Disaster Prevention Initiatives at Smart City Takamatsu

NEC is undertaking global expansion of its initiatives to promote safety, security, and comfort by transforming cities to make them smart cities, using advanced technologies such as biometrics, including facial and fingerprint recognition, image analysis powered by AI, and IoT. Among our responses to environmental issues through smart cities, we have implemented disaster readiness through analysis of weather observation data using ICT and AI technology, CO_2 reduction through the construction of optimal waste collection routes, and reduction in waste. Looking ahead, we will use ICT, IoT and other advanced technologies to prevent and mitigate natural disasters in cities.

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Kagawa Prefecture faces the Seto Inland Sea, and experiences a warmer climate with relatively fewer natural disasters compared with other areas. However, in the past few years the prefecture has been working urgently to prepare natural disaster countermeasures over a wide area in preparation for disaster damage from torrential rains and so forth caused by climate change. At Takamatsu City in Kagawa Prefecture, workers and students from nearby municipalities gather because it is a core city, giving rise to needs for disaster prevention over a wider area by rapid information sharing between local governments during disasters. However, data for conducting disaster countermeasures, such as weather and traffic information, is distributed across different systems operated by government and private organizations, creating a need for a system for integrating data in an information linking infrastructure.

To solve this issue, NEC has been working with Takamatsu City since fiscal 2018 to promote the "Smart City Takamatsu" project, making use of ICT, IoT, and other advanced technologies for city development. As part of this effort, we are working on rapid information linkage to assist disaster prevention over a wide area.

District disaster prevention requires a system that can centrally manage various data and protect the safety of residents. We began by collecting various kinds of data required for district disaster prevention, such as river level sensor data collected by local governments, and data published on systems operated by government agencies and private-sector organizations (water level, tide level, traffic, and weather). The data were accumulated and concentrated on a shared IoT platform and converted into a standard uniform data. This enables district disaster prevention data to be displayed simultaneously together on a dashboard, enabling rapid sharing between people responsible for disaster prevention and multiple local governments, which promotes situational understanding.

We are also focusing efforts on support for flood countermeasures. Recent concentrated torrential rainfall caused overflows and resulting flooding in medium-sized and small rivers in urban areas as reservoir volume overwhelmed drainage capacity for a short time, causing massive damage to the area. The incident has prompted research into river level prediction using AI. Up until now, the status of river overflows has been ascertained by direct inspection undertaken by local government employees; however, AI analysis based on water level data and weather data such as rainfall can produce highly accurate predictions of river levels. In the future, this technology is expected to aid in encouraging residents to evacuate early before flooding occurs.

Looking ahead, NEC aims to increase cooperation with local governments around Takamatsu City and create safe, secure cities for residents through district disaster prevention.