

1. Context

The European Union (EU) has launched the development of the Galileo Programme in 1999, stressing the need to give a positive boost to European Industry, while at the same time ensuring Europe's independence in a crucial technology. European Institutions (EC and ESA) assigned 1.2 billion euro to the system development and validation phases, moreover, 100 million euro is devoted to Galileo mission and application activities in the 6th Framework Programme.

The real challenge for Europe is to actually generate the projected economic and social benefits, including the anticipated creation of new jobs. These benefits are closely dependant to the achievements of European downstream Industry in the 25 Member States. However, despite its recognized scientific and technological potential, it is worthwhile to notice that Polish organisations are only very slightly involved in Galileo-European projects. This is due to the lack of sufficient contacts with possible partners from Western Europe, who in turn do not have enough information on Polish capabilities. In order to improve this situation, the Galileo Point of the Polish Space Office and the European Commission GALILEAN project organised the European Satellite Navigation Cooperation Day on November 30th, 2004 in Warsaw, Poland.

The seminar was attended by around 100 participants from European GNSS downstream Industry such as suppliers of equipment and services, and research institutes from both Western Europe and Poland. The list of participants is presented in Annex 1.

2. Scope

The aim of the event was to foster cooperation between Polish and Western European Industries in the field of satellite navigation applications and to develop networking opportunities. The presentations and discussions addressed:

1. Existing European-wide tools (Industry associations and European projects) aiming at facilitating contacts and cooperation in satellite navigation applications,
2. Examples of European projects, applications and fund-raising mechanisms,
3. Industry presentations and opportunities for cooperation.

3. Welcome/Introduction

The event was opened by Professor Zbigniew Kłos, director of the Space Research Centre, Professor Janusz B. Zieliński, coordinator of the national Galileo Point in Poland, and Mr. Pascal Campagne, coordinator of the GALILEAN Thematic Network.

The panel recalled the first European Space Council and the emergence of a European Space Policy. The enlargement of the European Union took place earlier this year and now the EU-25 have to be put into practice. One element of this is the participation of the new EU Member States in the Galileo programme.

4. Seminar Details

The seminar was divided into 4 sessions, which are briefly summarised hereafter.

The presentations have been compiled on a CD-ROM and distributed to the registered participants of the meeting.

4.1 Session 1 – GNSS Cooperation Networks

This session was chaired by Pascal Campagne from FDC and addressed five different issues.

- The Galileo Programme Update was presented by the chairman himself.
A summary of the main characteristics of the Galileo system, of the programme and of the overall schedule and budget was presented. The basic idea of the concession and some aspects of international cooperation were given in brief.
- A rapid overview of the GALILEAN Thematic Network was performed by Hugo Zunker from Euro Telematik.

The GALILEAN project had the objective of fostering the European downstream Industry interests and markets shares in the field of GNSS. It operated several working groups in the course of its activities and produced a strategic roadmap document. The GALILEAN project also performed a series of actions at European and International scale to promote GNSS applications and EU downstream Industry and to foster networking of EU stakeholders. The organisation of this Cooperation Day is part of those activities.

- The two existing European Industry Networks (OREGIN and Galileo Services) were presented to the audience as key tools to establish contacts with possible new industrial partners.

OREGIN was presented by the chairman, who is its coordinator.

OREGIN is an organisation of European Industry and research entities active in the area of GNSS equipment and services. It represents approximately 250 entities and is aiming at supporting the development of the Galileo user segment. Becoming member of OREGIN can help to find new partners. It allows any industrialist to be better known and to increase the awareness of Galileo's programme progress and opportunities while providing a path to express Industry concerns towards EU Institutions. OREGIN is open to any European Industry or R&D entity and membership is free of charge. Registration can be done online through the OREGIN website (www.oregin.net).

Galileo Services was presented by the vice-president of the association, Gard Ueland from Kongsberg Seatex.

