Creation of Space-based Applications across Disciplines and Region

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Satellite Observation

Satellite Positioning

Satellite Communication

Climate change

tourism

Water resource

Air pollution

Biodiversity

Mineral resources

Forest

Sea transport

Fishery resource

GIS Cloud for Analytics

Data link

Business development

Logistics

Transport

Diseases

Piracy

Mobile phone network

Android

Cell phone

People network

Space-Scale IoT
GPS to Multi-GNSS

[Number of Positioning Satellites]

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Benefits of GNSS Data in Sports Training

1. Facilitating Communication among Players, Coaches, and Managers
2. Preventing Injury Accidents
3. Achieving Appropriate Condition Management.
4. Delivering Effective Personal Coaching
5. Strategy Development, Implementation and Evaluation
Japan to APAC
Sports Training to Sports Education
Benefits of GNSS Data in Sports Education

1. Improving Children’s Self-Objectivity and Self-Esteem
2. Facilitating Communication among Students, Coaches, and Families
3. Preventing Injury Accidents
5. Delivering Effective Personal Education
Athletes to Livestock Cattle

A grazing cattle with GNSS device installed

Simple visualization
Smart Livestock Farming with GNSS, EO and AI

Positioning satellite (GNSS)

Earth observation satellite

Cloud (AWS)

Obtained data

Processed data

PC

Cattles’ condition

Cattle

GNSS receiver

Implant sensor

Signal

Location data

Farm data

Objects

Vegetation

Elevation

Field server

Hydro and meteorological data

Farmer

Health care

Supply
Smart Livestock Farming with GNSS, EO and AI

- **Raw data of a grazing cattle location**
- **Patterned moving distributions**
- **Combining with farm vegetation**

Satellite-based alternative data rather than attaching various sensors on a grazing cattle as in previous studies
Conclusion

1. Space technology/data is becoming commoditized. For today’s digital native youth like Generation Z, space technology / data are not special.

2. To create a large number of diverse space-applications
   a. People in space domain understands possibilities and challenges in non-space domain.
   b. People in non-space domain understands possibilities and challenges in space domain.
   c. To develop people who understand both space and non-space domain and who can create value by integrating them.

3. Create national and regional cooperation through space technologies / data, realize world-class human resource development programs and programs that contribute to the realization of a sustainable society.
HR Development and Program Creation Initiatives from Japan

1. Asia-Pacific Regional Space Agency Forum (APRSAF)

2. Consortium for Satellite Earth Observation (CONSEO)

3. Multi-GNSS Asia (MGA)
   a. Rapid Prototype Development Challenge (RPD Challenge)

4. JICA's Space Cooperation with Emerging Nations
   a. JAXA-JICA collaboration
   b. JICA-JAXA Network for Utilization of Space Technology (JJNeST)
   c. Technical cooperation for space agencies

5. Japan Space Strategic Fund
   etc.