ITALY: THE PERFECT PLATFORM FOR AEROSPACE

BUSINESS OPPORTUNITIES IN ITALIAN AEROSPACE INDUSTRY

SELECTED COMPANIES AND CLUSTERS

AEROSPACE & DEFENCE MEETINGS TORINO
NOVEMBER 26 - 27TH, 2019

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PROJECTS

APULIA

GROTTAGLIE AIRPORT TEST BED: ITALIAN CENTRE OF EXCELLENCE FOR REMOTELY PILOTED AIRCRAFT SYSTEM TRIALS

PROPOSER:

Aeroporti di Puglia S.p.A. - Distretto Tecnologico Aerospaziale (DTA) - Puglia Sviluppo S.p.A.

SECTOR:

Aerospace

INVESTMENT TYPE

- Greenfield manufacturing
- R&D

BUSINESS ENVIRONMENT

Apulia is a dynamic region of the South East of Italy where companies have been involved in the aeronautics sector since the 1930's. Today, Apulia plays a leading role in the aerospace industry in Italy and boasts a significant industrial concentration, with over 560 companies (MNEs, SMEs, start-ups), occupying over 7,550 employees, active throughout the region in various fields of R&D and manufacturing that make up the entire aerospace supply chain, from the production of aircraft components to space software.

Continuous investment in innovation, as well as in skills, have turned Apulia into a centre for excellence in aerospace, making it the only Italian region in which the following sector specializations co-exist: fixed-wing, rotating wing, aerospace software (Leonardo Group); production of sections of the fuselage and tail wing in carbon fibre for the Boeing 787 Dreamliner Project

(Leonardo Group); propulsion engines (GE Avio Aero); design and assembly of aircraft components in titanium and carbon fibre (Dema Brindisi for Bombardier); micro-satellites and propulsion systems for space stations (Sitael); Design and production of ultra-light carbon fibre aircraft (Black shape); R&D Centre for Additive Repairs (GE Avio Aero and Polytechnic University of Bari).

The aerospace industry is one of the most strategic sectors within the regional economy that has acquired a strong position in the international market in recent years thanks to its ability to strike up positive business relations with key players, contractors and OEMs, some of whom have chosen to invest in Apulia and contribute to the increasingly positive export performance (in 2018 the regional sector exports totalled 561,6 million euros, accounting for almost 10,2% of national exports).

In Apulia, there are two clusters involved in the aerospace sector and both of them actively seek to foster competitiveness and international business, stimulate and support research and training:

- DAP – Apulian Aerospace Business Cluster with over 70 associates (businesses and universities);
- DTA s.c.a r.l. - Apulian Aerospace Technological Cluster, a non-profit making consortium which brings together key industry players, universities, as well as public and private research centres active in Apulia.

BRIEF DESCRIPTION

In the near future, both aircrafts with pilots on board and remotely piloted aircraft systems will be operating in the same airspace. This poses not only the need to develop new aircraft platforms and associated ground systems, but also to define new rules and develop new technologies and products for all forms of air traffic control and management, in order to operate safely in the sky.

In 2014, with the backing of the Italian Government, the Italian Civil Aviation Authority (ENAC) devised a plan to qualify the Grottaglie Airport, based near Taranto in the South-east of Italy, as an integrated platform (airport, controlled airspace, systems for control and performance measurement, technological and logistical services), which aims to address these problems by creating facilities for testing, developing and offering innovative services, products and solutions for the aerospace sector.

In particular, Grottaglie Airport, thanks to its infrastructure, favourable location and facilities, represents an important test bed for companies and institutions interested in:

- conducting simulations and test trials, on the ground and in-flight, for manned and unmanned aircraft systems;
- carrying out test trials for ATF&M (Air Traffic Flow & Management) systems for product and service development and certification;
- developing products and solutions for territory observation and data management.

More recently, the Italian Ministry of Transport also designated Grottaglie airport as Italy's first and only spaceport, which, based on the project assigned to ENAC for completion, is due to be ready for operating suborbital flights in 2020.

Aeroporti di Puglia S.p.A. (AdP) which manages the regional airport network, has been carrying out significant investments in the Grottaglie Airport infrastructure and has created a range of solutions and services (hangars, office space, etc.) for companies interested in locating at the airport.

Based on a Memorandum of Understanding between the Apulian Technological Aerospace Cluster (DTA) and Aer-

oporti di Puglia SpA, for the creation of an international research hub at Grottaglie Airport, significant research and training activities are already underway with programmes involving RPAS/UAS simulation and testing, as well as cybersecurity.

To facilitate investments in Apulia and stimulate the growth and development of the Grottaglie Airport hub, the regional government has devised a wide range of flexible incentive schemes, available through the regional government agency Puglia Sviluppo.

BUSINESS PROPOSAL

The Grottaglie Airport Test bed initiative generates interesting investment opportunities for key industry players, SMEs and innovative start-ups, involved in business sectors such as UAV systems, software systems and cybersecurity, who want to be located in or around a strategic airport infrastructure, offering the possibility to carry out simulations, test trials, on the ground and inflight, for manned and unmanned aircraft systems.

Key advantages

- Grottaglie Airport is a fully-serviced strategic airport infrastructure, authorised for UAV simulation and flight trials, designated as Italy's first and only spaceport, ready for operating suborbital flights in 2020;
- Apulia is a hub for innovation thanks to the work of its more than 415 private and public entities, including universities, business and technology clusters and laboratory networks start-ups, all of which are active in R&D;
- DTA is a key player in the aerospace sector in Apulia and can assist companies in the development of highly specialised R&D programmes and training activities;
- the Apulia regional government stands out for its commitment to supporting investment in research and innovation, focusing mainly on smart technologies and providing a significant boost to hi-tech sectors, including aerospace;
- Puglia Sviluppo, the regional development agency, can assist potential investors in Apulia to access a raft of incentives, as well as assistance throughout the initial setting-up phase in identifying business locations, local business and research partners and so on.

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ADVANCED ICT SOLUTION FOR ...

PROPOSER:

CETMA (Technologies Design and Materials European Research Centre)

SECTOR: ....

INVESTMENT TYPE

☐ ....

DESCRIPTION

The aim of the project is the development of an advanced ICT solution for detecting production defects. By implementing and applying supervised classification algorithms, the aim of the project is to support quality inspection though the use of an Expert System to elaborate data from different type of sensors, identify the production defect and classify the type of defect, suggesting the most appropriate type of intervention, based on international best practices.

After the identification and study of the intervention methodologies applicable in the context of productive defects, the objective is, therefore, to identify the possible corrective solutions to the defects and their application areas, the evaluation of the effectiveness of the proposed solution and possible contraindications. The project proposal will take into account the technological aspects involved, and will aim at minimizing production costs and non-quality. Thanks to these, a database of the possible interventions in the sector of productive defects will be created.

The final objective will be the creation of an expert system, based on advanced artificial intelligence techniques, which classifies the defect and correlates it with the most effective structural repair intervention.

CETMA wants to involve other companies in order to finalize the ICT solution. The investment required ranges from 500,000 € to 800,000 €. The TRL of the technology is 4.

BUSINESS PROPOSAL

CETMA aims to produce an ICT solution specifically applicable in aerospace sector. CETMA needs partners to carry out R&D activities focused on the specific application, in order to set up optimized equipment and process parameters. The partners involved will be Electronics and Sensors producers, ICT companies.

Key advantages

- Know-how developed in other projects, cooperating with partners like ALENIA AERMACCHI S.p.A. e Agusta Westland;
- The proposed ICT solution is very flexible and applicable to a large number of process and sectors.

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AUGMENTED REALITY APPLICATION FOR OPERATORS TRAINING

PROPOSER:

CETMA (Technologies Design and Materials European Research Centre)

SECTOR: ....

INVESTMENT TYPE

☐ ....

DESCRIPTION

Aircraft maintenance technicians (AMTs) must obtain new levels of job task skill and knowledge to effectively work with modern computer-based avionics and advanced composite materials. Traditional methods of training, such as on-the-job training (OJT), may not have potential to fulfill the training requirements to meet future trends in aviation maintenance.

CETMA has established a high level of know-how for the design and the developing of Augmented Reality Application. DUNE. is a "digital ecosystem" based on technologies for virtual reality and 3D content interaction, consisting of advanced visualization systems, software solutions and specialized services, offered by the design and development team of the CETMA Consortium of Brindisi.

Specifically, DUNE AR could represent the aerospace solutions for training, give real-time feedback and improve the efficiency of skills transfer, increased knowledge retention, and better captures enterprise knowledge within an organization, partners involved will be several ICT Enterprises.

Utilizing a combination of step-by-step task management, knowledge markers that display relevant data, and wayfinding to the next task site, DuneAR improves worker efficiency, while also providing an unparalleled level of traceability and oversight. The TRL of the technology is between 2 and 3. The investment required is estimated to approximately 500k euro.

BUSINESS PROPOSAL

CETMA aims to sell both the DUNE AR application with 2 different offers: a) Dune AR License with a month or year subscription fees; b) Dune AR perpetual license. CETMA needs partners to carry out R&D activities focused on the specific application, in order to set up the full design process of the AR software.

Key advantages

The key advantage of the project proposed is relevant to the possibility to minimize cost and the time and resources spent on training, while also maintaining or improving quality. In addition, technicians need to be proficient and continue to change rapidly as tasks become more complex. Finally, traditional classroom training does not give hands-on experience, nor does it support critical thinking, problem solving, communication and grit that is crucial for learning complicated procedures.

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CONTINUOUS INDUCTION WELDING FOR THERMOSET AND THERMOPLASTIC COMPOSITES

PROPOSER:

CETMA (Technologies Design and Materials European Research Centre)

SECTOR: ....

INVESTMENT TYPE

☐ ....

DESCRIPTION

The development of new techniques to join thermoplastic and thermoset composites, characterized by high reliability, production rates and performances, is one of the key-factor for the exploitation of these materials in sectors like aerospace and transport. Cetma developed a new machine for continuous welding of thermoplastic and thermoset composites. The innovative aspect of this machine, installed at CETMA's facilities, is related to the integration of a new control and tuning system to allow an optimized temperature distribution for different materials and geometries to be welded. The machine has been developed with the collaboration of SINERGO Srl for the building of Induction Heads and basic equipment and aerospace large companies (Leonardo, Airbus). The activities were mainly developed within European Clean Sky Projects.

The TRL of the technology is between 5 and 6. R&D activities are required for application of Technology at industrial level for the welding of average number of parts. The investment required is estimated to approximately 1 million of Euro.

BUSINESS PROPOSAL

CETMA proposes to cooperate for the customizing of the process for the aerospace applications, increasing the TRL at industrial level. The possible target investors are aerospace OEM and aerospace TIER 1.

Key advantages

The key advantage of the proposed process is relevant to the possibility to increase the use of composite materials, in particular thermoplastic matrix composite materials, also in complex shape components. This would be possible thanks to the implementation of an innovative and winning process for the welding of composite material aerospace components, applicable to a large number of applications.

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AEROSPACE INTERIORS IN COMPOSITE MATERIALS (RECYCLED CARBON FIBRES COMPOSITES FOR AEROSPACE INTERIORS?)

