



QZSS Update

(Quasi-Zenith Satellite System)

United Nations/ United Arab Emirates/ United States of America Workshop on
the Applications of Global Navigations Satellite Systems

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QZSS outline

Quasi-Zenith Satellite System

■ *Characteristic:*

- *GPS Complementary*
- *GPS Reinforcement*
- *Short message*

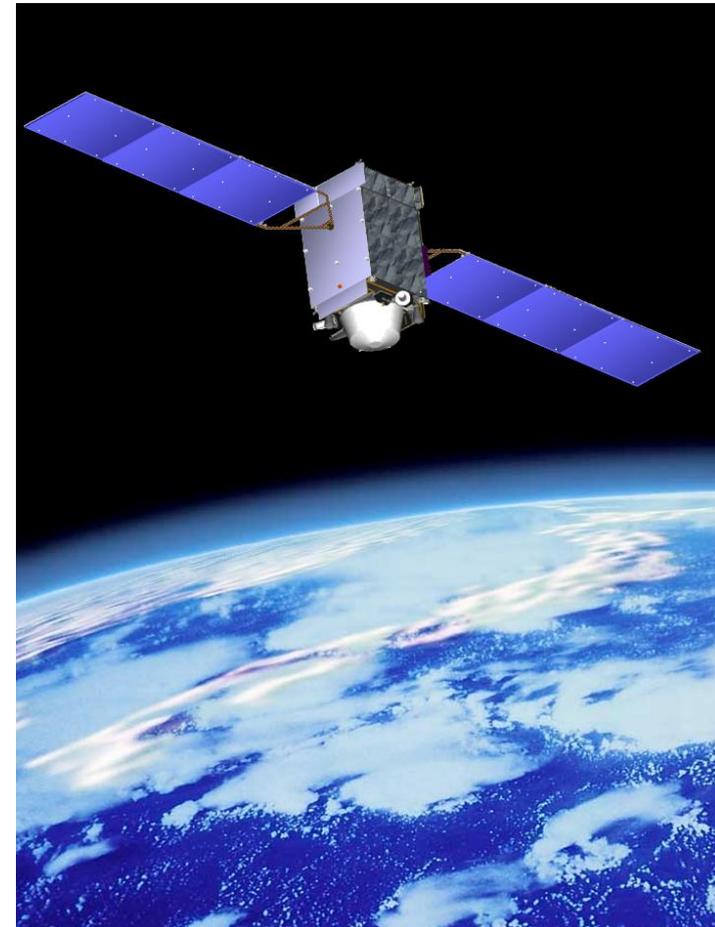
■ *Coverage: East Asia and Oceania region*

■ *Six Signals:*

- *L1C/A, L1C, L2C and L5* → *positioning*
 - *L1-SAIF on 1575.42 MHz*
 - *LEX on 1278.75MHz*
- } → *augmentation*

■ *First satellite (MICHIBIKI):*

launched in September 2010



Launch Operation of “Michibiki”



- *The H-IIA launch vehicle No.18, which carried the first satellite of the QZSS, MICHIBIKI, was successfully launched from Tanegashima Space Center.*



- *Separation of Michibiki from H-IIA rocket was confirmed 28 minutes 27 seconds after its lift-off.*

Back Ground Act & Decisions

- **May 2008** : Basic Space Law established
- **Jun. 2009** : Basic Plan for Space Policy decided by the Strategic Headquarters for Space Policy

