

GNSS. asia

Industrial cooperation across continents

Tomasz Wierzbowski, GNSS.asia Korea Program Manager



European
Global Navigation
Satellite Systems
Agency

HORIZON 2020

The GNSS.asia initiative – The three objectives

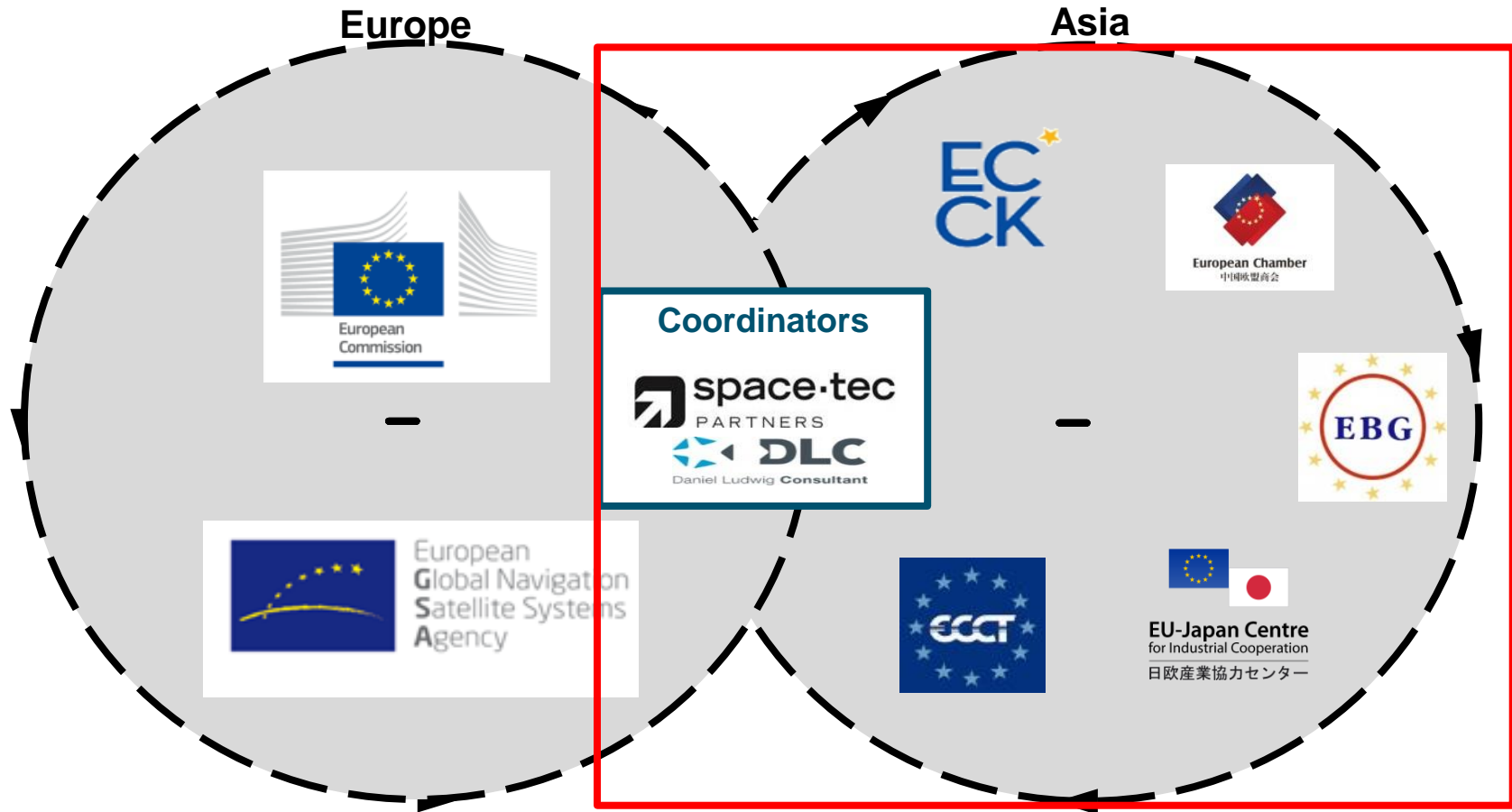


**Facilitating
Industrial Cooperation**

**Supporting
Institutional Relations**

**EGNSS Awareness in
Multi-GNSS context**

Building on the Success of GNSS.asia



European GNSS Industry

Asian GNSS Industry

GNSS.asia partner network in Asia



Leveraging GNSS capacity in Asia

Stakeholders – Institute for Positioning, Navigation & Timing (IPNT)