PROPOSER:

CETMA (Technologies Design and Materials European Research Centre)

SECTOR:

Aerospace

INVESTMENT TYPE

- Industrial/technological partnership
- Funding

DESCRIPTION

The aim of the project is the development of aerospace interiors in composite materials, using recycled carbon fibres (RCFs) as reinforcement. RCFs are a very attractive secondary raw material having mechanical properties similar to those of virgin ones. In addition, they are cheaper than the virgin ones: a price reduction ranging from 45% and 55% is estimated. The RCFs could represent a great opportunity for the suggested application, in substitution/integration of semi-structural composite components produced using glass reinforcements, providing a winning solution to the impelling need of the aviation industry to satisfy the target of CO2 reduction, associated to a reduction of fuel consumption that can be obtained reducing the aircraft weight. It is important to underline that a mandatory issue to contemplate, in order to exploit the fully potentiality of RCFs, is the sizing restoring, degraded during the recycling process.

The sizing protects fibers during handling, lets an adequate wettability during impregnation stage and increases interfacial shear strength between the fiber and matrix resin, making the fibres suitable as reinforcement for composite components. Cetma, based in Brindisi, has established a high level of know how for the proprietary sizing treatment for RCFs, in order to make them technically and technologically competitive with virgin fibres.

The investment required ranges from 100,000 € to 500,000 €.

The TRL of the technology is between 5 and 6.

BUSINESS PROPOSAL

The business proposal is linked to the development of new products for aircraft interiors, based on recycled carbon fibres, at two different levels:

- Development of semi-finished products, such as semi-pregs, pre-pregs;
- Development of aircraft interiors components.

The partners involved will be semi-finished composite products producers and aircraft interiors manufacturers.

Key advantages

- Know-how developed for sizing of RCFs;
- Possibility of using an high value secondary raw materials;
- Lower cost in comparison with virgin carbon fibres;
- Weight and CO2 emission reduction.

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RFID TRACKING & MONITORING...

PROPOSER:

CETMA (Technologies Design and Materials European Research Centre)

SECTOR: ....

INVESTMENT TYPE

- ....

DESCRIPTION

The aim of the project is the development of RFID Tracking & Monitoring Services for quality management in production process. The development and application of new technologies for tracing the production process, to improve performances in terms of costs and time, is one of the key factors in sectors such as aerospace, that requires moreover very high quality level.

CETMA, based in Brindisi, has already developed production-tracking systems in various sectors and has been able to verify that these technologies and monitoring can represent a real opportunity to increase the competitiveness of a company. This ICT solution allows the control and management of the production process, considering both the declarations of the manual activities and the automatic monitoring of the production parameters (of any type of machine / plant).

The interactive management of collected data feeds a complete and powerful real-time supervision system and a virtually infinite set of statistics, indicators and reports.

CETMA's know-how derives from previous collaborations with partners like ALENIA AERMACCHI S.p.A. and AVIO S.p.A.. CETMA wants to involve other companies

in order to finalize the ICT solution and make partners technically and technologically competitive thanks to this new production monitoring tool.

The required investment ranges from 500,000 € to 800,000 €.

The TRL of the technology is 4.

BUSINESS PROPOSAL

CETMA proposes an ICT solution for the development of RFID Tracking & Monitoring Services for quality management in production process. The service could be sell at any kind of production company. The technology has to be customized depending on the process/product to be tracked. R&D activities are required for application of the ICT solution at industrial level. The partners involved will be producers and manufacturers of components for aeronautics.

Key advantages

- Know-how developed for other tracking and monitoring system;
- The proposed ICT solution is very flexible and applicable to a large number of product, process and sectors;
- Costs and time reduction in production process.

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HIGH INSTRUCTIONS LEARNING THROUGH VIRTUAL REALITY

PROPOSER:

MTM Project Srl

SECTOR:

Aerospace

INVESTMENT TYPE

- Industrial/technological partnership
- Funding

DESCRIPTION

HIL VR (High Instructions Learning through Virtual Reality) is the most powerful Virtual Reality and Machine Learning software, integrated in a unique Platform, for the training of technical staff which, through the use of VR procedures (for learning) and the Machine Learning algorithms (for checking of training), allows the operator to carry out training, simulate and repeat “in real life” what has been learned.

The project is also made up of AURES (Augmented Reality and Remote Support). Aures is the Smart Glass and Smartphone software system for service, maintenance and production assistance through Augmented Reality. With Aures, it is possible to view, step-by-step, the operative procedures in VR that need to be followed, to access remote access and video calls, to record videos and take photos and store them on the cloud/server.

MTM Project, is a well-established innovative Italian SME located in Monopoli, which develops projects in collaboration with Bari University (scientific partner), Confindustria Bari, Apulian ICT Business Cluster, Apulian Aerospace business cluster.

Our software is suitable for the technical training of workers in the aerospace, automotive and manufacturing sectors. It is ideal for training company technicians on: complex procedures, security, routine and specialist maintenance, production and maintenance.

We are interested in finding an international partner, either as an investor in the business or as a distributor licensee.

BUSINESS PROPOSAL

We are interested in finding an international partner, either as an investor, willing to invest between 600.000-1.000.000 Euros, or as a distributor licensee.

For investors, we are willing to offer a share in the company.

In the case of licensees, we will offer an exclusive contract with the highest percentages in the sector able to satisfy both. The target investors can be technology companies, commercial distributors, and professional investors.

Key advantages

- For HIL VR, Having a single integrated system for industrial training, progress control and tests available
- HIL VR reduces the times and costs of training. It promotes self-learning and E-learning. It improves the organisation of staff. It encourages the sharing and conservation of the know-how within the company.
- AURES reduces intervention time and costs thanks to the remote assistance. It is totally “hands-free”.
- We have several large customers. We have passed the launch phase, we are at an advanced stage of development.

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MULTIFUNCTIONAL PANELS AND COMPOSITE ISOGRID/LATTICE AEROSPACE STRUCTURES INTEGRATION

PROPOSER:

SATOR

SECTOR:

Aerospace

INVESTMENT TYPE

- Industrial/technological partnership
- Funding

DESCRIPTION

The main goal of the project is to minimize the mass of satellites and spacecrafts by incorporating cables, power bus, connectors, sensors and thermal control components into composite panels, featuring multifunctional properties, and then inserting them into the CFRP lattice primary structure, just like a tile. Electrical components are embedded into composite panels during carbon thread stitching process, so achieving high level of integration. The design allows easily accessible, removable and modular electronic systems with high grade of debris protection. The benefits of such technology include a 70% reduction in electronic enclosure and harness, a 50% reduction in spacecraft volume required for conventional components and a reduction in labor required for spacecraft assembly, showing up an extremely robust system applicable to several missions. Panels can be easily allocated in load bearing CFRP ANISOGRD/Lattice structure's cells. The novel systems' integration concept overcomes the actual one based on lumped mass distribution concept (ref. http://www.satorsrl.it/multifunctional-structures/).

- Place/Site: Grottaglie/Taranto or best site for investor (as alternative);
- Partners involved: ARES Consortium, University of Roma 2 – Tor Vergata -
- Investment required: Min. 1,3 Mln € - Max 2,4 Mln €
- Project Phase: self-funded prototyping (TRL 4: Component functional verification in laboratory environment)

BUSINESS PROPOSAL

SATOR is looking for big aerospace companies/system integrators/industrial partners as investors and proposes a framework agreement for the technical development and business concept start. The partnership would facilitate the development and manufacturing phases due to engineering requirements, research platform and test facilities availability for ground and in-flight or in orbit test. Furthermore, the investor might be a direct selling client or the final customer, being an end user.

Key advantages

- Big market opportunities in aerospace sector (satellites, launchers, aircrafts)
- Fast and high R.O.E. and R.O.I.
- Low number of competitors
- Rapid Break Even Point achievement
- Low capital investment

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SEAGULL: A HIGH PERFORMING TWO SEATS LIGHT HYDROPLANE

PROPOSER:

NOVOTECH SRL – AEROSPACE ADVANCED TECHNOLOGY

SECTOR:

Aerospace

INVESTMENT TYPE

- Industrial/technological partnership
- Funding

DESCRIPTION

The SEAGULL is a high performing two-seater light hydroplane with a hybrid propulsion system, easy and economical to use, operating in complete autonomy from any conventional infrastructure but can be easily operated also from “marine” or private boat structure.

It features a very innovative and automatic retractile morphing wing, making it possible to pass from aircraft to boat configuration. The integration of methods and technologies from the aerospace and naval sectors are combined to create a unique product relying on the wide use of high performing composite materials and eco-friendly production processes. This new mobility system has been developed for promoting communication between people and to go beyond the current barriers of public and private transport.

Partners involved: University Federico II of Naples; CETMA

Investment required: € 1,500,000

Project Phase: Designing started in January 2018 and now the aircraft is completely designed, tested in water tank and wind tunnel. In addition, a full scale fuselage mock-up and a wing folded test bed, have been used to verify the main capability of the project. Manufacturing of some components is in progress and the complete flying vehicle is planned to be ready at the end of 2020.

BUSINESS PROPOSAL

We are looking for investors, interested in investing in a very innovative and promising personal transportation system that is currently suited to use on water, but potentially can be converted in a ground operated system also with capacity to VTOL operation.

The commercial challenge is the production of a new mobility system that is multi-scope (Reconnaissance, surveillance, sport, tourism, training activities), economical (accessible) and eco-friendly (materials and production processes).

We are also interested in commercial representatives and distributors.

Key advantages

- the development of innovative electromechanical actuation mechanisms enabling a folding wing to be able to make the transition from the aircraft to the boat configuration.
- the production of an integrated and lightweight aerostructure, thanks to a wide use of composite materials through out of autoclave and as much as possible automated production processes.
- development of the hybrid propulsion system

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LAZIO

GAUSS ACTIVITIES FOR MICROSATELLITES

PROPOSER:

G.A.U.S.S. Srl (Group of Astrodynamics for the Use of Space Systems)

SECTOR:

Space technology in particular for field of Small Satellites

INVESTMENT TYPE

- R&D
- Industrial/technological partnership
- Funding

BUSINESS ENVIRONMENT

The space industry is undergoing a dramatic transformation. Demand for large geosynchronous communications satellites has fallen dramatically as companies prepare to launch constellations of hundreds or thousands of less expensive broadband satellites in low and medium Earth orbits. In this environment of small satellites, smaller GAUSS has been active for more than 20 years. GAUSS launched from 2000 to now 9 microsatellites, 8 CubeSat and 6 Pocketcube in the frame of UniSat Program.

DESCRIPTION

GAUSS Srl is an Italian limited liability company based in Rome, founded in 2012 as a spin-off of the Scuola di Ingegneria Aerospaziale of University of Rome, active in the space technology field.

GAUSS aims are the research, the development and the implementation of aerospace projects, and the educa-

tional aspect and the execution of related cultural initiatives.

GAUSS activities range from structural design and mission analysis to the realization and launch of complete micro-satellites and CubeSats, their deployers, launching platforms and main subsystems (OBC, Radio, customers payloads etc.), IOD/IOV and ground segment services. The UniSat satellite is used also as a platform carrier and deployer for third-parties satellites in orbit.

Next launch is planned for 2020.

