Examples of QZSS Applications

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NEC Corporation
Introduction

In Japan, mobile penetration rate has reached 92.4% in 2010 and almost 50% of mobile terminals have GPS functions, so positioning information using satellites is imperative to peoples' lives.

The successful launch of QZSS, MICHIBIKI (which means "Guidance" in Japanese) will help make our society more secure and comfortable as it enhances the accuracy of positioning information and makes it ubiquitous.

Japan has established technology to utilize GPS signals for navigation systems, and the high-accuracy QZSS positioning system promises to expand the possibilities in a variety of fields.
NEC’s Roles in 1st QZSS Project

- Master Control Station
- Tracking & Control Station
- Monitoring Station
- Development of GIS Oriented Applications

Positioning Payload

Supplementary Signal

Augmentation Signal

GPS Satellites

GPS Signals

QZSS#1

GPS Satellites

Development of GIS Oriented Applications

Supplementary Signal

Augmentation Signal
Combination of LBS (Location Based Services) and value-added satellite remote sensing information provides advanced telematics, which solves traffic problems and reduces exhaust fumes and energy consumption.

Applications for Environment Conservation

- QZSS + GPS Constellation
- GEO/LEO Earth Observation Satellite Constellation
- Position and Timing Data
- Mobile-service Provider
- Traffic Control Center
- Optimal Signal Control
- High-Resolution Images
- Weather Information

Traffic jams or accident could be monitored by time rate of change of position data.

Accident, Alternate Route Information, etc. could be available.
Applications for Realizing Secure Society

Scenario #1
Send info. (location, time, images, etc.) to Operations Center.

Scenario #2
Operations Center commands optimal vehicle assignment with the most direct route.

Scenario #3
Operations Center directs ambulance to take the injured to the nearest and best hospital without delay.

Scenario #4
Hospital A prepares to accept the injured in advance based upon ambulance information.

Hospital A
Specialist
No hospital bed
Bed available and call-out of the specialist is OK
Traffic Jam
Accident
Operations Center
Hospital B
Applications for Agriculture Business

Issues and expected solutions utilizing GNSS and Satellite Remote Sensing

- Aging of the farming community  
- Deviation of farm field soil component  
- Difficulties of optimum harvesting

- Systems of elder-proof  
- Reduce fertilizer cost by equalization  
- Harvest during proper time, day and night

Elder-proof Systems

Unmanned digging over soil and rice planting machine

Main Computer  
GPS Antenna

Unmanned combine harvester

Earth Observation Satellite Constellation

- Hyper Spectral Sensor  
- Multi Spectral Sensor

Information for
- Soil component equalization
- Proper time of harvesting

Mapping of Growing condition

Distribution of Soil component
Applications for Personal Services

Utilizing AR (Augmented Reality) technology, old-time CG landscape, historical photos, etc. could be displayed.

On visited site.. On popular photo spot..

Holding up a tablet..

Expected as rich tourism resources

Participative development of contents would contribute to the revitalization of local towns.