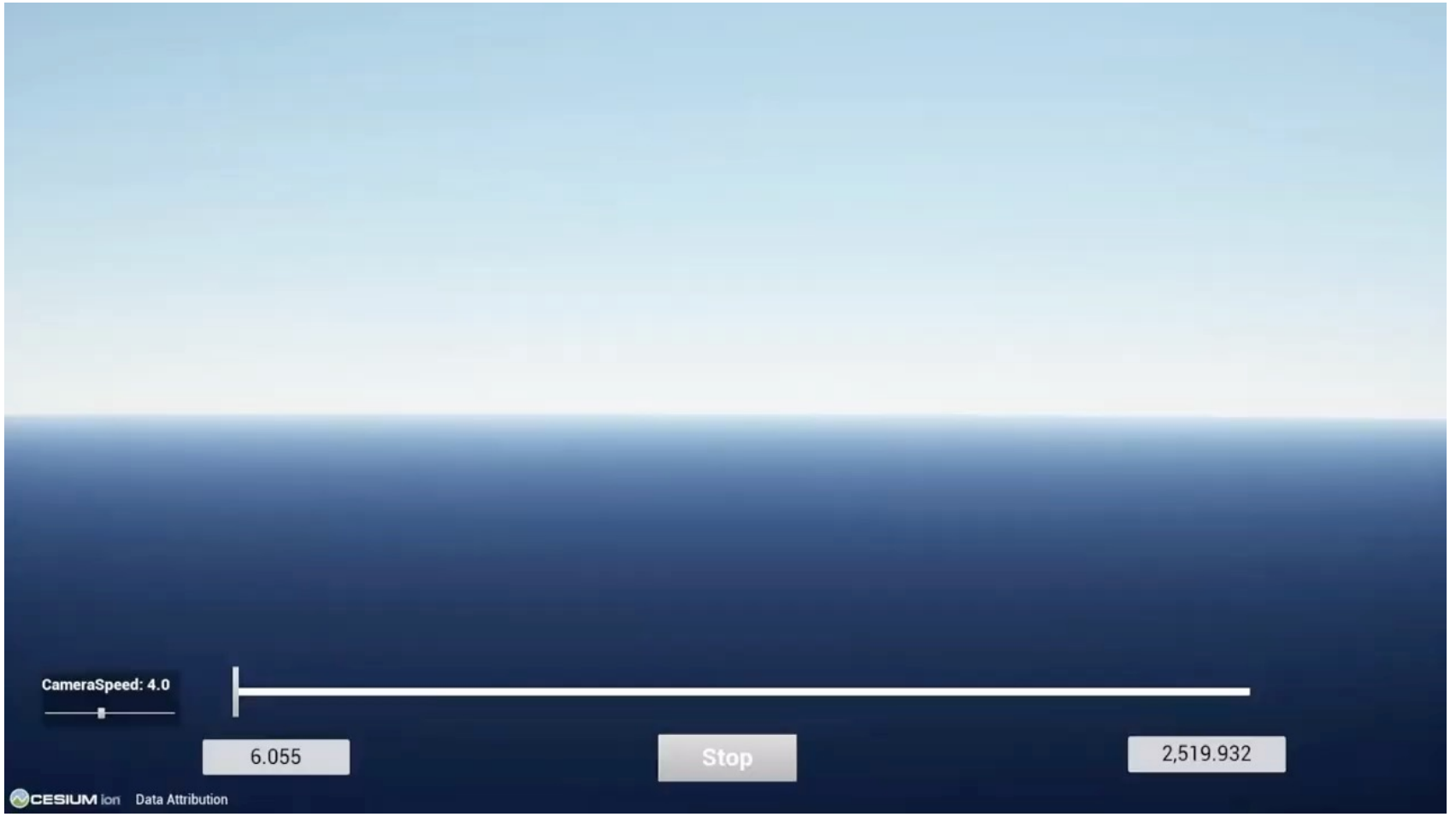
3. Other Use Cases of Project PLATEAU



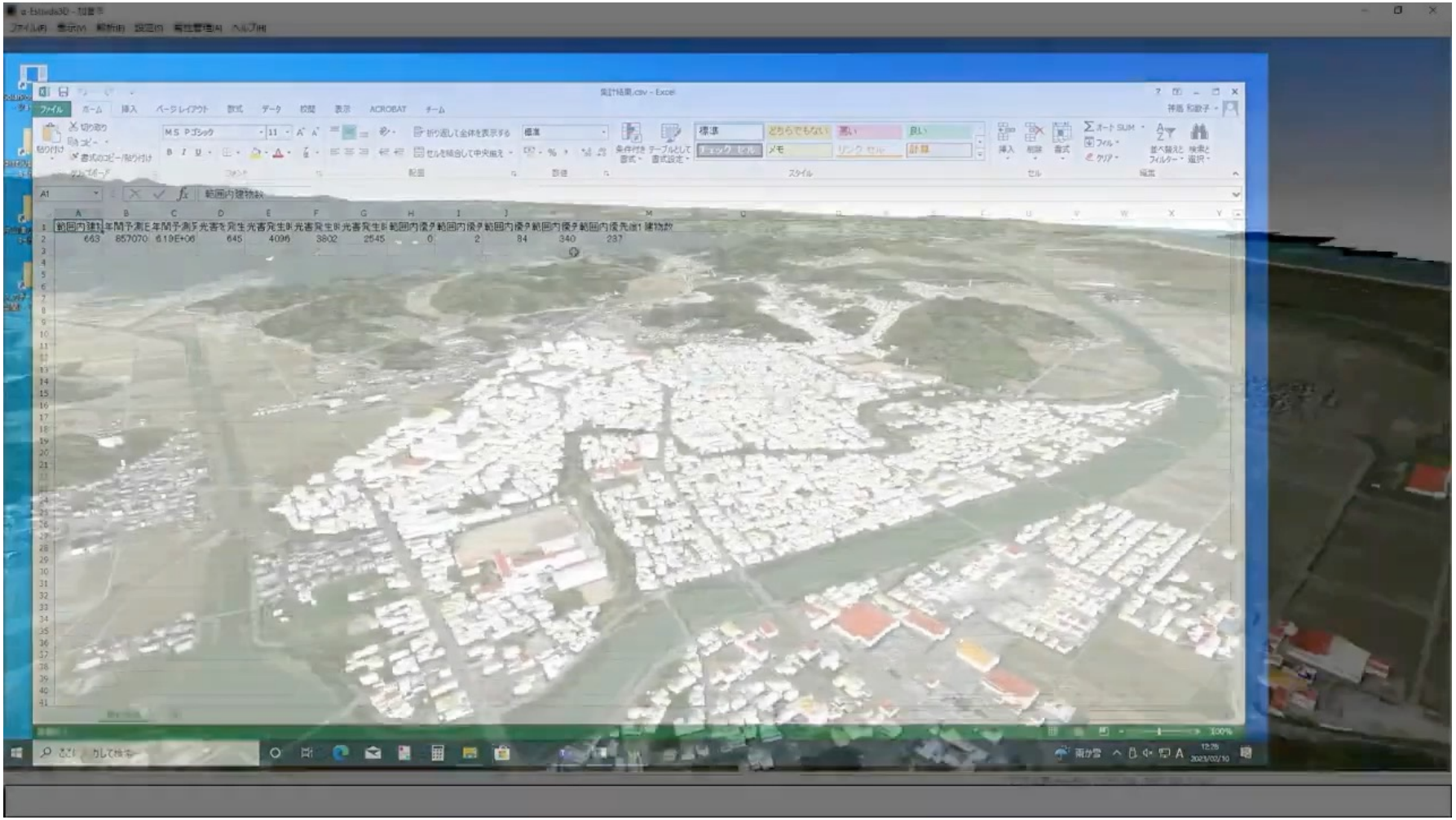
Other Use Cases

1) Flood Evacuation Simulation (Takashima-Daira, Tokyo)

2) Disaster / Evacuation Planning (Takanawa-Gateway, Tokyo)



3) Solar Power Generation Simulation (Kaga City, Ishikawa)



4) Application System for Development Approval （Chino City, Nagano Prefecture)

Consultation for Applying Development Approval:

