Utilizing New Technologies and Human Resource Development

1. Disaster Response and ICT
2. DX through New Technology Implementation and Human Resource Development

Suiteki-kun

Mizutama-chan

Kosuke Wakabayashi

Director General,
Hachioji Water Supply Office

Bureau of Waterworks,
Tokyo Metropolitan Government

1. Disaster Response and ICT

Noto Peninsula Earthquake (January 1, 2024 / Mag 7.6)

- Over 300 people died (disaster-related deaths)
- Damage from house collapses, tsunamis, and fires
- <u>Widespread and prolonged water outages (high social interest)</u>


工事阻むがれき■作業員は

続く断水 重なった悪条件

Asahi Shimbun, March 1, 2024
"Continuous water outages, overlapping adverse conditions"

Support from Bureau of Waterworks, Tokyo Metropolitan Government

- **Activity Location** : Wajima City and other areas in Ishikawa Prefecture
- **Activity Content** : Emergency water supply, emergency restoration
- **Dispatch Period** : January 3, 2024 - May 31, 2024
- **Number of Dispatches** : 1,725 people in total (including 944 construction contractors)

Emergency water supply (water truck)

Emergency restoration

Local Office

On-site Challenges and Solutions

Challenges

- Activities in unfamiliar areas affected by the disaster
- Response with insufficient personnel

Solutions

- Smooth information-sharing on site
- Backup and collaboration from Tokyo

ICT* used in active ways

*Information and Communication Technology

Local Headquarters in the Disaster Area

Tokyo

Leak Detection

Pipeline Repair

Information Sharing on Site Using SNS

Sharing location and damage information using SNS and map apps

- Accurately communicate information even in unfamiliar localities
- Smooth collaboration even with temporary teams engaged in frequent exchange
- Smartphones introduced in construction and maintenance on a daily basis

⇒The system could be used without difficulty in the disaster-stricken area.

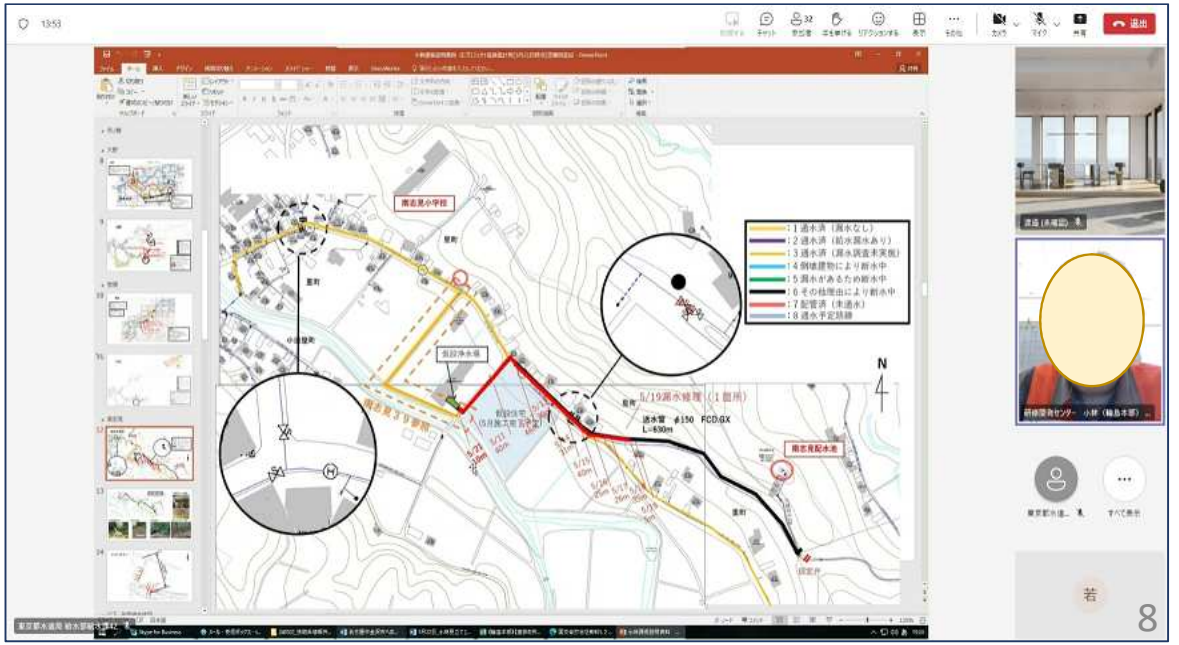
Leak Detection

Pipeline Repair

Coordination with Tokyo via Web Conferencing

Sharing information via web conferences between Tokyo and the disaster-stricken area (daily on weekdays)

