Future Potential of ICT in Agriculture

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Case Study 1: “Paddy Watch”

- Monitoring of **rice fields**
- Works without a power supply (battery)
- docomo×Vegetalia×Akita Prefecture×Kubota

<Meeting with the representatives from nine regions throughout Japan>

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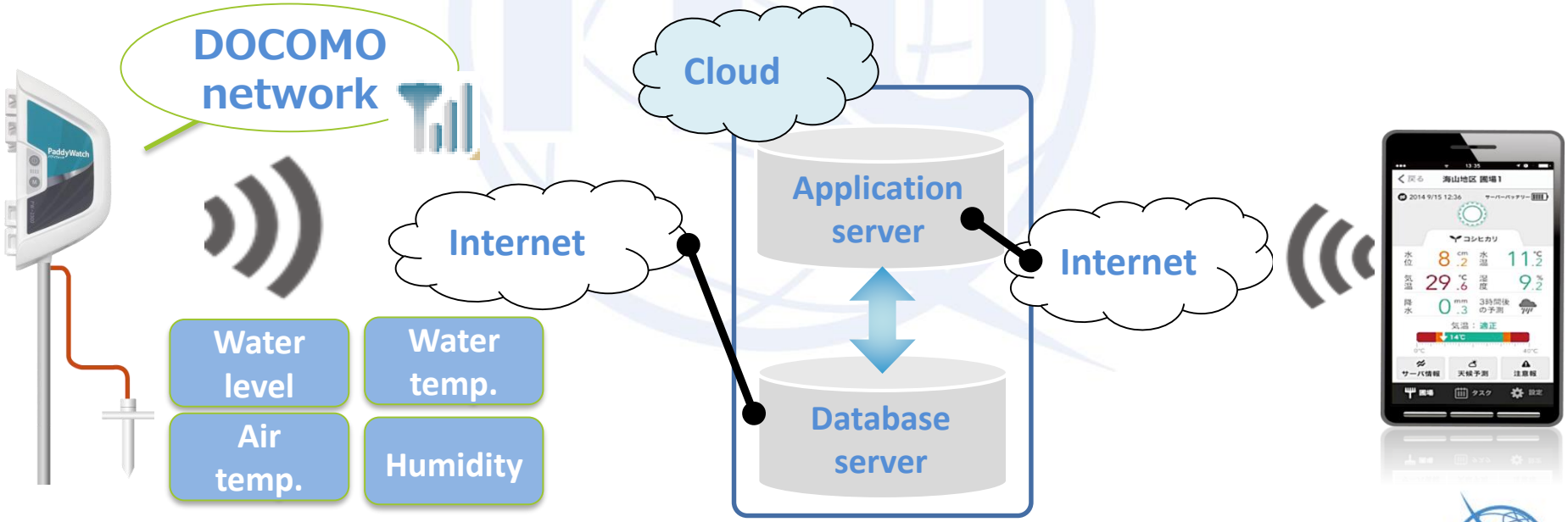
System for rice-paddy water management

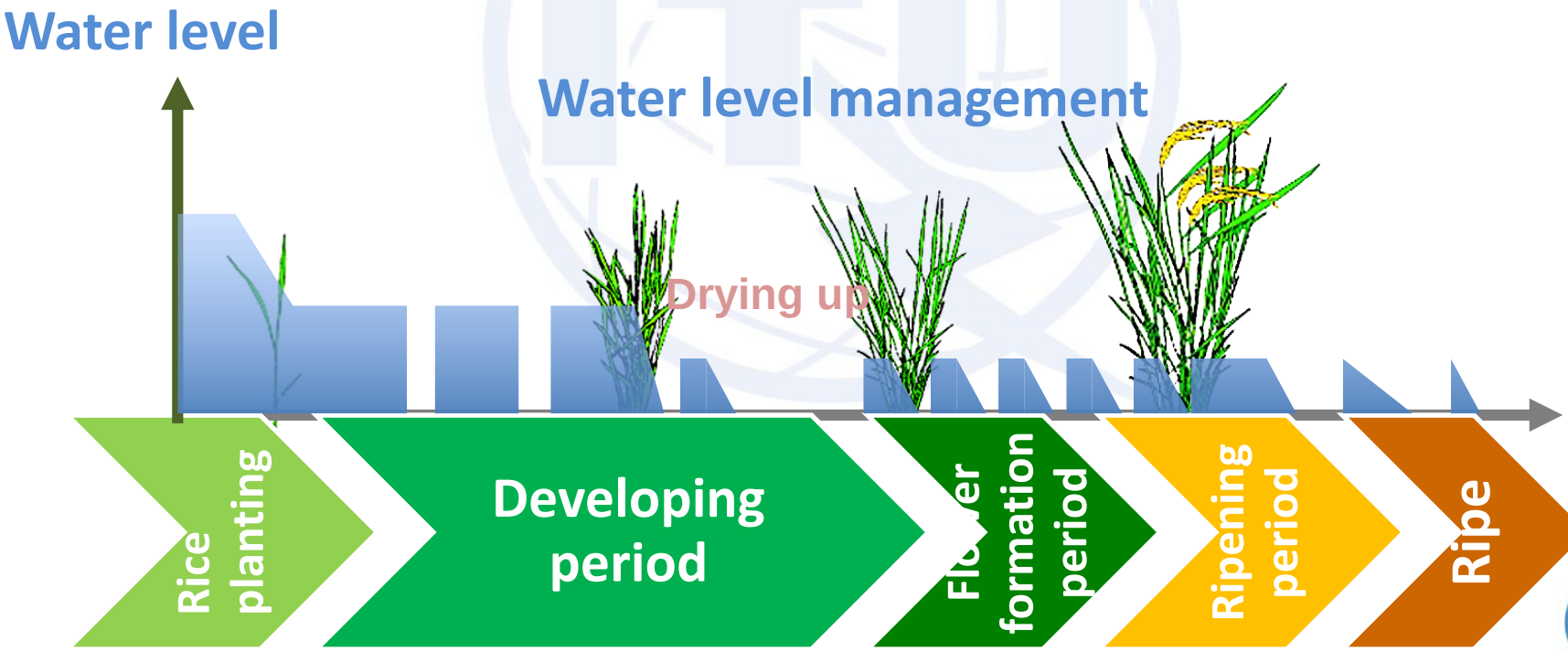
Remote monitoring via sensors
Sensors in paddies collect data on water level, water temperature, etc.
to enable anytime, anywhere monitoring



