



The Snow work Operations in Heavy Snow on Highways in Niigata , Japan

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1. INTRODUCTION

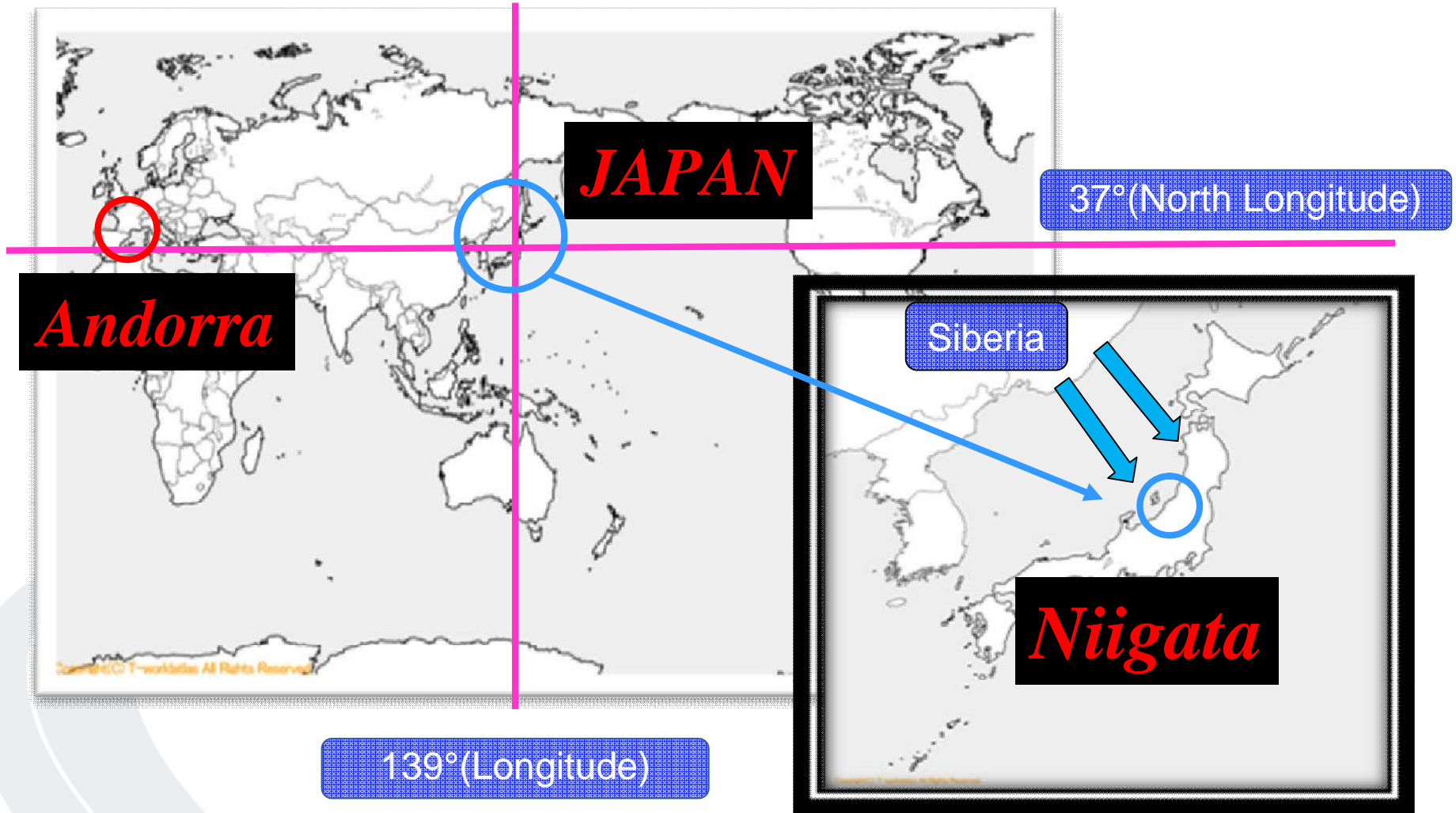
Background Behind Our Efforts. Social Issues in Japan.