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) 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. Sunin 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

EUROPE



Rainer Horn
Global
Coordinator



Ross Findlay
Deputy
Coordinator



Hannes Dekeyser
Project Manager

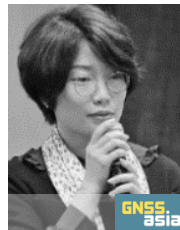


Daniel Ludwig
GNSS Expert

ASIA



Tomasz Wierzbowski
GNSS.asia Korea
SpaceTec Partners



Tiantian Qi
GNSS.asia China
EUCCC



Fabrizio Mura
GNSS.asia Japan
EU-JP Centre



Varadarajan Krish
GNSS.asia India
IIRA



Davof Xu
GNSS.asia Expert -
China



Angela Hsiao
GNSS.asia Taiwan
ECCT

GNSS.asia – Building a community step by step at almost 60 events worldwide!



2017 KASS Workshop

- SBAS 비즈니스 활용방안 -

일시 : 2017.11.01 (수) 장소 : 라마다프라자 제주호텔 주회, 현대관광유망인구증가사업사업



초정밀 GPS 보정시스템 (SBAS)

2017 KASS WORKSHOP

SBAS 비즈니스 활용방안

- ◆ 일시 : 2017.11.01 WED 10:30 ~ 17:30
- ◆ 장소 : 라마다프라자 제주호텔 2F 우도홀

2017 IPNT Conference
 2017년 항법시스템학회 정기학술대회 및 제6차 정기총회
 후원: KO-ST, erence
 기간: 2017. 11. 1.(수) ~ 3.(금) 장소: 라마다프라자 제주호텔 주최: 대한항공항법시스템학회