Expected benefits of Paddy Watch

About 35% reduction of labor for inspecting paddy

Improved rice quality & taste through analysis of sensor-collected data



Collaboration with Niigata city

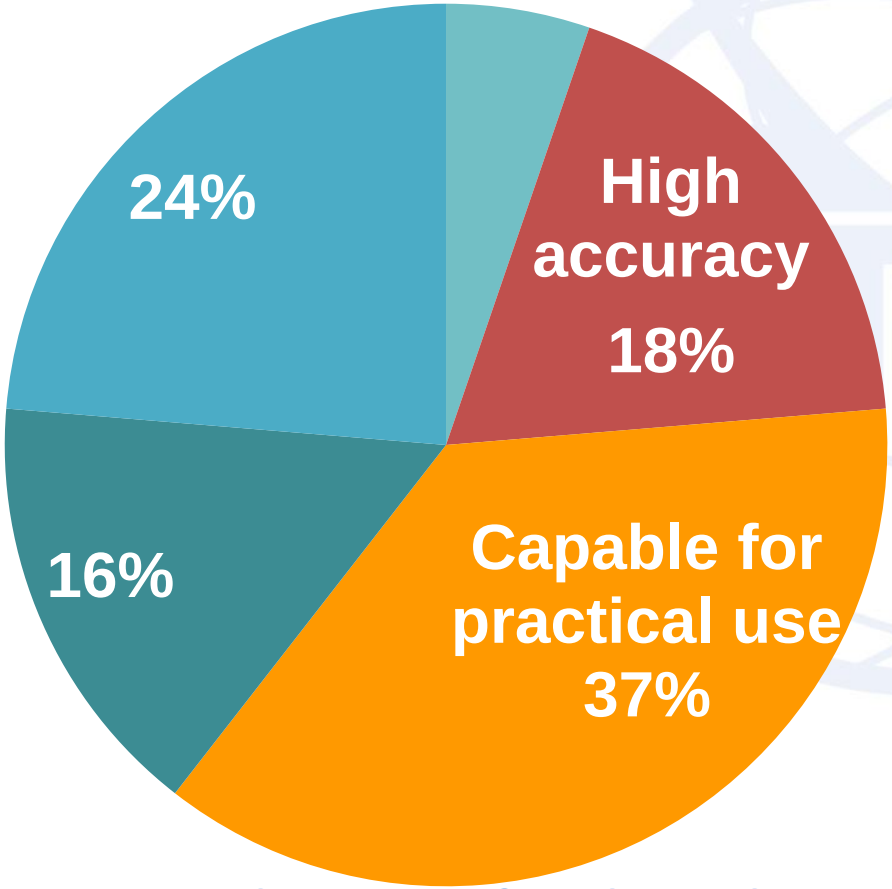
Paddy Watch trialed in Niigata area
— One of Japan's major rice-producing regions —

Niigata is designated as a strategic district for developing more competitive agro-business to help stimulate rural Japan.

