IoT/edge social implementation

Haruhisa Fukano, TSC member of akraino, Fujitsu

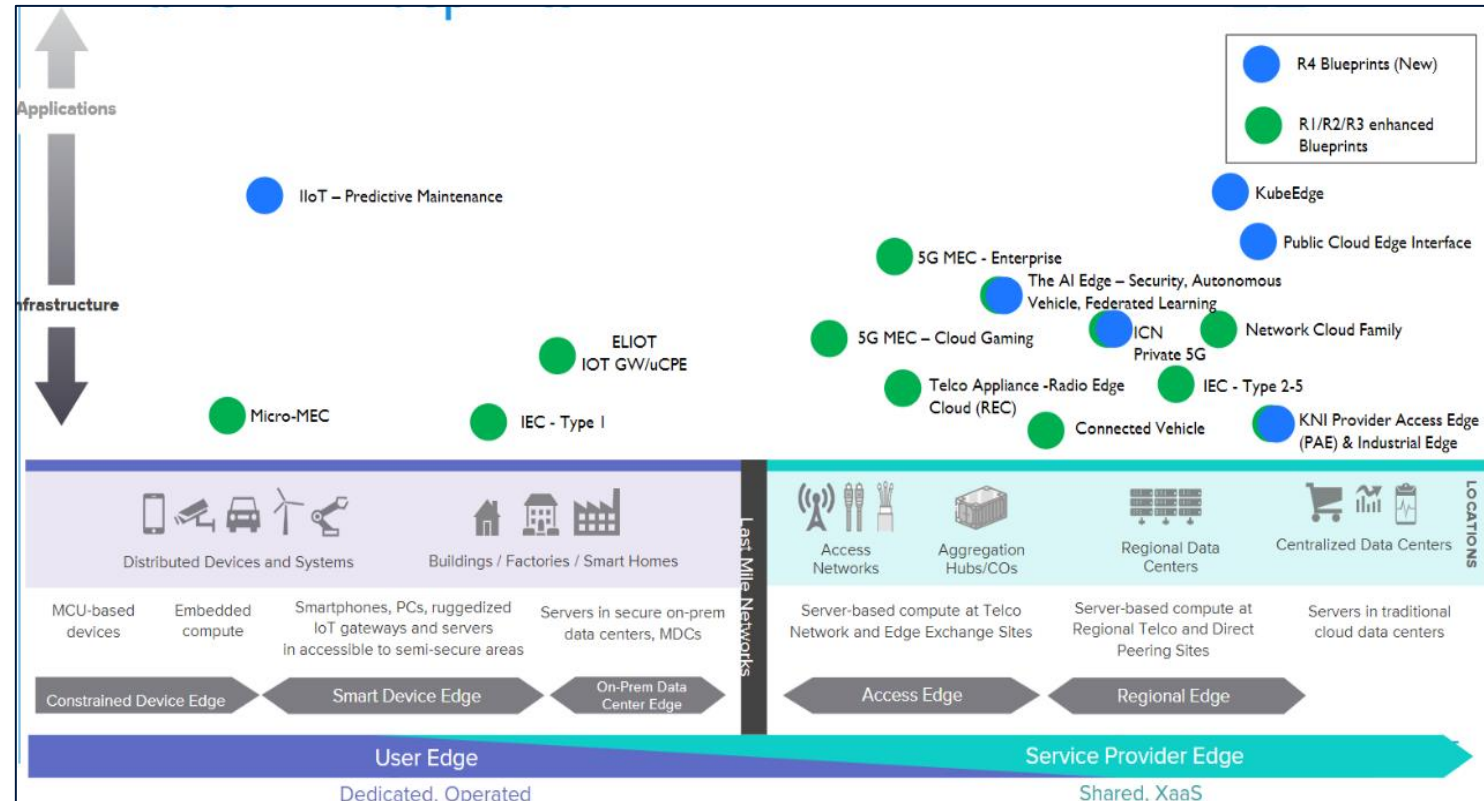Kenji Yamada, Senior Architect, Fujitsu Kyushu network technologies(QNET)

Why akraino?

› **Sustainable development Goals**

   › IoT/edge computing power is necessary to achieve.

   › "Akraino" has wide variety of blueprint which is end to end stack in IoT/edge.