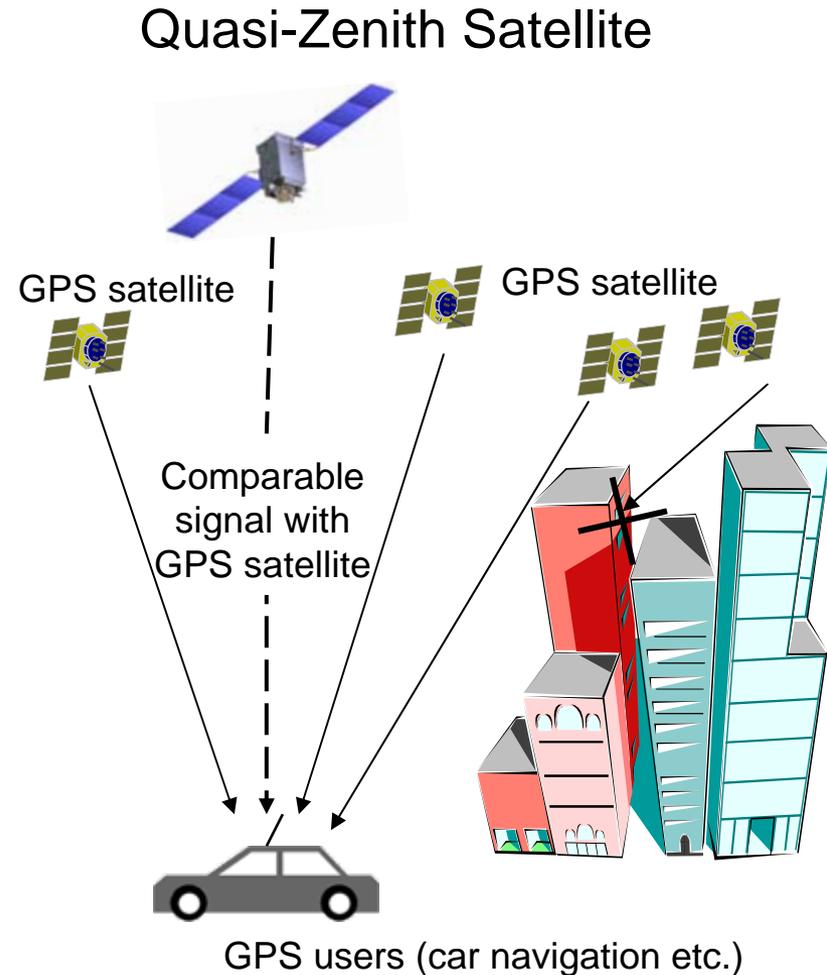
MICHIBIKI launching and its technical verification are provided in the Basic Plan

GPS Complementary

QZSS improves [positioning availability time](#)

Complementary signals sent from high elevation will improve the time percentage of positioning availability from 90 % (GPS only) to 99.8 %

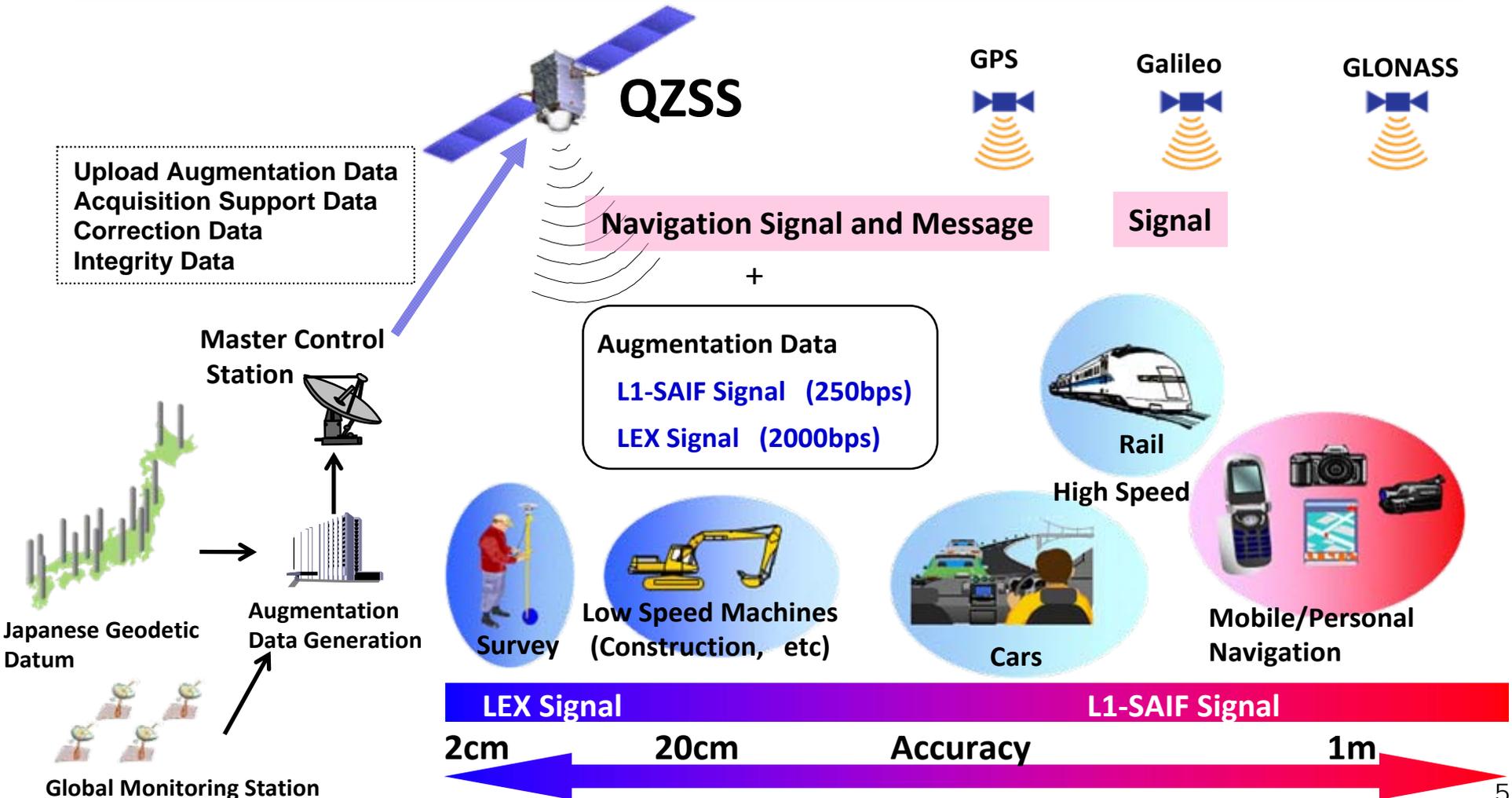
(ex : GPS + 3 QZS satellites.)



