



## PRESS RELEASE

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### Europe Brings Terrestrial SME Research into the Space domain

A breakthrough integrated solution for communications, attitude and orbit purposes is the innovative proposition of the GAMALINK Consortium, uniting 6 institutions with complementary experience in terrestrial communications and space technologies.

The two-year GAMALINK Project started in January 2013 and is funded by the European Commission's FP7 Programme, with an overall budget of about 2 million Euros.

GAMALINK's main goal is to engineer a novel solution for Inter Satellite Links (ISLs) based on Software-Defined Radio technology, capable of supporting GPS receiving capabilities, mobile *ad hoc* networking algorithms and radio-based attitude determination. Targeting nano- and pico-satellite platforms, the GAMALINK design considers CubeSat constraints and requirements to deliver a tailored solution that specifically addresses this niche market.

The GAMALINK Consortium comprises TEKEVER (Portugal, Coordinator), DVLX (Turkey), TTI Norte S.L. (Spain), University of Porto (Portugal), Fraunhofer Institute for Integrated Circuits (Germany) and TUBITAK UZAY (Turkey).

GAMALINK will set a new technological maturity level to the applicability of a wide range of terrestrial technologies in Space, as it certainly contributes to the qualification effort of space engineers and researchers.

#### About TEKEVER

The **TEKEVER Group** develops disruptive technologies for the Aerospace, Defence and Security markets, providing innovative products and solutions in the areas of Unmanned Systems, C4I and SDR-based Communications. With subsidiaries in Europe, Asia and North and South America, the TEKEVER Group leverages technological innovation, ensuring a permanent competitive advantage to clients and partners throughout the World.

In 2009, a Space Division was created to develop cutting edge technologies for the Space market, namely investigating the spin-in of technologies and Group products by taking advanced terrestrial technologies already deployed and tested and adapting them to the Space market, hence creating products with a high degree of innovation and a great return on investment. TEKEVER Space Division main research areas are affordable space validation platforms, inflatable structures and Space-based Software-Defined Radio (SDR). TEKEVER has a dedicated research group focused on the SDR platform (based on FPGAs and GPPs) and waveform development and also has performed extensive research in the *ad hoc* networks domain, including work in static reconfiguration of *ad hoc* networks, deployment and routing (e.g. power-aware routing), and has developed its own prototype of low-power wireless *ad hoc* nodes which is being productised and commercialised for the public safety market.

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For more information, please see [www.tekever.com](http://www.tekever.com).

#### **About DVLX,**

DVLX is an SME that provides innovative engineering solutions and full turnkey product development services mainly for the electronics industry. It is located in Izmir Technology Development Zone, Izmir Institute of Technology Campus and its engineering team collectively has more than 100 years of experience in the industry. Their backgrounds cover product development, manufacturing, quality assurance, customer service and support. DVLX offers a complete range of engineering services from product specification and design to product delivery and on-going support. It is expert in bringing together the critical aspects of successful design including Top/Down level design, Manufacturability and Support.

DVLX has a manufacturing set-up for PCB type products using a combination of SMT and leaded components. It has access to thermal, electrical and mechanical design and simulations software, manufacturing process and test benches to develop and test electronics boards and products.

#### **About TTI Norte**

TTI is a Spanish SME that works in the technological forefronts of space, military, telecommunications, science, and information technology sectors. It was founded in 1996 entirely with national private capital and comprises an expanding team of more than 100 highly qualified engineers.

TTI works in the radiofrequency (RF) and antenna technology fields developing advanced products as Power Amplifiers (SSPA/BUC), Low Noise Amplifiers (LNA/LNB), Converters, Transceivers, Phase Shifters, Filters or Oscillators from VHF/UHF to Ka frequency bands. A well equipped facilities base allows TTI to undertake the design, fabrication and integration of communication equipments, meeting aggressive deadlines while delivering high quality products. The process covers the full chain from detailed design up to testing and validation.