- By participating, personnel scheduled to be dispatched can obtain the latest information in advance
- Tokyo team considers cumbersome tasks and difficult issues



Use of GIS* *Geographic Information System

Calculation of the Length of Pipeline Restoration and Number of Houses

- Register pipeline information and customer information.
- Effectively used for progress management of the restoration work.

・・・Conduit through which water flows
・・・Customer information

Priority Setting for Restoration

- Register pipeline information and building collapse risk information.
- Effectively used for priority setting in restoration.

・・・Pipeline Information
・・・Degree of Building Collapse Risk (by house)

[Color]
Red: Dangerous Yellow: Caution required Blue: Investigated (safety)

Imminent Threat of a Major Earthquake directly under the Tokyo metropolitan area

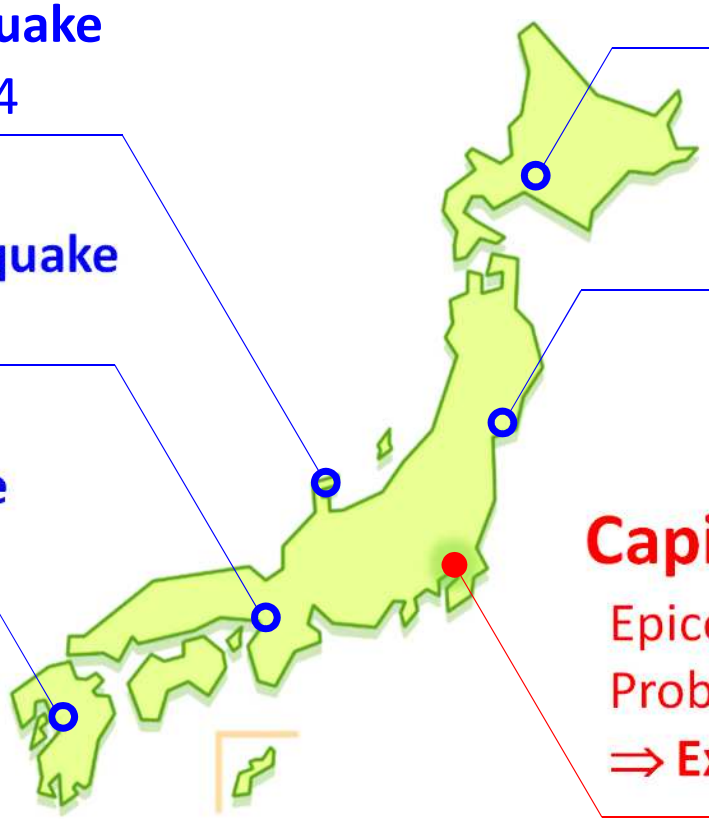
Hokkaido Eastern Iburi earthquake
(Mag. 6.7) November 2018