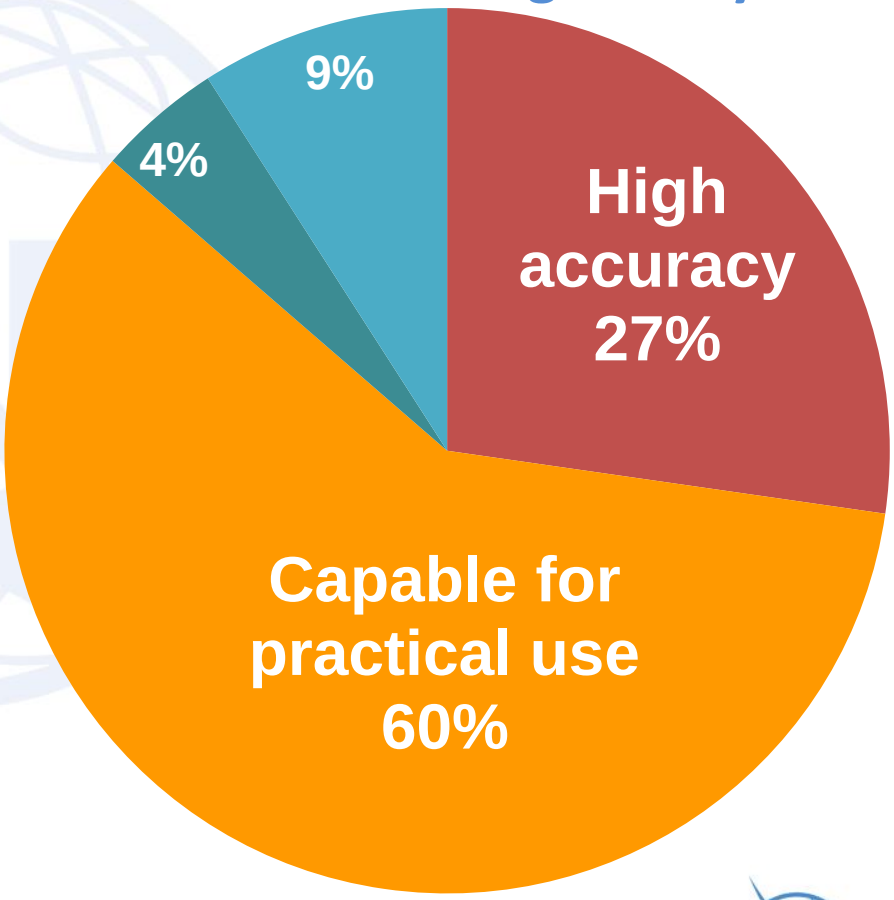
460 hectares of rice paddies and 300 sensors installed in paddies.

Measurement Accuracy

Technology dissemination organizations in 36 prefectures nationwide



22 Agriculture corporations and private farmers in Niigata City



Evaluation of technical experts is a little harsh

Satisfaction of producers is high

Case Study 2: “Drones”

- Discovers and locates pine weevils*
- Measures material volume
- docomo×Nigata-city×Aerosense

*Destructive pest insects which attack and destroy pine trees

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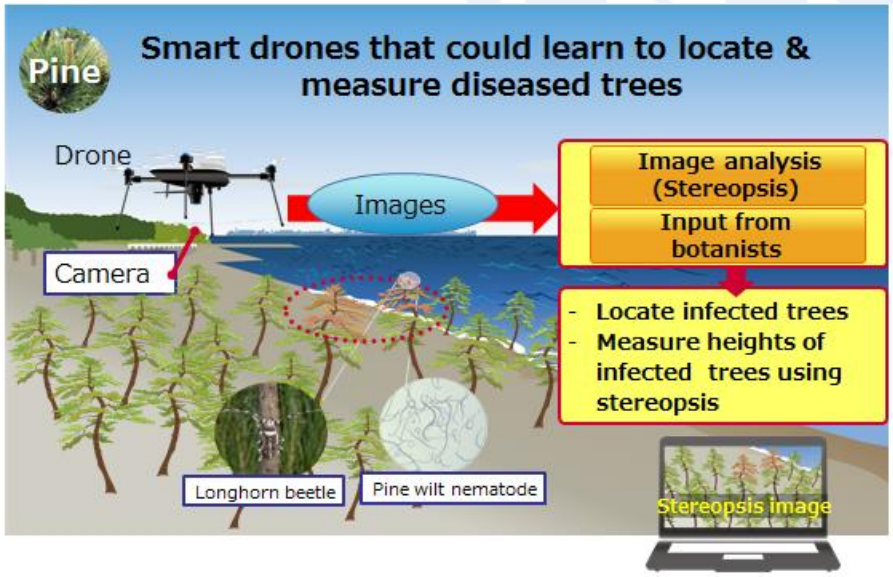


