Country Report from Japan

Video Report
Landmark Demonstration Experiments
@ Tanegashima /Yakushima Islands
-Enjoying the latest technology of GPS and AR-

Video Report by
Kagoshima Prefectural Tanegashima High School Broadcasting Club

The 13th PNT Advisory Board Meeting,

June 3-4, 2014 at Washington DC

Hiroshi Nishiguchi

Japan GPS Council

The following PPT documents are cited from SPAC (*) presentation at Hanoi, 2013 Dec.

* NPO Corp. Satellite Positioning Research and Application Center who conducts verification tests on various utilization modes of the “GPS + QZSS”.

Much is expected of the mode to contribute to the “Growth Strategy of Abenomics” toward the successful 2020 Tokyo Olimpic Games.

Applications of “GPS + QZSS” will show up a manifestation of “O, Mo, Te, Na, Shi”

1. Introduction

Summary

- Landmark Demonstration Experiments has been successfully done at Tanegashima and Yakushima Islands using MICHIBIKI.
- Main purpose is to demonstrate potential application of MICHIBIKI unique services of augmentation to new business.
- The results are still under investigation.
- This project is sponsored by Ministry of Economy, Trade and Industry of Japan

The preliminary version of video report has been prepared by *Kagoshima Prefectural Tanegashima High School, Broadcasting Club.*

Purposes of Demonstration

1) Performance evaluation of the GPS/MICHIBIKI receiver

- Indoor, outdoor seamless positioning accuracy using Indoor Messaging System, IMES
- Positioning accuracy in mountains and deep forest using sub-meter augmentation of MICHIBIKI

2) Effectiveness verification of MICHIBIKI Application to LBS business

- Tourism activation using smartphone application*

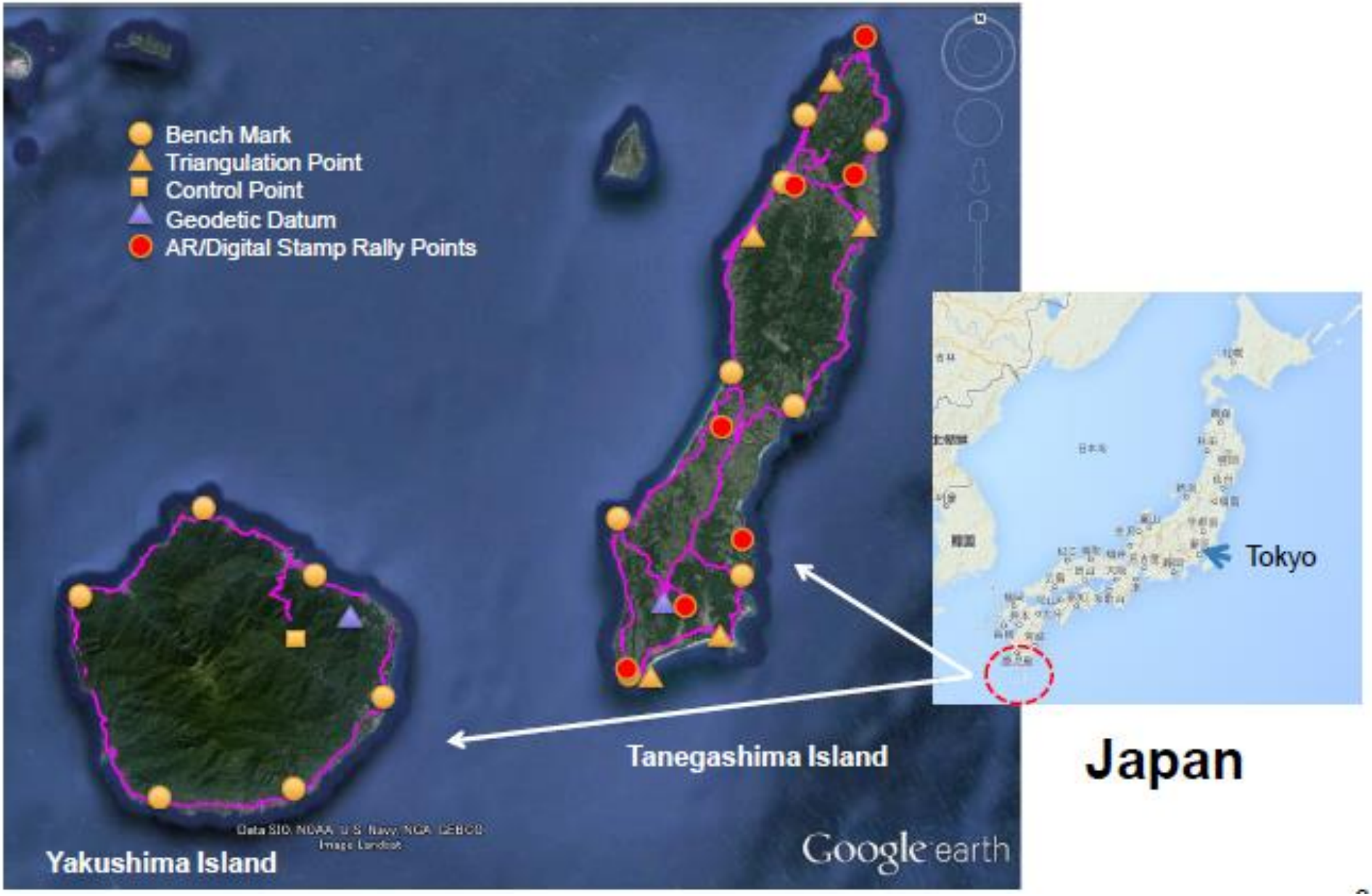
  *Enhanced by Augmented Reality and high accurate positioning