BUSINESS PROPOSAL

We propose investments to develop a constellation of 3U microsatellites which have for the basic model the following characteristics: LEO or GEO Orbit, structure dimension of 10x10x35 cm, electric power 20watt, telecommunication UHF VHV S-band, attitude pointing less than 5 degrees. The price for one 3U basic model, including launch is about € 800k.

Key advantages

Fast and easy manufacturing (10 pieces every 3 months), 4 launches per year, using Soyuz-Fregat.

Lean design and low cost realization.

Multipurpose constellation (telecommunications, remote sensing, in-Orbit demonstration etc.).

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I.MODI

PROPOSER:

Survey Lab s.r.l

SECTOR:

Earth Observation, Infrastructures and Structures Monitoring

INVESTMENT TYPE

- Brownfield (expansion/renovation)
- R&D
- Industrial/technological partnership
- Funding

BUSINESS ENVIRONMENT

In Italy specifically, the potential demand for interferometry monitoring products is significant; with an estimated + 10 – 15% annual sector growth (the estimate is based on insights from direct interviews with market players and potential users). The main players in Italy are diverse and include multiple entities with distinct involvement along the value chain. They range from satellite data originators and distributors seeking to expand towards product development and provision, to more traditional user-oriented operators that have acquired interferometric know-how through collaborations and agreements with players focused on processing techniques. The competitive landscape assessment has shown that the main market operators do not currently offer significant added value benefits to their customers (specifically in the downstream/user end of the value chain) and do not seem able to differentiate their products. The Market Volume for EO services composition is approximately: public customers, including R&D agen-

cies, lead with a total market share of 65 % while around 30 % of revenues come from other industrial customers (4% comes from international organizations). As far as the I.MODI thematic area is concerned, the business volume is already huge. Indeed, by summing up Land Motion & Ground Government, Urban areas, Infrastructure, Landslides and Earthquakes, we come up with over 16% of the total revenues generated.

DESCRIPTION

I.MODI (Implemented MOnitoring system for structural DIsplacement) is an added-value service that integrates Earth Observation (EO) technologies, ground based data and ICT to create easily accessible visualized data for all kinds of users, including non EO professionals. The I.MODI project aim is to develop a service which employs EO data into standard procedures, devoted to structural damage assessment; thus contributing to implement mitigation and prevention actions for potential failures. I.MODI is a Survey Lab (Sapienza University Spin Off) project, and it was financed by the European Commission under the H2020 SME-Phase 2 (Small-Medium Enterprise) Instrument Program. It was developed in Rome (Italy), where the Survey Lab headquarter is located. We need about 750,000-1,000,000 €. Our service is at the marketing stage; we have already used I.MODI to monitor buildings, roads and dams on Italian territory with research conventions, public entities and engineering firms. We have also identified a critical need in order to better exploit market opportunities, specifically the need to tailor made in each specific market the link between Survey Lab as a service provider and the potential end-users of our services. We have a strong technical capacity to deal with EO applications and to develop useful new services based on advanced technologies. It is now necessary to develop in each specific end-user market a "brokerage capacity", defined as the capacity to develop a stable and profitable connection between Survey Lab's services and our specific clients. Moreover, we would like to patent our newly developed tools which optimise I.MODI performance.

BUSINESS PROPOSAL

We offer an innovative service (I.MODI) which represents a valuable tool in situations where numerous buildings or big infrastructures need to be monitored, with the aim to prioritize more detailed investigations on critical structures. Our target groups are public and private customers who operate in the following market segments: buildings, roads and dams.

Key advantages

- It costs less than traditional monitoring, saving up to 80% per year;
- Fast and systematic control over large areas and extensive infrastructures;
- It permits back analysis, until 1992, of the displacements of a structure or infrastructure;
- It provides customized solutions based on user needs;
- Identify critical issues without inspections and instrumentation installed on structures.

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IOT SOLUTION TO IMPROVE RESILIENCE OF BUSINESS-CRITICAL INFRASTRUCTURES

PROPOSER:

Smart Structures Solutions

SECTOR:

Space data for industrial infrastructures

INVESTMENT TYPE

- Funding

BUSINESS ENVIRONMENT

The targeted application addresses the problems/issues the owner of distributed infrastructures (pylons of power lines, poles/towers used for broadcasting and telecommunication purposes, etc.) usually face in the management of their asset, especially for what regards the inspection/maintenance activities.

Traditional inspection/maintenance procedures envisage periodic assessment of the status of the infrastructure; such processes, whereas proven in the past to be effective, have some limitations connected to their period nature:

- Impossibility to have assessment between two successive inspections;
- Impossibility to promptly identify and being alerted about the occurrence of damages/anomalous situations;
- Impossibility to assess the current status in case a severe/extreme event hit the infrastructure (or a portion of it).

DESCRIPTION

The proposed IoT solution is designed to solve the limitations affecting these existing procedures: it aims at continuously monitoring, in a remote way, damage-sensitive parameters of the critical infrastructures. In such a way, in case a damage/anomalous situation occurs, the system will alert the owner which will have the capability to promptly react, before the damage/anomalous situation leads to a catastrophic failure.

Our IoT solution is based on data acquired by local sensors, transmitted to Control Centre and processed by proprietary algorithms, capable to extract information about the integrity of the monitored infrastructures. Sensors' data are supported by information/data provided by space asset.

BUSINESS PROPOSAL

The shareholders are looking for an investment of 1 million of Euro: this amount will allow to scale-up the company and deals with first orders, consenting the investor to have the control of the company and a percentage of shares between 51% and 60%.

Key advantages

The proposed business idea is capable to improve the resilience of critical infrastructures (such as power, broadcasting and telecommunications infrastructures) for enabling:

- Predictive / On-condition maintenance, which allows an improved management of the asset and the possibility to optimize of the inspection interventions;
- An improvement of the service availability through a reduction of the out-of-service;
- A reduction of the financial costs connected with risk of failures.

CONTACT INFO

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JANUS 2.0

PROPOSER:

Airbus Italia S.p.A.

SECTOR:

Aerospace, avionic SatCom terminals

INVESTMENT TYPE

- R&D
- Industrial/technological partnership
- Other

BUSINESS ENVIRONMENT

Airbus Italia (former Space Engineering), whose Headquarters and Industrial Plant are based in Rome, is currently part of the Defence and Space division within the world leading Airbus, Space Systems, Telecom. Space Engineering has been a 100% Airbus Defence and Space company since 2015; in August 2019 it has officially changed its name to Airbus Italia S.p.A.. The Janus product line, fully designed and built by Airbus Italia, is one of the most successful product stories of the company. The growing interest in avionic SATCOM terminals for LOS/BLOS ISR missions able to flexibly use either Ku or Ka frequency band on a single antenna aperture has been pushing Airbus Italia in the design, manufacturing and test of a low profile switchable Ku/Ka multi-reflector system named “Janus”. Starting from the first version, Janus 1.0, Airbus Italia has been keeping on updating the antenna design, developing the second generation of the Satcom Terminal, Janus 2.0.

DESCRIPTION

As of today, the entire Janus line of products includes:

- the Janus Aero 1.0: designed for aeronautical applications and next to be installed on UAVs;
- the Janus Aero XS: for aeronautical applications on platforms with tight size constraints, e.g. helicopters and small UAV;
- the Janus Aero 2.0: the evolution of the Janus dual-band that will fit below standard radomes.

It is worth mentioning that Janus 1.0 was used on May 2017 on-board an ATR-P 72A MPA to provide continuous video surveillance of the G7 Summit area in Taormina, Italy. Janus is the unique concept patented by Airbus Italia to enable remote switch between Ku and Ka band. The switch is performed by mirror rotation with a dedicated RF chain for each frequency band. The compact size and low weight combined with its high throughput both in reception and transmission make Janus Aero the ideal solution for several types of Mission Patrol and UAV applications. In addition to dual-band (Ku/Ka) configuration, Janus is also able to operate in a single-band configuration (Ku or Ka) by disembarking the unnecessary RF chain. Janus Aero 2.0 has all the features of Janus Aero 1.0 with improved electrical and mechanical performances.

BUSINESS PROPOSAL

Janus Aero 2.0 is the evolution of Janus Aero 1.0 targeted to all type of institutional ISR missions, and all type of aircraft platforms. It has all the features of Janus Aero 1.0 with improved electrical and mechanical performances. Janus Aero 2.0 accomodates below standard ARINC 791 Commercial Off-The-Shelf radomes (e.g. Carlisle, Panasonic, Boeing, etc.). The target of Janus Aero 2.0 is to be the best compromise between institutional and civil BLOS ISR missions that require maintaining a good quality of a multiple polarized satellite channel also at very low or high elevation angles.

Key advantages

- Dual band
- Remotely switchable
- Third axis/high tracking performance
- Very light
- Excellent RF performances
- ITAR free

CONTACT INFO

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METAMATERIALS FOR ANTENNA - M4A

PROPOSER:

ALMA Sistemi Srl

SECTOR:

Aerospace, telecommunication

INVESTMENT TYPE

- R&D
- Industrial/technological partnership
- Funding

BUSINESS ENVIRONMENT:

ALMA Sistemi Srl operates in Lazio Regions, Italy where are concentrated most of the largest aerospace industries in Italy, including Thales Alenia, Airbus, Leonardo etc. as well as a large and important network of SMEs.

The research networks include several Universities (3 main universities in the Rome area) and research centres (e.g. CNR, ENEA, ESA/ESRIN) with activities in the Aerospace.

ALMA Sistemi has ongoing cooperation with University Roma TRE – Dipartimento di Ingegneria (expertise in metamaterials) and "La Sapienza" for remote sensing applications.

DESCRIPTION

For Machine to Machine (M2M) / Internet of Things (IoT) terminals connecting through broadband non-geostationary orbit (NGSO) constellations there is a need for cost-effective medium gain transmit/receive steerable antenna solution with slow-tracking requirements, where size and power consumption are key driving requirements.

ALMA Sistemi (Guidonia, Rome, Italy) in cooperation with University Roma TRE developed in the frame of M2P project (POR-FERS Lazio 2014-20 KETs) a prototype antenna lens manufactured with "varactor" (metamaterial) to electronically steering the beam. The prototype "lens" is placed in front of an C band horn antenna steering the beam to -30° + 30° with good performance. M4A project aim to design and develop a "lens" suitable to address Ku band need (and potentially Ka) and -60° + 60° (zenith) and 360° (az). The main advantage of the proposed technology is to drastically reduce the complexity of the electronic used in the traditional electronically steerable antenna (e.g. phase array antenna). This enable significant cost reductions and can prove to be commercially viable. ALMA Sistemi proposes a pilot project to build up a prototype/pre-series antenna in Ku band using this innovative technology in cooperation with University Roma TRE. The project range 0,8 -1,5 M€ to be completed in 24 months. The project starts from the result of M2P (TRL3).

BUSINESS PROPOSAL

Development of an innovative, cost effective, technology for telecommunication suitable to be applied to different fields including ground/sea/air to space, space to space as well as ground to ground telecommunication

We are seeking technological and commercial partnership to exploit the technology.