2017 IPNT Conference
 2017년 항법시스템학회 정기학술대회 및 제6차 정기총회

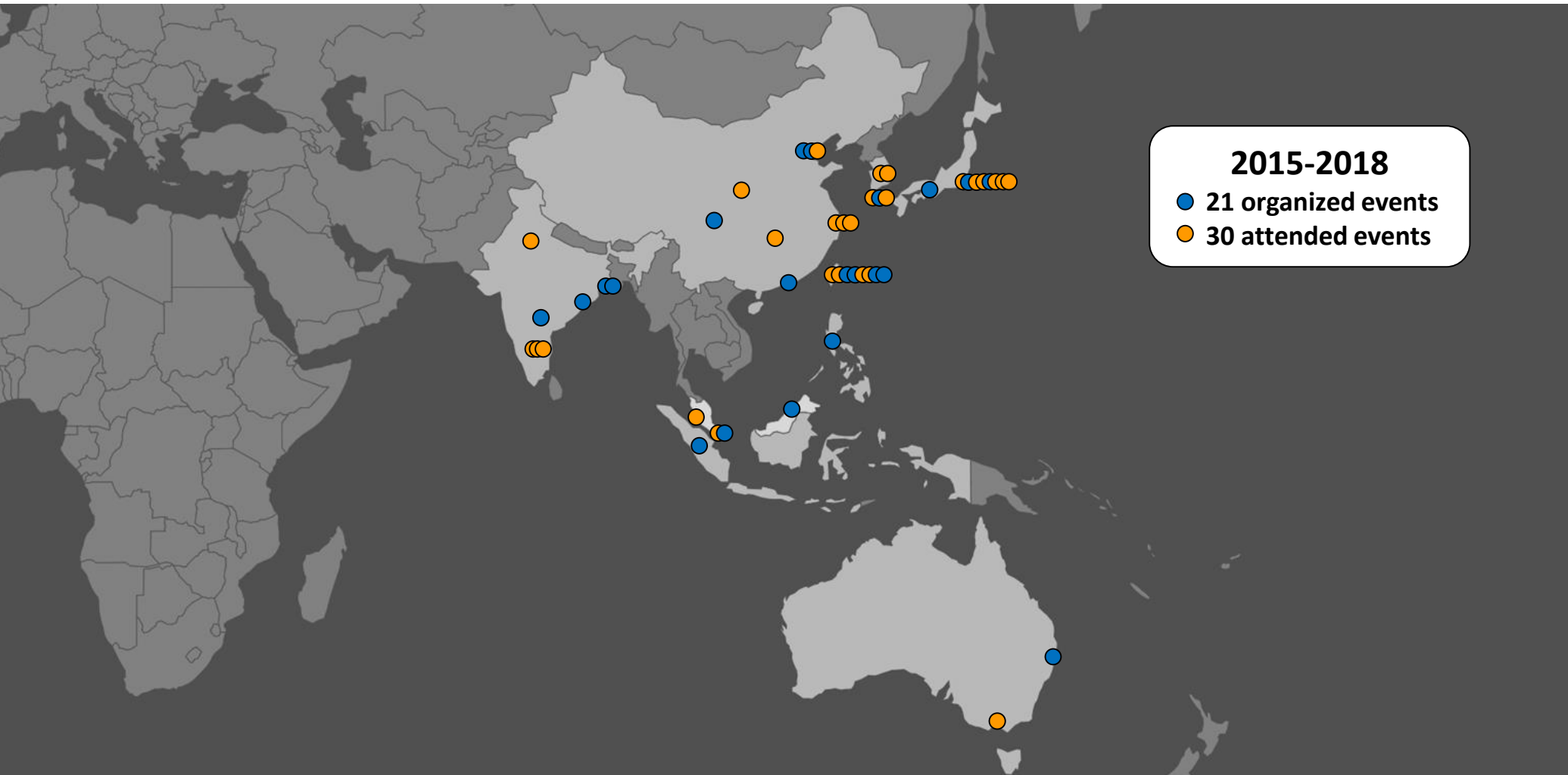
2017 IPNT Conference
 2017년 항법시스템학회 정기학술대회 및 제6차 정기총회

2017 IPNT Conference
 2017년 항법시스템학회 정기학술대회 및 제6차 정기총회

2017 IPNT Conference
 RAMADA PLAZA

GSA addressing IPNT Conference in Jeju

GNSS.asia at 50+ events in Asia-Pacific



Achievements of GNSS.asia

GNSS-related businesses actively supported



~ 40
Businesses actively supported

Facilitated business partnerships

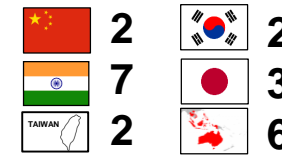


~ 16
Facilitated business partnerships

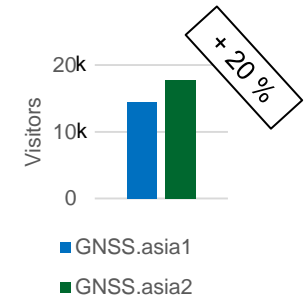
Successful EGNSS adoption



Organisations used as multipliers for EGNSS promotion



Website visitors

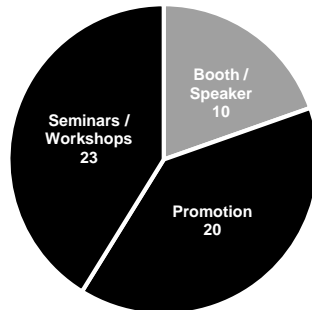


Participants in GNSS.asia sessions

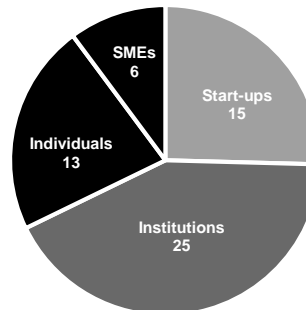


~ 1200
Visitors at GNSS.asia Events to date

Number of events



GNSS.asia Challenge entries



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

Logos of European companies engaged in GNSS.asia activities:

