

Made in Bavaria

Innovations in Space Technology

by Janet Danisman, State of Bavaria
U.S. Office for Economic Development

State of Bavaria
supports small & mid-sized
application developers
and manufacturers

With an expected downstream market size of 65 billion Euros by 2010, and a projection of 4 fold growth by 2030, the world market for Global Navigation Satellite Systems (GNSS) products and services has become a new frontier for future-oriented companies. The scope of possibilities for businesses ranges from satellite subsystems to Galileo-GPS combined receivers up to software for vehicle navigation and robotics for Unmanned Aerial Vehicles (UAV's). With the advent of Galileo, the future European GNSS, innovative companies in the state of Bavaria are increasingly filling the growing market demand.

The Galileo Control Center in Oberpfaffenhofen, 18 miles west of Munich in the Bavarian Alps was

inaugurated in 2008. Much of the infrastructure to support space technologies particularly related to Galileo is located in the German State of Bavaria – like the Galileo Test and Development Environment (GATE). At the German Aerospace Center (DLR) in Oberpfaffenhofen, nearly 1500 scientists are conducting research in the areas of satellite navigation, space missions, climate, earth monitoring, and robotics. Also, Bavarian Universities offer several courses of study related to Satellite Navigation and other facets of Aerospace, making Bavaria Europe's heart of satellite navigation.

Next Generation Satellite Navigation Solutions from Bavaria

“The State of Bavaria is among the world's most important and his-



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Galileo is the first satellite positioning system developed for civilian use. Galileo can be applied to a broad range of commercial applications and aims to provide higher accuracy and reliability than the U.S. Global Positioning System (GPS). Galileo's market potential ranges from applications in transportation to science, search and rescue and recreation.

torically rich aerospace regions” says **Bavarian State Minister for Economic Affairs, Martin Zeil**. Innovative companies located in the State today are living up to this tradition. There are over 150 primarily small/medium sized companies in Bavaria offering applications for time- and navigation-signals. Extensive networking within this young industry and within the research world drives innovation, as does Bavaria's strength in the IT sector. Synergies between businesses and research institutions regularly lead to new satellite navigation solutions, like the GAMMA-A automobile telematics system.

Developed by the **Fraunhofer Institute for Integrated Circuits** in Nuremberg, Bavaria – renown for the development of the MP3 – GAMMA-A is a cost effective three frequency receiver for Galileo and GPS which offers the automotive industry high precision and reliable positioning. In the future, this satellite-support-

ed driver assistance system will be able to intervene in the car's control system to prevent accidents.

At the same time, **EADS Astrium** in Ottobrunn, Bavaria, is developing an indoor navigation system that offers high precision positioning inside complex buildings. Whether it is a case of fire or a terrorist threat, it is critical for fire brigades and special forces to know the precise location of their own people inside complex buildings. “Seamless outdoor to indoor navigation and guidance services is an ideal that police, fire and other emergency organizations urgently seek. After years of intensive research work, Astrium has developed an ad hoc deployable indoor navigation technology that makes this ideal a reality” commented **Thomas Mayer**, Head of Navigation Business Development, **EADS Astrium GmbH** during the September 2009 Institute of Navigation Conference in Savannah, Georgia. >>

Invest in Bavaria

INVEST IN BAVARIA PROVIDES:

- Extensive data on Bavaria's economy/ industries/markets.
- Information on support programs
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- Connections to Bavarian companies, industry cluster managers
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March 9-11, 2010



www.munich-satellite-navigation-summit.org

40 New Space-Tech Start-Ups in Next 4 Years

To further Bavaria's leading position, the State's Ministry of Economic Affairs has recently announced a new incentive program of 10 million Euros. It aims to motivate small and mid-sized companies to strengthen their R&D activities in Bavaria. The State of Bavaria, the German Aerospace Center (DLR) the European Space Agency (ESA) and local bank Kreissparkasse Munich Starnberg recently opened a new Business Innovation Center (ESA BIC) in Oberpfaffenhofen, a major aerospace technology hub in Europe. The goal of this new BIC within the Application Center Oberpfaffenhofen (AZO) is to support 40 new company foundations on location in the next 4 years. Says **Minister Zeil**: "The aerospace industry is as dynamic as ever in Bavaria! Here new companies have an opportunity to succeed and the AZO's history of achievements is set to continue on the European stage".

Invest in Bavaria and bavAIRia e.V. – Precise Navigation for Business Establishment in Bavaria

Bavaria's Aerospace Satellite Navigation clusters, part of the State of Bavaria's multi-faceted, pro-business economic policy to promote Bavaria as a business and science location are managed and fostered by bavAIRia e.V.. The organization networks businesses with universities,

research institutes, manufacturers of systems and subsystems and with end users, and establishes business and government links at national and international levels. U.S. companies located in Bavaria can take advantage of the services of bavAIRia e.V. as well as the programs and services of the State of Bavaria. There are already over 850 U.S. companies with business locations in Bavaria.

The State of Bavaria offers an innovative research environment, highly qualified scientists, reliable suppliers, a strong market, business friendly economic policies and extensive support programs. In cooperation with the team at the Bavarian Ministry of Economic Affairs, Infrastructure, Transport and Technology in Munich, Invest in Bavaria's U.S. representative offices in New York and San Francisco introduce these advantages to U.S. investors considering expansion to Europe. **EAT**

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