Key advantages

The proposed technology is innovative with the potential to be applied to several field. The reduction in complexity lead to consistent cost reductions with respect to equivalent phase array antenna enabling mass market

applications. The capability to electronically steering the beam and hence reduce jamming and spoofing interference, can also enable professional market applications related to secure telecommunication.

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MIPRONS (MICRO PROPULSION FOR NANOATELLITES)

PROPOSER:

Miprons Srl

SECTOR:

Aerospace propulsion

INVESTMENT TYPE

- R&D
- Industrial/technological partnership
- Funding

BUSINESS ENVIRONMENT:

Propulsion systems for nano/micro/ mini-sats.

DESCRIPTION

Nanosatellites, due to their small dimensions (10x10x-10cm), do not permit the integration of high performance propulsion systems (high Thrust, Specific Impulse and Delta-Velocity).

This does not allow manoeuvres as orbit changing, swarm constellation forming, de-orbiting, life-time extension, etc., in particular, in “commercial-reasonable” time.

Miniaturized effective propulsion systems would, therefore, enlarge the fields of application of the nanosatellites and would permit greater/heavier payloads to the micro/mini satellites.

BUSINESS PROPOSAL

Development of an innovative micropropulsion system for nano/micro/minisatellites that maintains miniaturized dimensions and very high performance.

The propulsion system is internationally patented (Minotti, A. "SPACE PROPULSION SYSTEM", PCT/IB2018/055595), effective as of 2017.

The MIPRONS srl is the exclusive licensee.

Key advantages

Scalable miniaturized propulsion system, with high performance, adoptable to nano/micro/mini satellites, in particular:

- Combustion chamber's characteristic dimensions of the order of:
  - 6 mm, for 3N of thrust, and specific impulse greater of 330s;
  - 20 mm, for 20N of thrust, and specific impulse greater of 330s;
- Orbit changing in the range 4<degrees<33, depending on the payload and thrust (1<Units<3+3[1] and 1<Thrust [N]<10);
- Time for orbit changing in the range 1<days<10, depending on the degrees, thrust and payload;
- Life extension, at 300 km, in the range 1<years<5, depending on the payload and thrust (1<Units<3+3[1] and 1<Thrust [N]<10);
- Pressure less equal than 50atm;
- Launch pressure, 1atm;
- Green, safe and easily manageable propellant;
- Cheap realization.

[1]3 units for propulsion system and propellant, plus 3 units of payload (optics, antenna, etc..).

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RANGE EXTENDED HYBRID – R.E.H.

PROPOSER:

Engineering for Sustainable Development, ESD srl

SECTOR:

Avionics, Aerospace, Military Defense

INVESTMENT TYPE

- R&D
- Industrial/technological partnership
- Funding

BUSINESS ENVIRONMENT

R.E.H. was designed for aircraft handling, in the avionics and aerospace sectors; other applications are in the automotive sector.

Avionics: in this sector there are interesting applications for unmanned aircraft, to extend flight autonomy, in the civil sphere for land and sea drones and in the military for surveillance drones -> https://doi.org/10.1139/juvs-2013-0005

Automotive: this sector is certainly in the process of development and transformation; currently the problems related to electric mobility are many: recharging times for accumulators that are too long, an electricity grid that is still not well distributed, accumulators that offer low autonomy and that quickly degrade. The hybrid in series allows an extension of the electric mobility, offering in fact a solution to the current problems.

The size of the market is national, European and international.

An interesting work can be read in this article: "A hybrid propulsion system for a high-endurance UAV: configuration selection, aerodynamic study, and gas turbine bench tests" (https://www.nrcresearchpress.com/doi/full/10.1139/juvs-2013-0005#.XaWPHVUzZ9N)

The size of the market is national, European and international.

Customers: The potential customers are mainly, medium and large companies operating in the automotive and avionics sector.

The "ENGINEERING FOR SUSTAINABLE DEVELOPMENT S.R.L. - ESD S.R.L." was born in 2017, as a start up of the Department of Mechanical and Aerospace Engineering of the University of Rome "La Sapienza". The company carries out research, development, implementation and marketing of innovative products and services of high technological value, with use in the renewable energy, mobility, avionics and calculation tools sectors.

DESCRIPTION

Place/Site: Rome

Partners involved: Engineering for Sustainable Development, Department of Mechanical and Aerospace Engineering. La Sapienza, Rome Italy

Investment required: Range investment 1.000.000 -1.200.00 €

Project phase: pre-prototype

Range Extended Hybrid is a system dedicated to the movement of a drone. The system consists of a high energy density gas turbine, a lithium battery pack (it can also be a hybrid battery pack, with batteries and ultracapacitors), an electric motor, inverter and dedicated electronics (various controllers). The peculiarity of the system is placed in series with the battery pack. This

system (standard system) of the turbine has the exclusive functionality of recharging the battery pack (RANGE EXTENDER) and therefore does not contribute to the movement of the drone; the recharge of the accumulator is programmed with the state of charge (SOC) of the same lower than the predetermined threshold of the battery pack. Design and constraint for the power supply of the installed battery pack. Since the turbogas unit can be supplied with LPG or natural gas, the pollutant reductions are significantly higher. The system aims to solve the following problems: significant reduction of battery degradation thanks to programmed charge cycles, considerable reduction of polluting emissions compared to similar hybrid systems.

BUSINESS PROPOSAL

The business idea.

The utility model, once patented, can be marketed in several ways, some of which can be chosen as an alternative to others, considering the opportunity for financial gain at the moment:

- issue of a license for a consideration, to third parties, of the rights to produce and sell, by third parties, the utility model, with periodic remuneration (royalties) recognized to the ESD.

Key advantages

- Increase the autonomy of flight of electric aircraft
- Lower weight and less bulk of the system
- More robustness and reliability
- System scalabilty, Range Extended Hybrid

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SMALL UAV SWARM PRECISE LOCALIZATION, IDENTIFICATION AND TRACKING OF RADAR AND RADIOFREQUENCY SOURCES

PROPOSER:

Sigma Consulting Srl

SECTOR:

Aerospace

INVESTMENT TYPE

- Industrial/technological partnership
- Funding

BUSINESS ENVIRONMENT

Sigma Consulting is an Italian system integration company based in Tecnopolo Tiburtino - the main technological district in Rome, which hosts 130 SME companies mainly in Aerospace sector.

Sigma is the formal representative of ATEN IS Group; an Advanced Technology Network established in 2013 with the aim of developing products and services in the Aerospace and ICT sector. ATEN IS currently consists of 41 companies and it collaborates steadily in R&D projects with CNR - the National Research Center, and with the 3 main universities of Rome.

ATEN IS missions are: 1) Developing integrated systems for final clients; 2) Strengthening partnerships with Research Institutions for continuous innovation in cutting-edge technology; 3) Promoting expansion in international markets. The Group main features are: high flexibility, low costs and continuous innovation.

ATEN IS experience:

Aerospace & Defence: Electronic Defence, Intelligence, Security of Land, Borders and Ports, Flight Simulation, Radar, Sonar, Lasers, Aircrafts, multi-wing UAVs, C&C, Telecommunication. Technologies: Microwaves, Antennas, Ground/Sea robots.

Civil products/services: Cybersecurity, Smart Cities, Energy management, Smart Farming, Electromedicals. Technologies: Artificial Intelligence, Virtual/Augmented Reality.

International Market: ATEN IS, through its representative Sigma Consulting, has developed a network of international commercial and technological partnerships in the following countries: Brazil, Ecuador, Peru, Chile, Mexico, Canada, China, India, Pakistan, Turkey and Bulgaria.

DESCRIPTION

The project consists of a Swarm of 3-4 Mini Class UAVs with fixed wings equipped with ultra-miniaturized, lightweight Elint/Comint receivers. They are able to perform security missions for many applications such as: Intelligence (ISR), Land Security & Monitoring, Search & Rescue with a high degree of localization precision - unachievable with existing multi-antenna single platform systems. We have designed a single-antenna multi-platform device that allows, during the mission, to detect, identify, localize and record radars and radiofrequency sources with extreme precision. Each UAV has a 3 m. wingspan, 9 kg of weight, 2 batteries for 4 hr. (50 km) of autonomy. It is fully autonomous and a single operator can control the Swarm through the Ground Station. The UAV is low cost, thus expendable. All UAV capabilities are configurable: frequency band, mission route, scanning rate, operating mode and emitters' library. The UAVs can operate in different areas or in the same area with different bands, or in localization mode pointing to

an assigned emitter. All digital receivers use direct sampling in the assigned frequency band. Each UAV has one antenna with an angular coverage of about 120 degrees in frequencies 0-40 GHz. The full system and UAVs will be developed internally.

Place: Rome Tecnopolo Tiburtino.

Partners: Sigma Consulting, Wave, Alpi Aviation.

Project Phase: A prototype of the Receiver and the Ground Station have already been built. An improved production version of the 3 systems must be developed and fully tested in operation.

Investment required: € 500.000.

BUSINESS PROPOSAL

Proposal: Production of a high-tech Intelligence system for ISR (Intelligence, Surveillance, Reconnaissance) missions. The system utilizes low cost, expendable Mini Class UAVs that guarantee superior localization performance compared to current avionic, naval and ground equipment.

Target Investor: Antiterrorism, Civil Protection, Surveillance of seas and ground, Civil and Military organizations, Port authorities.

Key advantages

- Low cost Elint/Comint capability for ISR missions
- Superior localization precision
- Single-antenna platforms for ground and naval bases not equipped with ELINT capabilities
- Cutting-edge receivers installed on UAVs
- Intelligence capability applied on a ground peripheral basis

CONTACT INFO

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VIRTUALMIND – AEROMECCANICA FLY 360

PROPOSER:

Eng. Davide Angelelli – Virtualmind Aeromeccanica

SECTOR:

Aerospace probe

INVESTMENT TYPE

- R&D
- Industrial/technological partnership
- Funding

BUSINESS ENVIRONMENT

- Video surveillance;
- Security infrastructure;
- Anti-terrorism operations;
- Public policy;
- Defense.

DESCRIPTION

Background:

Fly360 The project was designed to bridge the gap between civil aircraft of small dimensions and ultra-professional systems by high production and operating costs. Currently there is only one competitor that does not have the same recording characteristics at 360 ° but only an HD front camera. The Fly 360 as well as having on board 360 and IR camera also possesses an innovative ground station.

Innovation:

Fly360 ° is a revolutionary project, the result of integration and synergy of many Italian and international patents, which wants to produce a new UAV technology. The first product in the world capable of integrating into a nano-UAV of small and very light, 170mm and 190g, an omnidirectional camera, for a 360° spherical shooting.

Fly360 is aimed at professionals in the defense and security markets, at least in the first stage, but it has very interesting features and capabilities for the market "prosumer" civil.

Its payload, integrated into the bearing body, is constituted by an omnidirectional mini camera with two lenses, able to resume spherically what surrounds it and a thermal front camera.

Particularly suitable for forensic analysis, in which the use of a small size plane means able to resume everything that surrounds it, makes it an ideal tool for "frizzing" the scene in a totally aseptic.

The larger version, "Cheyenne 360" already realized and in production is proposed for Search and Rescue (SAR) and for the control and monitoring of infrastructure. This version incorporates an omnidirectional camera with very high resolutions> 30Mpixel and a thermal front camera.