<Expected benefits>

Pine

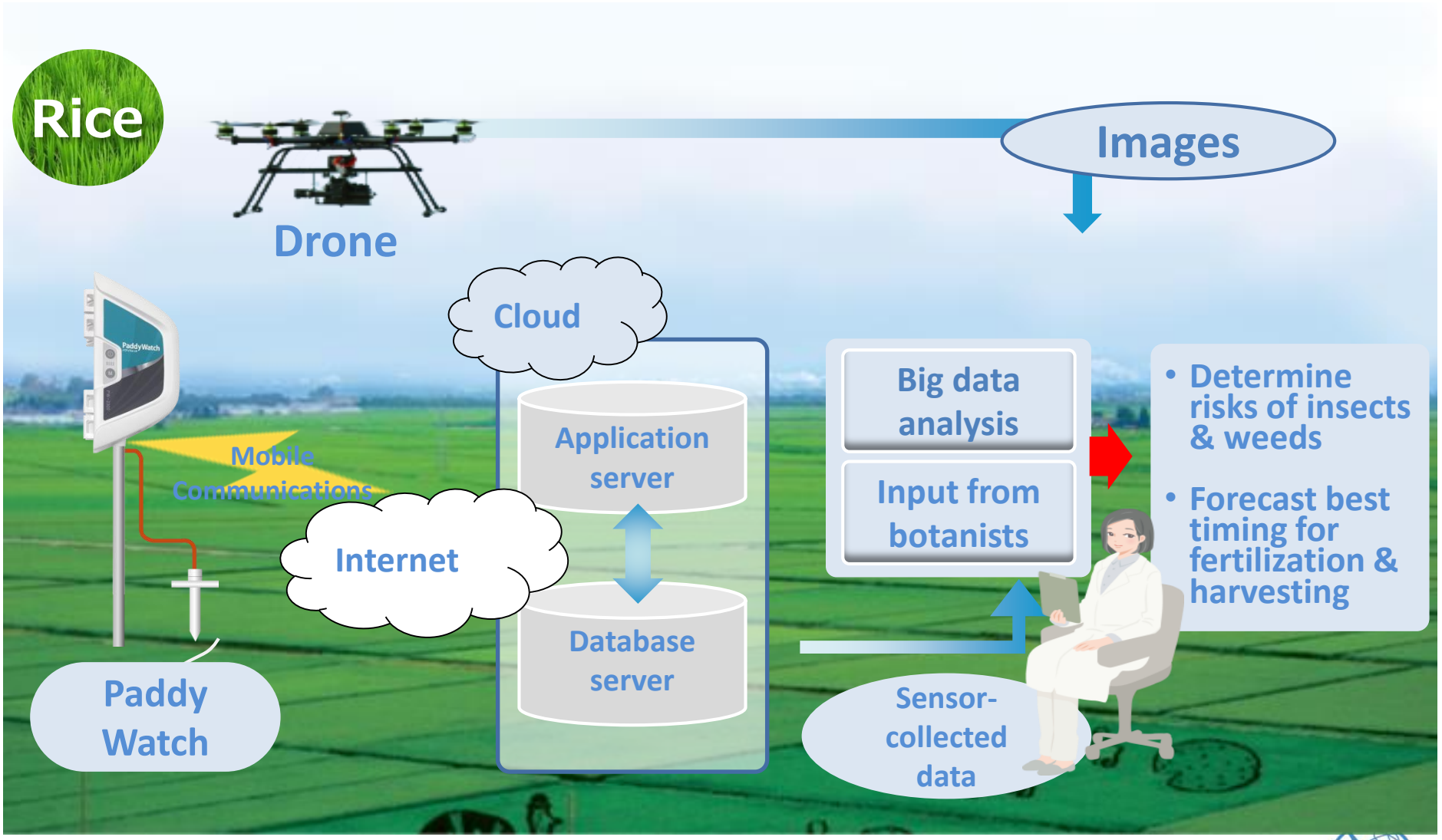
Locate infected trees ⇒ Quick, precise removal