Noto Peninsula Earthquake
(Mag. 7.6) January 2024

Great East Japan Earthquake
(Mag. 9.0) March 2011

Northern Osaka earthquake
(Mag. 6.1) June 2018

Kumamoto earthquake
(Mag. 7.3) April 2016



Capital Tokyo

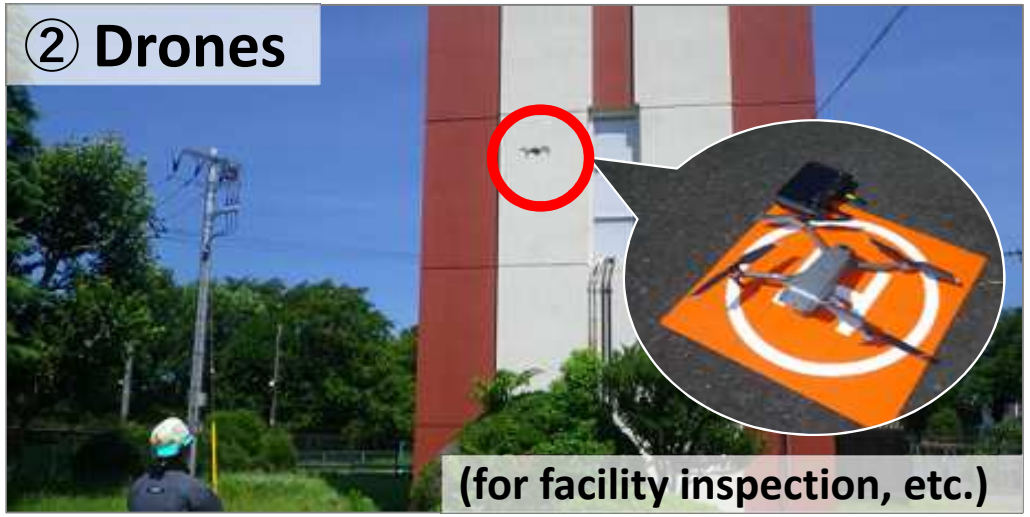
Epicentral earthquake in the capital area:
Probability of mag. 7 class earthquakes
⇒ **Expected at 70% over the next 30 years**

2. DX through New Technology Implementation and Human Resource Development

Introduction of New Technologies in Water Utilities

① Smart Meters

② Drones



(for facility inspection, etc.)

③ A I

(for supporting water purification plant perations)

④ ICT Construction

Introduction of New Technologies in Water Utilities

Development of Smartphone Apps

- ✓ Various procedures such as the startup of water use
- ✓ Payment of water charges
- ✓ Check water usage and charges
- ✓ Information on water supply points in case of disaster

水との暮らしをスイスイと

東京都水道局アプリ

Sharing Technology Information and Public-Private Collaboration

Various debriefing sessions

- Reports on excellent initiatives by staff (not limited to DX)
- Prominent reports advance to larger presentation events

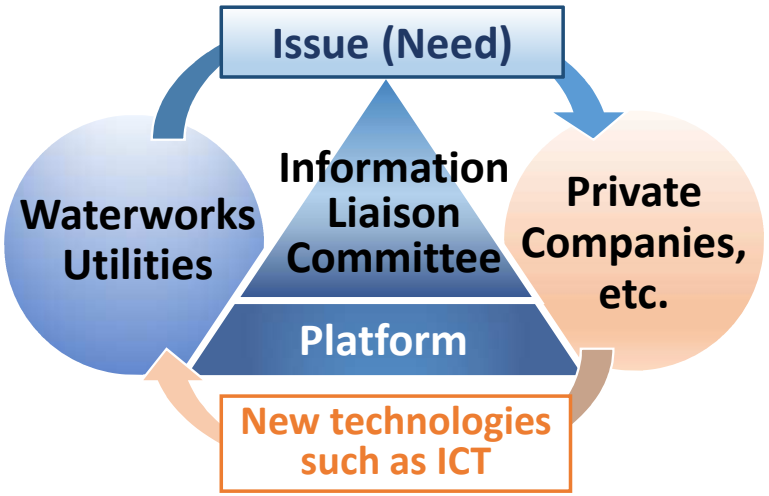
Bureau Technical → Bureau-wide → National Presentation