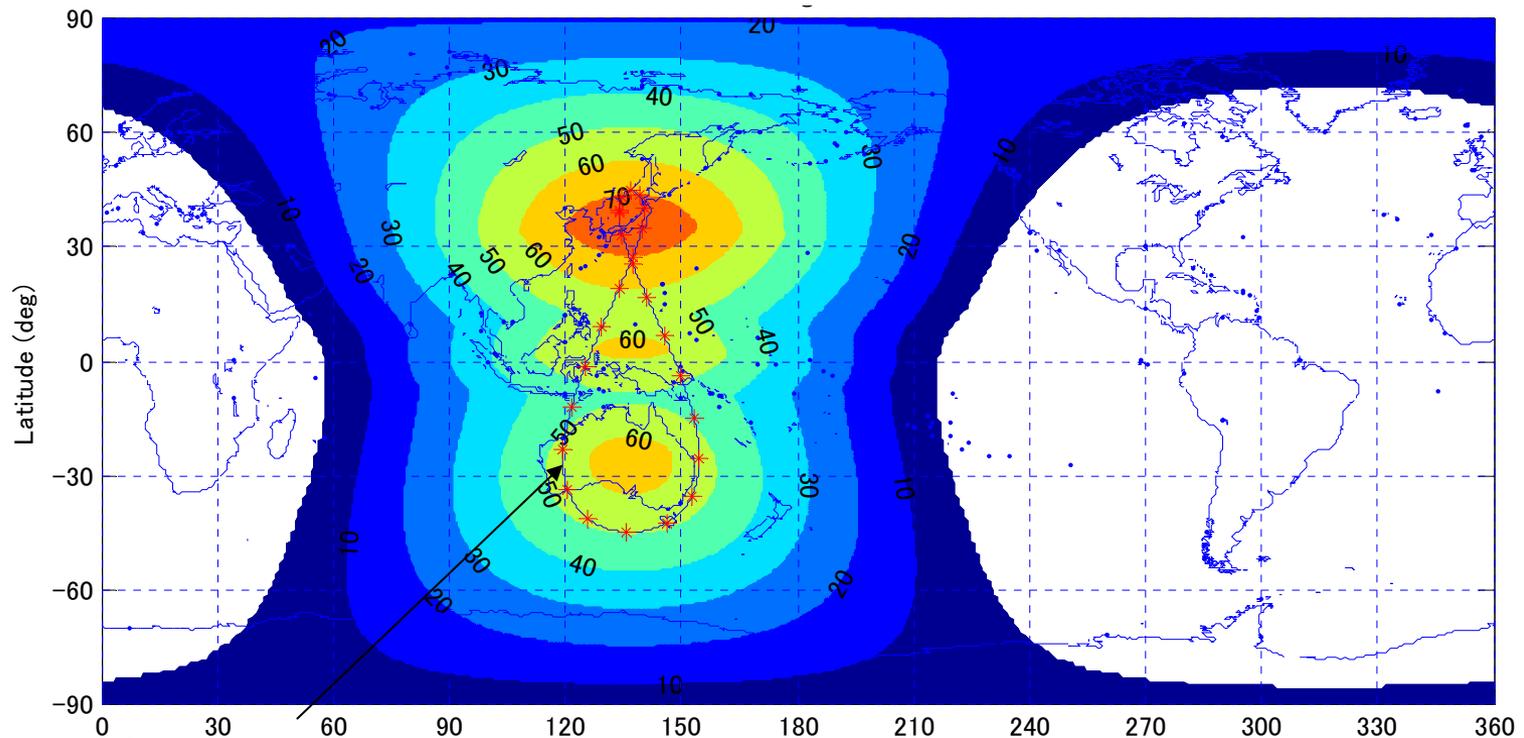
GPS Reinforcement

QZSS improves [positioning accuracy](#)

QZSS upgrades the positioning accuracy to one meter or even a centimeter level.



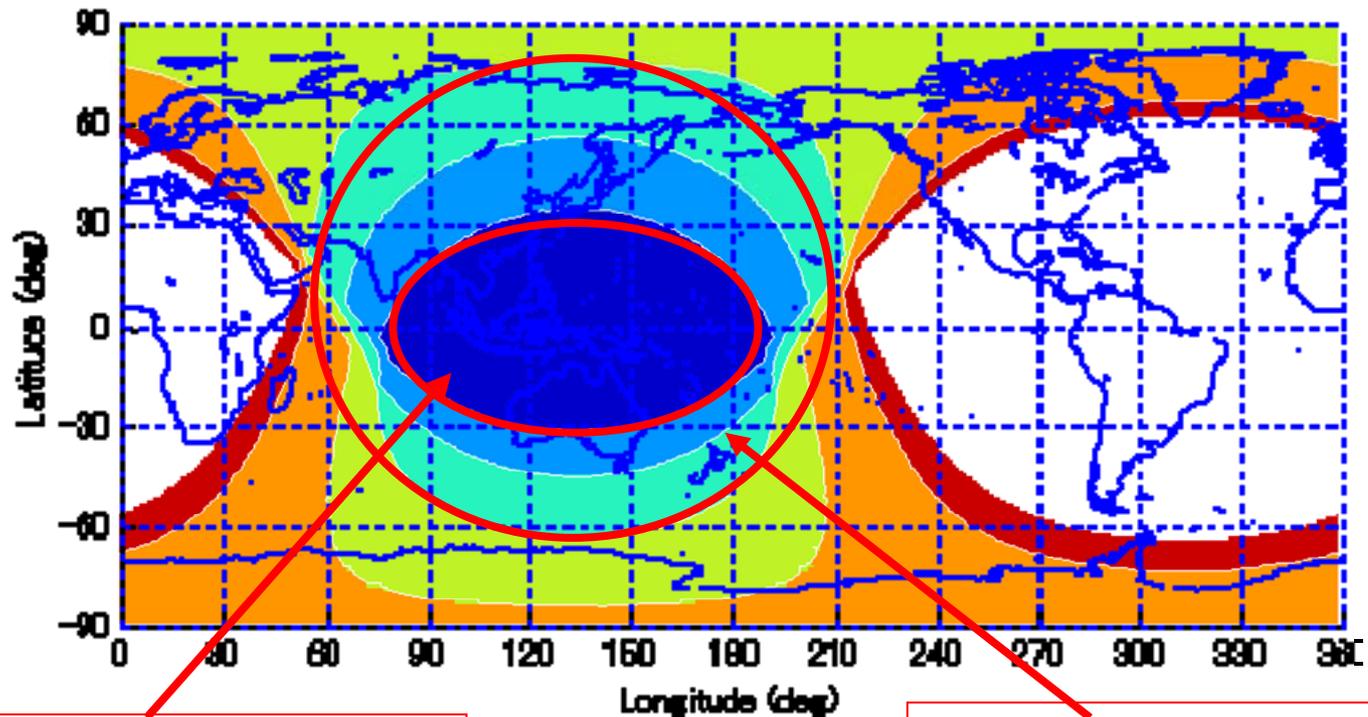
QZSS Service Coverage *the Elevation*



Ground Track of a QZSS Satellite

At least one QZSS satellite can be observed more than specified elevation angle any time. For instance, users in orange colored area can receive at least one QZSS satellite with 70 degrees or more.