Calculate height of infected trees ⇒ Less costly logging

More efficient countermeasures

for pine wilt disease

Sensor data +drone - captured images



More economical rice farming

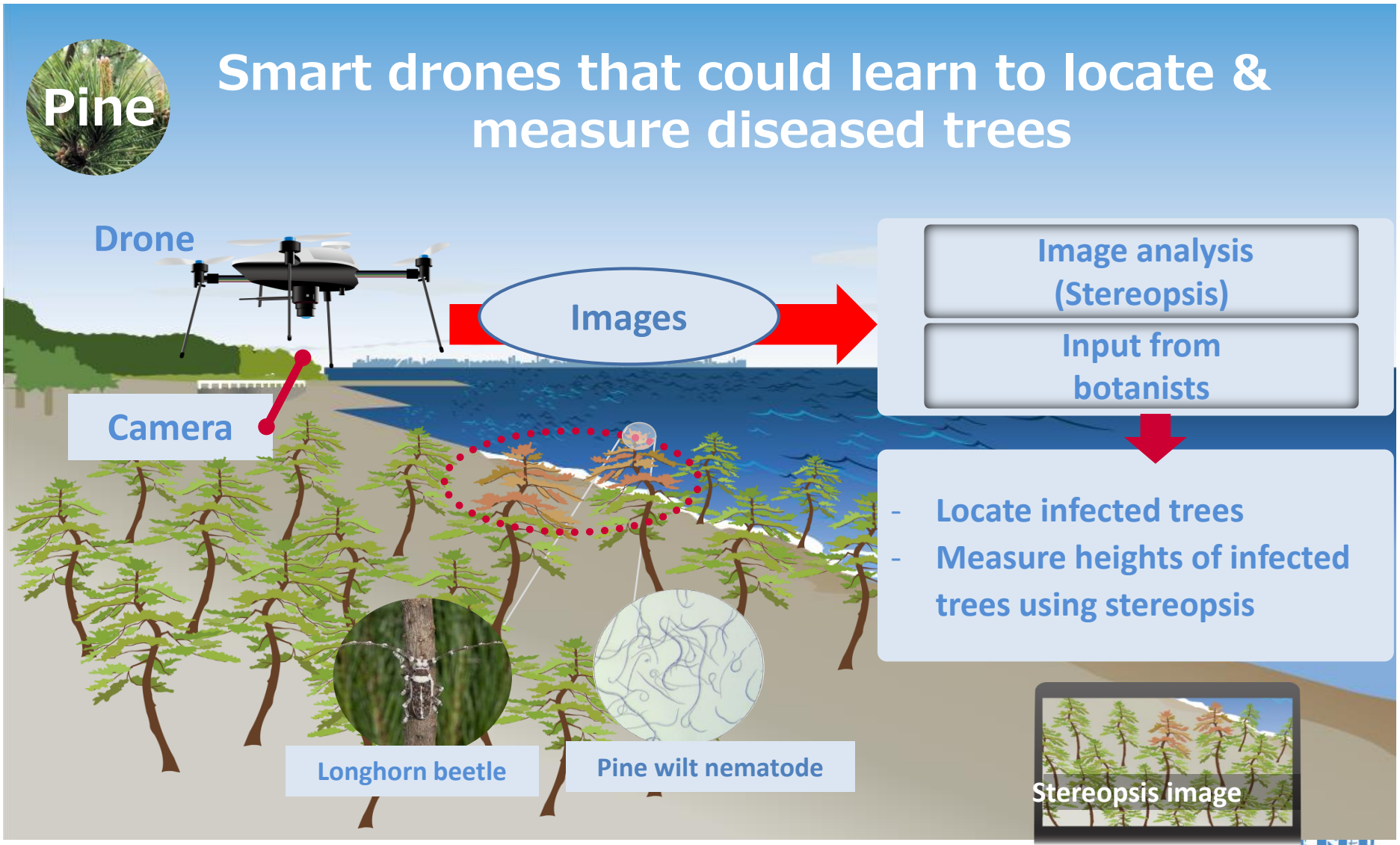
Determine risks of insects & weeds

Forecast best timing for fertilization & harvesting

Higher quality, bigger yields

and lower costs

Remote sensing with drones



Expected benefits

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for pine wilt disease

Case Study 3: “Mobile Gyu-On-kei*”

*Calving Monitor

- Monitoring of **the delivery timing** of the mother cow
- Tied up with Japan Agricultural Cooperatives (JA)
- docomo × JA × Remote, Inc.

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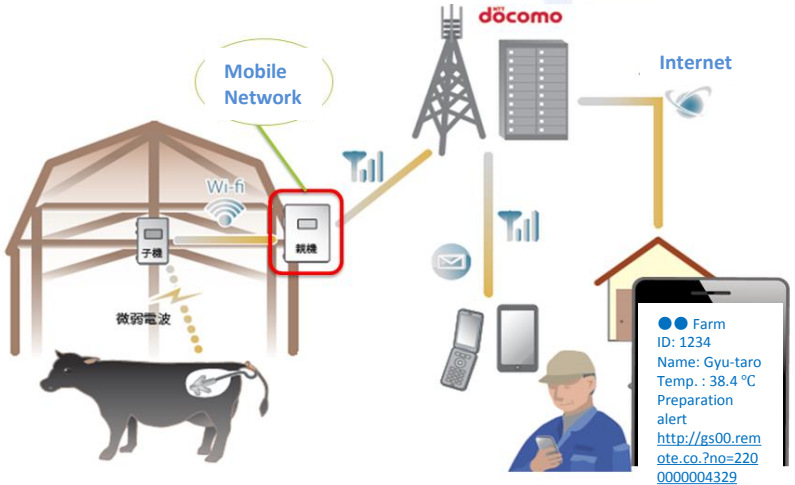
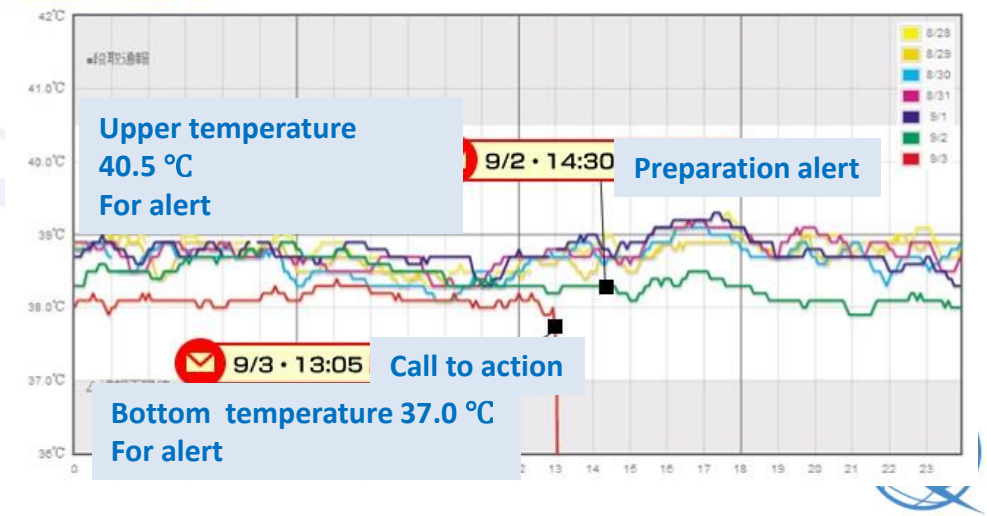


<Temperature change graph>



Mobile Gyu-On-Kei

(Cow Temperature Measurement with Benefit)

To measure the deep part reaction in every 5 second

To detect the 24 hours before delivery from a slight change in the body temperature

Body temperature change

Notice by mail

A typical sample of a mail

●● Farm
ID: 1234
Name: Gyu-taro
Temp. : 38.4 ℃
Preparation alert
http://gs00.remote.co.
?no=2200000004329