- TeleOrbit: The Locating Company
- IFEN GmbH
- TOMTOM
- ANWENDUNGSZENTRUM Obermalfen
- TRACEWAVE
- septentrio
- elecnor deimos
- bavAIRia: Europe's heart of aerospace and navigation
- gmv: INNOVATING SOLUTIONS
- intelligence on wheels
- imec
- Deutsche Telekom
- BOSCH: Invented for life
- taoglas: antenna solutions
- IGUA/U: SOFTWARE SYSTEMS
- NavCert
- eureka: CONNECTING COMPETENCE
- ST
- u-blox
- Fraunhofer IIS
- aerospace valley
- THALES
- Telematics UPDATE
- Alcatel-Lucent
- ThalesAlenia Space: A Thales / Finmeccanica Company
- SYNTONY: GNSS
- OVINTO
- NSL
- veripos: ON TARGET
- GReD



Logos of companies from Korea, China, Taiwan, Japan, and India engaged in GNSS.asia activities:

- Korea:** SAMSUNG, ASCEN GPS (Global GPS Leader AscenKorea Inc.), SK, kt, TELACE, DusiTech (Dual System Integration Technology), LG
- China:** Hwa Create, COSIC, UNICORE (和芯星通), OLIMAX, UniStrong (合众思壮), NAVINFO (四维图新)
- Taiwan:** MEDIATEK, SkyTra, LOCOSYS, PRINCO, MITAC, ADVANTECH, BIOG, ASUS, PEGATRON, wistron, WNC (Wistron NetWeb Corp.), RoyalTek, G.top
- Japan:** FURUNO, 株式会社 ジョルダン, MapiON, SEIKO EPSON, HITACHI (Inspire the Next), MITSUBISHI ELECTRIC, NAVITIME, clarion, AISIN AW, ALPINE, NISSAN, FUJITSU TEN
- India:** ASL (Advanced Systems), AqTronics, LARSEN & TOUBRO, amd, readmatics, kalycito, XYS, El Labs India Pvt. Ltd., Sheevey Digital, Fargo Telecommunications, AFS

... and many more!

Past EU GNSS actions in Korea

GNSS.asia track record



The Challenge

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



The GNSS.asia solution

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 Outcome

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.