Both versions have a powerful onboard control unit, coupled with a smart software and great precision, which allows you to "drive" the drone with a simple I-Pad.

Also is possible to assign "missions" planned, to provide the pilot on the ground, through the remote video signal and telemetry avionics onboard, through a Ground Station with GPS tracking drone in real time. You can also reset the waypoint and change the route, also started the mission.

Our patent provides realization of a series of UAVs, both rotary wing fixing, which are not more or less effective

copies of mass products from China, but provide a high degree of specialization to each product, which meets versatility criteria, security, ease of use, offering a standard qualitatively and technically superior to what is currently proposed.

Technical considerations:

The pilot will be more focused on the operation of investigation and control, with no lapses in attention, recording the entire image area for analysis in real time or later operation.

Features:

Nano UAV Omnidirectional 360 ° x 360 °; 2 Optical Resolution 360 ° video> 4 k, IR> 2k Wireless, Realtime Streaming, Stereoscopic Vision 170mm Dimensions, Weight 199 gr.

Advantages:

It's possible to obtain various types of: using stereoscopic glasses remotized signal that offer operators or users of the images also the depth of field thanks to the stereoscopic vision, in addition to the vision omnidirectional 3d for an absolute quality, a second two-dimensional vision replicable on external monitors or FPV for have an eye on the entire spherical field that surrounds the camera into a single image two-dimensional spherical omnidirectional 2d.

Applications:

- Video surveillance - Security Infrastructure;
- Anti Terrorism Operations - Public policy - Defense.

BUSINESS PROPOSAL

Currently in the final testing a larger version with 160 cm diameter.

The development of nano-UAVs version requires 1.7 million for the pre-production phase in the edition of 50 first pieces. Additional funds are required for the production.

The sale price is between 9 and 11,000 euros the price of production of 5,500 euro for the 170mm version to 27,000 for the class 800 version with triple optical and 30k recording system.

The system includes double ground station Flybag in EPP and accessories.

Other possible approaches to system integration or Manned or Unmanned vehicles are to prototype.

Key advantages

It's possible to obtain various types of: using stereoscopic glasses remotized signal that offer operators or users of the images also the depth of field thanks to the stereoscopic vision, in addition to the vision omnidirectional 3d for an absolute quality, a second two-dimensional vision replicable on external monitors or FPV for have an eye on the entire spherical field that surrounds the camera into a single image two-dimensional spherical omnidirectional 2d.

CONTACT INFO

www.virtualmind.it
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Real 360: Virtualmind 360 (http://www.virtualmind.it/360/difesa.mp4) Real 720° - Panoptes 360® © International Patent

SARDINIA

SARDINIA UAV TEST RANGE

PROPOSER:

Sardinia AeroSpace District (DASS) Scarl

SECTOR:

Aerospace

INVESTMENT TYPE

- Brownfield (expansion/renovation)
- R&D
- Industrial/technological partnership
- Funding

BUSINESS ENVIRONMENT

The regional context is characterized by the presence of the Sardinia AeroSpace District (DASS) which is a limited-liability consortium established in October 2013 with 24 private companies, i.e. Accademiasapr Srl, Aermatica Srl, Aeronike Srl, Avio SpA, Centro Italiano Ricerche Aerospaziali ScpA, RINA Consulting – Centro Sviluppo Materiali SpA, Fondazione di Sardegna, Gem Elettronica Srl, Geodesia Tecnologie Srl, Innovative Materials Srl, Karalit Srl, Lion Consulting Srl, MR8 Srls, Nemea Sistemi Srl, Nurjana Technologies Srl, Oben Srl, Opto Materials Srl, Poema Srl, Soliani Emc Srl, Space Srl, Spacearth Technology Srl, 3D AEROSPAZIO Srls, UavItalia Srl and Vitrociset SpA, and 5 public shareholders, i.e. Consiglio Nazionale delle Ricerche, CRS4 Surl, Istituto Nazionale di Astrofisica, Università di Cagliari, and Università di Sassari.

Apart from SRT, a 64-meter single-dish radio telescope with state-of-the-art technological capabilities and a versatile instrument for radio astronomy, geodynamical studies and space science, the following military infrastructures, i.e. the inter-force military test sites along

with the control room in Capo San Lorenzo/Perdas De Fogu, known as PISQ, as well as the Decimomannu military airport, can be exploited by DASS for civil applications in the aerospace sector in the framework of the 5-years-agreement signed in May 2018 with the Italian Ministry of Defense.

In particular, the aerospace sector has been indicated as one of the top priorities within the Smart Specialization Strategy planned by the Regional Authorities, that signed a cooperation agreement in August 2016 with DASS aimed to speed up the corresponding development in Sardinia.

DESCRIPTION

The investment opportunities are aimed to support drone integration by providing an avenue for the drone industry and stakeholder community to conduct more advanced drone research and operational concept validation. Military sites above and the corresponding segregated air spaces as well as civil airport infrastructures and airfields available make Sardinia a unique environment for UAV test range where, in addition, drones might flight almost 365 days due to favorable weather conditions.

DASS and some of its shareholders are at the moment involved in the Sardinia UAV Test Range project which has already received a financial support of 1.6 M€ from the Regional Council. The investment required for the project development could be of the same order of magnitude and should be also addressed to analyze with novel tools the relevant data obtained during flying tests to determine technical and operational trends to derive conclusions that support critical safety decisions required to integrate UAVs into the national airspace system.

BUSINESS PROPOSAL

The project offers an ideal proving ground for UAV, which make up one of the fastest-growing parts of Italy's aviation industry. The test range might become the cusp of leading the rapidly increasing number of UAV companies seeking, as an example, BVLOS capability and certification in a myriad of different applications.

Target investors are UAV manufacturers and potential users that need to test their equipment for specific purposes.

Key advantages

Advantages and strengths of the proposed project are unique in Italy:

- military, civil and airfields for different UAV applications
- control room with real time acquisition of relevant data, tracking responsible of data fusion as well as information registration and playback reproducibility of registered data
- possibility to fly all year long.

Significant support, services and partnerships from DASS and its Shareholders in the following complementary-to-aerospace sectors are also available:

- electronics and microelectronics
- software and firmware development
- computers technology
- materials technology
- engineering consulting
- research and development
- and more

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CLUSTERS

AOSTA VALLEY

FACTS AND FIGURES

About 900 companies working in the sectors: metallurgical, components for electric vehicles, sensors, molding equipment, equipment for cold forming of metals

Large and medium companies are: Cogne acciai speciali S.p.A. Eltek S.p.A., Thermoplay S.p.A., MDM LTD, Podium advanced technologies LTD, Mavel EDT LT, SEC s.r.l. – Insis S.p.A.

In 2018 growth in regional exports at current prices continued, whit an increase higher that the national average.

INFRASTRUCTURES AND CONNECTIONS

- 1 regional airport Corrado Gex (allows the operation to aircraft up to a maximum of 70/80 places)
- Highway: A5 linking Aosta with Turin and Milan
- Tunnel Mont Blanc: linking Aosta with France
- Tunnel Gran San Bernardo: linking Aosta with Switzerland
- 1:00 h from Aosta to Turin; 2:00 h from Aosta to Milan; 7:00 h from Aosta to Rome; 7:00 h from Aosta to Paris; 2:00 h from Aosta to Geneva

INDUSTRIAL BASE

Following are some of the numerous companies providing business opportunities in Aosta Valley: Cogne Acciai Speciali S.p.A.(special steel), Engineering S.p.A. (data center), STMicroelectronics LTD (semiconductors), Thermoplay S.p.A. (hot runner systems for injection molding of plastics), Eltek S.p.A. (electromechanical components), Brabant Alucast LTD (magnesium and aluminum components), Podium advanced technologies LTD (electric drive systems), Mavel LTD (electric engine for high speed), Honestamp LTD (molds for thermoplastic), MDM LTD (bolts and screws), GPS Standard S.p.A. (security systems), SEC S.r.l. - Insis Sp.A. (security of

complex environments). Aosta Valley is autonomous in water, C.V.A S.p.A. produces and distributes hydroelectric power from a huge catchment area consisting of weirs and dams of significant magnitude.

R&D NETWORK

A Protocol is aimed at implementing the multiregional Plan, of the "Space Economy Transition Plan" as part of the Mirror GovSatCom Program, aimed at supporting the implementation of the Ital-GovSatCom satellite system for institutional telecommunications, and favoring the relapse and the benefits of the relative technological developments in the territories of the Regions and the autonomous Provinces that have signed the protocol itself. Valle d'Aosta Region contributes to the "Space Economy Strategic Plan": the "Mirror GovSatCom" Program, the "Mirror Galileo" Program", the "Mirror Copernicus" Program and the "Space Technologies and Space Exploration Development" Program.

In the Region there are the headquarters of the University of Valle d'Aosta and a seat of the Polytechnic of Turin, as well as research centers, such as the Astronomical Observatory, the Safe Mountain Foundation, the Institute for agriculture, the Italian Institute of Technology.

INCENTIVES AND FUNDING

The Aosta Valley is a Region in "special status" with wide legislative and administrative autonomy by which it can operate in an efficient and effective way so that entrepreneurs can interact with the public administration quickly and easily.

Concessions, in the form of a direct contribution to spending, granted to companies and Research Bodies that carry out research and development projects, defined in the overall project signed by the economic operator awarded the Partnership for innovation, aimed at the realization of the Ital-GovSatCom system. The maximum amount of the contribution, expressed as a percentage of the costs incurred, depends on the size of the company and is equal to 35% for large companies, 45% for medium-sized companies and 55% for those of small size. For Research Bodies the maximum amount of the contribution, expressed as a percentage of the costs incurred, is 35%. Moreover, according to the law 8/2016, Valle d'Aosta Region promotes the stipulation of Agreements for settlement and development, concerning new production facilities, projects for the growth of existing companies and programs for the conversion of production, through the granting of research and development concessions, investments, training, within the limits of Reg. 651/2014, up to a maximum of 18 million euros per company.

Aosta Valley, thanks to its small size, is a region "close to entrepreneurs" that can easily interact and receive answers from public officials.

SITES AND BUILDINGS

The Region, can make available to companies many industrial sites:

- technology park Espace Aosta, with lots and buildings of different sizes;
- technology park Ilssa Viola in Pont-Saint-Martin, with lots and buildings of different sizes;
- industrial area in Châtillon of 16,660 sqm;
- industrial area in Verrès of 16,042 sqm.

SUCCESS STORY

The company SEC S.r.l., an innovative start-up born in October 2017 from an idea of the Insis. S.p.A. Group researchers, develops systems for monitoring the mountain and complex environments with a network of cutting-edge technologies. Composed of a team of

professionals in advanced electronic engineering, the start-up develops integrated systems for prevention and intervention capable of operating in extreme situations and complex environments (mountains, slopes, crowded areas ...). These systems find application in the sectors of environmental safety (such as prevention and forecasting of avalanche and hydrogeological events) and in protected communications (LTE technology), of teleassistance and telemedicine, of geolocation of means of transport and of people for facilitating relief. The SEC S.r.l. - Insis S.p.A. laboratory is recognized by the MIUR at national level, with over 20 years of research conducted by engineers and researchers in extremely complex subjects ranging from electronics to mechanics precision, from aeronautics to system engineering, and this adds value to the ability of Sec to make its products more responsive to the needs of the context. The research also aims to start a new project to move the concept of complex environment into the environment of the celestial space and to be able to develop technological solutions that lead to the world of space robotics.