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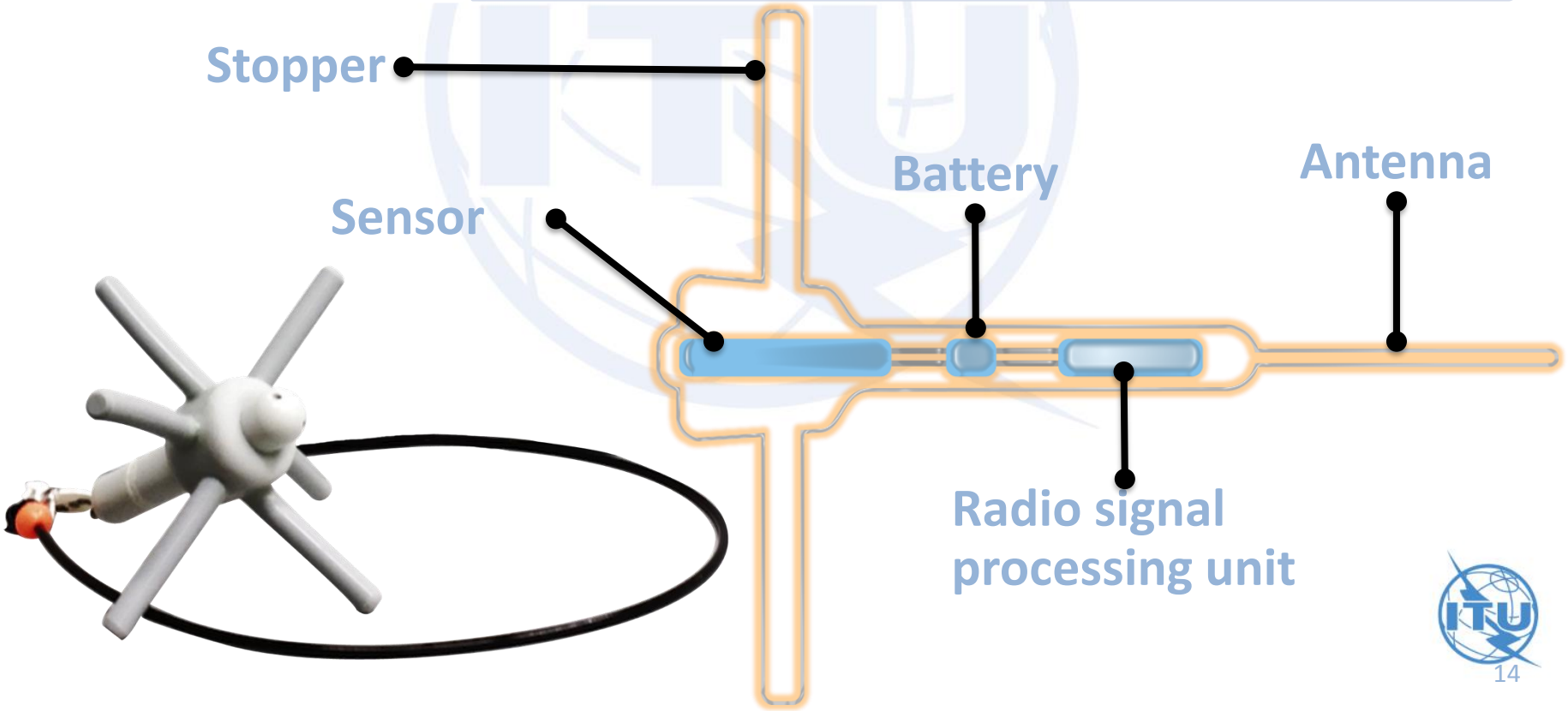
It is a simple sensor but various knowledge from the field is condensed into it

Stopper	• Preventing probable dropping at the first water breaking
Battery	• A battery for 5 years (no need to change)
Antenna	• Winding the antenna to the tail



To support the wagyu production nationwide

Demonstration test for evaluating the performance
(by National Agriculture and Food Research Organization)

Number of delivery: 167	Notice on 24 hours before: 142 (Notice in the night: 99)
	Notice at the time of water breaking: 25

Sales Figure

About 900 sets

About JPY 400,000,000

(From June 2014 to MARCH 2017)

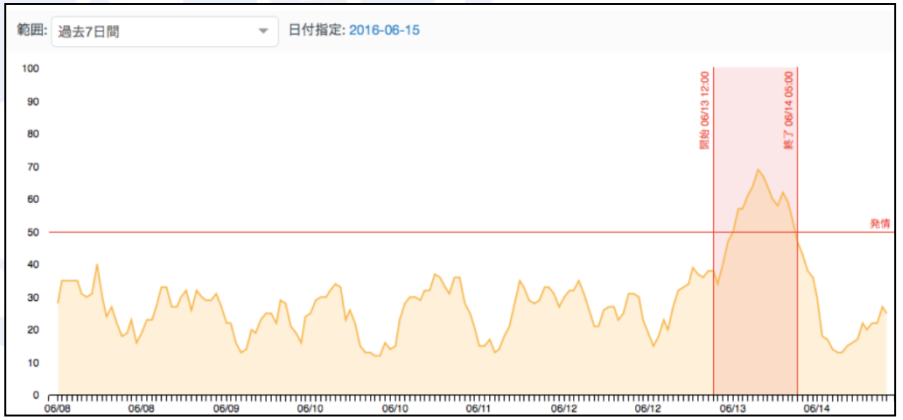
Case Study 4: “Farm note Color”

- Monitors **the sexual excitement** of female cows
- Commercially distributed by the JA group
- docomo ×JA group × Farmnote