Galileo Services is a non-profit association set up to support the development of the Galileo downstream business. Its Members are selected on grounds of their expertise and motivation in the future Galileo services. Galileo Services today comprises 16 Members from 11 countries, from SMEs to large industrial groups. The Galileo Services association is offering a coordinated approach to the Galileo downstream market development and its members are playing a key role in the Galileo studies. Galileo Services is open to welcome new members and to work with new partners from the

enlarged Europe. Membership to Galileo Services is subject to a yearly subscription fee.

- The EC NAVOBS project was presented by Bartosz Buszke from Polspace Sp. z o.o. The NAVOBS project is a network type activity and is fostering new business activities of SMEs based on space infrastructure (GNSS, GMES, satellite telecommunications). The NAVOBS programme is an initiative of the European Space Incubator Network (ESINET) and aims at building a European community of SME involved in business exploitation of space infrastructure and at establishing a technology roadmap.

4.2 Session 2 – Galileo Concession

This session was chaired by Professor Andrzej Stateczny from the Maritime University Szczecin.

The two consortia bidding to become the Galileo Operating Company were presented.

- Gérard Brachet, adviser to iNavsat presented the iNavsat consortium
iNavSat aggregates the competencies and capabilities of three European Industry leaders: EADS, Inmarsat and Thales. Over 30 leading companies from European and non-European countries are exclusively associated with the consortium. The presentation underlined the iNavsat system concept, its approach to costs and to deployment and operations of the system. The financial offer was as well briefly addressed with the risk distribution foreseen between the public and the private sectors. Gérard Brachet emphasised that the iNavSat consortium is ready to collaborate with Polish partners.

The discussion, which followed this presentation raised two points:

- The audience asked for precisions about the approach proposed by the iNavSat consortium regarding EGNOS integration in the Galileo system and clarifications of the status of the future Galileo concessionaire as regards the EGNOS operator. It was underlined that EGNOS should be used as a market precursor of Galileo and as an instrument enabling Galileo to penetrate rapidly the market for satellite navigation. An approach to the integration of EGNOS in Galileo is outlined in the iNavSat proposal as requested by the GJU, which require however a separate operator for EGNOS.
 - Another point discussed was the co-operation between Galileo and GLONASS. A prerequisite for a tight cooperation between Galileo and GLONASS would be that GLONASS is transferred from the military to the civil domain. The discussion between EU and the Russian Federation on interoperability is still on-going.
- Olivier Colaitis from Alcatel Space presented the Eurely consortium.
Eurely's core team (and equity investors) is formed around Alcatel and Finmeccanica, and is comprising as well ASF, AENA, Hispasat and ENAV. The consortium is supported by numerous associated companies from different European countries (i.e. France, Italy, Germany, Spain, Belgium and UK) and by several regional partners from the US, China, India, etc.. The presentation underlined Eurely's perspectives as regards Galileo markets, services, revenues and EGNOS integration scheme. Olivier Colaitis highlighted that the Eurely consortium is looking for new partners who are willing to develop services and applications.

Further to the presentation, two points were raised by the audience.

- The audience wanted to know what kind of partner could join the consortium. It was explained that the partners should be players on their respective markets and should contribute their domain-specific knowledge to the development of those markets. In particular, maritime operators would be welcome in the Eurely consortium.
- Another question referred to the distribution of correction data through other means than the satellites themselves. Alcatel clarified that the corrections are distributed through GSM/GPRS and Digital Audio Broadcast (DAB) already today.

A discussion involving both iNavSat and Eurely representatives followed and focussed on three points.

- Mr. Brachet underlined that the Galileo operational phase will begin in 2008-2009 and that the Galileo Concessionaire should be in business as early as possible. He added that the whole Galileo satellite constellation is not needed to have first operational capabilities for some application testing.
- Clarifications on the justification of future cost of correction data was asked for by the audience. Both the representatives of Eurely and iNavSat explained that in the future certain kind of applications would need a Service Level Agreement (SLA), which describes the intended use of the service, its users and defines the service quality to be provided. On the basis of such agreement the service provider can be held liable by a customer in case of service non-conformances. E.g.: Road Tolling applications will need a guaranteed service level before billing their clients.
- The audience asked if there will be more cooperation or more competition between Galileo and GPS in the future. It was clarified that future end-users would probably use several satellites constellations, and not only GPS or Galileo. Moreover, views have been expressed that GPS might develop in the future into a solely military part and a civil part, which may be funded as well by means of a concession, similar to Galileo.

