Industrial cooperation across continents

Tomasz Wierzbowski, GNSS.asia Korea Program Manager
The GNSS.asia initiative – The three objectives

Facilitating Industrial Cooperation
Supporting Institutional Relations
EGNSS Awareness in Multi-GNSS context
Building on the Success of GNSS.asia

Coordinators

European GNSS Industry

Asian GNSS Industry
## GNSS.asia partner network in Asia

<table>
<thead>
<tr>
<th>Region</th>
<th>Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>EU-Japan Center for Industrial Cooperation, JAXA, Cabinet Office, Government of Japan</td>
</tr>
<tr>
<td>Korea</td>
<td>SpaceTec Partners Korea Project Office, ETRI</td>
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<tr>
<td>China</td>
<td>European Chamber of Commerce in China</td>
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<tr>
<td>Taiwan</td>
<td>European Chamber of Commerce in Taiwan</td>
</tr>
<tr>
<td>India</td>
<td>In coop. with European Business Group India</td>
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<tr>
<td>SE-Asia</td>
<td>SpaceTec Partners</td>
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</tbody>
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### Leveraging GNSS capacity in Asia
The objectives of the **Institute for Positioning, Navigation and Timing (IPNT)** are to contribute to the profit of society in general, also contribute to the development of PNT and its applications, and furthermore help develop science, technology and industrial cooperation. IPNT members consist of academic researchers, engineers, government officials, private entrepreneurs, professors and students actively participating in PNT development. Origins of the organisation stem from 1994, when the GNSS Technical Council was established to contribute actively to the field of GNSS and its applications. In December 2011, the KGS ([www.gnss.or.kr](http://www.gnss.or.kr)) was established in Seoul, Korea with the foundation from the GNSS Technical Council, and since then it has contributed to academics as well as industries in the fields of GNSS. KGS has been a associated partner in GNSS.asia since the beginning. In 2017, the Institute was **renamed into Institute for Positioning, Navigation and Timing (IPNT)**. KGS/IPTN have been holding annual conferences in Jeju since many years.

**President: Dr. Chansik Park (Professor of ChungBuk Uni)**

**Dr. Sanguk Lee**
- GNSS Expert for GNSS.asia Korea since January 2012
- GNSS Technical Council Member and Trustee of The Korean Society of Space Technology
- Board member and editorial member of the IPNT since 2016
- Principal Researcher in satellite research group at ETRI
- Represents ETRI in Galileo H2020 project STRIKE3
- Project manager and researcher in several GNSS projects
- Ph. D. in Aerospace Engineering (Auburn University)

**Dr. J-H. Won**
- Professor in Inha University since June 2016
- Formerly head of Navigation Laboratory at Univ. FAF Munich
- Former member of the Organisation Team of the Munich Satellite Navigation Summit
- Research activities include GNSS SW receivers, GNSS/INS coupling systems & user terminals
- Ph.D. in Electrical Engineering (Ajou University, Korea)

**Dr. W.S. Choi**
- Involved in GNSS.asia since 2013, representing in MGA 2014 and ESS 2016, regular judge in GNSS.asia Challenge
- Principal Researcher in ETRI since June 1992
- Project manager for several GNSS related R&D projects since 2004; R&D on satellite ground control systems
- Auditor of the IPNT since 2016
- Chairman of LBS Standardisation, LBS PG, TTA, Korea since 2008
- Chapter director of ICROS (Inst. of Control, Robotics and Systems)
- Ph.D. in Mechanical Engineering (The University of Alabama)

**Dr. Gumin Jeong**
- Involved in GNSS.asia since 2015
- GNSS technical advisor for GNSS.asia Korea since Spring 2014
- R&D projects on LBS, smartphone and embedded systems since 2001
- Editorial Board of the IPNT since March 2013
- Member of LBS Standardization, LBS PG, TTA, Korea since 2009
- Ph.D in Electrical Engineering and Computer Science (Seoul National University)
GNSS.asia core team – update
GNSS.asia – Building a community step by step at almost 60 events worldwide!
Introducing EGNOS: proven benefits for the European industry and market

Alberto Fernández, Market Segment Leader

EGNOS system architecture and service area

EGNOS system architecture and service area
GSA addressing IPNT Conference in Jeju
GNSS.asia at 50+ events in Asia-Pacific

2015-2018
- 21 organized events
- 30 attended events
Achievements of GNSS.asia

- **GNSS-related businesses actively supported**: ~ 40
- **Facilitated business partnerships**: ~ 16
- **Successful EGNSS adoption**: Successful EGNSS adoption
- **Organisations used as multipliers for EGNSS promotion**: Organisations used as multipliers for EGNSS promotion
- **Website visitors**: Site visitors (+20%)

