1. Status on European GNSS Programmes
2. GNSS Global Market & Applications
3. GNSS.asia project presentation

The GNSS.asia project is under the supervision of the European GNSS Agency (GSA).

The GNSS.asia project is funded by the European Commission under the 7th framework programme grant agreement N° 287244.
What is EGNOS?

- EGNOS = European Geostationary Navigation Overlay Service.
- Services based on GPS and Glonass signals, providing augmentation signals re-transmitted by geostationary satellites and a network of ground stations.
- Suitable for safety critical applications such as flying aircraft or navigating ships.
- Crucial ‘integrity message’ delivery, informing users in the event of problems.
- Increased accuracy of existing satellite positioning services to below 1 metre.

Why Galileo?

- European independence, worldwide system under civilian control
- Interoperable with GPS and GLONASS with a full complement of satellites (up to 30).
- Increased precision even in high-rise cities, where buildings obscure signals from today’s satellites or in polar areas.
- Several signal enhancements making the signal more easy to track and acquire and more resistant against interference and reflections.

Galileo Status Summary

Galileo is progressing from the development phase to the deployment phase

- GIOVE-A, GIOVE-B missions still ongoing
- In-Orbit Validation phase: First operational IOV satellites (x2) launched on 20th October, 2011. Two other IOV satellites plus ground segment scheduled for 2012.
- Galileo early services by 2014
- International coordination is critical
  – to ensure compatibility with other GNSS
  – to achieve interoperability as desired
Galileo Implementation Plan

- **2003**: Galileo System Testbed v1
  - Validation of critical algorithms

- **2005**: GIOVE A/B
  - 2 initial test satellites

- **2011/2012**: In-Orbit Validation
  - 4 IOV satellites plus ground segment

- **2014/2016**: Initial Operational Capability
  - Early Services, 18 Satellites (TBC)

- **2019/2020**: Full Operational Capability
  - All services, 30 satellites

Galileo Services

- **Early OS, SAR, PRS services will be provided by 2014/2016**

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
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<tbody>
<tr>
<td>Open Service</td>
<td>Free to air, mass market, simple positioning</td>
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<tr>
<td>Public Regulated Service</td>
<td>Encrypted, robust, continuous availability</td>
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<tr>
<td>Search and Rescue Service</td>
<td>Near real-time, precise, return link</td>
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<tr>
<td>Commercial Service</td>
<td>Encrypted, high accuracy, added-value service</td>
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<tr>
<td>Safety of Life Service</td>
<td>Adds integrity to open service</td>
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</table>

A decision to re-profile SoL has been taken.
• The total enabled GNSS market size in 2020 is estimated at €244 bln, the core global GNSS market is estimated at €165 bln.

- Core GNSS market, accounting only parts of the retail price that are directly attributable to GNSS (e.g. chipset, maps, navigation software) in LBS sector
- Enabled GNSS market, accounting e.g. full price of GNSS mobile phones in LBS sector

Global core GNSS market by segment (cumulated revenues 2010-2020)
Total: €1260 bln

LBS and Road will be the market sectors with the highest revenue generation.

- Road: including PND and in-vehicle systems
- LBS (Location Based Services): including GNSS-enabled mobile phones and services
- Agriculture: including low and high technology
- Aviation: including GNSS devices for commercial and general aviation

Sources: GSA
Mobile LBS are taking off

More and more mobile phones with GNSS inside
Increasing consumer and developer awareness
Application stores provide a viable business model

LBS Value Chain

Chipset Manufacturer → Smartphone Vendors → Map Data Providers → Application Stores → Application & Content Developers

Vertical integration by leading smartphone vendors

Improvement in navigation performance
Leading smartphones display a host of technologies to improve position performance:

• Highly sensitive GNSS chipset
• Wi-Fi, cellular and hybrid positioning as back-up
• Motion sensors and gyroscopes for tilt
• Magnetic compass

Increasing attractiveness:
New applications and services such as vulnerable people tracking, mobile commerce and location-based games.

Increasing affordability:
Price erosion and reduced power consumption of GNSS chipsets (integration & miniaturization).

GNSS penetration in mobile phones

Almost 1 billion GNSS-enabled mobile phones shipped every year in 2020
By 2020 the penetration of GNSS-enabled mobile phones will have reached 65%.
Facilitating EU-Taiwan cooperation on satellite navigation applications

As of January 2012, the ECCT participates to the EU funded project GNSS.asia promoting EU-Taiwan industrial cooperation on satellite navigation applications.

The GNSS.asia project, financed under the EU Research program, has the objective to develop and implement GNSS industrial cooperation activities between the European Union and China, India, Japan, South Korea and Taiwan focusing on the downstream sector (applications and receivers).

GNSS.asia Kick-Off meeting in Brussels (January 2012)

GNSS.asia Organization

Strategy, Coordination EU Liaison

<table>
<thead>
<tr>
<th>Japan</th>
<th>Korea</th>
<th>China</th>
<th>Taiwan</th>
<th>India</th>
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<tbody>
<tr>
<td>EU-Japan Center Brussels (B) / (Japan)</td>
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<td>EUCCK (Korea)</td>
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<td>EUCCC Beijing (China)</td>
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<tr>
<td>ECTT Angela Hsiao (Taiwan)</td>
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<td>EBG India/Bangalore (India)</td>
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GNSS.asia consortium is relying on EBO’s European chambers of commerce in Asia for regional execution.
1. Define a **strategy** for the industrial cooperation between EU and the selected Asian countries on GNSS downstream sector (applications and receivers essentially)

2. Ensure the **valorisation** of the Galileo Programme with an emphasis on the “exportable” products mainly the Users Segment: receivers and applications.