4.3 Session 3 – Experiences from GNSS/Galileo related Projects

This session was chaired by Marie-Laure Mathieu from FDC. It introduced the FP6 GJU activities and focussed on the achievements of 7 European projects led by Western European companies. Cooperation opportunities with Polish Industry were highlighted in each presentation.

- The overview of FP6 GJU 1st and 2nd Call activities was presented by the chairwoman. She briefly presented the Galileo R&D activities plan and gave an overview of the Galileo Joint Undertaking (GJU) calls under the 6th RTD Framework Programme. The industrial activities resulting from the first call and the topics of the second call were presented. Besides, cooperation opportunities for next calls were highlighted. In particular, two specific cooperation activities in Latin-America have been launched by GJU. The FP6 GJU 3rd calls to be launched in spring-summer 2005 and the FP7 related activities to be launched from 2006 to 2010 are also important milestones and should provide opportunities for cooperation between Western European and Polish Industry.
- Jan Van Hees from Septentrio performed a presentation entitled “Galileo Receivers: the world’s first compliant prototypes”.

Septentrio is a European SME designing, developing and commercialising high-end OEM satellite navigation products. The company has been involved since its foundation in the Galileo programme. Apart from its commercial products the company is involved in dedicated development activities for Galileo Test User Receivers for novel signal structures. Septentrio is open to support any application related activity of their clients.

- The MARGAL (Maritime and Inland Waterways Services utilising Galileo) project was presented by Gard Ueland from Kongsberg Seatex.

MARGAL is a FP6 GJU 1st call funded project coordinated by Kongsberg Seatex, an experienced company in the field of maritime applications and deeply involved in GNSS/Galileo activities. MARGAL aims at providing identical basic solutions to both harbours and inland waterways. It will distribute EGNOS corrections in inland waterways and ports and will provide infrastructure and user terminals for EGNOS integrity monitoring. MARGAL also addresses certification and legislation issues. Potential areas for future cooperation could cover local elements for maritime applications and maritime surveying applications.

- Georg Mandelka from Bombardier Transportation performed a presentation on GNSS-based Telematics Applications in Railway Operations.

The heritage of Bombardier and of several projects was briefly presented. Bombardier offers a comprehensive portfolio of rail systems and is worldwide established. The company has been involved in several EU funded projects related to Galileo. Opportunities for cooperation are in the areas of fleet monitoring and administration, and driving style management for rail related projects but as well in applications requiring accurate Position, Velocity and Time (PVT) and digital route atlas data. Other opportunities may arise in EU/GJU funded projects. Bombardier has a sales office in Poland.

- Victoriano Sanz from INECO presented the INECO-TIFSA activities on GNSS Applications to Aviation and Rail.

INECO-TIFSA's activities are focused on rail applications and aviation. In both areas, INECO has a long track of projects in the past EU framework programmes. Aviation GNSS related activities include GNSS trials, GBAS introduction, flight procedure design and airworthiness certification. Moreover, the GADEROS (Galileo Pilot Project for Rail) project was presented in a short video clip. This project had three objectives:

- the feasibility of integration of GNSS locator for interoperability with ETCS on-board ;
- the development of a common test bed ;
- the feasibility of application of GNSS to support a traffic monitoring centre.

- The Alcatel Satellite Location Technology and European projects were presented by Arnaud Masson, from Alcatel Space.

An overview of service classes and of the location technology available was given. The products of the company were briefly presented and several past projects were explained. Alcatel is looking for partners in various domains (academic, operators, application, content, service, etc.) in order to collaborate on European RTD projects and awareness activities. Companies could also be partners for commercial offers and for the provision of end-to-end solutions. Mr Masson performed a live demonstration of an Alcatel LBS application.

