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shaping tomorrow with you

World Bosai Forum

International Disaster Risk Conference 2017 in Sendai

The Role of ICT in Disaster Risk Reduction

Toshiaki ARIYAMA

Vice President, Frontier Computing Center

Technical Computing Solutions Unit

Fujitsu Limited

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有山 俊朗 Toshiaki ARIYAMA

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- Vice President, Frontier Computing Center
  Technical Computing Solutions Unit
- Business Producer familiar with Science and Technology
- My major was Satellite remote sensing to observe the Earth

My history

1. Earth observation for Disaster mitigation in Asia-Pacific region
2. Environmental monitoring in Industrial Cities in Saudi Arabia
3. Energy monitoring for Low-carbon Cities in Indonesia

Management Policy of Frontier Computing Center

- Create solutions adopting the Cutting-Edge technology
- Challenge global businesses　- Europe / Middle East / Asia -
- Enjoy cross-culture through Co-Creation

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Fujitsu in Technical Computing

Computing the Ideal Future

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Society

1. Data Collection
- Sensing
- IoT

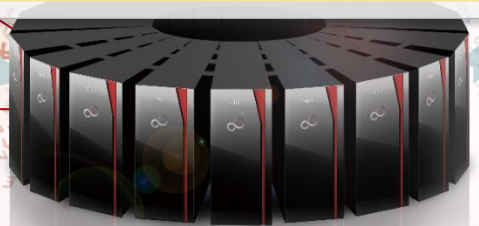
AI

2. Data Utilization
- Big Data
- Analysis
- Simulation

3. Creating Social Value
- New Knowledge
- Future Prediction

Advanced Computing

HPC High Performance Computing



Business Portfolio of Technical Computing

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Solution

- Space
- Astronomy
- Meteorology & Environment
- Disaster Risk Reduction

Technology

- AI
- Cloud
- HPC

Global Offering

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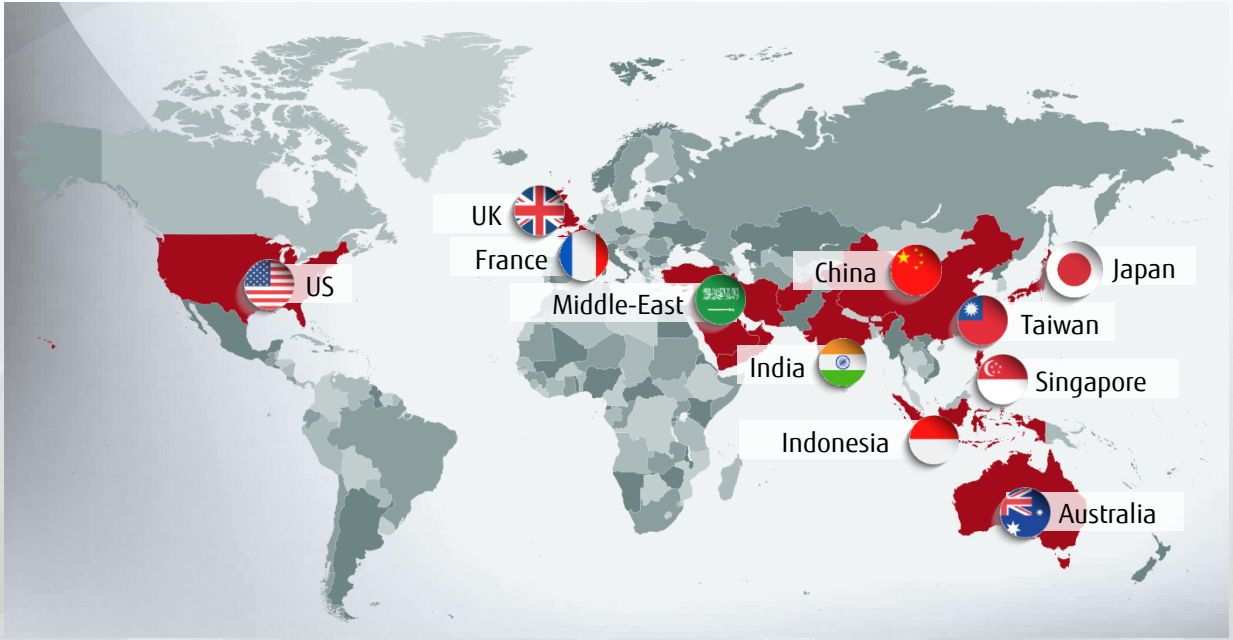
Co-Creation with Global Customers



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Role of ICT in Disaster Risk Reduction