- Decline in total population.**
- Issues with electricity power supply.**

We have engaged in the following three efforts in response to these two social issues.

- Development of a snow removal and ice control vehicle centralized operation Device.**
- Development of a GPS vehicle location management system.**
- Implementation of a new road heating control system.**

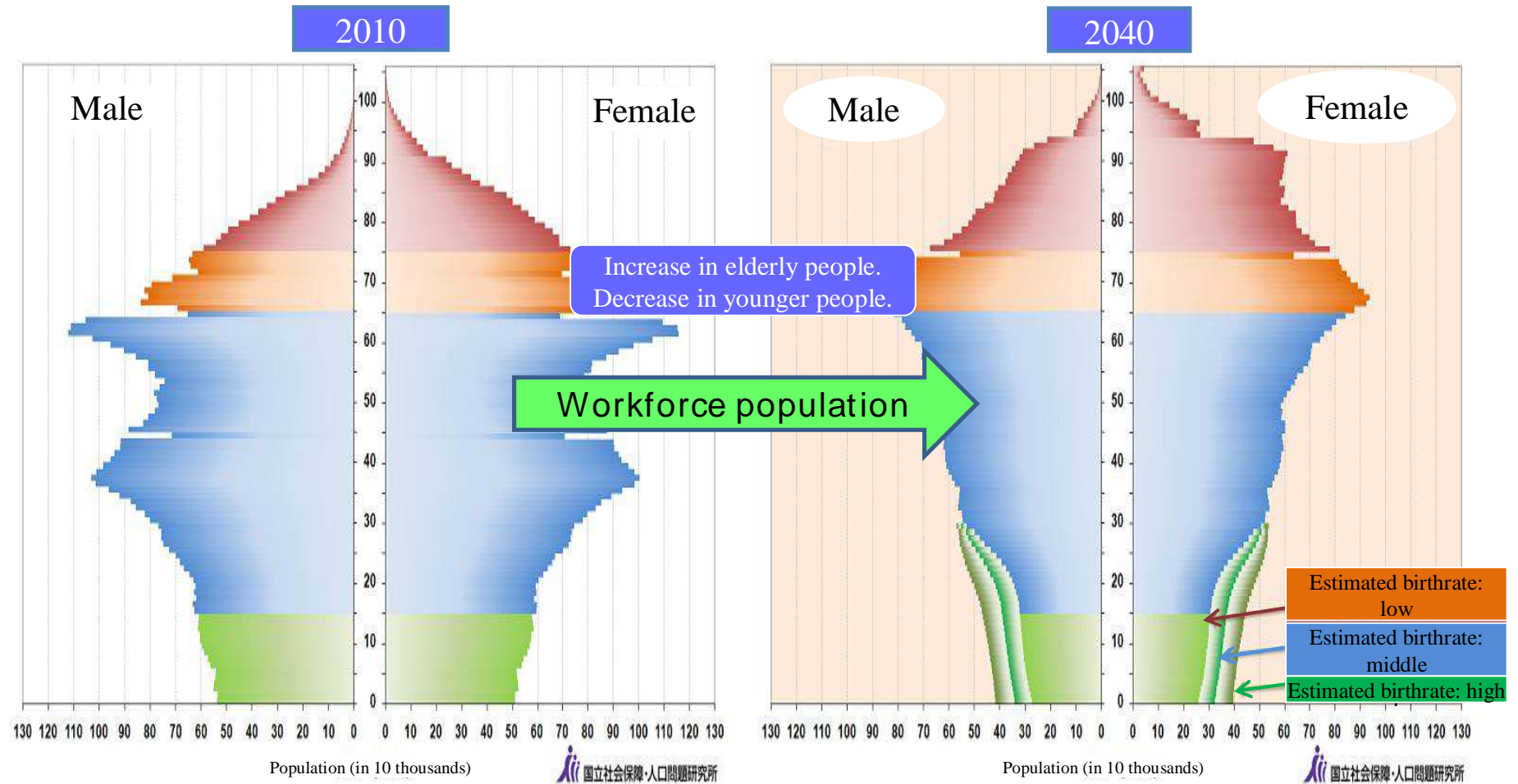
2. Location and Weather of Niigata



2. Location and Weather of Niigata



3-1. The Issue of a Decreasing Population



3-2. Issue with Electricity Power Supply

The 2011 earthquake off the Pacific coast of Tohoku

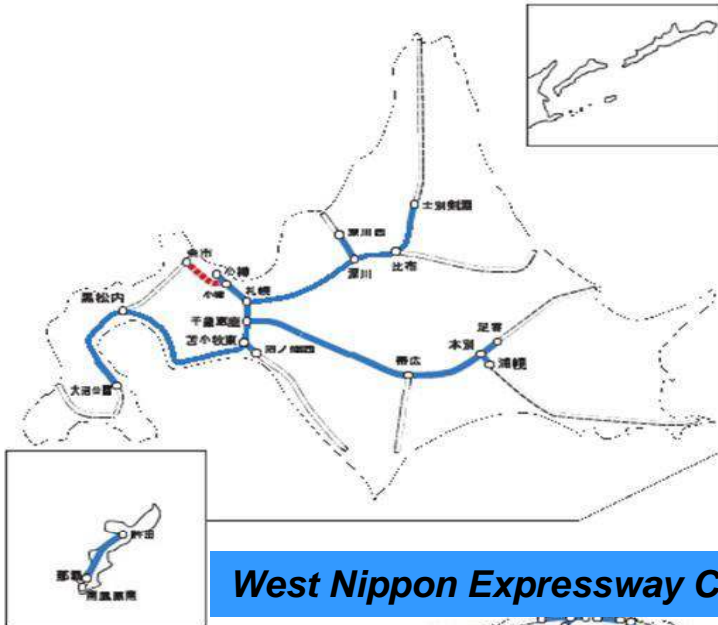
Nuclear Power Plants Stopped after the Earthquake.
Hydroelectric Plants Stopped by heavy rain disaster.



Electric power required for snow-melting of Highways or to make a house warm.
Electric power demand increased for reconstruction after earthquake disasters.

The entire country engages in efforts to conserve energy.
Ex: Rolling Blackouts

4-1. Highways network operated by NEXCO in Japan.