TTI has among its customers important national and international technology corporations. Recently, TTI has won a contract of the European Space Agency (ESA) to develop solid state amplifiers (SSPA) of 150W in P-band based on the novel nitride gallium (GaN) technology. [www.ttinorte.es](http://www.ttinorte.es)



### **About University of Porto**

The Faculty of Engineering of the University of Porto (FEUP) is a public institution of higher education with statutory, scientific and financial autonomy. Its mission is to train world-class engineers and its effort is on research and development of excellence. Founded in 1926, it is the largest of the 14 faculties of the University of Porto, with 3 Graduation Programmes, 9 Integrated Master Programmes (5 years), 10 Master Programmes (2 years) and 21 Doctoral Programmes.

FEUP works closely with several respected institutions such as the European Space Agency (ESA), IBM, Microsoft and the European Organization for Nuclear Research (CERN). It also teams up with research universities such as the Massachusetts Institute of Technology (MIT), the University of Texas at Austin (UTA) and the Carnegie Mellon University (CMU). This close collaboration has allowed FEUP to reform and modernise its educational programmes. These programmes consider not only the needs of the many stakeholders in Portugal and abroad, but also the framework of institutions such as the European Federation of National Engineering Associations (FEANI), the Council of Associations of Long Cycle Engineers of University or Higher School of Engineering of the European Union (CLAIU) and the Conference of European Schools for Advanced Engineering Education and Research (CESAER).

### **About Fraunhofer Institute for Integrated Circuits**

With 60 Institutes throughout Germany as well as numerous international research centers and liaison offices in Europe, the USA and Asia, Fraunhofer-Gesellschaft has an established reputation for excellence at the front rank of applied research and development. 22,000 staff members work with an annual research budget of over 1,9 billion euros. Founded in 1985, Fraunhofer Institute for Integrated Circuits IIS in Erlangen, Germany, ranks first among the Fraunhofer Institutes concerning headcount and revenues. As the main inventor of mp3 and universally credited with the co-development of AAC audio coding standard, Fraunhofer IIS has reached worldwide recognition.

In close cooperation with partners and clients the Institute provides research and development services in the following areas: Audio and video source coding, multimedia realtime systems, digital radio broadcasting and digital cinema systems, integrated circuits and sensor systems, design automation, wireless, wired and optical networks, localization and navigation, imaging systems and nanofocus X-ray technology, highspeed cameras, medical sensor solutions and supply chain services.

### **About TÜBİTAK UZAY**

TÜBİTAK UZAY (Space Technologies Research Institute) is a publicly funded research institute, which leads R&D projects in space technologies, electronics and information technologies in Turkey. Founded in 1985, TÜBİTAK UZAY has expertise on design, manufacture and operation of LEO (Low Earth Orbit) satellites. It leads Turkish Space Program and has a pioneering role in the

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national research community. It also aims to initiate international collaboration in space technologies. TÜBİTAK UZAY is a founder member of Asia-Pacific Space Cooperation Organization (APSCO) and represents Turkey in APSCO.

TÜBİTAK UZAY's first LEO Satellite, BİLSAT-1 was launched in 2003. BİLSAT was credited as the first satellite to take a disaster image in the Disaster Monitoring Constellation. The second LEO Earth observation satellite project, RASAT was designed, manufactured and tested completely by TÜBİTAK UZAY engineers. After RASAT, the first Turkish high resolution earth observation satellite, Göktürk-2, was launched from the Jiuquan Satellite Launch Center on the 18th of December, 2012. GÖKTÜRK-2 was developed in collaboration with the Turkish Aerospace Industries. Several satellite subsystems of TÜBİTAK UZAY, such as on board computer BİLGE, image compression and encryption hardware GEZGİN-2 and X-Band Communication system T-Rex has been successfully functioning on RASAT and GÖKTÜRK-2 satellites.