Concept to implement Resilient Society in Disaster Risk Reduction

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KNOW

Visualization

Sensing & Recognition

PREDICT

Knowledge processing

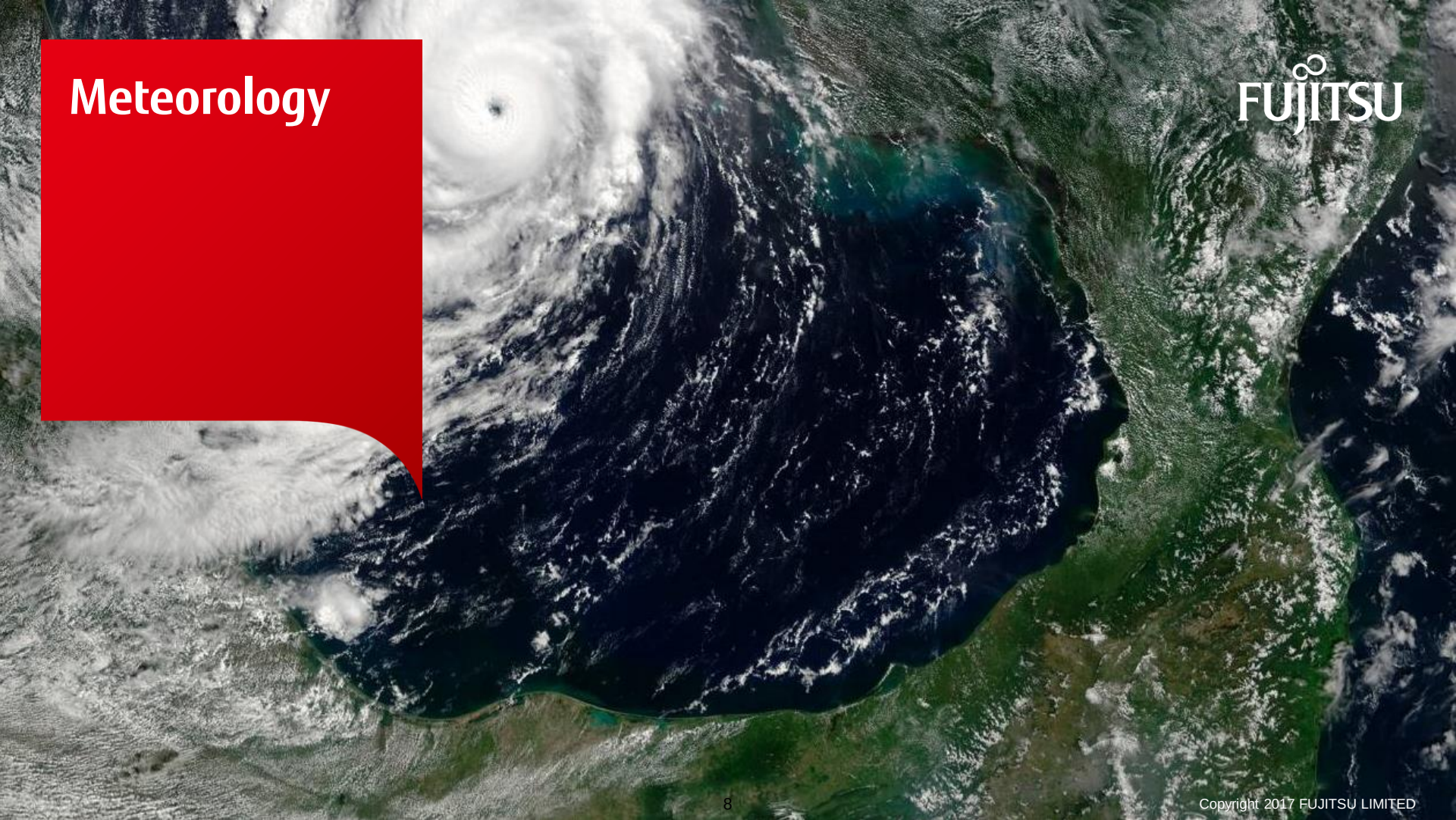
Analytics & Simulation

PREPARE

Decision & Support

Connected Service

Meteorology



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Meteo

Weather Information Platform

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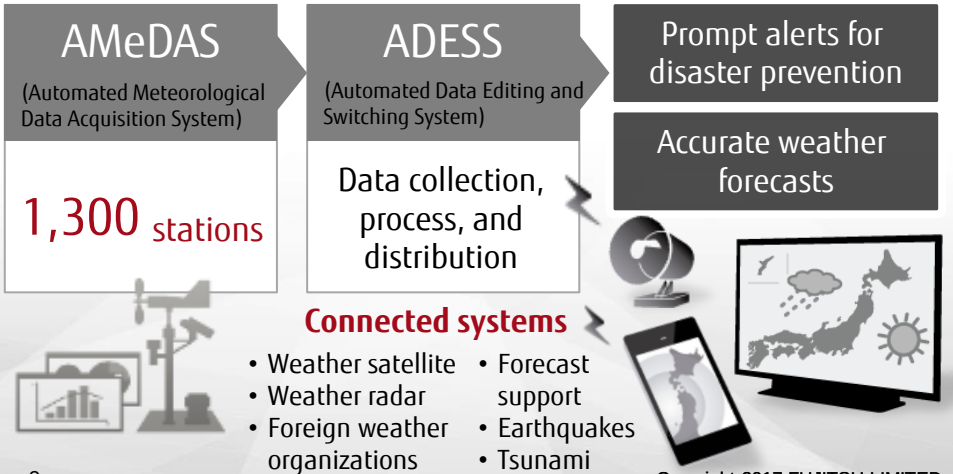
Social Infra to prevent and mitigate natural disasters