**Participants in GNSS.asia sessions**: ~ 1200

**Number of events**
- Seminars / Workshops 23
- Booth / Speaker 10
- Promotion 20

**GNSS.asia Challenge entries**
- Start-ups 15
- SMEs 6
- Individuals 13
- Institutions 25

**Institutional Agreements**
- EU-Korean Science & Technology Agreement, Free Trade Agreement
- EU-Japan Cooperation Arrangement GSA / National Space Policy Secretariat Cabinet Office (in progress)

**High-level meetings facilitated**
- EC/GSA– National Space Policy Secretariat/ Cabinet Office (Tokyo, Kyoto, The Hague, Munich)
- GSA - Ministry of economic affairs (Bordeaux 2015)
- GSA – Korean Ministry of Land Infrastructure and Transport (Bordeaux), EU GNSS Korea Week 2017
- GLAC – GNSS Centre of Excellence (Czech Republic)
- GSA – GAGAN
European companies engaged in GNSS.asia activities

European Companies

Korea

China

Taiwan

Japan

India

... and many more!
Nottingham Scientific Limited (NSL) is a UK-based high-tech SME which specialises in developing algorithms, software and applications using GNSS technologies. As a partner in an ongoing R&D proposal for a call under Horizon 2020, NSL was looking to initiate a bilateral discussion with Asia-Pacific stakeholders which could contribute additional skills to the project consortium.

Through reaching out to GNSS.asia, the local GNSS.asia teams were informed about the ongoing R&D proposal. Based on their strong network of stakeholders and experience in matchmaking between industry partners, the GNSS.asia teams in India and Korea reached out to the most suitable partners which could bring the necessary complementary skills and know-how for this proposal.

The connected partners were successful in their joint R&D proposal in the framework of Horizon 2020. Their project ‘Standardisation of GNSS Threat reporting and Receiver testing through International Knowledge Exchange, Experimentation and Exploitation [STRIKE3]’ was selected from a very competitive pool of entered proposals.
GNSS.asia3 wants to further expand its impact across target regions

**After GNSS.asia2**

<table>
<thead>
<tr>
<th>Level 0 “Beginner”</th>
<th>Level 1 “First traction”</th>
<th>Level 2 “Active engagement”</th>
<th>Level 3 “Mutual activity”</th>
<th>Level 4 “Full swing”</th>
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<tbody>
<tr>
<td><strong>Awareness</strong></td>
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<tr>
<td>• Little knowledge</td>
<td>• First GNSS.asia events</td>
<td>• Larger GNSS.asia event with executives</td>
<td>• Structured, differentiated info</td>
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<tr>
<td>• Suspicions on “EU GPS”</td>
<td>• Stakeholders identified</td>
<td>• Stakeholder dialogue</td>
<td>• Sensor industry interested in info</td>
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<td>• No EGNSS events</td>
<td>• Local GNSS.asia website / newsletter</td>
<td>• User community engaged</td>
<td>• Concrete use cases articulated</td>
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<tr>
<td>• No local language info on EGNSS</td>
<td>• First GNSS.asia events</td>
<td>• Support by politics*</td>
<td>• EGNSS well known</td>
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<td><strong>Industrial Cooperation</strong></td>
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<tr>
<td>• Little EU/Asia GNSS connection</td>
<td>• Industry mapped</td>
<td>• Industry engaged proposals</td>
<td>• Industry MoUs</td>
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<tr>
<td>• Dealers for upstream providers</td>
<td>• Opportunities mapped</td>
<td>• Industry visits in EU</td>
<td>• Joint H2020</td>
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<td></td>
<td>• Introduced to industry associations</td>
<td>• Expressions of interest</td>
<td>• First commercial cooperation</td>
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<td><strong>Industrial Cooperation</strong></td>
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<tr>
<td><strong>Differentiators</strong></td>
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<tr>
<td>• Little knowledge about EGNSS</td>
<td>• GNSS-generic discussions</td>
<td>• Understanding of services and schedule</td>
<td>• EGNSS specific opportunities</td>
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<td>• Doubts about Galileo realisation</td>
<td>• R&amp;D community</td>
<td>• Multi-GNSS and feature discussions</td>
<td>• Local protagonists for EGNSS</td>
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<td>• Understanding of EGNSS actors</td>
<td>• Application level dialogue</td>
<td>• Expression of interest for testing</td>
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<td>• Selected application sessions</td>
<td>• Synergy discussions</td>
<td>• EGNSS pilot users</td>
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GNSS.asia in numbers