<Sensor image>

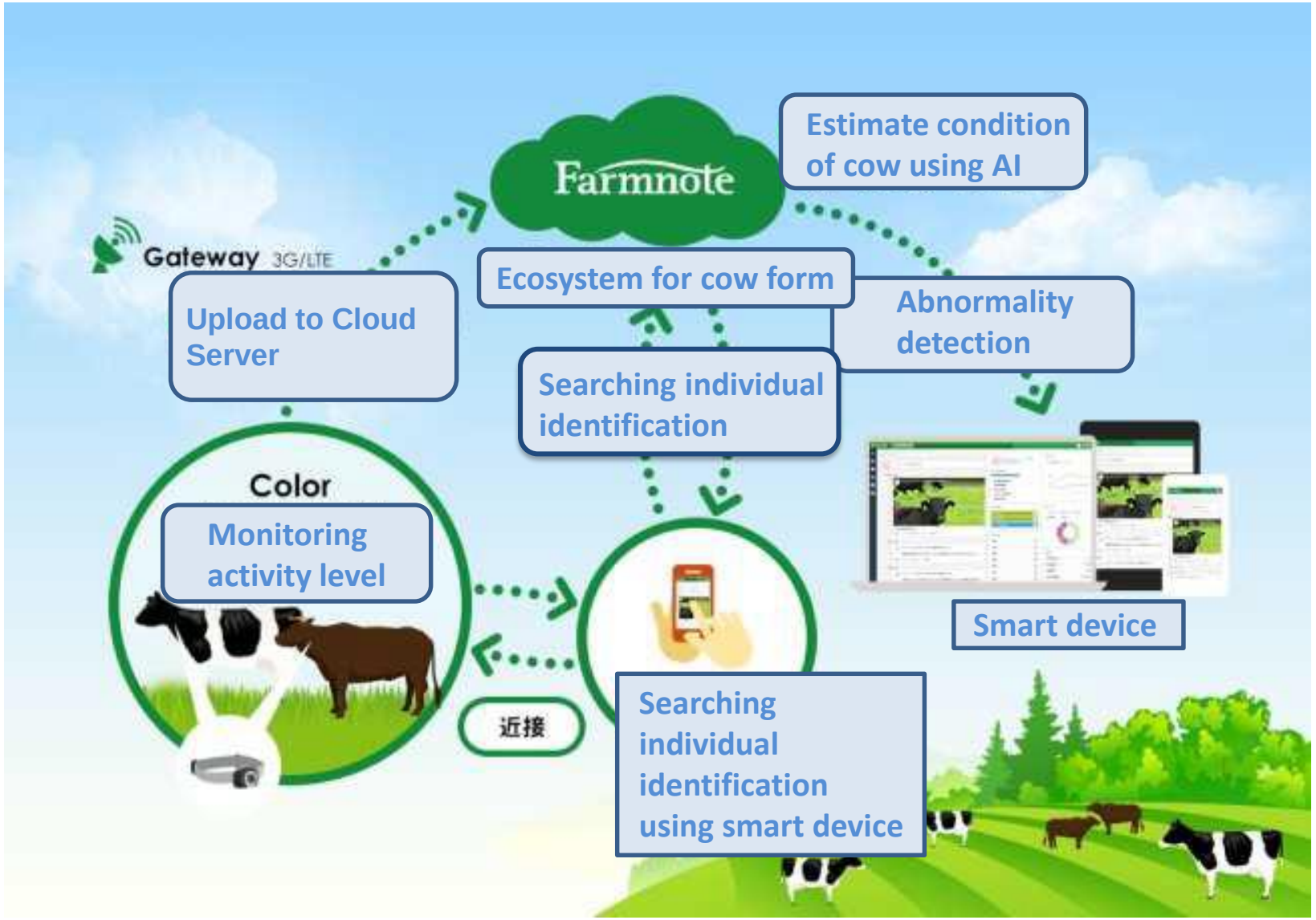
Using a motion sensor

<Sexual excitement graph>



Estrus Level, Activity Level

Case Study 4': "Farm note ecosystem"



Case Study 5 : “ICT Buoys & Drones”

- Understands the environment for seaweed and oyster farming
- Measures **sea water temperature** and **salinity**
- docomo × Saga-Prefecture × Optim ×fishermen's association

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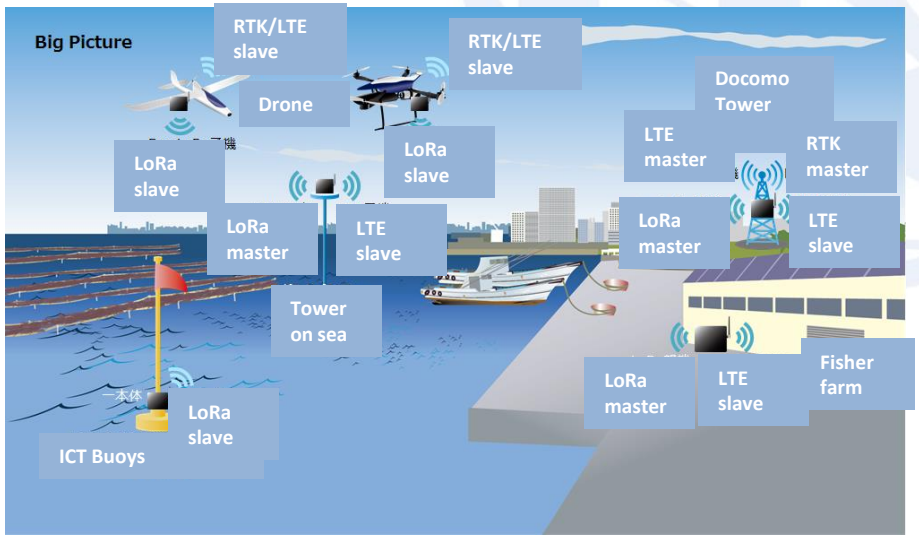