Customer : Japan Meteorological Agency (JMA)

- ADESS together with NAPS constitutes a comprehensive system for 24x365 data communication and processing
- Data collection enhanced to 1 min intervals (previously, 10 min)
- Analysis program automatically detects irregular data for higher data quality/control



Meteo

Numerical Weather Prediction

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Contribution to the public safety and disaster mitigation in Taiwan through enhanced weather prediction

Customer : Central Weather Bureau, Taiwan (CWB)

- 100 times higher computing power with low power consumption CPUs
- Customized weather forecasting models for higher prediction accuracy
- Improved accuracy of speedy forecasts for early warning against natural disasters

 Weather forecast	 Disaster mitigation	 Climate change
Higher accuracy considering subtropical climate conditions	Predicted path of typhoon Guerilla torrential rain	Impact on water resource / management

Environment

Environment Management

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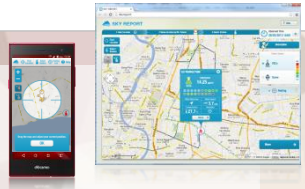
Fujitsu offers a “one-stop solution“ and customizes it
according to your unique environmental objectives and challenges.

Application Solution

Environ Monitoring / IoT

Environ Mobile Communication



Environ Modelling / Simulation

Energy Management Dashboard

Platform Solution

“Super Green” Products
Data center, server

Environment

3D-Visualizer & Mobile app.

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Environment Modeling & Simulation

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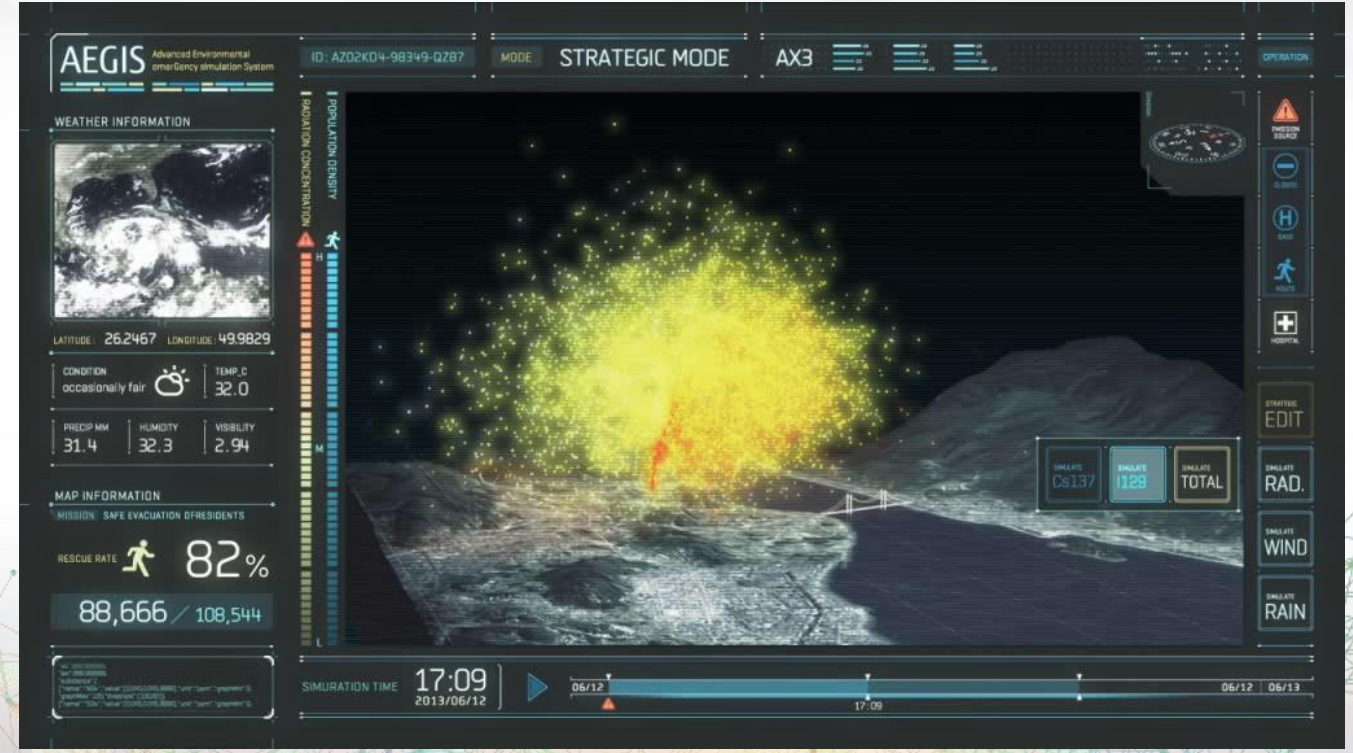