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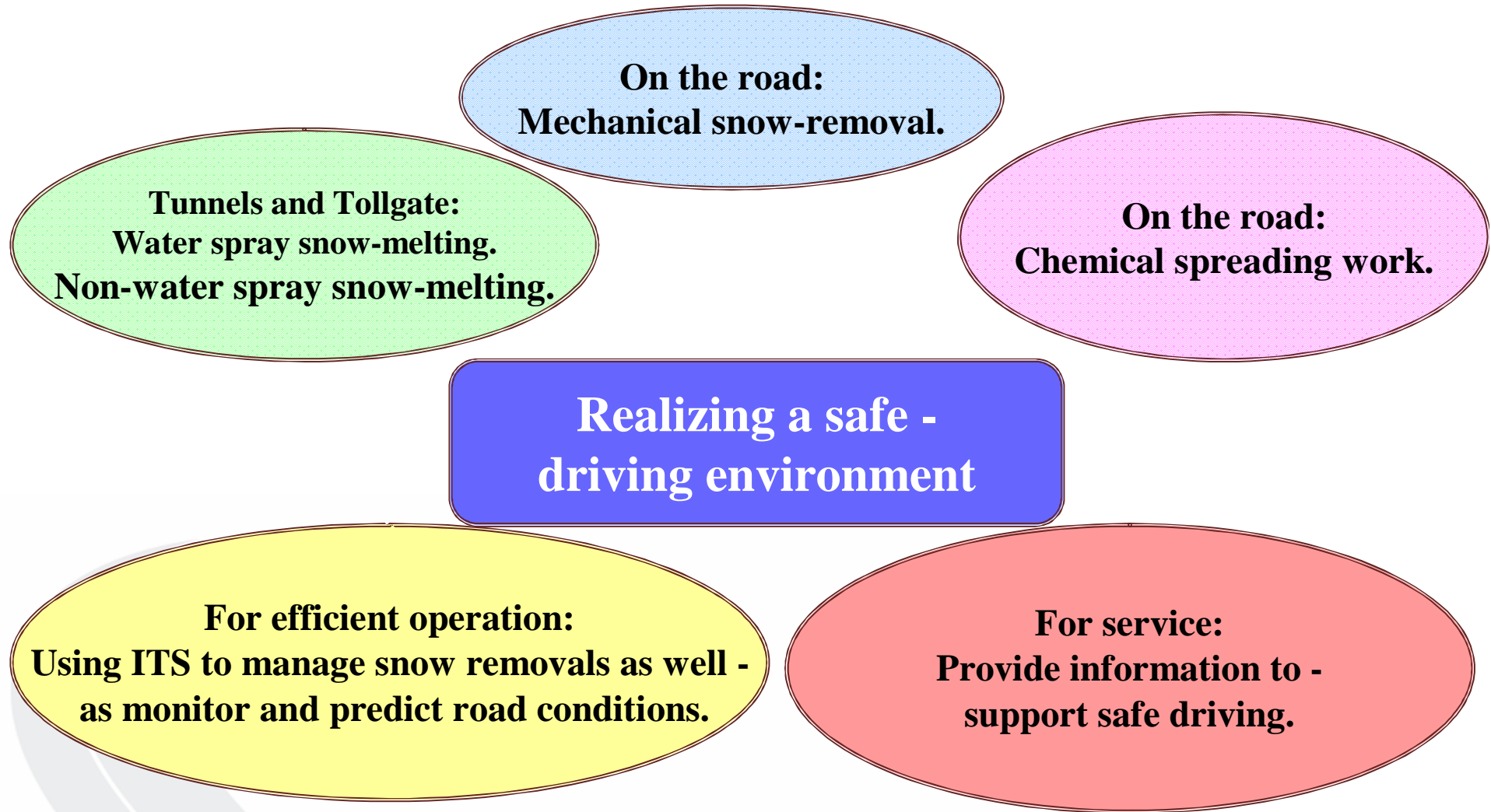
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4-2. The Snow work on Highways



