

# 9<sup>th</sup> NEWSLETTER

## EDITORIAL

The coming BBI airport is the focal point for economic growth and improved employment in the capital region. The recent court decision (BverwG) gave way as well as the desired framework for all parties involved: politicians, airport-operators, residents, airlines as well as business environment. The existing window of opportunity has come to built the airport of the future.

Investment into a competitive BBI is both, challenge and chance to implement innovative technologies, modern infrastructure, improved processes & regulations at air and landsite.

Optimized slot and airfield management, turn around & ground operations, intermodal transport of passengers & luggage as well as innovative PPP services stimulate leading edge technologies and operations.

A coalition of willingness and concerted actions of regional stakeholders are needed to set the pace for seed money to foster economic growth and employment. Munich Airport and Freising region as best practice examples show the fundamental perspectives for welfare and economical development. Needless to say that the international Air Show ILA perfectly fits into such a favourable environment in the capital region.

FAV and its network partners are supportive to introduce cost-effective and customer oriented operations. Thus BBI will contribute to both economically and ecologically balanced and justifiable accomplishments of the

increasing need for transport and mobility.




Wolfgang H. Steinicke,  
Managing Director

## RIBB – THE SMALL SATELLITE INITIATIVE BERLINBRANDENBURG

Berlin possesses high competences in R&D and operation of small and pico satellites. Scientists of TU Berlin have designed and successfully deployed a total of seven satellites in space. Presently the RIBB initiative (Raumfahrtinitiative Berlin-Brandenburg) is bundling the regional competences of institutes and companies in the field of small and pico satellites. With only a few centimetres in size these spaceborne objects mark a substantial progress of micro system technology and capture new application sites rapidly.

RIBB is an initiative of the regions companies and scientific institutes related to the most innovative promising small satellite technology within the region of Berlin Brandenburg.

The new generation of small and smallest satellites is marked by its high level of integration. „This miniaturizing enables competitive programs for space missions.“

states Michael Scheiding (Astro- und Feinwerktechnik Adlershof GmbH) with regards to the economic aim of RIBB.

The cubic pico-satellites have a dimension of 10x10x10 centimetres. They serve as platforms for sensors,

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which among others are measuring the environment but are also capable of testing electronic components under zero gravity conditions. This example shows how RIBB is linking the aerospace players in the capital region.

Initiated and founded in 2004 by Prof. Dr. Ing. Klaus Brieb (TU Berlin, ILR) and Mr. Michael Scheiding the RIBB partnership is the basis for shaping and developing innovative projects in



Small Satellite BIRD

image: DLR Optical Information Systems

the field of small satellite technologies as well as it contributes to growth and employment within the region of BerlinBrandenburg. The partners of the initiative, mostly medium sized companies and research institutes, are capable of covering 85% of the value

chain in the capital region.

This especially applies for the development capacity, the AIV processes for assembling, integration and verification as well as to a large extent for the supply of ready-to-fly hardware for components of the satellite bus or the carrying capacity. Furthermore for the supply of the satellites main elements like the energy supply unit, computing devices and significant parts of the attitude control, are produced by the partners. Additional products are foldable solar panels and swivelling arms for highly sensitive electromagnetic sensors.

Regarding the carrying capacity the RIBB network is especially capable in developing and producing optical sensors and high-resolution cameras as well as sensors measuring terrestrial magnetic fields. The framework conditions for the dedicated initiative are favourable.

The developmental periods for new technological trends are becoming shorter. The increasing requirements for earth observing missions are particularly met by flexible, cost-efficient small satellites equipped with cutting edge sensor technology. These technologies are realized and developed by RIBB partners and outperform common sensors, e.g. used for monitoring forest fires, in terms of

resolution and intelligent analysis.

Right from the start the initiative was joint by Berlin companies and research institutes as the Aerospace Institute, German Aerospace Center (DLR) - Optical Information Systems, Fraunhofer Institute for Computer Architecture and Software Technology - FIRST, BTU Cottbus, Magson GmbH, Vectronic Aerospace GmbH and alpha-board GmbH. These partnerships have been proven of value at well-known aerospace projects as DoubleStar, Rosetta and BIRD.



The further development of a strong initiative is fostered by the Transport Technology Systems Network Berlin (FAV) with its know-how in managing R&D.

It is one of the RIBB's guidelines to bundle regional competences in small interdisciplinary cooperation within the fields of micro system technology, nano technology, optic technology as well as interregional networking.

Thus RIBB is seen and capable as starting point for setting up a „Kleinsatelliten Integrationszentrum Ostdeutschland“ (EastGermany's integration center for small satellites). Along with BBAA (Berlin Brandenburg Aerospace Allianz e.V.) RIBB is working on establishing aviation and aerospace as key industry with the aim to become the third main region in Germany, following Munich and Hamburg-Bremen.