Threat substances

- Chemical
- Biological
- Nuclear

Environmental risks

- PM2.5
- NOx
- Yellow sand

Disasters

- Volcanic ash
- Agricultural pest

Disaster Risk Reduction

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Earth Observation for Disaster Mitigation
– Sentinel Asia –

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Int'l cooperation for disaster monitoring in Asia-Pacific for early warning and rescue

Client: JAXA (Japan Aerospace Exploration Agency)

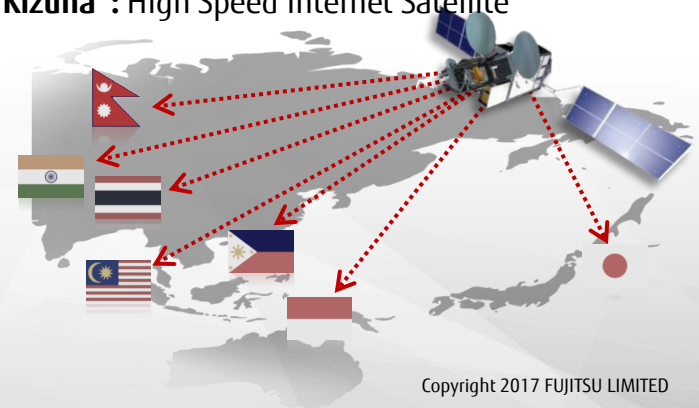
23 countries

58 organizations

9 Int'l orgs.

- Transfer satellite images of concerned areas to disaster prevention organizations in Asia-Pacific.
- Fujitsu established and provides fast, reliable file transfer services using ultra-speed internet satellite "Kizuna"
- Imagery information receivable even in areas without high-speed internet landline access

"Kizuna": High Speed Internet Satellite

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Future Society with AI

Artificial Intelligence

AI

Citywide Surveillance

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Released in Nov 2016

AI solution to realize intelligent citywide surveillance using monitoring cameras.

- Detection of various situations, not predefined
- Data analytics reduces monitoring and searching workload
- Uses existing assets effectively

Security | Retail | Industrial Zone | Smart City | Transport | Disaster Management

Vehicle Recognition	Detection / Count Type / Brand Model / Color LPR	
People Recognition	Detection / Count Cloths / Belonging Facial Recognition	