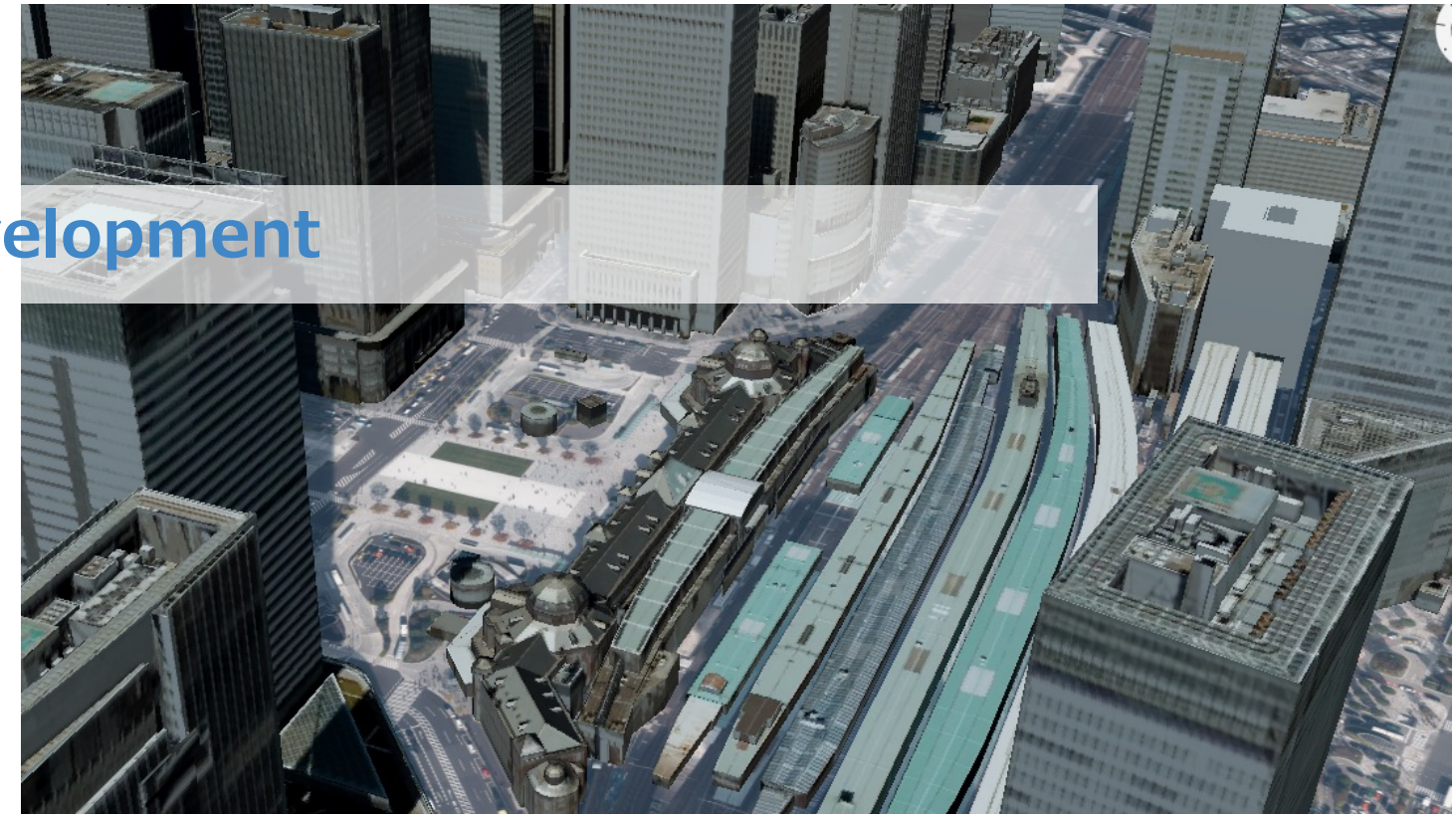
→ Since the consultation is necessary for various department in the city government, an applicant needs to visit each counterpart and have multiple of meetings.

→ City officials needs to respond to applicants by interrupting their tasks.