QZSS Service Coverage *the Number of Satellites*



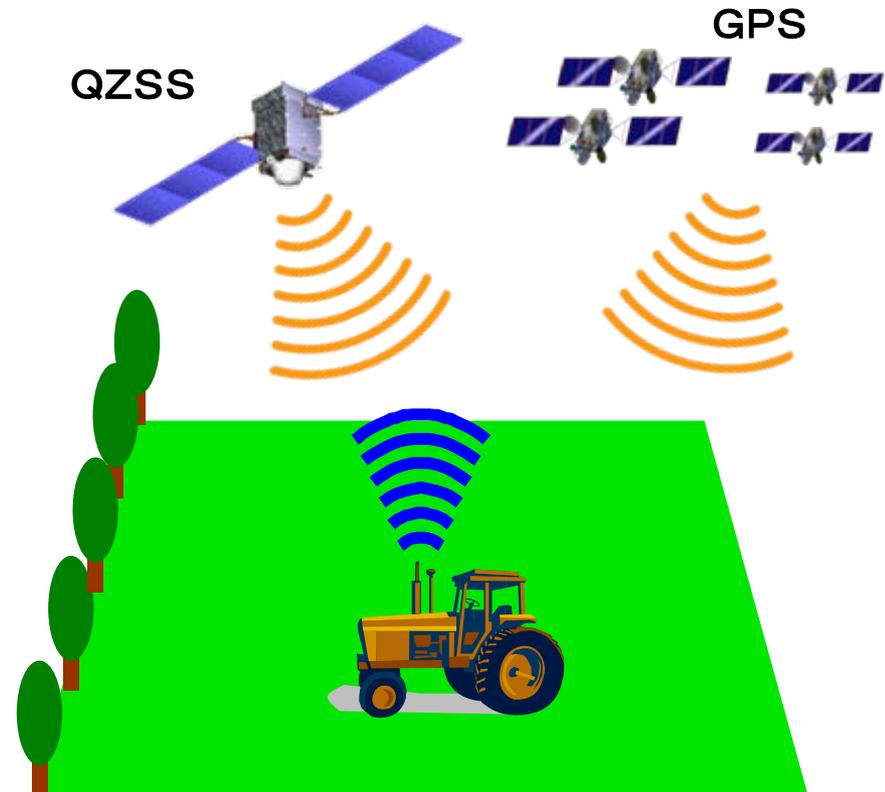
Southeast Asia can observe 3 QZSS satellites almost of time.

Most East Asia and Oceania countries can observe more than 2 QZSS satellites every time

Application implemented by the QZSS

Precision Agriculture based on iT Automatic Driving

Using a reinforcement signal from the QZSS, accurate positioning of about +/- 10 cm (target) become possible without ground network.



Free from Ground Network

Application implemented by the QZSS

Construction based on iT Automatic Driving

Using a reinforcement signal from the QZSS, accurate positioning of about +/- 10 cm (target) become possible without ground network.