AI Video Analytics Functions

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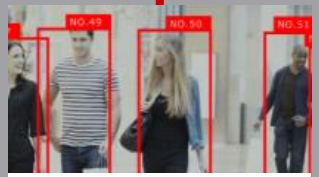
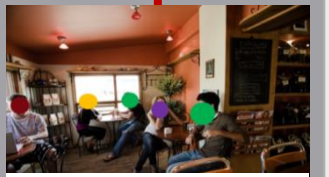
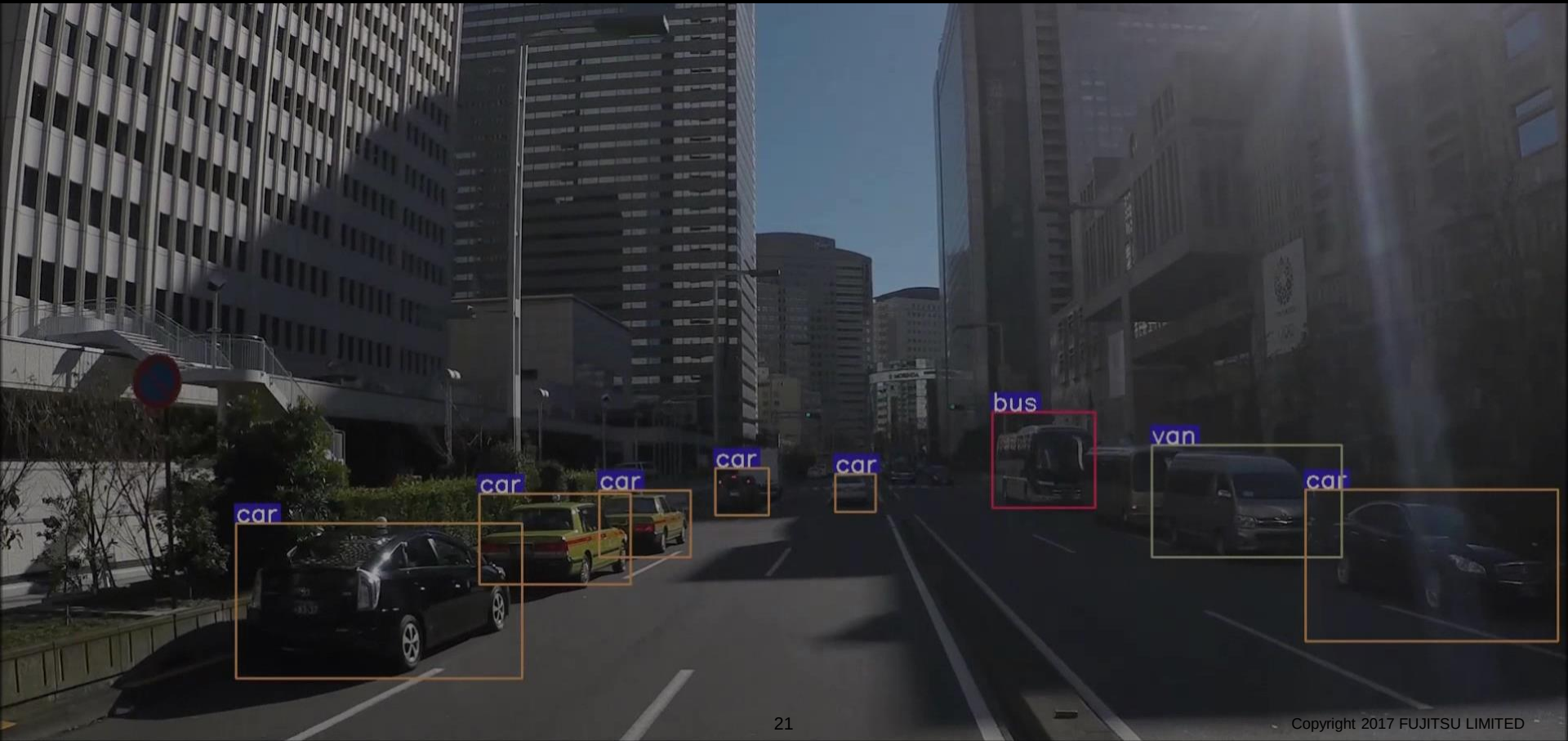
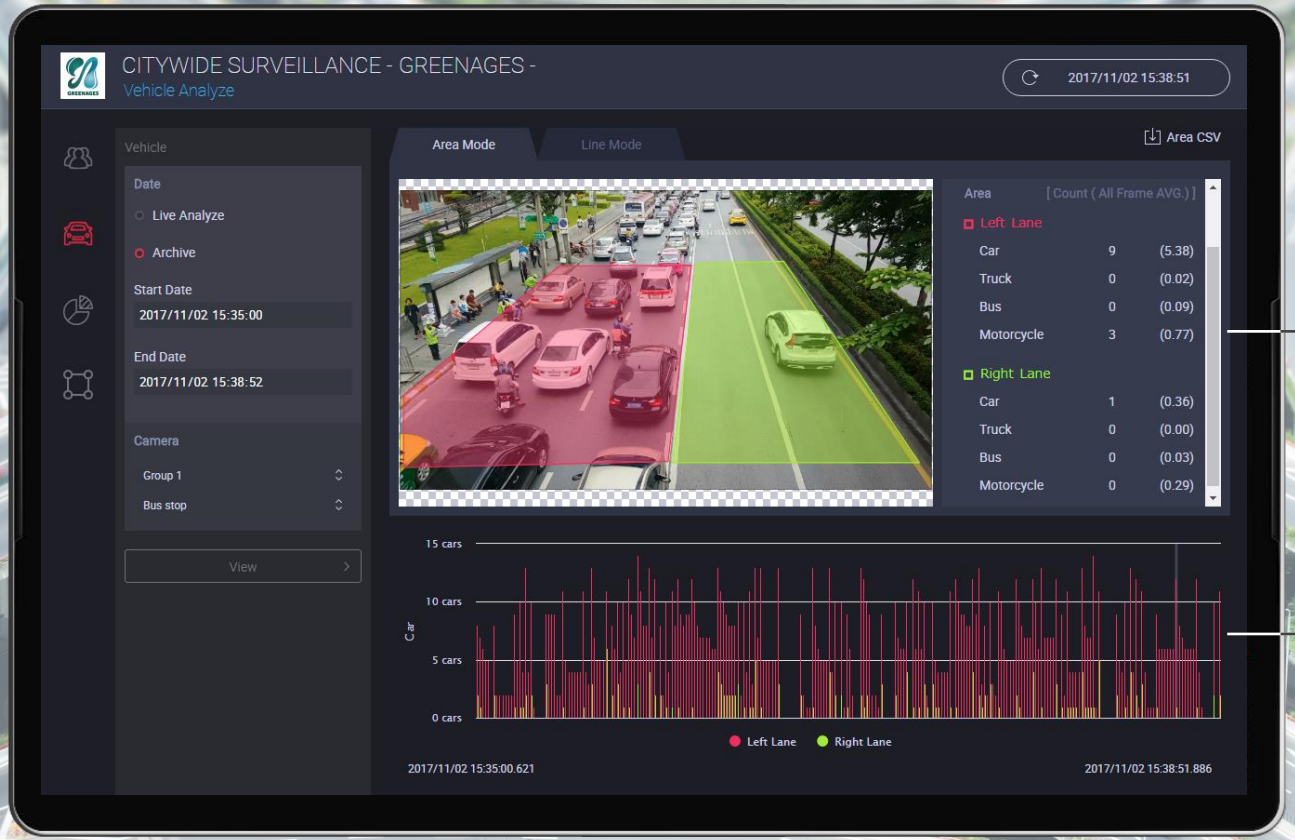
	Detection / Count		Property Classification	Individual Recognition	Auto position
People					
	Congestion Detection	Entrance & Exit Monitoring	Cloths / Color / Belonging	Facial Recognition	Automatic Seat Positioning
Vehicle					
	Congestion Detection	Entrance & Exit Monitoring	Type / Brand Model / Color	LPR License Plate Recognition	