After the presentation, the audience asked if there could be a potential problem with existing patents on assisted GPS, which are mainly held by US companies. Alcatel explained that this situation is resulting from the much earlier and more stringent E-911 regulation, when compared to Europe. However, a careful analysis of existing patents has been carried out and own patents have been filed. The technology applied in the presented solutions is owned by Alcatel.

- Stuart Martin from LogicaCMG performed a presentation on Business Models for Location Based Services.

He gave an overview and a short analysis of the LBS market in the past years. Specifically the past discrepancy between expectation and reality was highlighted. Today the outlook is promising. Key factor for the communication service providers could be to provide location information to the content providers for free and earn the revenues from increased data traffic. Logica is keen to understand the LBS market in Poland and to establish partnerships with Polish companies for FP6 projects dealing with LBS developments.

- GNSS Signal Generators were presented by Bruno Denjean from Spirent Communications.

The history of Spirent products from the beginning to the latest low-cost multi channel simulators was given. Finally, a Galileo demonstrator allowing to simulate Galileo “noise” based on publicly available information was developed recently in several steps. Spirent is keen to learn about the GNSS activities in Poland as well as to develop local partnerships and in particular to increase its educational relationship.

4.4 Session 4 – Experiences from GNSS/Galileo related Projects

This session was chaired by Professor Janusz Śledziński from the Warsaw University of Technology. It was devoted to the presentation of 5 Polish satellite positioning related applications projects. It focussed as well on cooperation opportunities with Western European Industry. The status of the Polish activities in the GNSS field was given at the end of the session.

- The works on applications of GNSS for time transfer were presented by Jerzy Nawrocki from the Space Research Centre PAS.

A status of the scientific work on time transfer and time references in Poland was given. Dedicated time receivers developed by the Space Research Centre are operated by many national and international institutes. The on-going implementation of a Polish time scale will bring several improvements for the national community and for their international partners.

- New concept and business opportunities for vessel traffic management systems using EGNOS/Galileo were presented by Andrzej Stateczny from the Maritime University Szczecin and by Arne Jungstand from Dornier Consulting GmbH.

After the presentation of present shortcomings in radar and AIS technologies, a concept for a future DGPS based Vessel Traffic Service was given using the example of the Oder river delta in the border area between Poland and Germany. A paradigm shift from radar-based services to DGPS based services could increase the operational

safety and the efficiency of operations and save significant efforts for the maintenance of inland waterways. The concept exposed requires funding and cooperation opportunities in order to be implemented.

- Artur Wiczyński from the Industrial Research Institute for Automation and Measurements presented location based applications for transport safety and antiterrorist activity support.

The Industrial Research Institute for Automation and Measurements (PIAP) develops several location-based applications aiming at improving transport safety and at supporting antiterrorist activity. This second activity needs to be strengthened since the European Union enlargement has created new long eastern EU border. Besides, the development of GNSS based application for transport support, hazard detection and the creation of a centre of excellence for antiterrorist support activity are some of the domains for possible cooperation.

- A project addressing the teletransmission of DGPS/RTK data via GSM/GPRS was presented by Stanisław Oszczak from the University of Warmia and Mazury .

The presentation gave an overview of the development of a DGPS/RTK/GPRS system in Poland. This system enables a large scale of applications (e.g. control parcel measurement for IACS, positioning of road accidents for police patrols) thanks to the improved accuracy of RTK/GPRS real time geodetic positioning.

Following the presentation, it was underlined that the limiting factor regarding the number of users was linked to software constraints and to the limited capacity of the servers used but not to GPRS network constraints. It was also clarified that the system is still under development.

- Robert Rozesłaniec from Autoguard & Insurance Sp. z o.o performed a presentation entitled "Submerge in Telematics".

According to several studies, telematics market is expected to grow significantly in Europe in the coming decade. Autoguard, a Polish telematics systems and services provider, gave an overview of its products (e.g. satellite security systems, fleet management systems, dynamic navigation systems, remote diagnostic systems and automatic collision notification).