   ✓Integrated

   ✓Proven and Tested

   ✓Deployable

   ✓Low Cost

   ✓Use case based   etc⋯

Fujitsu agrees with concept of akraino and will contribute based on our IoT/edge social implementation achievements.
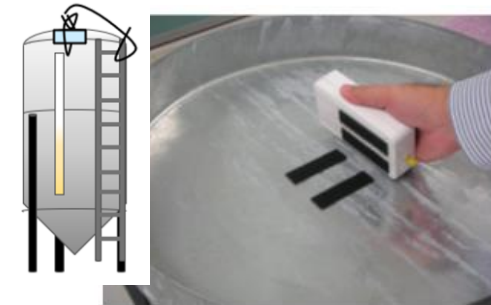
Fujitsu contribution to solve social issues

› Social implementation achievements using ICT in wide range of fields

IoT

Monitoring sewerage water level

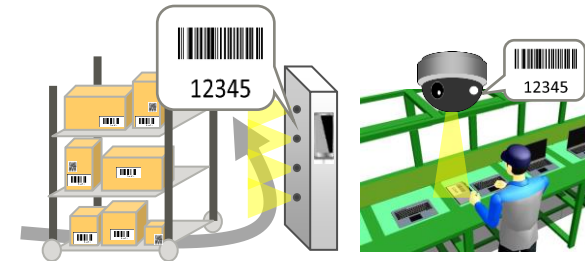Monitoring frost FAN for Tea plantation

Monitoring amount of feed tank for livestock

AI

Birdsong detection

Individual identification of cattle by image recognition

Batch recognizing Bar code/QR code

12345

12345

1.Measure for urban flood disaster "inland flooding"

› Sudden rainfall caused by climate change increases threat of inland flooding.

› Sensing water level in manhole and alert residents immediately.
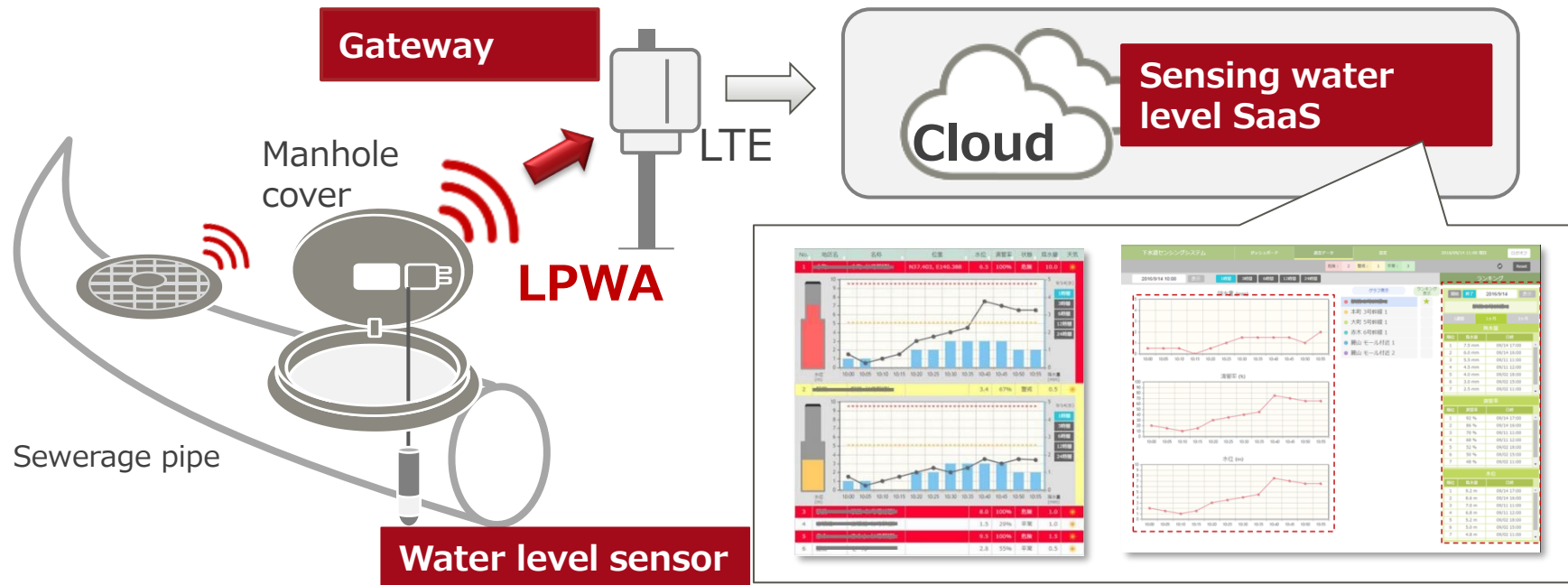
1.Measure for urban flood disaster "inland flooding"

› First equipped with thermoelectric power generation by temperature change on manhole cover in Japan.

› Long-term reliability and long-term durability in spite of severe condition in manhole.