National Presentation

Waterworks ICT Information Liaison Panel Exhibition

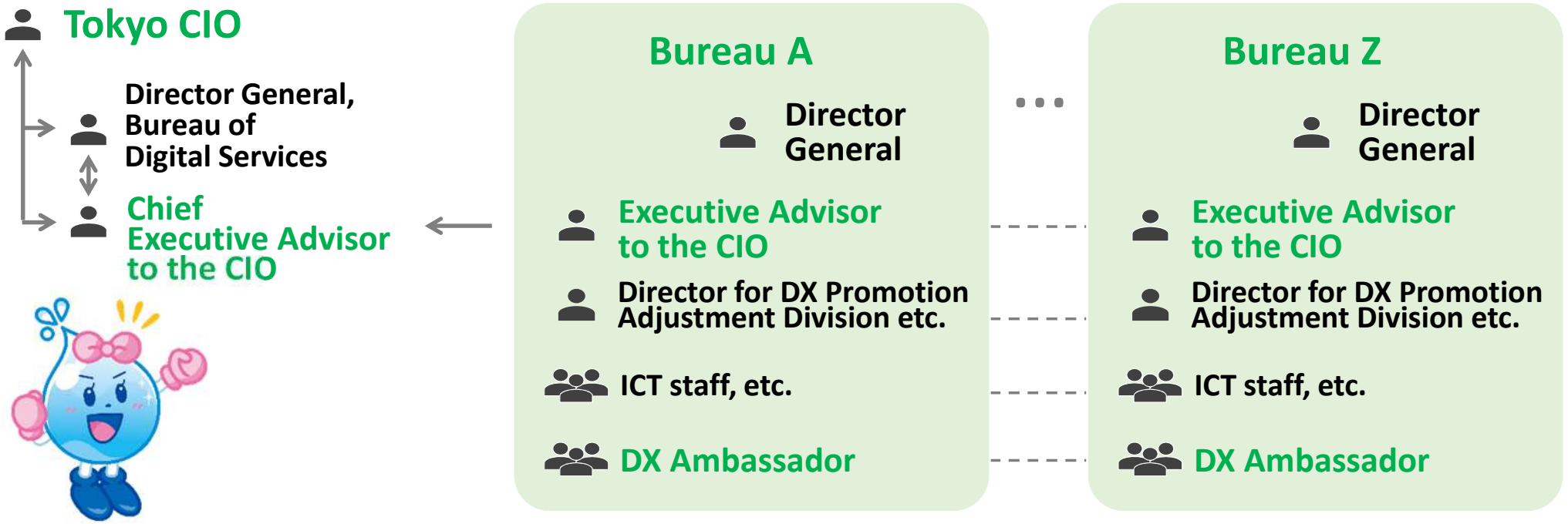
Waterworks ICT Information Liaison Committee

- The waterworks entity reports the needs. The private business entities make a technical proposal for the new technology (matching).
- 21 city waterworks entities and private business entities participate.
- Public-private partnerships



Promotion of DX in the Tokyo Metropolitan Government (Organization)

- The Tokyo Metropolitan Government has many "bureaus ".
  Each bureau has an "Executive Advisor to the CIO " to facilitate collaboration.
- Each workplace (dozens of people) has a "DX Ambassador" who promotes the diffusion of DX and human resource development.



Promotion of DX in the Tokyo Metropolitan Government (Training)

- All employees receive online training on DX.
- Use of private sector business online courses, selecting courses of interest (10-20 hours required at minimum)

Examples of Courses

- ✓ Using Office Suite Software
- ✓ An Introduction to AI
- ✓ Statistics
- ✓ Marketing
- ✓ UI/UX
- ✓ Design Thinking

etc.

Conclusion

- ICT could be effectively used for disaster recovery activities after the Noto Peninsula Earthquake.
- Preparations for a major earthquake directly under Tokyo are urgently needed. Disaster response capabilities and human resource development must be enhanced through the provision of supports for other disaster-stricken areas, hardware maintenance and training.
- The Bureau of Waterworks actively introduces new technologies and fosters human resources through presentations and collaborations with other cities and private waterworks utilities.
- The Tokyo Metropolitan Government as a whole is promoting DX through organizational restructuring and training programs for all of its employees.

Thank you for your attention.

Reference Slides

(Noto Peninsula Earthquake) Restoration Activities for Water Supply Facilities

Factors that made restoration difficult:

- Major facilities were damaged.
- The water pipe network was spread out dendritically.
- The percentage of seismic-resistant pipes was low.