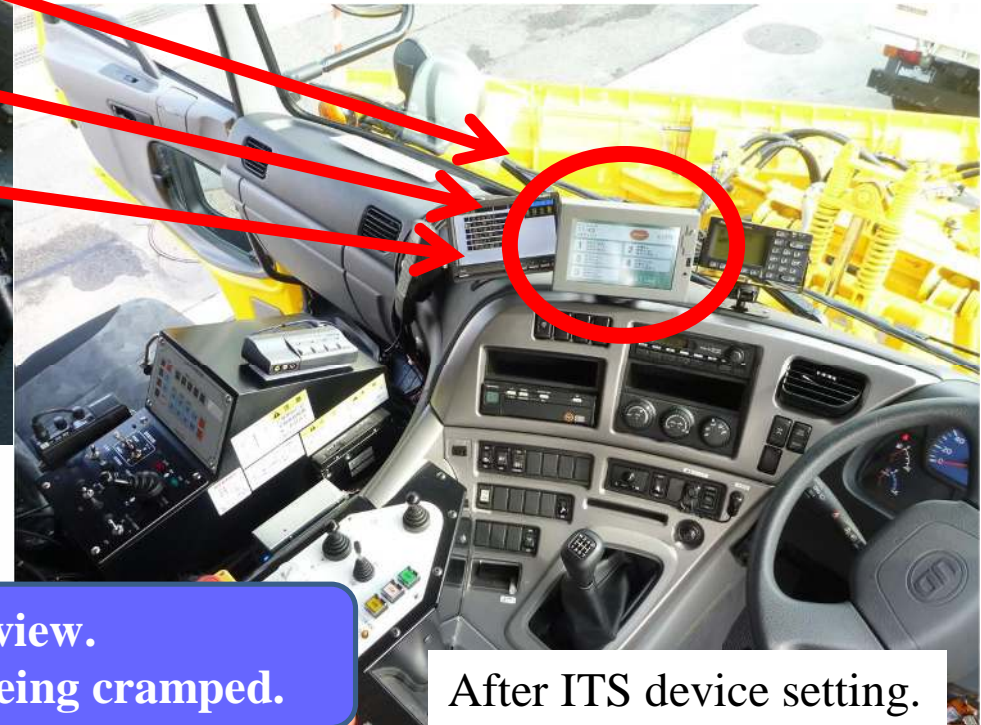
5-1. Centralized Operation Device

Angling of individual monitors and controllers.
Control panel on the far edge of the operator's field of view.

Former layout.



Can be set in the operator's field of view.