Vehicle Type Recognition



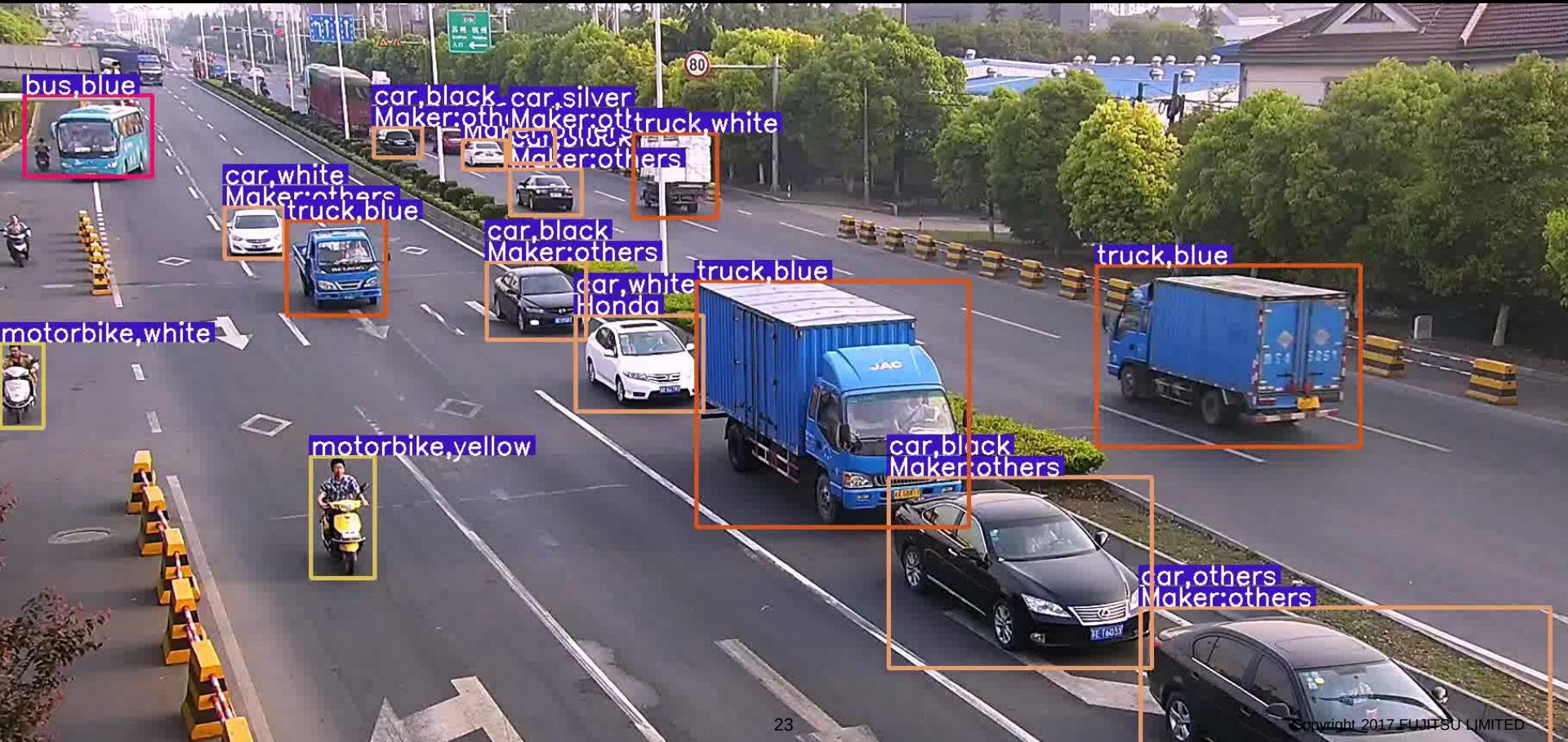
Vehicle Count



Count in each area

Time-series data trend

Vehicle Brand Recognition



People Count in Areas

People Count　in area / over line

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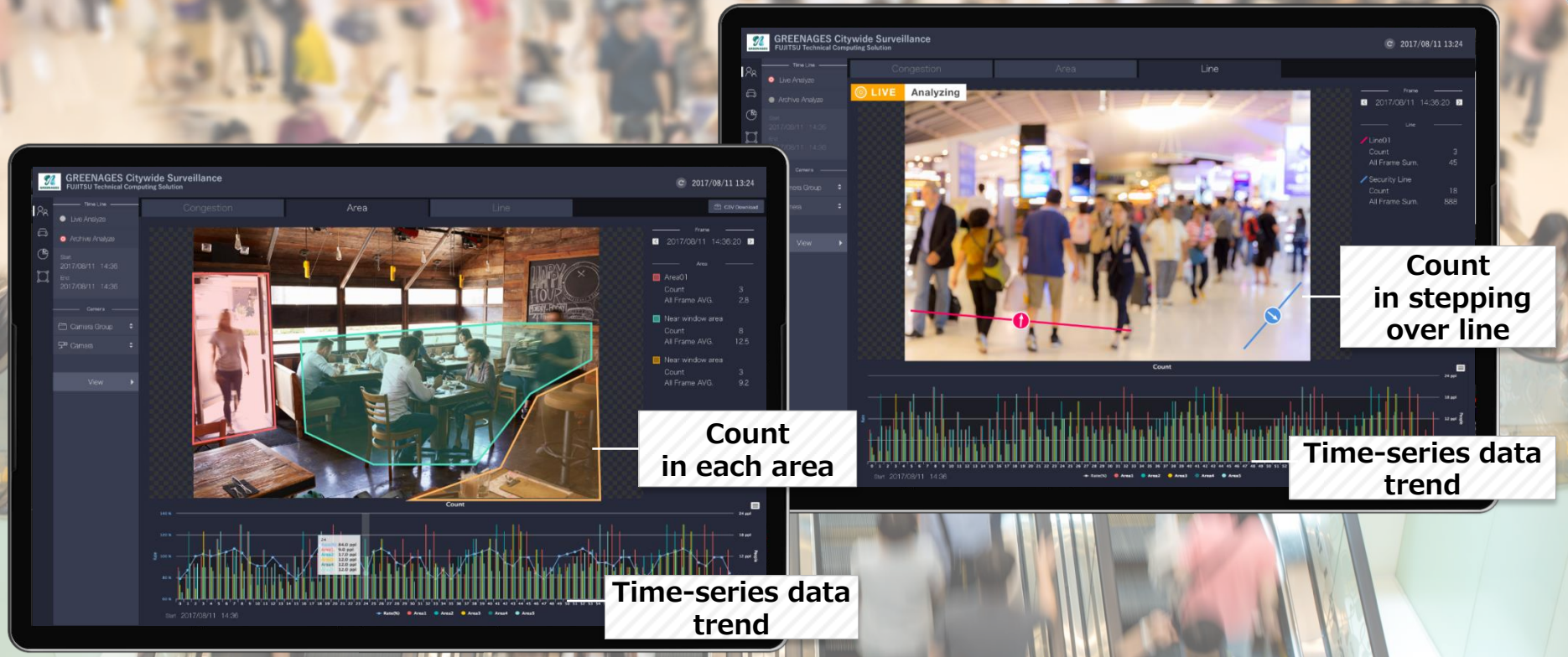