Thermoelectric power converter

Sensor node
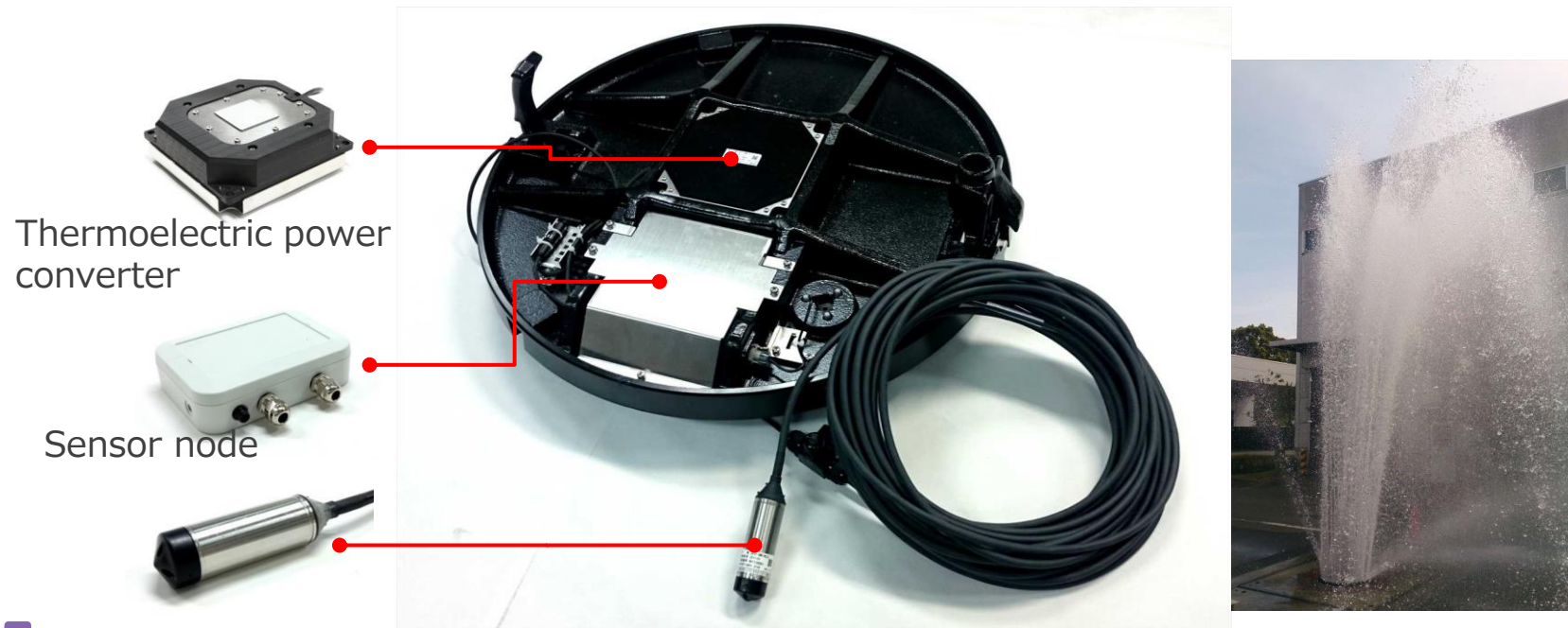
2. Environment and ecosystem conservation "Wild bird protection"