- Guiding people to the specified location using short message
- Usefulness of behavior analysis to tourism using big tracking data

3) MICHIBIKI Awareness Improvement

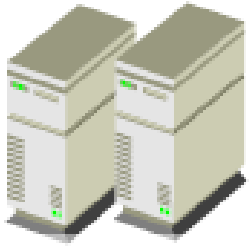
- Unique features of MICHIBIKI/IMES

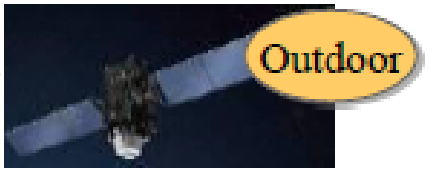
Tanegashima and Yakushima Islands



Japan

Tanegashima Demo.(Indoor/Outdoor Seamless Positioning)





■GPS

Indoor

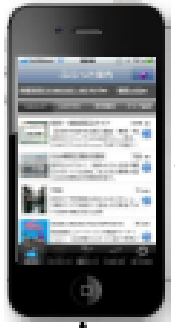
・GPS Equivalent Signal
・L1 SAIF(Augmentation)

■Augmentation Data Generation
- Acquisition Support Data
- Correction Data
- Integrity Data

■Quasi-Zenith Satellite , MICHIBIKI(QZS-1)
- Very High Elevation

■IMES Transmitter

■MICHIBIKI Receiver
- MICHIBIKI/GPS navigation message
- Sub-meter Augmentation data
- Short message
- Indoor message



・Positioning Data Transfer using Bluetooth

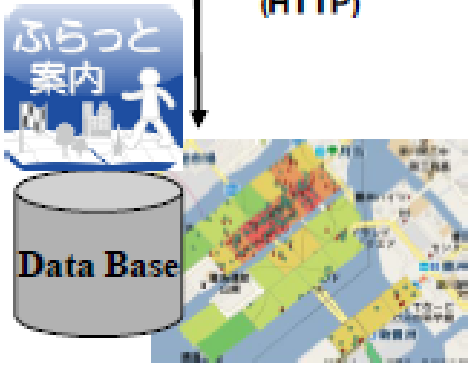
Pendant Type Receiver (QZPOD)