Industrial cooperation

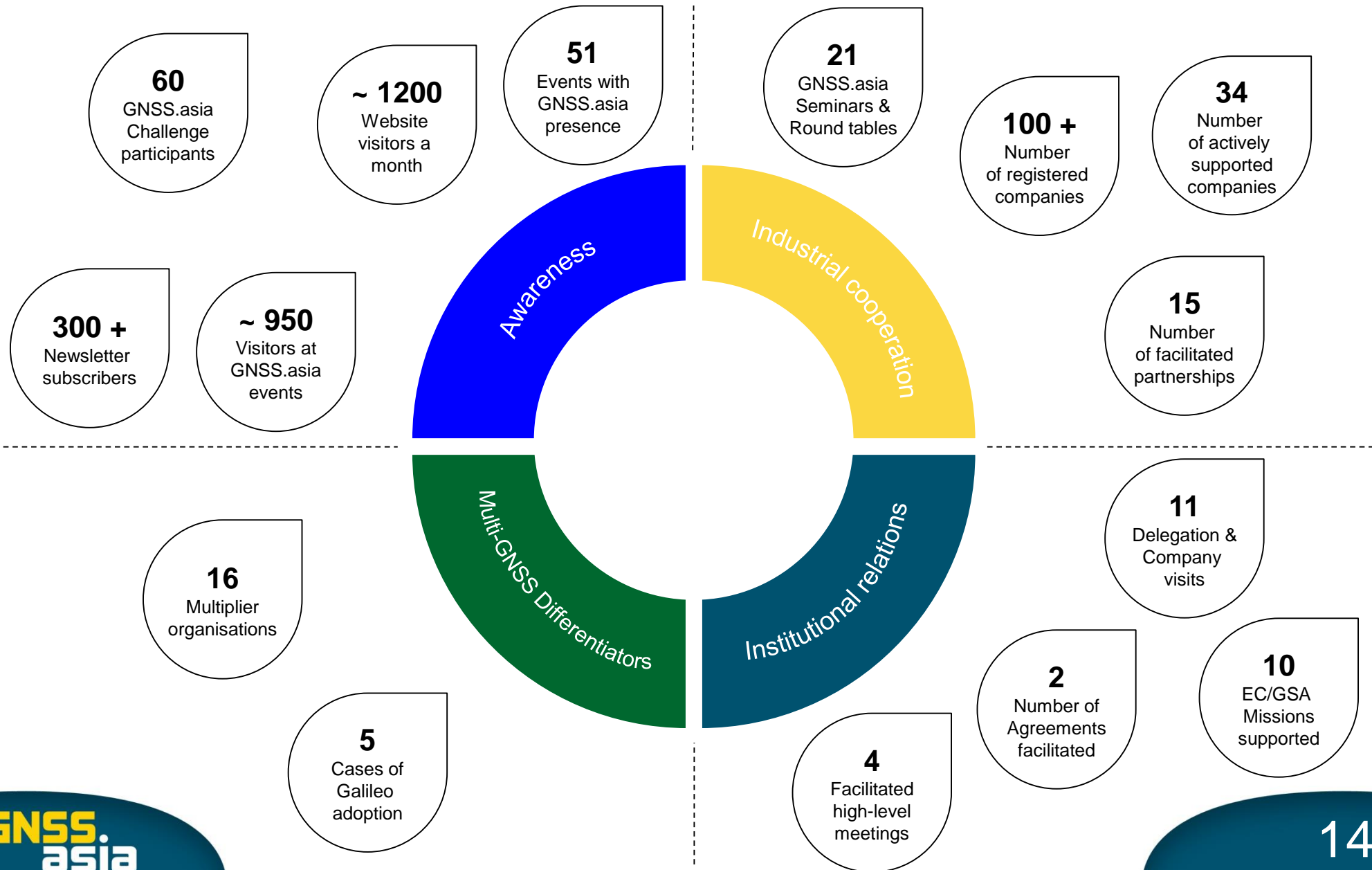
GNSS.asia3 wants to further expand its impact across target regions

After GNSS.asia2

	Level 0 "Beginner"	Level 1 "First traction"	Level 2 "Active engagement"	Level 3 "Mutual activity"	Level 4 "Full swing"
Awareness	<ul style="list-style-type: none"> • Little knowledge • Suspicions on "EU GPS" • No EGNSS events • No local language info on EGNSS 	<ul style="list-style-type: none"> • First GNSS.asia events • Stakeholders identified • Local GNSS.asia website / newsletter 	<ul style="list-style-type: none"> • Larger GNSS.asia event with executives • Stakeholder dialogue • User community engaged • Support by politics* 	<ul style="list-style-type: none"> • Structured, differentiated info • Sensor industry interested • Concrete use cases articulated 	<ul style="list-style-type: none"> • EGNSS well known • Positive perception • User "pull" for information
Industrial Cooperation	<ul style="list-style-type: none"> • Little EU/Asia GNSS connection • Dealers for upstream providers 	<ul style="list-style-type: none"> • Industry mapped • Opportunities mapped • Introduced to industry associations 	<ul style="list-style-type: none"> • Industry profiles • Brochure / case study • Expressions of interest • Associations engaged 	<ul style="list-style-type: none"> • EU industry engaged / proposals • Industry visits in EU • Exchange beyond events • Joint R&D preparation 	<ul style="list-style-type: none"> • Industry MoUs • Joint H2020 • First commercial cooperation • Industry "pull" for information
Differentiators	<ul style="list-style-type: none"> • Little knowledge about EGNSS • Doubts about Galileo realisation 	<ul style="list-style-type: none"> • GNSS-generic discussions • R&D community • Understanding of EGNSS actors • Selected application sessions 	<ul style="list-style-type: none"> • Understanding of services and schedule • Multi-GNSS and feature discussions • Application level dialogue • Synergy discussions 	<ul style="list-style-type: none"> • EGNSS specific opportunities • Local protagonists for EGNSS • Expression of interest for testing • EGNSS pilot users 	<ul style="list-style-type: none"> • Multi-GNSS experiments • CS demonstrator • OS-A Pilot • Galileo integration in Asian receiver of chipset