Automatic Seat Positioning

For enhancing of Human visual to watch Cities

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Shows Real-time Situation

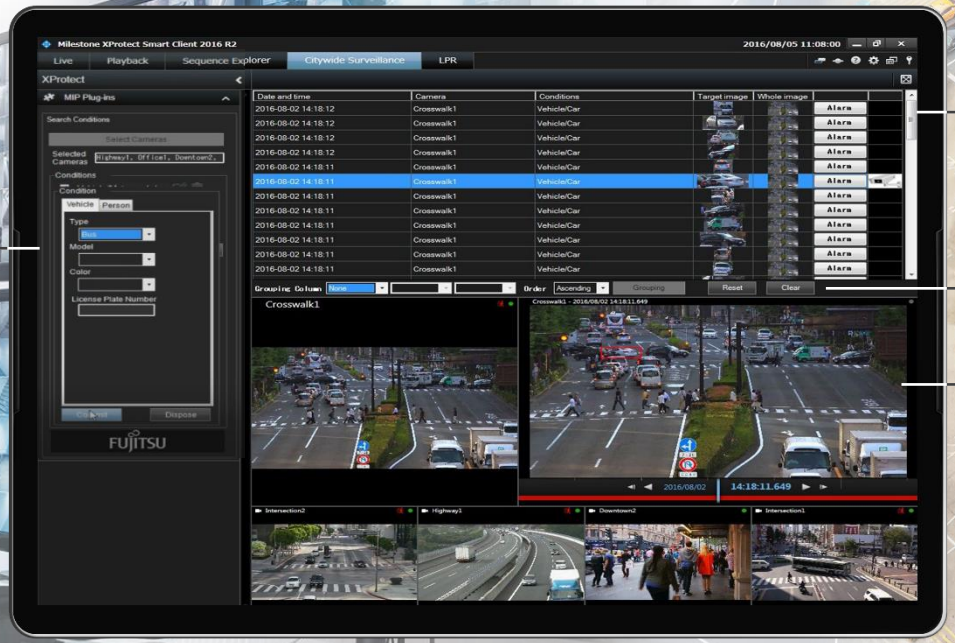
Provides Useful Information for Understanding City

Alert Notification

Set Conditions

Vehicle

- Type
- Brand
- Color
- License Num.