■Smartphone
- Guiding Information to Visitors
- iOS、Android

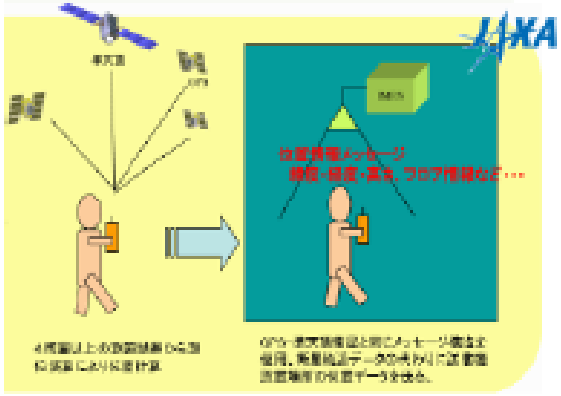
Internet

3G/LTE/Wi-Fi
・Contents Acquisition
・Logging Data Output (HTTP)

■Application
ふらっと案内
"Fratto Annai"
- Guiding Information
- Stamp Rally
- Augmented Reality
- Voice Synthesis
- Image Recognition
- Marketing Analysis
- Logging of Track Data

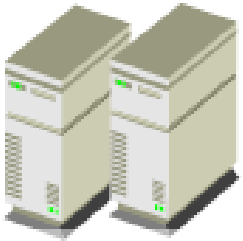


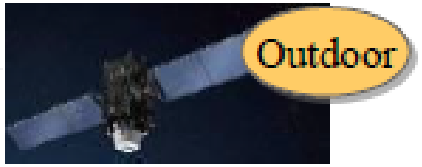
Concept of IMES Seamless Positioning



Tanegashima Demo.(Short Messaging)

Quick Response Activation by Satellite Short Message





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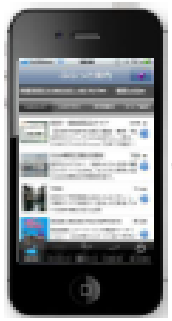


・Positioning Data Transfer using Bluetooth

■MICHIBIKI Receiver
- MICHIBIKI/GPS navigation message
- Sub-meter Augmentation data
- Short message
- Indoor message

■Smartphone
- Guiding Information to Visitors
- iOS, Android

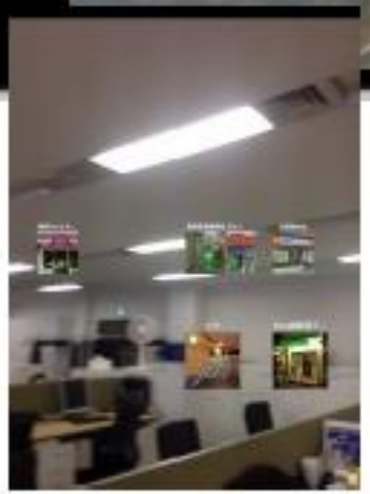
Pendant Type Receiver (QZPOD)

- **Distribution Message**
  "Where to Go, next in Stamp Rally"
- **Selective Distribution**
  to All Regions, or Specified Regions

Behavior Analysis for Disaster Management

・Success Rate of Signal Receiving, Response Activation

Multi-Positioning 3D AR



Application Image of High Precision Service is proposed to the Society by Demonstration

Purpose	Recognition	Rendering
Evaluation of Hybrid AR/Positioning System	-QR/Marker -2D Space -3D Space -QZSS/IMES/GPS -Gyro/Wi-Fi/Base Station	-Link -2D(Tag, Image, Voice, Movie) -3D(Polygon, Animation)

3. Conclusion

1) Expected positioning accuracy, effectiveness of satellite data communication and smart phone application has been confirmed even in deep forest and mountains. The result gives us strong confidence of business innovation especially, in safety and security.
2) Effectiveness MICHIBIKI/IMES application with AR to LBS business for tourism has been confirmed using smartphone application.
3) Activation of Quick Response using satellite short message has been demonstrated. The results need more investigation.
3) MICHIBIKI Awareness is believed to be much improved through mass media, and twitter.

Let’s enjoy the video!