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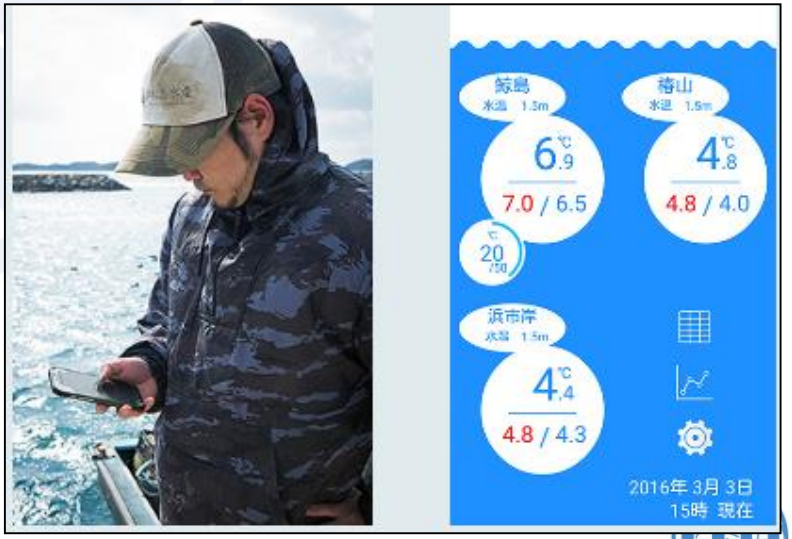

Case Study 6: “Hog Raising（Trial）”

- Measures the **weight of a pig** by using image recognition
- Reduction of production control cost
- docomo×Data-Horizon×Canon×Hirata ranch

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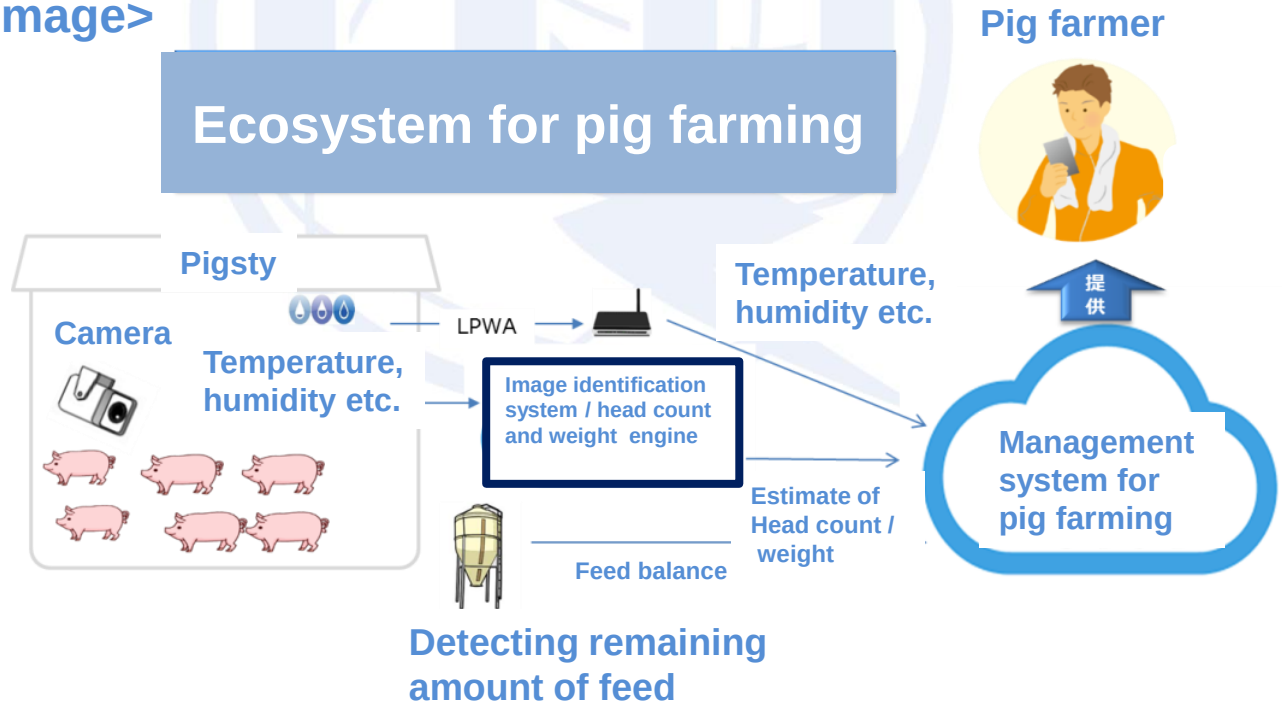


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