3. Recommend and start to develop an **industrial cooperation** between EU and each Asian economy.

**ECCT will assess market areas of mutual interest, get a GNSS industrial overview and support industrial cooperation between EU and Taiwanese organizations.**

Activities will include in particular experts workshops and industry seminars (both in Taiwan and in the EU) and Galileo awareness raising towards the Taiwanese GNSS community as well as the broader public.

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### GNSS.asia Deliverables

**Industrial Cooperation- Strategy**

- Understanding of the background
- Assessment of applications and technologies (market)
- Potential of industrial cooperation
- Identification of entities in Taiwan and first joint intents
- Propose Calls for interests (CFI) and launch Pilot Projects
Multi-language website (under construction – May 2012):
www.gnss.asia

- Information about Taiwan provided in Chinese

Other communication tools:
- ECCT website (English/Chinese) – Technology Committee: www.ecct.com.tw
- ECCT Euroview magazine (English)
- ECCT point of contact (Chinese/English/French): Angela Hsiao (02) 2740-0235 ext. 21

Timetable for Galileo:
GNSS.asia to prepare exploitation

- IOC: Initial operational capability
- FOC: Full operational capability
European Satellite Navigation Competition 2012
Prototyping Prize of Galileo Pro

“No matter whether you are an individual or a team from a company, research institute, university, or start-up, what counts is your idea. We are looking for applications based on satellite navigation that use the technology in a new and innovative way.”

• **Theme:** Connect Autos Tightly to ICT from V2X

• **Topic:** Connected Vehicle

• **Purpose**
  - Promote integration of Positioning into Connected Vehicle technology to develop innovative applications for communications among moving and stationary objects

• **Prototyping competition**
  - Applications based on GNSS integrated with WAVE/DSRC

Please visit
http://www.galileo-masters.eu
http://galileo.itri.org.tw

ITRI Compound: Competition environment
## Prototyping Competition - Prizes

<table>
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<tr>
<th></th>
<th>Prototyping Prize</th>
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<tr>
<td><strong>Grand Prize</strong></td>
<td>● EUR 10,000</td>
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<td>● A round-trip air ticket and accommodation in Europe for one person. (One round-trip air ticket and accommodation in Taiwan if the Grand prize winner is not from Taiwan)</td>
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<tr>
<td><strong>2nd Prize</strong></td>
<td>● EUR 3,500</td>
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<tr>
<td><strong>3rd Prize</strong></td>
<td>● EUR 2,500</td>
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<tr>
<td><strong>Honorable Mention</strong></td>
<td>● EUR 1,500</td>
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<tr>
<td><strong>Stars</strong>*</td>
<td>● EUR 1,000</td>
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<tr>
<td><strong>Others</strong></td>
<td>● ITRI will provide each foreign qualified team round-trip tickets and two nights’ accommodation for two people.</td>
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<td>● Prize winners must pay withholding tax according to R.O.C. tax laws.</td>
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<td>● Commemorative plaque for each winner</td>
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<td>● Certificate for each finalist</td>
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</tbody>
</table>

* There are four additional prizes named Stars by evaluating only two indexes, innovation index and technical Index.

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## GNSS.asia EU Industrial Seminar 2012

- **Objectives:**
  - To invite EU Industry to support or leverage GNSS.asia activities
  - To present Industry potential cooperation with Taiwan and Asia
    - Based on Taiwan strategy, Taiwanese Industry profile and views on local CFI (Call for Interests)
  - To launch CFI - Call for Interests

- **Participants (by invitation only):**
  - EU Industry representatives
  - Asian Industry representatives (side-event to be defined)
    - Taiwan Industry representatives to be invited

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- Organised by the European Commission in Brussels, Belgium on September 26th, 2012
  (Venue: Borschette Center)
• Organised by the ECCT in Taipei, Taiwan on November 5-8th, 2012 along with the 12th International Conference on Telecommunications for Intelligent Transport Systems

• **Objectives:**
  • To promote Galileo & Products towards Taiwanese Companies
  • To Identify and elaborate Joint Partnership
  • To plan engagement with local stakeholders
  • To foster next phase (until GNSS.asia Taiwan Seminar 2013)
    ➢ To select pilot projects

• **Participants:**
  • EU Responsibles
  • EU & TW Companies
  • National relevant organizations (Taiwan)

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**Conclusion**

• European GNSS programmes will make possible a whole new range of ‘reliability-critical’ services, applications and **business opportunities**.

• Galileo first satellites are being **deployed** (2 other satellites to be launched in 2012). Galileo early services will be available by 2014.

• The worldwide GNSS market is growing fast and revenues are expected to increase at a **11% CAGR** over the next decade.

• GNSS-enabled mobile phone and services (LBS) will be one of the market sectors with the **highest revenue generation**.

• GNSS.asia project is bridging the gap between Galileo’s deployment and exploitation (**2012-2014**).

• ECCT Technology Committee is in charge to execute GNSS.asia in Taiwan, to promote and facilitate **industrial cooperation between Europe and Taiwan**.

• Check [www.ecct.com.tw](http://www.ecct.com.tw) and [www.gnss.asia](http://www.gnss.asia) for further information.
謝謝  Thank You