Saves space to lessen the feeling of being cramped.



After ITS device setting.

5-1. Centralized Operation Device

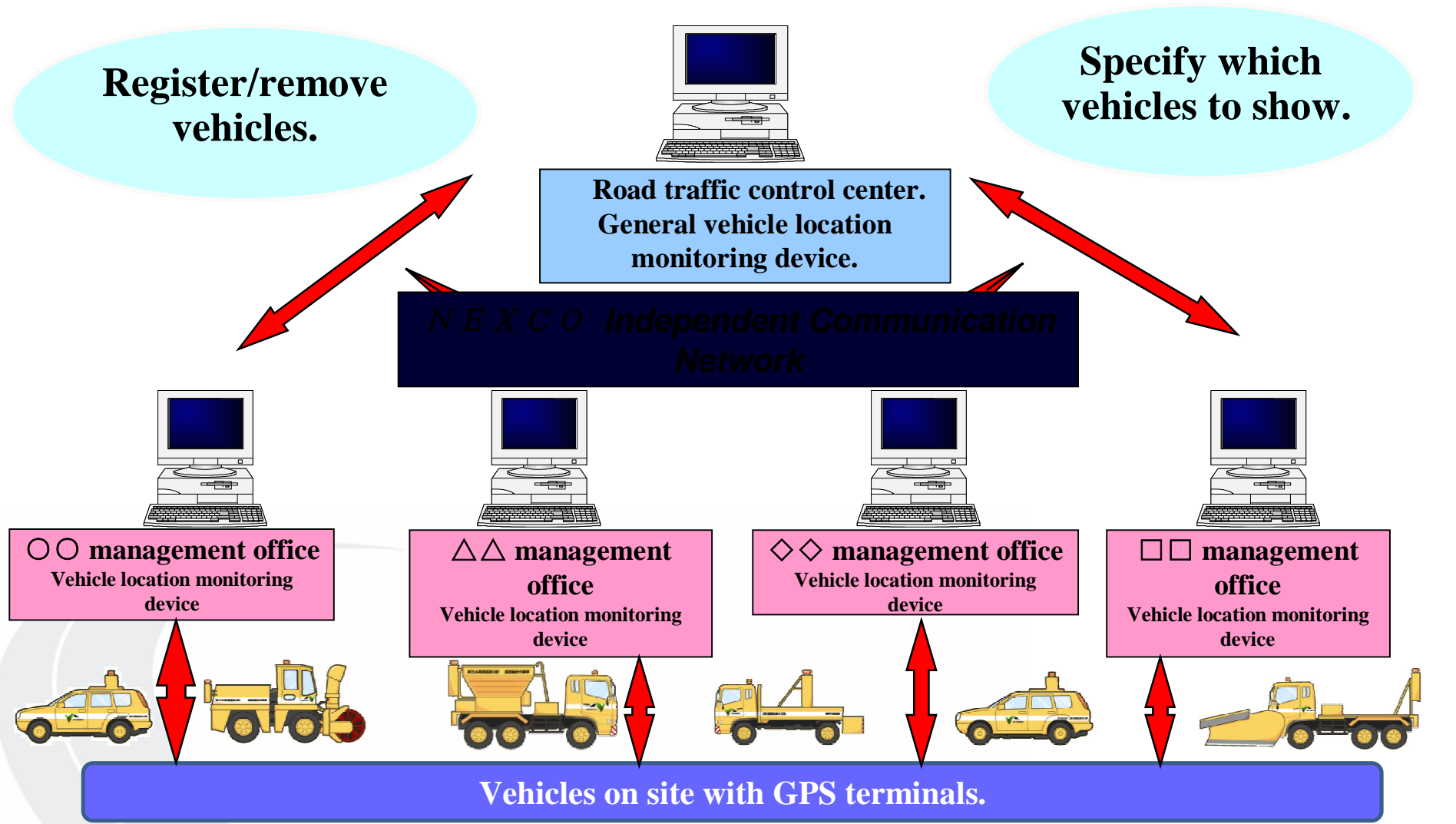
Touch-panel TFT LCD monitor.
Simple display design.