Under the umbrella of RIBB especially small and medium sized enterprises, with competitive innovations for the global market, are contributing to strengthen Germany as leading technological site. The next step is setting up the RIBB office followed by future comprehensive market analyses.

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## GALILEO APPLICATION CENTER BERLINBRANDENBURG

The region BerlinBrandenburg is a center and showroom for telematic applications and services. Within the framework of AZVT (Anwendungszentrum intermodale Verkehrs-telematik) fundamental competences have been accumulated, which are now used for the next stage – the Galileo – stage. The European satellite based navigational system will not go into service until 2011 but the development of new applications needs time.

The term „European“ only regards to the design, financing and service because Galileo is designed globally right from the beginning, is available worldwide and prepared for global cooperation on the basis of international contracts e.g. with china. Thus the development of applications

will have to meet international standards.

The new Galileo Application Center and its founding committee will consider these challenges to take advantage of the global situation in the region.

The new Galileo Application Center will serve all players in the region as information platform, encouraging the exchange of experiences and provide a cooperation network supporting combined projects in science and economy.

In order to reach this aim the Galileo Application Center BerlinBrandenburg is supported by the associations BBAA, GEOkomm and telematicsPRO in cooperation with FAV – Transport Technology Systems Network Berlin and the chamber of

commerce and industry of the region. This cooperation shows the advantages of working in a open networks. As founding members the associations and FAV will make further efforts in acquiring new partners. Up to this point the founding members represent more than 300 companies, which bundle the existing competences of the region, also setting up new cooperations with related centers on a national, European and global level.



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## THE AIRPORT OF THE FUTURE

BBI has been in the focus of the high level experts group chaired by Wolfgang H. Steinicke, Managing Director of FAV.

In recurrently round table discussions the expert group deals with the issue of the Ideal Airport. The group of experts consists of representatives of the airport management (e.g. Berlin, Munich, Frankfurt/M, and Hamburg), airlines, politics, DFS, science and industry (e.g. EADS/ Airbus, MTU and Rolls-Royce).

Aim is to highlight the technological, infrastructural, operational and regulative prospects for users, operators, airlines and politics. Since the need for mobility is ever-growing, the economically and ecologically justifiable accomplishment has been in focus as well.

For attainment of the integration and harmonisation of sub-processes into one coherent system at the airport the high level expert group defined some requirements:



Terminal BBI Foto: Blue Multimedia / Berliner Flughäfen

- Optimizing the process chain both on land- and airside
- Enhancement, integration and interoperability of on-board systems and ground-based systems.
- Optimized services for passengers using door-to-door systems
- Utilization of technological potentials including Galileo
- Implementation of innovative operating schemes and public-private-partnerships for the optimization of business processes between airlines and the airport

effective by combining both hard and soft measures

To met these ambitious goals new technologies and applications are requested and evolved, such as:

- **Info guidance** via mobile phones, PDAs, e- direction signs for orientation and customer specific aviation and non-aviation information
  - **Check in** „Simplifying passenger travel“ (e.g. e-ticket, check-in-islands, fast-tracking)
  - **Luggage processing** (e.g. door-to-door, check in at the main station, optimized luggage conveying machinery)
  - **Slot and turn-around-optimization**
- Some of these applications will be fostered by the realisation of BBI and concurrently will contribute to obtain an outstanding international airport and showroom for innovations.

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## PORTRAIT OF A COMPANY NETWORK MEMBER – MAGSON GMBH

### Venus express entered the orbit - Magnetic field measurements onboard

On April 11. 2006 the ESA satellite Venus Express entered successfully the Venus orbit.

The satellite, launched on November 09. 2005 in Baikonur, shall investigate Venus and its complex atmosphere by seven scientific experiments. One of them is a magnetometer for measurements of the magnitude and direction of the magnetic field of Venus and the interaction of the solar wind with the planet atmosphere.

The electronics of this experiment were provided by Magson GmbH Berlin Adlershof. The magnetometer was developed in cooperation with the TU Braunschweig and the Imperial College London under leadership of the Space Research Institute in Graz. Space qualification and experiment integration has been performed at Alenia Turin, Astrium Toulouse and Estec Noordwijk.

Now, after a half year transfer to our neighbour planet, the first Venus data were received. Satellite as well as magnetometer electronics are working perfectly. After a mission time of 3-5 years the satellite will immerse into the hot (450°C) and dense (90bar surface pressure) atmosphere of Venus. Up to that moment we can expect exciting data of a planet very similar to Earth in size but evolved in a completely different way. Magson develops and manufactures equipment for

geophysical and space flight applications since more than 10 years. Hardware contributions are used on the German small satellites Equator-S and Bird, the Mir space station, the ESA missions Rosetta, Mars Express, Venus Express and the Chinese Double Star mission. At the end of this year the launch of the NASA Themis mission is scheduled. For all five satellites of this mission Magson provides the magnetometer electronics as well as additional hardware.