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APULIA

FACTS AND FIGURES

- 566 companies active in aerospace sector (large companies and SMEs) with over 7.555 employees.
- Regional sector export in 2018 amounted to 561,6 million Euros.

Main business sector specializations:

- Design, construction and assembly of aircraft and their components;
- Design, production and testing of structures in carbon-fibre composite materials, metals and ceramics;
- Technologies for sensor and mechanical systems;
- Quality control;
- Aircraft interiors;
- Intelligent engine, aeronautical & space systems;
- Microsatellites;
- Propulsion systems for space stations;
- Space software;
- Ultralight carbon fiber aircraft;
- R&D centre for additive repairs;
- Test, case and frames;
- MRO;
- Remote tracking.

INFRASTRUCTURES AND CONNECTIONS

- 2 international airports (Bari and Brindisi), serving over 40 international destinations;
- 1 industrial cargo airport (Taranto-Grottaglie), recently adopted as a test-bed for remotely piloted aircraft and designated as the first spaceport in Italy for the development of sub-orbital flights;
- 1 local airport (Foggia), with connections to Tremiti Islands;

- 3 major ports: Taranto (container shipping; the 3rd largest commercial port in Italy for cargo traffic); Bari (passenger and container traffic); Brindisi (passenger traffic);
- Extensive road and railway networks, linking the region to major north-south corridors and high-speed rail network;
- 1 logistics Interport located in Bari.

INDUSTRIAL BASE

Apulia is a dynamic region of the South East of Italy where companies have been involved in the aeronautics sector since the 1930's. Today, Apulia plays a leading role in the aerospace industry in Italy and boasts a significant industrial concentration, with over 560 companies (MNEs, SMEs, start-ups), occupying over 7,550 employees, active throughout the region in various fields of R&D and manufacturing that make up the entire aerospace supply chain, from the production of aircraft components to space software.

Continuous investment in innovation, as well as in skills, have turned Apulia into a centre for excellence in aerospace, making it the only Italian region in which the following sector specializations co-exist: fixed-wing, rotating wing, aerospace software (Leonardo Group); production of sections of the fuselage and tail wing in carbon fibre for the Boeing 787 Dream-liner Project (Leonardo Group); propulsion (GE Avio Aero); design and assembly of aircraft components in titanium and carbon fibre (Dema Brindisi for Bombardier); Microsatellites and propulsion systems for space stations (Sitael); Design and production of ultra-light carbon fibre aircraft (Blackshape); R&D Centre for Additive Repairs (GE Avio Aero and Polytechnic University of Bari).

The aerospace industry is one of the most strategic sectors within the regional economy that has acquired a strong position in the international market in recent years thanks to its ability to strike up positive business relations with key players, contractors and OEMs, some of whom have chosen to invest in Apulia and contribute to the increasingly positive export performance (in 2018 the regional sector exports totalled 561,6 million euros, accounting for almost 10,2% of national exports).

In Apulia, there are two clusters involved in the aerospace sector and both of them actively seek to foster competitiveness and international business, stimulate and support research and training:

- DAP – Apulian Aerospace Business Cluster with over 70 associates (businesses and universities);
- DTA s.c.a r.l. - Apulian Aerospace Technological Cluster, a non-profit making consortium which brings together key industry players, universities, as well as public and private research centres active in Apulia.

R&D NETWORK

3 major Universities (Bari, Foggia, Salento) and 1 Polytechnic University (Bari), which offers a Degree course in Aerospace Systems Engineering

Research centres:

National Research Council (CNR), present in Apulia with 6 research institutes, including

- NANOTEC – Institute of Nanotechnology
- CNR- IMM (specialized in Microelectronics and Microsystems)
- CNR-ISSIA (specialized in Intelligent Systems for Automation)

CETMA – Technologies design and materials European research centre

ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development

OPTEL - specialized in high technological microelectronic and mechatronic solutions.

INCENTIVES AND FUNDING

Regional Contract Programmes: regional grants scheme supporting business innovation and investment projects for existing companies or for new companies to be located in the region, with investment budgets falling within the range between 5 million and 100 million Euros;

Integrated Incentives Packages (PIA): regional grants scheme supporting business innovation and investment projects for existing SMEs or new ones to be set-up in the region, with investment budgets falling within the range between 1 million and 40 million Euros;

Tecnonidi: regional grants initiative which supports investments projects for innovative start-ups and SMEs, with a high-technology content aimed at introducing new products, services and/or business solutions, with investment budgets falling within the range between 25,000 and 350,000 Euros.

SITES AND BUILDINGS

2 Business Incubators located in Puglia Sviluppo's premises in Modugno (BA), suitable for service industry and digital start-ups and Casarano (LE), suitable for research and manu-facturing activities.

DTA-Apulian Aerospace Technological Cluster and DAP-Apulian Aerospace Business Cluster based in Mesagne (Brindisi).

SUCCESS STORY

Leonardo Group is a global high-tech aerospace, defence and security company. As a strategic risk sharing partner for the Boeing Company, Leonardo develops and manufactures a significant share of the airframe for Boeing's "787 Dreamliner" aircraft in composite materials. Leonardo Group chose to invest in Apulia to create its international center of excellence in the field of composite materials, by setting up two state-of-the-art manufacturing plants in the region to carry out production for the "787 Dreamliner" project: in Foggia, Leonardo converted an existing facility for the production of the aircraft's horizontal stabilizer; in Grottaglie, Leonardo made an important greenfield investment to set-up an innovative plant for the production of two central fuselage sections, using "one piece barrel" technology.

Avio Aero is a GE Aviation business that designs, manufactures and maintains components and systems for civil and military aviation, which has made two significant investments in Apulia within the past 5 years. In November 2016, Avio Aero, together with the Polytechnic University of Bari, launched the first laboratory in Italy devoted to the development of repair procedures for aviation engine components using innovative technology based in laser systems. The components involved in the research will come from various engines, including the GE90, which drives the Boeing 777 and the GEnx, used on the 787 and 747-8 Dream-liners. In addition, at the Avio Aero production facility in Brindisi, which is specialized in the assembly and maintenance of aviation engines, the company has invested in new technology for the production of components for the low pressure turbine for both versions of the GEnx engines and has set up a new additive manufacturing area.

SITAEL is a world leader in the design and construction of micro-satellites, which has invested in a greenfield research and manufacturing facility in the town of Mola di Bari. Among its various project activities, Sitael was selected by ESA to develop and built the ESEO (European Student Earth Orbiter) satellite which was successfully

launched into orbit in December 2018 from the Vandenberg Airforce base in California (USA) and is intended to measure the levels of radiation present in the low Earth orbit and tests technologies for future ESA missions. Sitael, part of Angel Group, not only developed the satellite platform, performing systems integration and qualification, but also coordinated the teams involved in the ESEO mission project, representing ten European universities from eight ESA member States: Estonia, Germany, Hungary, Italy, Netherlands, Poland, Spain, UK.

All of these investment initiatives were supported by regional government funding.

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LAZIO

FACTS AND FIGURES

Lazio Aerospace Technology Cluster:

- 250 companies;
- 23,500 employees;
- 5 billion euro turnover;
- 1.6 billion of exports;
- 10 Research Centres;
- 5 Universities;
- 3,000 R&D PhD & Specialists;
- 6 Incubators, Accelerators Technology Parks.

Main business sector specialization:

- Launchers (Vega, solid rocket motor for Ariane);
- EO, NAV & TLC SATELLITES:
  - Design & Assembling of payloads
  - Micro nano sats constellations
  - Applications
  - GovSatcomm
  - Space surveillance and tracking (SST)
- Manned and unmanned Space Exploration (incl. International Space Station);
- Ground Segment Control Centers;
- Safety &Security;
- Air Traffic Management;
- Homeland / Cyber Security;
- Aeronautical & stratospheric systems, interior design manufact.
- RPAS – UAV;
- Sub systems and components:
  - Propulsion (Guidance Navigation and Control, At-

titude and Orbital Control Systems)
  - Thermomechanical (incl. Environmental Control and Life Support)
  - Electric power
  - Avionics and electronic systems
  - Optical / Electro-optical
  - Software
  - Structural components and mechanical equipment
- Key enabling technologies:
  - Micro & Nano-electronics;
  - Photonics;
  - Advanced materials (composite, ultralight alloys, nano-structured materials);
  - Advanced manufacturing technologies.

INFRASTRUCTURES AND CONNECTIONS

- 2 international airports (Fiumicino Leonardo Da Vinci, Ciampino);
- 3 commercial ports (Civitavecchia, Gaeta, Fiumicino);
- Main Highways: A1 Naples-Rome-Milan, A12 Roma-Civitavecchia; A24 Roma-L'Aquila.

INDUSTRIAL BASE

Lazio is the second region of Italy for GDP, equal to about 11% of the national total, and is placed by Eurostat among the twenty most important regional economies of EU.

LAZIO Aerospace Technology Cluster (DTA) was legitimated in 2004 by a Framework Agreement signed by Italy Ministry of Research and Lazio Region. In 2012, the DTA of Lazio was one of the founding partners of the National Italian Cluster for Aerospace Technology (CTNA).

Lazio hosts large groups of international excellence in electronics, sensors, avionics, components and innovative materials, "space" and satellite applications and services, but 85% of the business landscape is made up of SMEs subcontracting electronics, ICT, advanced materials and aeronautical and airport services. The numerous existing plants produce components for the Ariane and Vega launchers, satellites, radars and equipment for aircraft and helicopters.

Lazio is the only Italian region which hosts the whole aerospace value chain, a peculiarity that creates a competitive advantage at national and international level.

The sector demonstrates a great capacity for cross-fertilization towards downstream application markets, in order to generate demand for innovation along the SMEs value chain and to intercept potential resources from Public Procurement. The technological transver-sality is nurturing Lazio "Space Economy" to seize commercially exploitable opportunities in agriculture, telecom, cultural heritage, smart cities and healthcare market applications.

In Lazio there are 9 airports: among these, Fiumicino and Rome Ciampino constitute, by volume of aircraft, passenger and freight movements, the main reference point for the entire national airport system.

Lazio aerospace sector plays a leading role also in European projects, such as: COSMO-SkyMed, one of the most advanced satellite systems in the world with many strategic applications for environment control and natural disasters' management, ESA Vega launcher, 65% of which built in the province of Rome.

R&D NETWORK

Aerospace sector in Lazio is made up of world-renowned universities and research centres, large enterprises and production units of international corporations, as well as SMEs providing components, services and technical/ industrial support. It covers all areas from research to

planning, from design to manufacturing and services:

- 10 major research institutes/bodies headquarters: ASI (Italian Space Agency), ENAV (National Air Traffic Control Service Provider), ENAC (the Authority of tech-nical regulation, certification, supervision and control in the civil aviation sector in Italy), ESRIN (European Space Research Institute) headed by ESA (European Space Agency), CNR (National Research Council), INAF (National Institute of Astrophysics), INFN (National Institute of Nuclear Physics), ENEA (National Agency for New Technologies, Energy and Sustainable Economic Development), ISPRA (Higher Institute for Environmental Protection and Research), INGV (National Institute of Geophysics and Volcanology)
- 5 Universities with 4 Faculties of Engineering, 12 departments and 30 higher education university programmes
- 3,000 University Professors, Researchers and other specialists involved in aeropace R&D

Lazio environment is further enriched by the Competence Centre "Cyber 4.0", focused on cyber security and led by Sapienza University, with 37 partners from industry and science.