Register work/Display registered details.
Automatic control through simplified controls.

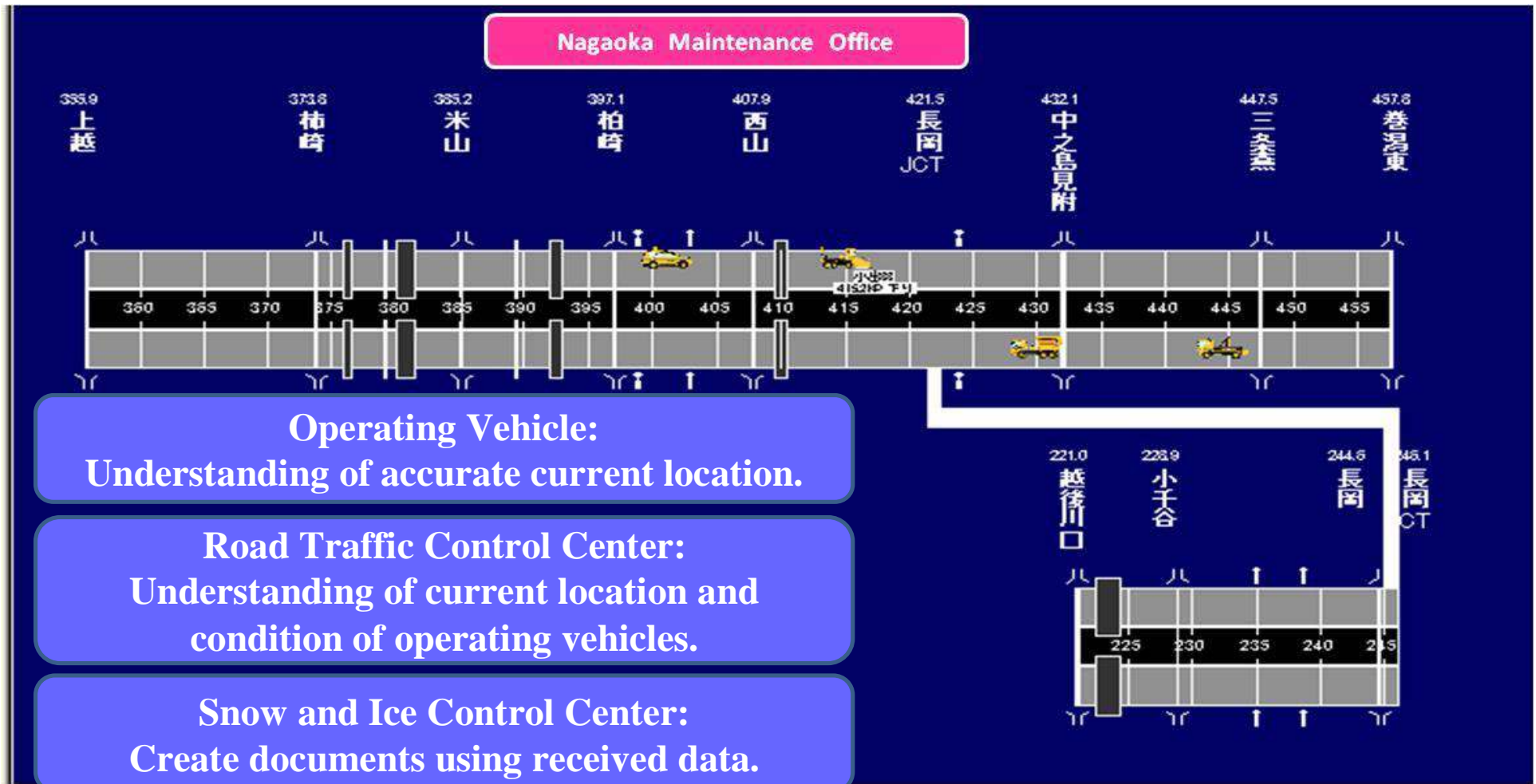
Alert messages and alarms during operation.
Automatic announcement function.