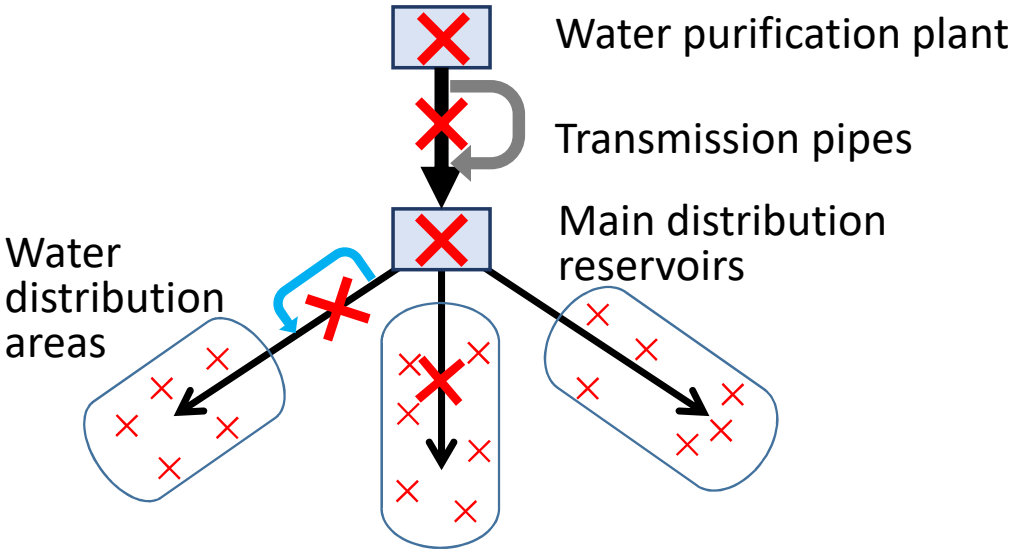


Image of the water distribution system and the damage incurred

Damage to core facilities

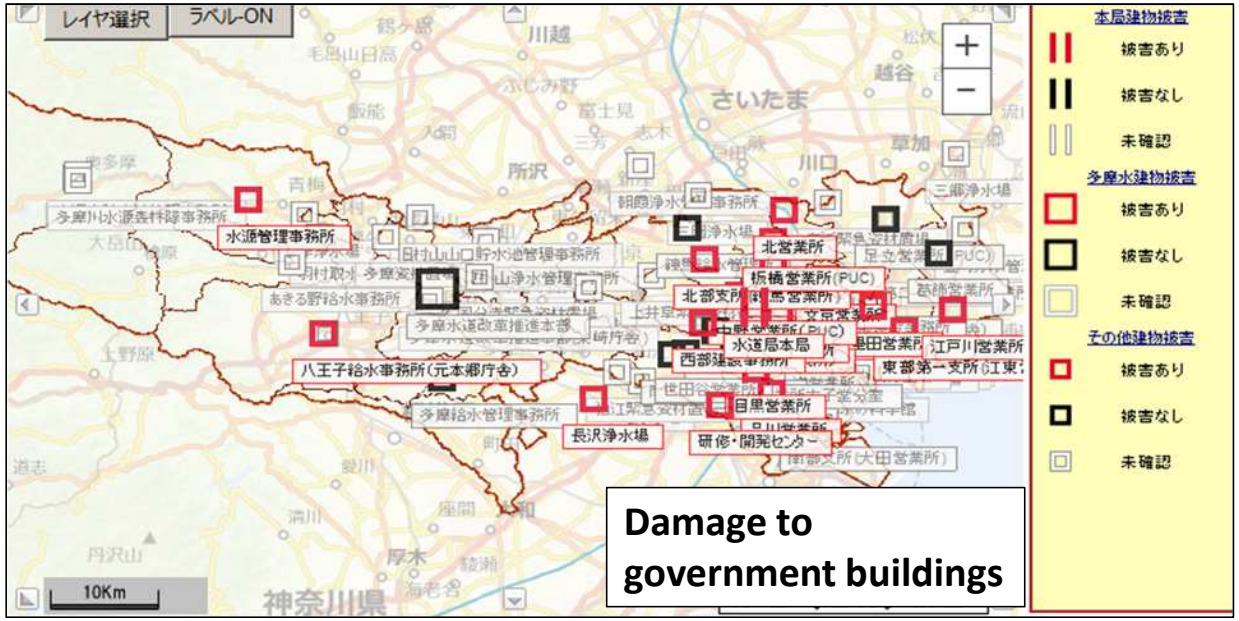
Temporary transmission pipes

Temporary distribution pipes

Pipeline Repair

Preparation for Earthquakes (Training)

- Conducts numerous training exercises each year
  (Simultaneous drills, holiday drills, safety confirmation drills, etc.)
- Systematization is progressing sequentially
  (centralization of information, safety confirmation, etc.)



Earthquake Information System

Answers to Questions about Personal Safety

■ Condition of Staff

1. Intact 2. Injured

■ Location of Gathering

1. Place of work 2. Other

■ Attendance Status

1. Already gathered
2. Within 2 hours……

Safety Confirmation System