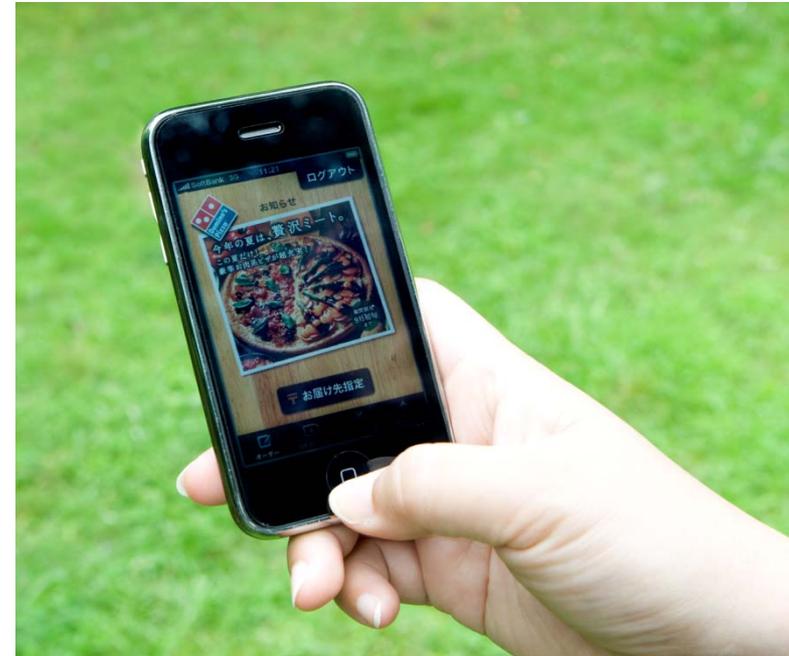


Free from Ground Network

Application implemented by the QZSS

Food Delivery Service

Using a reinforcement signal from the QZSS , food delivery service for the people in outdoor become possible.



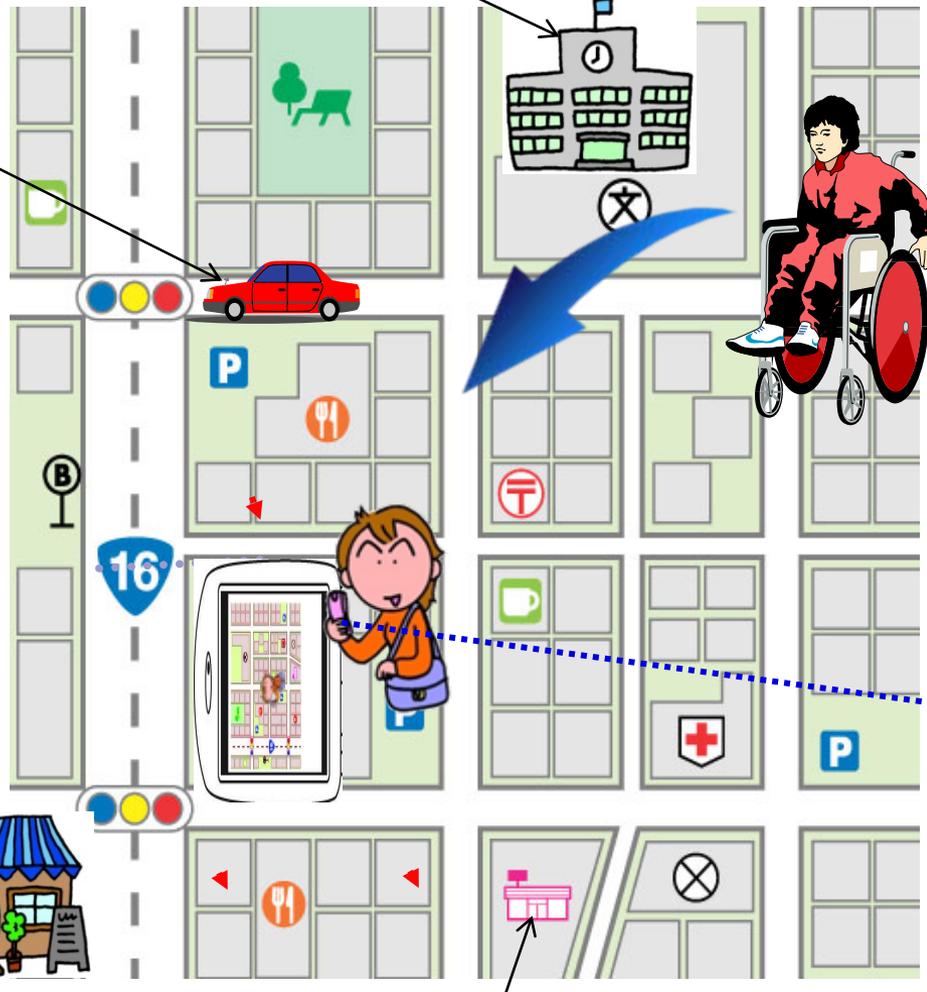
(C)JAXA

Application implemented by the QZSS Navigation



Car navigation

Public accommodation



Identified place & Historical site



Restaurant



コンテンツ		
目的地画面 	誘導案内 	観光スポット Kiyomizutera temple and the...
公共交通 From: Kyoto St To: Kiyomizutera Karasuma Bus Stop-A2	ツツピガ案内 △△センター 9:00-17:30	お食事案内 ○○食堂 (○○ retro buffet)
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