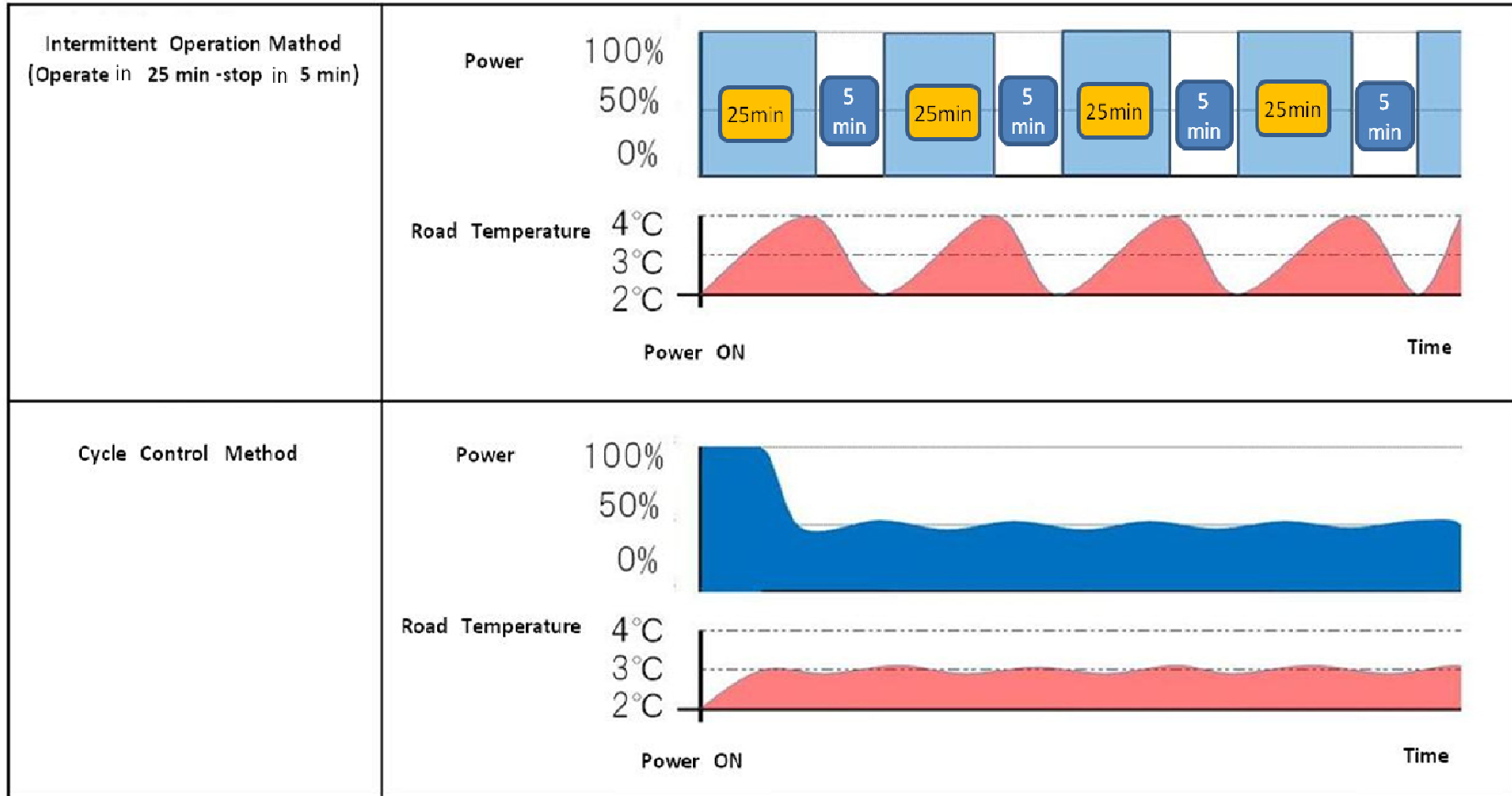
5-2. GPS Vehicle Location Management System



