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TOPIC

MIC's Project on Development Demonstrations for Realizing Local 5G to Solve Local Issues

The Ministry of Internal Affairs and Communications (MIC) has been conducting development demonstrations in various fields, including agriculture, fisheries, tourism, and medical care. These demonstrations combine local 5G* features (e.g., ultra-high speed, ultra-low latency, and multiple simultaneous connections) with areas with different test environments (e.g., urban areas, rural areas, and indoors) and multiple frequencies, with consideration of the needs of each region in various utilization scenes.

* Local 5G is a new system that allows various entities, including local governments and companies, to build and use networks in their buildings and premises flexibly. This system provides services apart from nationwide 5G services provided by mobile phone operators. In December of 2019, the system was established for some frequencies (28.2 -28.3 GHz band).

Here are some examples of demonstrations.

Case 1: A use case in the fishery field

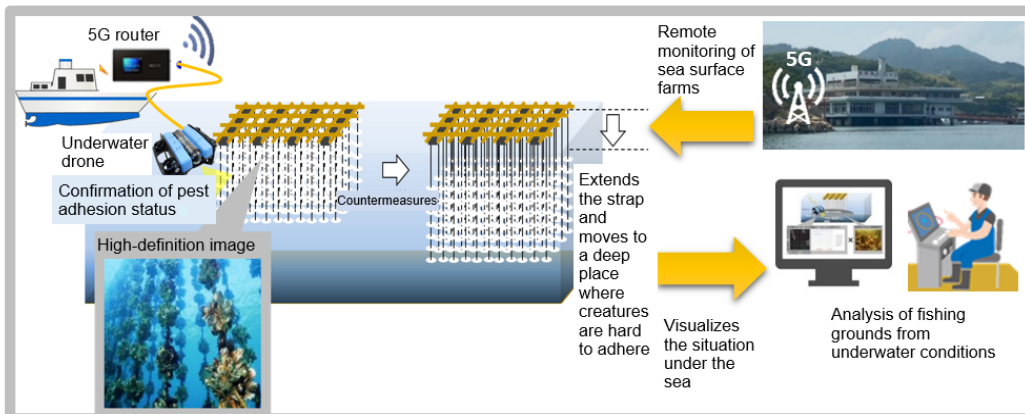
In Etajima City, Hiroshima Prefecture, MIC conducts the following demonstrations to improve productivity by grasping the real-time underwater conditions of oyster aquaculture.

Demonstrations:

- 1 Demonstration of the remote control of an underwater drone from land (remote location) and visualizing underwater conditions.
- 2 Demonstration of an environmental analysis of aquaculture grounds by combining high-definition images acquired with an underwater drone and environmental data (e.g., water temperature and salinity data) of the sea surface farm and its surroundings.

Technology demonstration:

MIC confirms the communication quality of local 5G at sea, considers area construction at sea, and studies the sharing of local 5G and carrier 5G.



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Case 2: A use case in the tourism field

Shirakawa, a village located in Ono District, Gifu Prefecture, is a depopulated area with a World Heritage Site. This initiative ensures tourists' satisfaction and safety by promoting the decentralization of their staying time and places for residents suffering from a shortage of workers.