INCENTIVES AND FUNDING

Lazio Authorities support startups and enterprises in research, testing, business development, internationalization and international cooperation, also in the framework of the 2014-2020 ERDF Regional Operational Programme.

Lazio Innova SpA is the "one-stop" Agency of Lazio Regional Government, which supports economic development, innovation and internationalization, operates to the advantage of businesses and local public administration providing:

- Incentives from regional, national and/or European resources;
- Credit support and the issuance of guarantees;
- Interventions in risk capital;
- Services for the internationalization, promotion of business networks and regional excellence;
- Services for the creation and development of business;
- Measures for social inclusion.

More info available at: www.lazioinnova.it

SITES AND BUILDINGS

Business incubators, accelerators and technology parks:

- ESABIC (Business Incubation Centre) Lazio is a partnership among Lazio Region, ASI (Italian Space Agency) and ESA and it is part of Innovation and Ventures Office (TIA-AI) of the European Space Agency. ESA-BICs aim to inspire and work with entrepreneurs to turn space connected business ideas into commercial startup companies, applying space technologies, solutions and systems in everyday life. ESABIC Lazio offers an incubation program with integrated services for creating and developing business and support to finance and technology transfer.
- Accelerators: there are many public and private companies that offer incubation and business acceleration services in Lazio and host start-ups and SMEs that base their business on the exploitation of space technologies, among these: Ketlab, Luiss EnLabs, Spin Over, INNOVA startup accelerator, Dock3 - The Startup Lab, TIM #WCap, The Business Factory, Vejo Park, Talent Garden, Roma Innovation Lab.
- Lazio Technopole system: Tecnopolo Tiburtino, east of Rome, characterized by production activities mainly in the ICT Electronics Telecommunications, Aerospace, Environment and Green Economy sectors,

Research and Technological Transfer; Castel Romano Technopole, south of Rome, focused on R&D in New Materials, Life Sciences, the Environment and Green Economy and Science and Technology Park of Southern Lazio (PALMER).

SUCCESS STORY

Space Engineering is a frontrunner, based in Lazio, Italian space company with 30 years of experience in space technologies. Since April 2012 it is controlled by the leading space company Airbus Defence and Space, Space Systems. Space Engineering stands as a reliable partner for space agencies, satellite operators and leading companies in the space domain, with a significant amount of projects worldwide. Space Engineering has an out-standing expertise in design, engineering, simulation, prototyping, integration, testing, for Space & Ground, owning a significant number of international patents on antennas, radars, scientific software and Digital Signal Processing.

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LOMBARDY

FACTS AND FIGURES

- The productive system is composed by 220 companies
- More than 16,000 workers
- Total turnover worth more than € 6 billion
- A sector devoted to export, with a turnover of € 1.3 billion coming from abroad
- 27% of the total export at national level is generated by Lombardy (increased by 9.4% in 2017)
- Presence of Lombardy Aerospace Cluster, that includes:
  - 6 universities/research centres
  - 2 other bodies

INFRASTRUCTURES AND CONNECTIONS

- 573 km of highways
- 900 km of national roads
- 11,000 km of provincial roads
- 1,680 km of railway network
- 4 International airports:
  - Milano Malpensa Airport, Varese - Ferno (54.5 km from Milan)
  - International Airport Il Caravaggio, Bergamo - Orio al Serio (60.4 km from Mi-lan)
  - Enrico Forlanini Airport, Milano - Linate (9.7 km from Milan)
  - International Airport Gabriele D'Annunzio, Brescia - Montichiari (120.5 km from Milan)

Distance by car from Milan to Paris (8h50min), Berlin (10h45min), Frankfurt (7h30min), Barcelona (10h)

INDUSTRIAL BASE

- The Region offers all the technologies and skills of

the entire supply chain required to build fixed and mobile-wing platforms and space frames: from the mechanical components, subsystems, to satellite, helicopter, and trainer aircraft integrators

- Prime contractors in Lombardy are Agusta Westland (helicopters); Alenia Aermacchi (trainer aircrafts); CGS Compagnia Generale per lo Spazio (satellites and scientific payloads); Selex Galileo (Avionics and radar); Thales Alenia Space (space)
- The excellences of the Lombardy Aerospace Cluster can be associated with these characteristics:
  - rotary wing aircraft and vertical flight: LTC point of excellence, the rotary wing sector (helicopters, convertiplanes)
  - fixed wing aircraft and training systems: the fixed wing sector goes from primary training with single engine propeller aircraft (with double piston engine and turbo-compressor) to basic training, up to the advanced-preoperative trainer
  - management of air traffic in the 'Avionic systems', 'Security and transport' and 'Defence' sectors
  - space, satellites and scientific payload: presence of important international companies, specialized in the production of scientific payloads and in small and medium class satellites
  - avionic apparatus and systems, fuel systems, electromechanical and hydraulic motor units, wireless communication systems produced by many specialized Lombard SMEs

R&D NETWORK

- Attitude for innovation: around 12% of the companies' turnover is invested in R&D activities
- Numerous collaborations between the research world and companies, such as: AWPARC, a collaboration initiative between the Polytechnic of Milan and Agusta Westland dedicated to the study in specialized laboratories of specific flight technologies vertical
- In Lombardy there is the only European Joint Research Center (JRC) located in Italy at ISPRA, in the province of Varese. This center coordinates numerous community networks and researches coming from National institutions, universities, advanced industries in the member states of the European Union, as well as carrying out a vast set of independent researches using the skills of the best European scientists working directly in the center during specific research periods
- Scientific expertise in various technological fields: sensors, acoustics, ICT, materials, mechanical engineering, design and integration of complex systems, testing, RfiD, remote sensing and earth observation, environmental monitoring, payloads and complex optical systems for satellite applications
- Strong research network thanks to the many Research Centers: INAF, CNR-IREA, AWPARC
- Lombardy Universities specialized in fields relevant to aerospace industry are: Politecnico of Milan, Bicocca University, University of Pavia, Carlo Cattaneo Liuc University
- The priority themes of technological development in this field are: space integrated systems and space systems, fixed and mobile wing integrated aeronautical systems, electro-mechanical systems and avionics, new technologies for production and infrastructures

INCENTIVES AND FUNDING

Regione Lombardia supplies incentives for corporate investments and Start-ups. For example:

«AL VIA» Corporate Investments

- 5% to 15% non-repayable grant for capital expenditures in productive assets for a specific investment project

- Long-term financing from €50,000 to €2.85M at favorable rates, with a duration from 3 to 6 years
- Free financial guarantee to cover up to 70% of the financing
- The eligible projects must fall within one of these two categories: Company Development or Relaunch of Productive Areas
- The intervention is dedicated to companies: registered in the Italian Register of Companies with an operating office in Lombardy at the time of the supply of the contribution, active for at least 24 months

«Linea Innovazione» Incentives for Innovation Projects.

The incentive consists of a subsidized-interest-rate loan and a capital contribution to support the interest payments (starting from a minimum of €300,000 up to a maximum of €7,000,000). The combination of the incentives can cover 100% of the total eligible cost of the project. The financial incentive is dedicated to MSMEs employing fewer than 3,000 people, which have the Headquarter in Lombardy and are planning to invest in a project which aims to innovate the process or the product of the business.

Thanks to the ERDF - European Regional Development Fund, Regione Lombardia allocated in the 2014 – 2020 program period 36% of the fund (€349.2 M) to strengthen the research sector, foster technological development, and innovation. In the same way, 30% of the fund (€294.6 M) is allocated to promote the competitiveness of SMEs and improve access to loans. Thanks also to the European Bank of Investment, who has allocated € 50,000,000 to financing the project, in collaboration with Finlombarda (operational partner).

SITES AND BUILDINGS

- AttrACT website www.attractlombardy.it gives access to more than 100 investment opportunities (greenfield and brownfield opportunities), located in 55 Municipalities, mapped out through the AttrACT Programme. A variety of sites ranging from the office building to the industrial facility. This initiative, promoted by Regione Lombardia together with Unioncamere Lombardia, is a unique experimentation in Italy for the promotion of the investment opportunities located in Lombardy.
- Within The Italian Scientific and Technological Parks Network:
  - KILOMETRO ROSSO (Bergamo – BG)
  - BERGAMO SVILUPPO (Bergamo – BG)

The AttrACT Program is a unique innovative program in Italy: it brings together investors, investment opportunities and local Municipalities thanks to a dedicated online platform, www.attractlombardy.it.

AttrACT aims at:

- developing the regional offering
- promoting opportunities for investment
- bringing together the main territorial stakeholders

More than 100 “ready to use” investment opportunities, representing all the 12 provinces of Lombardy and pertaining to 4 key segments: Industry, Logistics, Offices and Tourism. The Program has mapped both publicly- and privately-owned areas.

AttrACT sees the direct engagement of the Lombardy Municipalities involved in the Program that are called to identify local investment opportunities (greenfield and brownfield) in their area, made it available to investors, and simultaneously made commitments to simply administrative processes, offer economic and tax incentives and offer qualified assistance service.

Commitments can vary according to the Municipality:

- Simplification of administrative processes such as:
  - Adopting the Action Plan by the city council in less than 90 days from the request
  - Delivering a Planning Permission in less than 60 days from the request
  - Dedicating a portal or an on line “front office” service where investors can find all useful information
- Economic and Tax incentivisation such as:
  - Declaring in advance all urban planning and construction expenses without additional expenses
  - Offering reduction or exemption of IMU, TASI, e/or TARI according to the Municipality
  - Reducing the primary and secondary land development expenses by at least 20%
- Promotion:
  - Making available a support team that coordinates the work, facilitates the relationships and encourages collaboration
  - Providing preliminary consulting services and support to companies in the presentation and implementation of their projects, with the issuance of written opinions if requested in the proposal

AttrACT, where to invest in Lombardy.

SUCCESS STORY

OHB ITALIA SPA

OHB Italia SpA is a subsidiary of the German Bremen-based aerospace and technology group OHB SE. This listed space and technology group OHB SE currently employs around 2,400 people and has consolidated revenues of € 860 M in 2017.

OHB Italia SpA is a leading company in Italy in the field of space systems design, development and integration. Founded in 1981, OHB Italia has its headquarters in Milan. Recently the group inaugurated a new Integration and Manufacturing Facility in clean environment adjacent to the headquarter building in Milan. This new facility is operational since June 2018 and will increase OHB Italia capacity in space system production, in particular for satellite integration.

OHB Italia SpA is also a member part of the Lombardy Aerospace Cluster.

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PIEDMONT

FACTS AND FIGURES

Piemonte has the highest concentration of Italian aerospace companies. The region offers a complete pipeline of skills and qualifications, high-level manufacturing, processes and service companies, cooperation with universities and the R&D network, unique products and engineering know-how, educational & training system and an organized and complete supply chain.