5-2. GPS Vehicles Location Management System

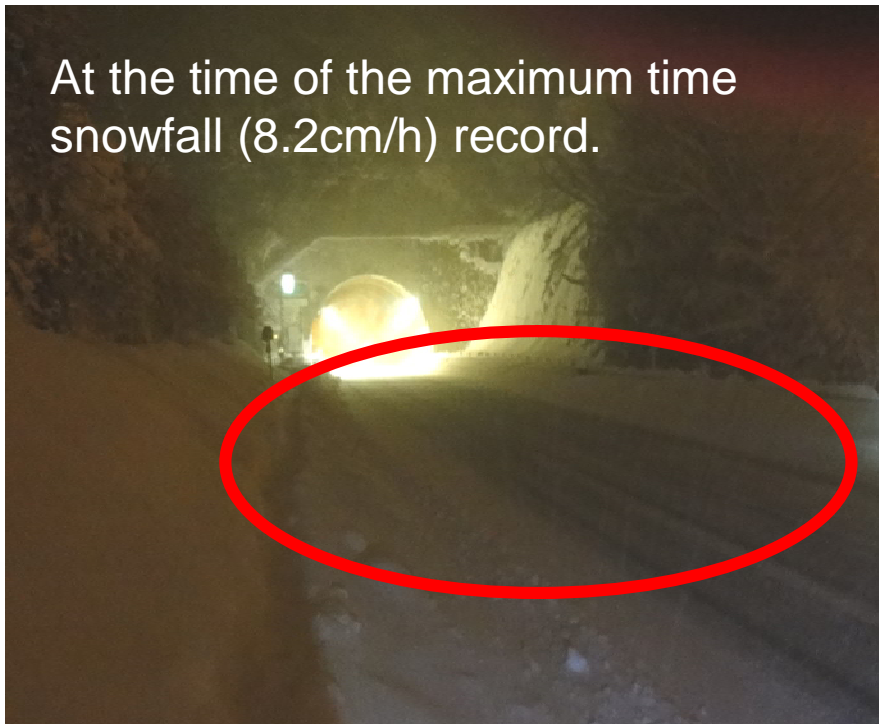


5-3. Implementing the New Control Method for Road Heating



5-3. Implementing the New Control Method for Road Heating

At the time of the maximum time snowfall (8.2cm/h) record.



After 30 minutes.



6. Conclusion



Snow removal
(in the Yuzawa
jurisdiction)

Thank you for your attention.

For more detailed information, please contact the e-mail address below.
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