After the presentation, the audience sought precisions about the market approach adopted by Autoguard. Mr. Rozesłaniec explained that Autoguard's products respond to real users' needs. He underlined that more than 12000 consumers were currently using their installation. Furthermore, new market opportunities are expected from the passenger related applications (e.g. information on shopping centre, etc.): this market is already booming in Japan.

- The overview of Polish GNSS activities was given by Professor Janusz B. Zieliński, Galileo Point Coordinator.

The GNSS market in Poland is promising considering the key figures from the telecom, road, and agriculture markets as well as the geographical situation of the country. The main actors involved in GNSS activities in Poland include national agencies, local authorities, defence and private users. Several GNSS applications are already well developed in Poland, such as sea and air navigation, geodesy, surveying and mapping, car guidance and monitoring, and emergency services. Moreover, the Space Research Centre has been chosen to host an EGNOS RIMS station and its R&D activities are

covering a wide range of activities from time transfer to ionospheric studies but also system integration. The Galileo Point informed that at least 20 SMEs were involved in GNSS in Poland.

4.5 Open Discussions

In order to address the specific barriers faced by Polish Industry, an open discussion among all the participants came off further to the last session. It focussed on the following issues:

- Partnerships and funding opportunities for Polish industries

The main obstacle faced by Polish Industry is linked to its low level of involvement in large consortia bidding for EU-funded projects. One solution is to further develop networking activities in order to make Polish Industry capabilities better known by potential partners. Mr. Campagne underlined that OREGIN is certainly one of the most reachable networks enabling to find new partners and he encouraged all the participants to register to the organisation.

Moreover, it was stressed that participating in EU/GJU funded projects is not the only way to be involved in GNSS activities. In particular, as highlighted in the presentations performed during session 2 and 3 several Western European companies are keen to assess the Polish GNSS market, which is very promising. Polish Industry would be very valuable partners to support Western European companies in that frame. It was also mentioned that many regional and national funding exist and provide good business opportunities.

- Consortia rules in EU/GJU funded projects

It was clarified that consortia bidding for EU/GJU funded projects must be composed of at least 2 companies from 2 different Member States. Once a consortium wins a contract, the negotiation phase begins. Within that timeframe, the customer can request to integrate one more partner. Afterwards, the general rules enforced by the EC make the involvement of a new partner in a consortium very difficult. It is thus of paramount importance to be involved from the beginning of the consortia teaming.

- SME involvement in EU/GJU funded projects

Polish SME stakeholders expressed concerns on their specific difficulties as regards participation in EU/GJU funded projects. Mr. Campagne explained that an optimistic approach should be followed as many examples of SMEs taking part in consortia and even coordinating projects exist. It was however mentioned that the overall success rate of a proposal is around 20-30%. It was underlined that preparing a proposal is very time consuming and that the associated financial investment is much riskier for SMEs than for big industry groups.

Opportunities specifically targeted to SMEs have been developed (e.g. small scale studies of area 3 of the FP6 GJU 2nd call). The involvement of Polish SMEs in EU funded projects is therefore possible and encouraged.

5. Conclusions - The Way Forward

Pascal Campagne, GALILEAN coordinator, summarised the key findings of the seminar. He underlined that the willingness of all the participants to share in a friendly atmosphere their experiences and visions for the development of GNSS applications will certainly pave the way for future fruitful collaborations and long term business. The networks and projects presented should help Polish industries to form solid and long term partnerships with Western European industries. The seminar enabled as well the participants to be better acquainted with GNSS applications development in Poland.

It is recommended that similar events should be reorganised in the future, in Poland and in the other new EU Member States.

Thanks

The Galileo Point in Poland and the GALILEAN consortium would like to thank everyone who participated to this seminar for their active and valuable contribution to the discussions.

Further information on the GALILEAN project and all the presentations performed during the seminar are available on the GALILEAN website:

www.galilean-network.org

Further information on the Galileo Point of the Polish Space Office is available at:
<http://galileo.kosmos.gov.pl>



Annex 1 – List of Participants