Aerospace industry:

- 280 SMEs;
- 14,800 employees;
- € 3.9 bn turnover;
- 17% of national exports;
- 26% of exports directed to USA;
- 22% of exports directed to Germany.

International key players: Leonardo, Avio Aero, Collins Aerospace, Thales Alenia Space, ALTEC.

Aeronautics: Piemonte played and still plays a key role in many international programmes: 777 and 787 Dreamliner, Airbus A321, 500/600, A380, and A 320 NEO, Falcon 2000 and EX, Eurofighter Typhoon, C27J, ATR42, NH90, EH101 and AM400.

Space field: Piemonte is involved in a prime contractor role in international programmes such as the International Space Station (more than 50% of its pressurized modules are being developed here), ExoMars, Euclid, Bepi-Colombo, IXV and Space Rider, Ariane 5, Ar-goMoon and many others.

Technological trends:

- Advanced materials
- Low emission aeroengine design

- High power transmission systems
- Additive technologies
- Advanced space robotics
- Technologies for space habitation
- Advanced satellite design
- New solutions for reusable vehicles

Piemonte aerospace district

Piemonte Aerospace District was established with the aim to support and strengthen the excellence of the regional aerospace sector through the creation of a network of large companies, SMEs, research system and institutional subjects.

So far the Association has gathered 51 members: public authorities, universities and research centers, trade associations and above all enterprises, both local SMEs and large globally operating companies with a significant presence in Piemonte, such as Leonardo, Avio Aero, Thales Alenia Space Italy, Mecaer and US Collins.

The Association has a governing body composed of 15 representatives and it covers various areas of action through the activation of specific working groups: R&D long-term strategic vision and technological development trajectories, supply chain, marketing & interna-tionalization, education & training.

INFRASTRUCTURES AND CONNECTIONS

- Piemonte is located at the intersection of the two main axes Lisbon-Kiev European Corridor and Genoa-Rotterdam Corridor 24;
- The region is a strategic point for goods distribution in Europe with 3 logistics platforms – S.I.T.O. (Torino), C.I.M. (Novara), Interporto Rivalta Scrivia (Tortona) – and a network of about 1,000 km of motorways and 2,000 km of railways. Its posi-tion bordering Liguria makes it the idea rear logistics service location for the port of Genoa (150 km from Torino).
- Torino International airport: 30 minutes from the city center.
- Milan-Malpensa intercontinental airport: 1h from Torino.

INDUSTRIAL BASE

In Piemonte, the aerospace sector is one of the productive and scientific excellences, confirming the regional vocation for technological innovation. Moreover, the technical-productive specialization of the companies, both in manufacturing and technical services, makes the local aerospace sector highly competitive on international markets. Alongside, the region boasts a distinctive learning and academic environment that contributes to the training and growth of technical and managerial capabilities of qualified human resources appreciated all over the world.

The Piemonte aerospace scenario is further enriched by the presence of Torino Piemonte Aerospace District, the Italian Institute of Technology's (IIT), the Centre for Space Human Robotics (CSHR), a spin-off from the Politecnico di Torino, and by the core of Italy's Space industry together with some international key players.

R&D NETWORK

Recent data confirm that Piemonte is a leading Italian region in R&D. Companies expenditure in R&D: 1.42% of GDP (national average of 0.65%), with a number of workers in R&D of 6.2 per 1,000 inhabitants (national average of 4.0) and an increasing IP impact, with a number of 137.6 patents registered per million inhabitants (national average of 83.6) (Source: Istat 2017).

- 200 private and public R&D centres, 4 Science &Technology Parks;

- 1st Italian region in terms of private investment in R&D;
- 3rd Italian region for hi-tech patents.

INCENTIVES AND FUNDING

Regione Piemonte has allocated € 1 bn to promote the growth and competitiveness of the whole territory.

The subsidy system in Piemonte focuses on both the start-up of new initiatives and on the development of existing companies. Subsidies to companies can take the form of soft loans, non-repayable grants or free-of-charge guarantee support (in compliance with the European regulation on state aid) and can vary according to the type of beneficiary, the kind of investment and the nature of expenses.

A special focus should be dedicated to grants provided for R&D activities:

- Regional investment contract, for R&D initiatives related to new investments in R&D centers, plants or service centers;
- Sector Technological Platforms, for cooperative R&D projects focused on four key topics, among which there is Space Economy (with a dedicated budget of 15 million euros) as Piemonte Region has signed the Multiregional Cooperation Program in the framework of National Space Economy plan.

Piemonte Agency:

Piemonte Agency is the one-stop-shop to get in touch with the regional economic community.

The agency provides a complete range of free services to foreign companies:

- wishing to locate in Piemonte
- searching for suppliers and partners

Piemonte Agency guarantees complete assistance to foreign companies willing to invest in Piemonte. The agency can advise on every aspect of starting and running a business in Piemonte, providing assistance at every stage of the project.

Piemonte Agency manages Piemonte Aerospace, a special project promoted by Regione Piemonte, financed by ERDF – European Regional Development Fund. It provides international players with a preferential channel to meet and start business with top class aerospace selected enterprises based in Piemonte.

For more information: aerospace@centroestero.org, www.centroestero.org/en/key-sectors/aerospazio.html

SITES AND BUILDINGS

Piemonte Aerospace is a special project promoted by Regione Piemonte, financed by ERDF – European Regional Development Fund and managed by Piemonte Agency, providing international players a free preferential channel to meet and start business with top class aerospace selected enterprises based in Piedmont. The Team makes an assessment of buyers' needs and technicians' requirements from all over the world and provides them with:

- top class skills and unique manufacturing know-how
- capable suppliers who can deliver on time high-quality parts/products at competitive prices
- technological qualified and competitive supply chains sharing commercial objectives, target clients and strategies
- technical working groups where local enterprises and foreign companies work together

The project Team's assistance is supply chain focused and completely free of charge.

For more information: aerospace@centroestero.org, www.centroestero.org/en/key-sectors/aerospazio.html

SUCCESS STORIES

Success stories in the framework of new space economy:

New space economy involves a new vision of space opportunities, including the progressive transition from upstream to downstream business models and the increase of private investments: space is becoming more and more a commercial business.

Piemonte has a leading role in the pathway to open a commercial space ecosystem, following the modern vision of "democratization of space", meaning giving open access to space for everyone.

The first ever commercial airlock that will operate on the International Space Station - ISS will leave from Torino: It is called Bishop and it represents the first step towards a new economy for scientific research, technological development as well as human and goods transport. It will enable additional capability to the International Space Station, giving the opportunity to connect more payloads.

The new module is the result of the collaboration between the Texan company NanoRacks, Thales Alenia Space - which developed 50% of the housing modules of the ISS in the region - ALTEC and by a pool of Piemonte companies: this partnership was cre-ated to take full advantage of the commercial opportunities of space exploration and in-orbit-services.

Piemonte production chain is a fundamental advantage as confirmed by the decision of NanoRacks to settle its European headquarters in Torino in October 2018, where the company will concentrate on the use of microgravity of space for advances in the fields of life sciences, biopharma and agriculture.

Also thanks to Piemonte dynamic ecosystem in the fields of new space economy, Tyvak International established in 2015, as the first international subsidiary of the American Group Terran Orbital Corporation, a company that specializes in nanosatellite design and manufacturing, as well as mission operation, which also includes Tyvak Nano-satellites System. Politecnico di Torino and its incubator I3P have provided great support to the activities of the company, which is unceasingly growing.

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Federico Zardi – Foreign Investment Promotion Manager

SARDINIA

FACTS AND FIGURES

- N° of companies: 24
- Employees, researchers: 300, 100
- Financial resources attracted for projects development in 6 years: 58 M€
- International patents for space exploration: 2
- Agreement with the Italian Ministry of Defence: 1

Main Objectives:

- Take advantage of the unique civil and military infrastructures
- Sardinia UAV Test Range
- Materials and Technologies for Astronomy and Aerospace
- Satellite information for Civil and Environmental Protection as well as Precision Agriculture
- New Technologies for Robotic and Human Space Exploration
- Space Situational Awarness and Space Surveillance and Tracking regional Centers

INFRASTRUCTURES AND CONNECTIONS

- 3 International airports (Cagliari-Elmas “Mameli”; Alghero-Fertilia “Riviera del Corallo”; Olbia “Costa Smeralda”)
- 5 commercial ports (Cagliari, Arbatax, Golfo Aranci, Olbia, Porto Torres)
- Main Highways: SS131 “Carlo Felice”, SS131 “D.C.N.”, SS 130 “Iglesiente”
- Sardinia Radio Telescope
- Military sites and General Aviation Airports: Decimomannu military airport, inter-force military test site in Perdas de Fogu and Capo San Lorenzo, Tortolì - Arbatax Airport, Fenosu Airport

INDUSTRIAL BASE

The regional context is characterized by the presence of the Sardinia AeroSpace District (DASS) which is a limited-liability consortium established in October 2013 with 24 private companies, i.e. Accademiasapr Srl, Aermatica Srl, Aeronike Srl, Avio SpA, Centro Italiano Ricerche Aerospaziali ScpA, RINA Consulting – Centro Sviluppo Materiali SpA, Fondazione di Sardegna, Gem Elettronica Srl, Geodesia Tecnologie Srl, Innovative Materials Srl, Karalit Srl, Lion Consulting Srl, MR8 Srls, Nemea Sistemi Srl, Nurjana Technologies Srl, Oben Srl, Opto Materials Srl, Poema Srl, Soliani Emc Srl, Space Srl, Spacearth Technology Srl, 3D AEROSPAZIO Srls, UavItalia Srl and Vitrociset SpA, and 5 public shareholders, i.e. Consiglio Nazionale delle Ricerche, CRS4 Surl, Istituto Nazionale di Astrofisica, Università di Cagliari, and Università di Sassari. Their expertise is crucial for the establishment and management of an industrial network in the aerospace sector able to develop competitive solutions to be properly proposed to qualified national and international customers.

R&D NETWORK

DASS has the goal to stimulate the collaboration between research centers, universities, space companies available in Sardinia to reach significant business opportunities and suitable occasions for growth and innovation in the space segment. As a new model of development, the challenge taken up by the regional government through DASS is linked to the consolidation and integration of the competences of all expertise in the aerospace sector available in the island. The ability of DASS to integrate all the regional players of the technological and productive supply chain together with research institutions, is made possible by the adoption of an innovative model of governance able to ensure the representation required by each member and at the same time to use a collaborative system of project & knowledge management on which all partners work independently albeit considering an integrated and accepted strategic view.

INCENTIVES AND FUNDING

Aerospace has been indicated by the Regional Authorities as one of the top priorities within its Smart Specialization Strategy. The following financial resources are available in the Regional Framework 2014 - 2020: Asse I – Research and Innovation: 129 M€, Asse III – Competitiveness of the Production System: 213 M€, Asse V – Environment Protection and Risks Prevention: 56 M€.

SITES AND BUILDINGS

- Industrial Consortia at the province level (CIP)
- Industrial Areas of Regional Interest (ZIR)
- Production Settlement Plans (PIP)
- Technology Park – Sardinia Research

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