REPORT ON A MULTI-GNSS DEMONSTRATION PROJECT IN THE ASIA/OCEANIA REGION

SUMMARY OF 5TH ASIA OCEANIA REGIONAL WORKSHOP ON GNSS

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Multi-GNSS Asia Secretariat
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PF-12, Vienna, Austria
SATellite Numbers in Multiple Constellations

- SDCM
- GAGAN
- MSAS
- EGNOS
- WAAS
- QZSS
- IRNSS
- Galileo
- BeiDou
- GLONASS
- GPS
Asia Oceania Region is showcase of Multi-GNSS Application

Visible satellite number (mask angle 30 degrees)

2020:
- GPS(32)+
- Glonass(24)+
- Galileo(30)+
- BeiDou(35)+
- QZSS(4)+
- IRNSS(7)+
- SBAS(13)
Campaign consists of three main activities:

- **Disaster Mitigation**
- **Precise Positioning**
- **LBS**
- **ITS**
- **Other, ionospheric observation etc**

**Regional Workshop**

- **4th Workshop, Dec. 2012** @ Kuala Lumpur, Malaysia
- **3rd Workshop, Nov. 2011** @ Jeju, Korea
- **2nd Workshop, Nov. 2010** @ Melbourne, Australia
- **1st Workshop, JAN. 2010**, @ Bangkok, Thailand
**Organization: What is MGA?**

- “Multi GNSS Asia (MGA)” is an international organization to promote and support activities of the “Asia Oceania Multi-GNSS Demonstration Campaign”
- MGA was established in **September 4th, 2011 in Tokyo**

1st meeting of MGA Steering Committee

Public website: [www.multignss.asia](http://www.multignss.asia)
**Work Structure for MGA**

**International Committee on GNSS (ICG)**

**Multi GNSS Asia (MGA)**
International Organization on voluntary base to promote multi-GNSS use in Asia Pacific region

- **MGM-Net**
- **IGS and Other Multiple Constellation Tracking NW**

**Call for Joint Experiments**
- Multi-GNSS Receiver provided by JAXA
- Experiments and educations provided by G-NAVIS project funded by FP7 Europe
- Call for Joint Experiments Multi-GNSS Rx provided by CSNO = BADEC (*)

**Asia Oceania Regional Workshop on GNSS**

(*) We keep requesting CSNO to join MGA and promote joint experiment together in MGA framework
### MGA Participating Organizations

<table>
<thead>
<tr>
<th>No</th>
<th>Organizations</th>
<th>Countries/Regions</th>
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<tbody>
<tr>
<td>1</td>
<td>Beach Building &amp; Civil Group (BBCG)</td>
<td>Australia</td>
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<td>2</td>
<td>RMIT University (RMIT)</td>
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<td>3</td>
<td>Japan Aerospace Exploration Agency (JAXA)</td>
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<td>4</td>
<td>University Putra Malaysia (UPM)</td>
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<td>5</td>
<td>National Cheng Kung University (NCKU)</td>
<td>Taiwan</td>
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<td>6</td>
<td>Asian Institute of Technology (AIT)</td>
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<td>7</td>
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<td>13</td>
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<td>Japan</td>
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<td>14</td>
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<td>Japan</td>
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<td>Japan</td>
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</tr>
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<td>17</td>
<td>National Space Agency of Malaysia (ANGKASA)</td>
<td>Malaysia</td>
</tr>
<tr>
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<td>19</td>
<td>Growing NAVIS (GNAVIS)</td>
<td>Europe</td>
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<td>26</td>
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<td>Russia</td>
</tr>
<tr>
<td>27</td>
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<td>Europe</td>
</tr>
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<td>28</td>
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<td>Satellite Positioning Research and Application Center (SPAC)</td>
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<td>31</td>
<td>Research Institute of Geodesy, Topography and Cartography</td>
<td>Czech</td>
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<td>32</td>
<td>St. Petersburg National Research University of Informational Technology, Mechanics, and Optics</td>
<td>Russia</td>
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32 organizations from 14 countries/regions

If you have interest to join MGA, please visit [www.multignss.asia](http://www.multignss.asia)
5th Asia Oceania Regional Workshop on GNSS was held very successfully on December 1-3, 2013 at Hanoi University of Science and Technology, Hanoi, Vietnam
The 5th Asia Oceania Regional Workshop on GNSS

- 160 participants from many organizations including universities, institutes, government agencies, International organizations and companies gathered from 14 countries.
Workshop Agenda included

• Dec. 1st
  – GNSS Tutorial Session by G-NAVIS and JAXA

• Dec. 2nd
  – Welcome and Keynote Speech
  – What’s New about GNSS
  – Status Report of the Multi-GNSS Joint Experiments
  – GNSS Applications /Network Session (1)

• Dec. 3rd
  – GNSS Applications /Network Session (2)
  – Discussion Session
  – QZSS Demonstration
  – Closing Session
Final results of Joint Experiment 2011 including improvement of positioning by Multi-GNSS were shared. Preliminary results and next steps of joint experiments 2012 were shared. Final results of these experiments are expected to be reported in next workshop.
Precise Point Positioning (PPP) Demonstration by using augmentation data created by using MADOCA (Multi-GNSS Advanced Demonstration tool for Orbit and Clock Analysis) via QZSS LEX signal
Proposed Multi-GNSS Joint Experiments

- MGA Steering Committee endorsed the implementation of the following 5 proposed experiments

1. "Autonomous rice transplanter guided by GNSS with QZS-LEX", National Agriculture and Food Research Organization, Japan [PP]

2. "Smart strategy for a large number of offshore oil and gas platforms deformation monitoring“, University of Technology PETRONAS, Malaysia [PP]

3. "Experiment proposal of the evaluation of position accuracy achievable Industrial Geodetic Systems, Russia by single-frequency Multi-GNSS receiver using various of correction information" ,Industrial Geodetic Systems, Russia [DMM]

4. "The evaluation of the QZSS's positioning augmentation functionality for the vehicular traffic management within the low-altitude region in South East Asia“, Mitsubishi Heavy Industries, Ltd., Japan [ITS]

6th Asia Oceania Regional Workshop on GNSS will be held on 9-11 October, 2014 at Phuket, Thailand. The Detail information will be available on MGA website: http://www.multignss.asia
SUMMARY

- Multi-GNSS Asia (MGA) was introduced. The Active Participation in MGA be highly welcomed!!

- As results of the 5th Asia Oceania Regional Workshop on GNSS, Five proposed Multi-GNSS Joint Experiments were endorsed to be implemented.

- 6th Asia Oceania Regional Workshop on GNSS will be held on 9-11 October, 2014 at Phuket, Thailand.

Detail Information: [www.multignss.asia](http://www.multignss.asia)

Thank you for your kind attention!