- 60 GNSS.asia Challenge participants
- ~ 1200 Website visitors a month
- 51 Events with GNSS.asia presence
- ~ 950 Visitors at GNSS.asia events
- 300+ Newsletter subscribers
- 100+ Number of registered companies
- 34 Number of actively supported companies
- 15 Number of facilitated partnerships
- 11 Delegation & Company visits
- 21 GNSS.asia Seminars & Round tables
- 51 Events with GNSS.asia presence
- 100+ Number of registered companies
- 34 Number of actively supported companies
- 15 Number of facilitated partnerships
- ~ 950 Visitors at GNSS.asia events
- 300+ Newsletter subscribers
- 16 Multiplier organisations
- 5 Cases of Galileo adoption
- 2015–2016 EC/GSA Missions supported
- 51 Events with GNSS.asia presence
- ~ 1200 Website visitors a month
- 300+ Newsletter subscribers
- 16 Multiplier organisations
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- 5 Cases of Galileo adoption
- 2015–2016 EC/GSA Missions supported
What can GNSS.asia do for you?

Networking & matchmaking support
- Stakeholder *introductions* and *matchmaking sessions*
- High-level EU-Asia *delegation visits*
- Personalised interviews identifying individual priorities
- Guided *company visits* and presentation opportunities

Dissemination & marketing support
- *Speaking slots* at GNSS.asia workshops and seminars
- *Demonstration* and *exhibition* opportunities
- *Virtual presentations* through videoconference
- Dissemination of *promotional material* at international events

Market entry support
- Access to the latest *GNSS market information* and *trends*
- Support in identifying *business opportunities* for your business
- Access to experienced local teams with in-depth market knowledge
- Access to a broad industry and institutional *stakeholder network*
Communicating opportunities for industrial cooperation

In a nutshell

Japan’s economy has been heavily reliant on mobile phone industries for its reconstruction demands. The industry can rely on its subject to currency fluctuations, so it is essential to have neighbours, especially in satellite-based augmented reality applications. The industry is well-known for its efficiency in road transport, agriculture and management.

Key opportunities

The recent decision by the Korean government to develop and implement an Independent Korean SSAS creates a unique opportunity for European companies specialised in GNSS to extend their operations in the Korean market. There is a strong interest to benefit from the know-how of European companies on implementation, certification and market uptake of SSAS in aviation and non-aviation sectors. This is further motivated by the doubling of aviation passengers every five years and the increasing popularity of luxury aviation.

The automotive industry in South Korea is currently the fifth largest in the world, as measured by automobile unit production and the sixth largest by automobile export volume. The leading trend in telematics is the use of in-car black boxes, mainly thanks to governmental plans for their mandatory utilization in commercial vehicles. Other opportunities include fleet management and remote tolling using GNSS.

Korea’s UAS portfolio is one of the most advanced in the world with more than 60% of the population using smartphones on a daily basis. All handsets sold in Korea must support GNSS. There is a strong interest in Korea in niche solutions for indoor navigation applications, making it a particularly attractive secto for Europe-Korea cooperation (e.g. In 2013 Mowa and SK Planet demonstrated a pedestrian navigation solution).

There is a strong interest on the Korean side (e.g. KESTE) in maritime Search and Rescue applications as demonstrated by the expected growth in sales of Emergency Position Indicating Radio Beacons (EPIRB) units. Several vendors have shown concrete interest in R&D collaboration in prototypes using Galileo SAR capabilities.

The Korean industry has the capacity to assemble GNSS receivers, but relies on imports of GPS chip components from the US. Recently, the first Korean SME (TalAc) has started to produce a joint Galileo-GPS chipset. Korea has specific interest in the development of High-precision Multi-GNSS receivers as well as jamming-resistant ones (to mitigate against security threats).

Strengths

- Smartphones and UAS devices
- ICT Industry leadership, Samsung & LG momentum
- World-wide system integrator and software
- ICT testbed for the world
- Global manufacturers

Weaknesses

- No GNSS chipsets fully commercialised yet
- Lack of knowledge on the emerging systems (Galileo)
- Lack of software and applications
- Limited domestic market for GNSS

Key challenges

- Lack of support from the Korean government
- Limited awareness of the potential of GNSS
- Lack of coordination between different government agencies
- Limited budget for R&D
Website relaunch in 2018!
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