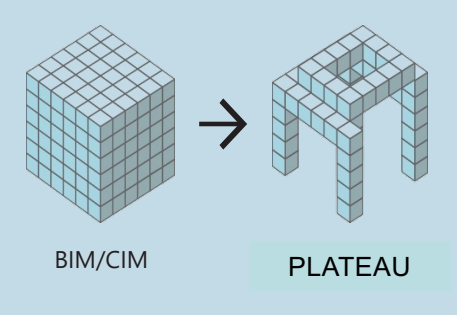
Using the system that utilize PLATEAU, an applicant can avoid the physical visit toward city office

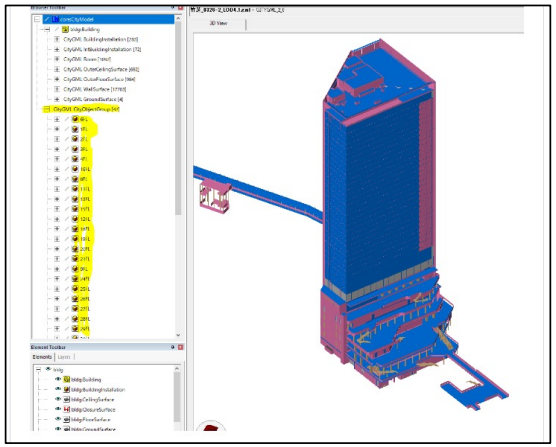
Since the area have some resort villages, the applicants who are outside of the city can reduce commuting & waiting time and information gathering for diffent counterpart.

3. Further Development



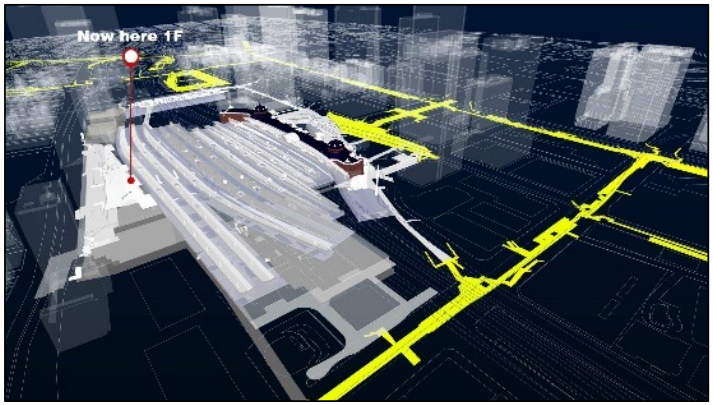
Conversion of BIM data toward PLATEAU





Development of information exchange requirements (conversion rules), data creation demonstration, and use case development for creating highly accurate 3D city models (LOD4) using BIM models

Development of Underground Information by PLATEAU and BIM



Establishment of standard specifications for high-precision underground structures and civil engineering structures using CAD, measurement data, etc.

(Linkage with BIM)

PLATEAU for Academic, Industry and International Community

Collaboration with Industries and Academics

- Industry Use of PLATEAU data for

Condominium Sales

Risk Monitoring for Traffic Accident

- Consortium with Industries and Academics

Collaboration with International Community

- International Meetings and Organization
  G7, COP, OECD, UN Habitat
- Organization for Geospatial Information
  OGC, Foss 4G

Legacy of G7 Ministerial Meeting for Walkable Town Center

The Sunport area (Conference Center Area) in Takamatsu city:
an area where urban functions are being renewed, and it is necessary for the public, private, and citizen sectors to work together on area management in the future.

G7 Ministerial Meeting (July 7-9, 2023)

Minecraft

A game from Sweden and is played all over the world:
you place the blocks and go on an adventure

Utilizing data from Project PLATEAU
Recreate the Sunport area in Minecraft

Virtual Photo Session

Ministers of each country were asked to control their avatars on Minecraft and have a virtual photo shoot.

Meeting Room

Virtual Meeting Room

Virtual Sunport Area

Group Photo Shooting

Takamatsu Minecraft Townscape Design Contest

July 23 Kick-off Event

(Source: Sankei Newspaper Website)

August Summer Workshop
by Providing the data of the Sunport Area

Inviting a wide range of citizens and youngsters
to think about the Sunport of the future.

November
Final judging and awards

Grand-Prize Winner
“Takamatsu:
Playing with Water”

by the group of four
elementary school children

「水と共に遊ぶたかまつ」
チームちいたあ　さん

PLATEAU English Website

PLATEAU View
(in Japanese)

PLATEAU Website
(in Japanese)

Thank you !