Searching

Filtering

Monitoring

Important Points for watching Cities

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1	Variety of recognition by AI / Deep learning	Variation and Real-time
2	High-Speed AI learning of a large amount of image data	High Accuracy
3	Digitalization of the action and property information	Automation & Knowledge creation
4	Use of existing cameras and images	Effective use of existing assets

AI technology as social infrastructure

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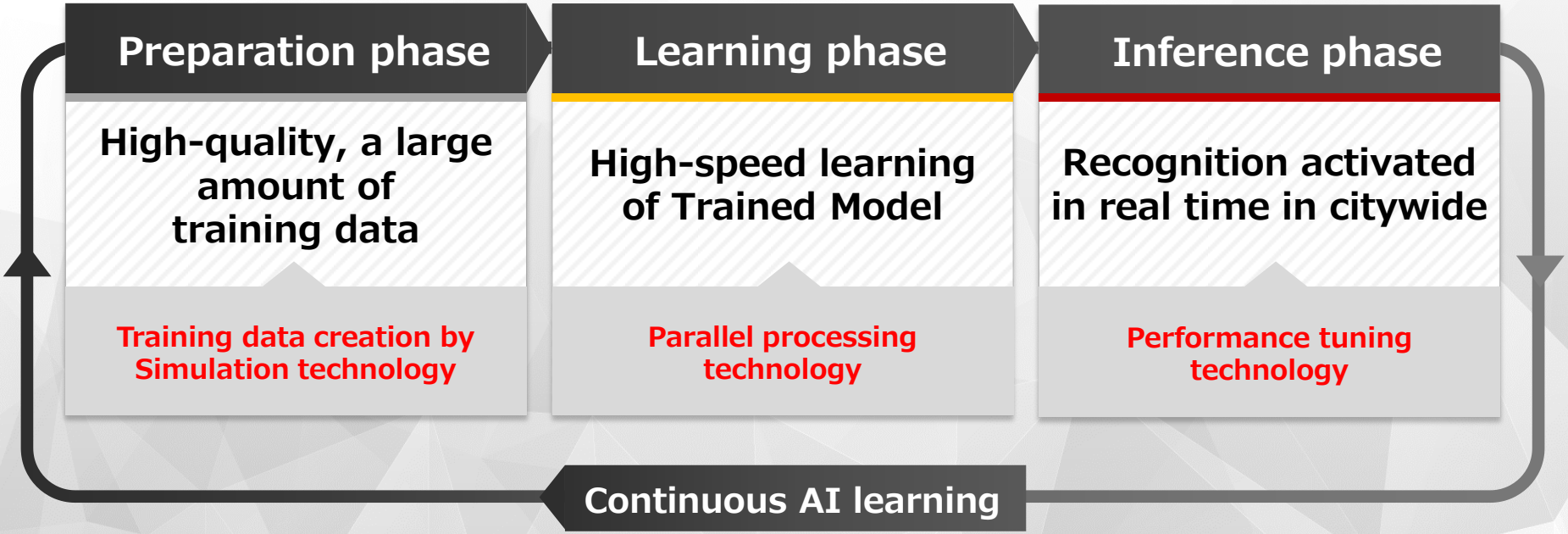
AI learning powered by super computer technology supports society strongly.



KNOW PREDICT PREPARE

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Real-time city watch

Congestion, Illegal Parker, Construction, Traffic/amount of walking

Person move analysis

Optimization of city planning
Optimization of evacuation plan

Watching vulnerable

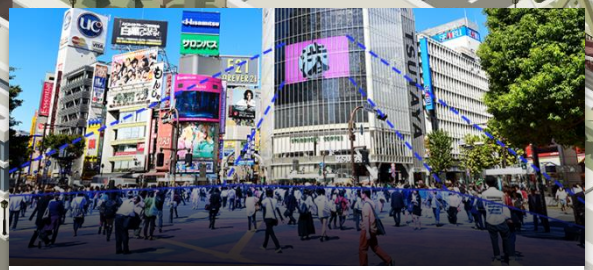
Rapid rescue of Lost child, Elderly person

Congestion and abnormal detection

People congestion and Rapid crowd

Visualization of the procession

Taxi stop, Bus stop, Airport Security gate



Connected & Personalized Support

Support according to individual attribute

Connected Society

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Realizing the Future Resilient Society

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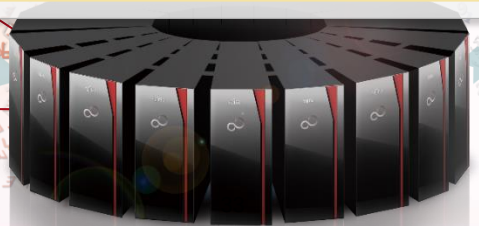
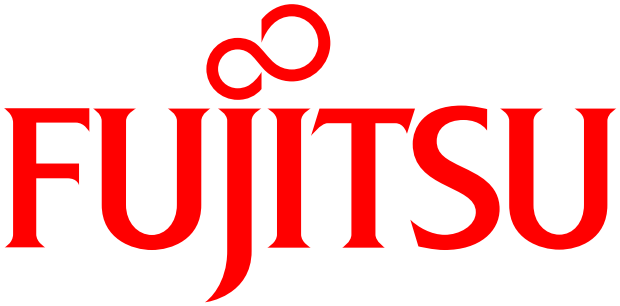
Advanced Computing

HPC High Performance Computing





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