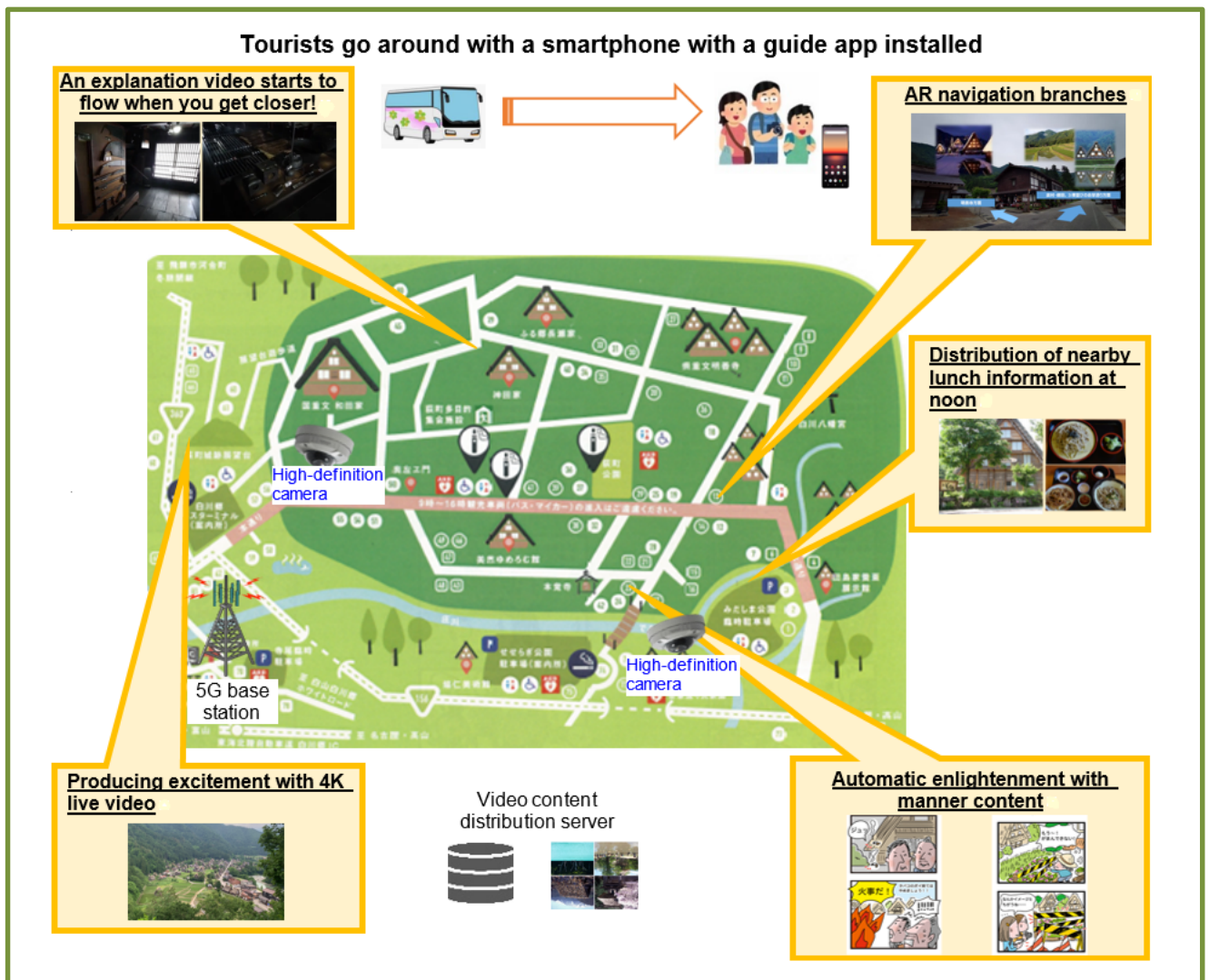
Demonstration:

Demonstration of the push delivery of high-definition live images and 4K video images according to the travel timeline (before, while, and after traveling)* and the location information on tourists.

Technology demonstration:

MIC evaluates radio wave propagation characteristics assuming local 5G to grasp the base station coverage area and area edge, and also conducts a sharing study of local 5G and carrier 5G, including their semi-synchronous operation.

* In this demonstration, "before traveling" is defined as "the time before arriving at Seseragi Park's parking lot to walk around the town." "While traveling" is defined as "the time of walking around the World Heritage area." "After traveling" is defined as "the time of returning to the parking lot after walking around the town."



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Case 3: A use case in the medical care field

Goto City, which is located on a remote island in Nagasaki Prefecture, has an increase in patients who require regular medical care in elderly care facilities or at home due to the rapid aging of the population. This demonstration is conducted on the remote island with the cooperation of Goto City and Nagasaki City, Nagasaki Prefecture, in response to this medical care issue.

Demonstrations:

- 1 Demonstration of highly specialized medical care by remote support from specialists via smart glasses and 4K camera images for core hospitals on remote islands and in other remote areas.
- 2 Demonstration of telemedicine and care support by nurses via smart glass images for elderly care facilities on remote islands or those located in other remote areas.

Technology demonstration:

MIC evaluates local 5G performance and radio wave propagation characteristics while verifying area construction and system configuration. At the same time, MIC studies uplink-downlink ratios and verifies equipment configuration requirements.