GNSS.asia in numbers



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

GNSS profile
Taiwan

GNSS profile
China

GNSS profile
Korea

GNSS profile
Japan

In a nutshell

With the world's 15th largest economy in terms of GDP (2% growth in 2012), Korea offers an attractive marketplace for businesses worldwide. This is further enhanced by the entry into force of the EU-Korea Free Trade Agreement (July 2011). Korea holds a leading global status as a developer and manufacturer of IT and mobile communications equipment together with service providers including telcos, GNSS-enabled smartphone manufacturers (the regulatory provision that all handheld phones must support GPS), internet search portals, government agencies and SMEs. In addition, subsidiaries of large Korean multinationals, such as Samsung and LG, have developed advanced ITS solutions and intend to obtain access to the EU's single market. The Korean GNSS market has further growth potential due to the excellent IT infrastructure, the popularity of LBS both for personal and commercial use and the need to become more independent from GNSS chipset imports from abroad.



Key opportunities

-  The recent decision by the Korean government to develop and implement an independent Korean SBAS creates a unique opportunity for European companies specialised in EGNOS 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 SBAS in aviation and non-aviation sectors. This is further motivated by the doubling of aviation passengers every five years and the increasing popularity of leisure 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 utilisation in commercial vehicles. Other opportunities include fleet management and remote tolling using GNSS.
-  Korea's LBS 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 sector for EU-Korea cooperation (e.g. in 2013 Movia and SK Planet demonstrated a pedestrian navigation solution).
-  There is a strong interest on the Korean side (e.g. KESTI) in maritime Search and Rescue applications as demonstrated by the expected growth in sales of Emergency Position Indicating Radio Beacon (EPIRB) units. Several vendors have shown concrete interest in R&D collaboration in prototypes utilising 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 (TelAca) 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-resilient ones (to mitigate against security threats).

Strengths	Weaknesses
<ul style="list-style-type: none"> ▶ Smartphones and LBS devices ▶ ICT industrial leadership, Samsung & LG momentum ▶ Worldwide system integrator and export orientation ▶ ICT testbed for the world ▶ Global car manufacturers 	<ul style="list-style-type: none"> ▶ No GNSS chipset fully commercialised yet ▶ Lack of knowledge on the emerging systems (Galileo) ▶ Less application oriented (vs. technology) ▶ Limited domestic market for GNSS







- EU
- IN
- CN
- TW
- KR
- JP

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The project

Facilitating EU-Asia cooperation on satellite navigation applications

The GNSS.asia project, financed under the EU 7th Framework Programme for Research & Technological Development, has the objective to develop and implement GNSS industrial cooperation activities between the European Union and China, India, Japan, Republic of Korea & Taiwan focusing on the downstream sector (applications and receivers).

[Read more](#)

INDIA	CHINA	TAIWAN	REPUBLIC OF KOREA
भारत गणराज्य	中国	台灣	대한민국

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ISSUE #April 2015

GNSS.asia
Industrial cooperation across continents
www.gnss.asia

In a nutshell

Latest highlights

EGNSS Opportunities	News on EGNSS
News from Asia	European Global Satellite Navigation activities

GNSS.asia Latest highlights

Cross-continental cooperation in GNSS continues

Website relaunch in 2018!

GNSS. asia

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European
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Agency

HORIZON 2020