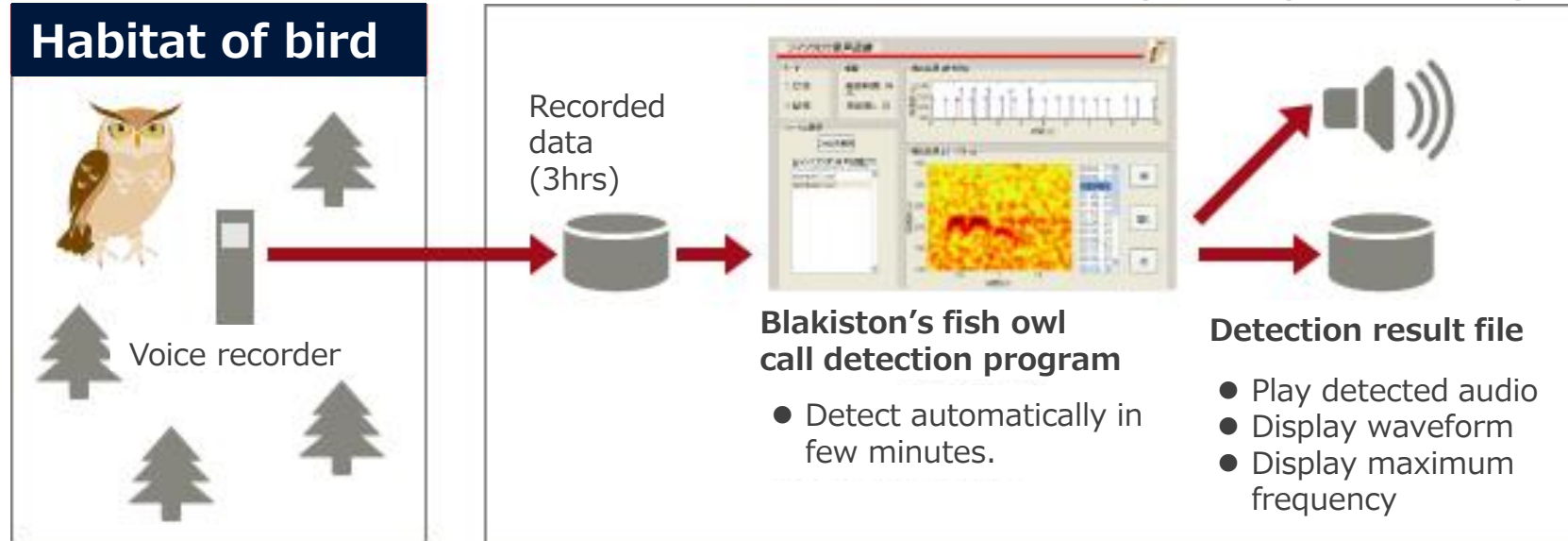Source : Wild bird society of Japan

Blakiston's fish owl

- Be designated as an endangered species by the Ministry of the Environment.
- Only about 160 owl live in central and eastern Hokkaido.
- Being researched for habitat by the "Wild Bird Society of Japan" for conservation.

Previous research methods and issues

✓Person listens to data recorded by voice recorder and confirms its existence by birdsong.(600hrs/month)
➔**Long time for analysis and possibility to overlook**

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2. Environment and ecosystem conservation
"Wild bird protection"

Realized efficiency and accuracy of research by recognizing birdsong using AI.

Habitat of bird

Voice recorder

Recorded data (3hrs)

Blakiston's fish owl call detection program

● Detect automatically in few minutes.

Detection result file

● Play detected audio
● Display waveform
● Display maximum frequency

Features

✓ **High speed** : Can process one hour of recorded data in 2~3 min.

✓ **High accuracy** :
Can detect birdsong more than 1km away by noise suppression and AI technology.
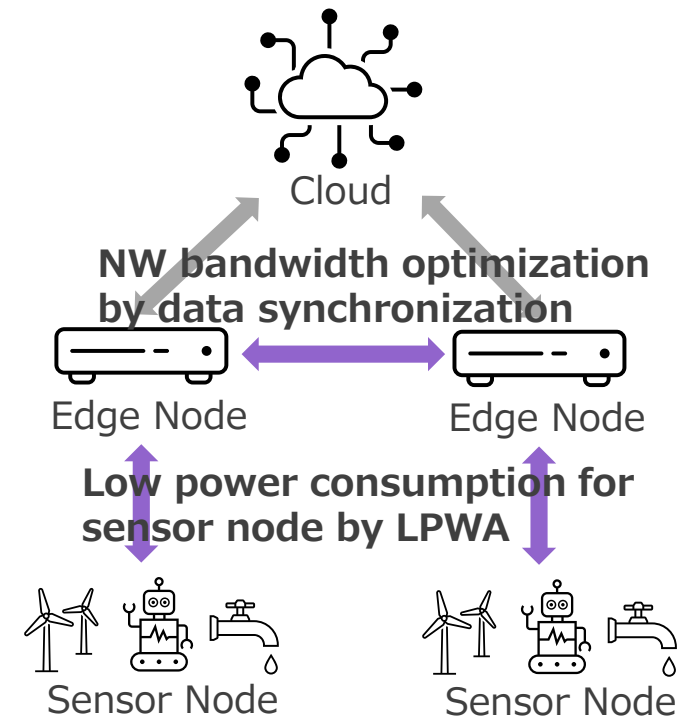
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Conclusion

Plan to propose new blueprint based on these social implementations.

- Current blueprint candidate 1:
  Network bandwidth optimization between sensor, edge and cloud.

- Current blueprint candidate 2:
  Low power consumption for sensor node

Welcome participants

Contact: fukano.haruhisa@fujitsu.com

Cloud

NW bandwidth optimization by data synchronization

Edge Node　　　　　Edge Node

Low power consumption for sensor node by LPWA

Sensor Node　　　Sensor Node

Thanks