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Vehicle carrying Venus Express probe- Roll out

Image: ESA

The activities performed by the department of Optical Information Systems revolve around the design, development, calibration deployment and operation of optical sensor systems. The expertise which has been amassed by this facility, a spin-off of the Institute of Space Sensor Technology and Planetary Exploration at DLR, is derived from many years of experience in developing opto- electronic sensors for terrestrial observation and space exploration.

systems for addressing social, industrial and scientific issues. This work is based on cross-disciplinary resources which the facility is able to tap both inside and outside DLR. The focus of the activities is concentrated on the design of innovative camera concepts and on spectrometer- and radiometer technologies in the visible and infrared region. The department owns and operates different laboratories for calibration, spectroscopy and photometry.

of optical information systems is significantly involved in these activities.



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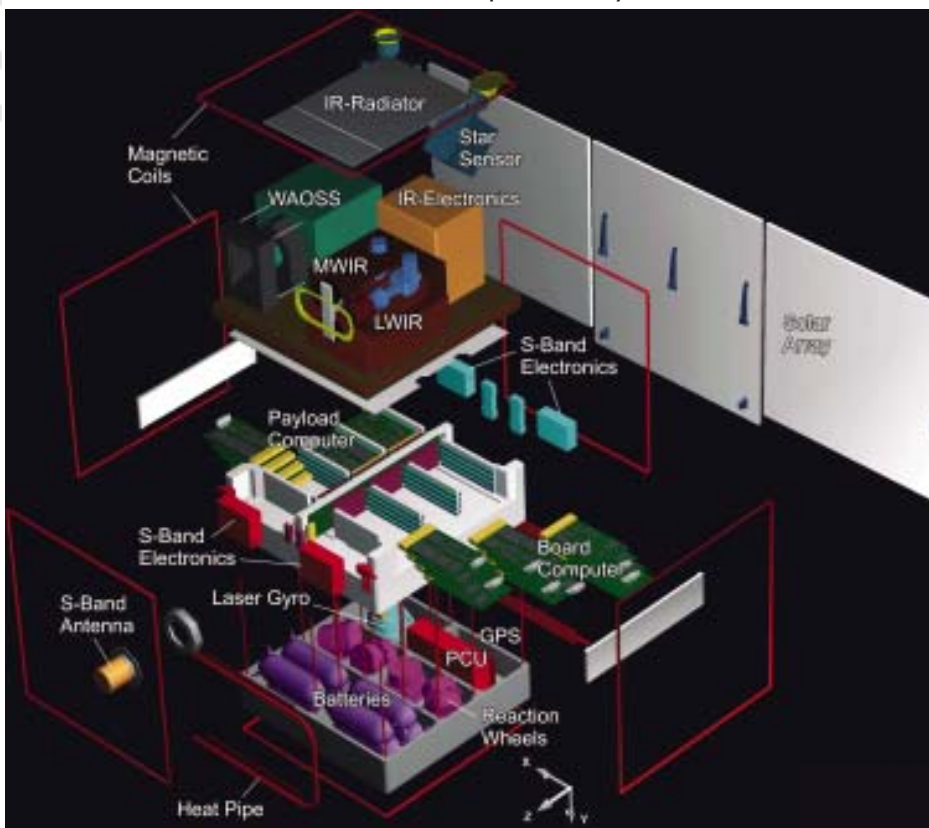
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**UPCOMING EVENTS**

**June 4 - 8, 2006**  
 7th World Congress on Railway Research, Montréal, Canada  
 FAV presents the European projects MODTRAIN and EURNEX

**July 2006** Next session of the Expert Group for the Airport of the Future

**September 19- 22, 2006** InnoTrans  
 FAV-stand: hall 3.26, stand 201  
 EURNEX Supplier & Researcher Poster Session  
 Function „Mock-up’s of front end and passenger compartment of the „Modular Train of the Future“ (project MODTRAIN) in 1:1 scale



System components of the small satellite BIRD

Image: DLR Optical Information Systems

The systematic use of these technologies in airborne and terrestrial applications has resulted in the development of further areas of activity. At the same time, high-quality commercial products have been developed in conjunction with industry. The development and design of optical real-time information systems is one of the unit’s main areas of competence, underpinned by special knowledge in the area of physics and system theory, optics and electronics as well as structural design and data processing. The aim of the research and development activities is to create autonomous real-time information

In 2001 the small satellite BIRD (Bi-spectral Infra-Red Detection) was launched and is still working. The Satellite and the optical payload were developed by the department in cooperation with several partners mainly in Berlin. The infrared payload is dedicated to the detection and scientific analysis of wild fires and other high temperature events. Due to the successful demonstration with BIRD this subject will be continued in the European GMES Program. The successful BIRD mission was the initial point for new DLR activities in the development of cost effective satellite technologies. The Department



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