Advisory Council for Aeronautical Research in Europe (ACARE)
Member States Group (WT6)

Report on the Aeronautical Research Activities and Capabilities of New Member States of the European Union

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May 2007

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Executive Summary

The purpose of this document is to provide a high-level report of the aeronautical research capabilities of the twelve new members of the European Union. The participation of these states in aeronautical projects of FP6 was low even if the lower level of development stage in the avionics sector is taken into account. As these twelve states are part of FP7 from the beginning – which was not the case for FP6 – there is a good chance that the integration of aeronautical research organizations, companies with research capabilities will be more successful in the new Framework Programme.

Success rate in terms of number of successful project initiatives, budget distribution is important - the fact that these States are also financing parties of the Framework Programme should not be neglected – but what is more important is the integration of the research organizations in New Member States to the relatively well developed research network in the "older" Member States. Education in some of the New Member States are still providing engineers for an industry which is well below its earlier capacities and has serious problems in meeting demand with supply. Consequently a lot of educated aeronautical expert leaves aeronautics and find work in other areas of life. These "brains" are not only lost for the local aeronautics industry but for the European industry in general. If FP7 can show new potentials for the aeronautics research industry in the New Member States it can also help to involve these industries in the European supply chain when the research ideas are later realised in actual products. A larger European research network will make the European Aeronautics industry stronger and more competitive.

To achieve the ideal "integrated" situation by the end of the new Framework Programme changes are necessary in the following three fields:

- European Commission should pay special attention to help the incorporation of these industries in FP7. Market mechanisms do not solve everything and especially not when public money is at stake.
- Leading players of the industry should recognise the fact that by involving new industry players in research initiatives the European aeronautics industry will be stronger, so their relatively lower portion in research projects can make an increase in their actual industrial income.
- Decision makers both at government and industrial level of the New Member States should understand first of all that aeronautics is useful; investment in this sector brings a lot of added value. It is also important the structure of the industry should be changed, what was successful in the past is not necessarily successful in the future. The new structure should be compatible with FP7 and the European needs, in other words these states should finds those niche areas where they can bring added value to already existing industrial capabilities in the old Member States.

Foreword - Possible Solutions for a Geographically Balanced FP7 in Aeronautics

The participation of the aeronautical organisations of the New Member States in the FP6 was low. It is very important for all concerning parties to increase the success rate in FP7.

New Member States:

- benefit from being part of the European research initiatives
- through research cooperation it is easier to join the supply chain of large manufacturers
- give work and more practice to researchers
- try to receive back at least the funding proportionally paid to the EC budget, in other words: not to be a Net Payer to the FP7 Aeronautics budget

European Commission:

- A more equal distribution of research activities and especially FP7 is the interest of the EC when working on building a European Research Community

Old Member States:

- The ineffective research cooperation among “new” and “old” member states in the field of aeronautics is a big loss for the old member states as well: hundreds of educated researchers, thousands of engineers are “lost” for Europe in the global competition

WHAT TO DO?

What shall be done by the different partners?

New Member States:

- More emphasis is needed to harmonise the European research needs with the project ideas representing the local needs and capabilities

- Larger focus on aeronautics is necessary, investment in aeronautics has a multiplier effect on the economy.

European Commission:

- When possible advise coordinators of forming consortiums to bring in partners from NMS. European Commission should also support initiatives helping to measure, track, advise and train organisations in these states with aeronautical research potential.

The industry of the Old Member States

- The industry of the NMS is not a “cheap” competition but a possibility to increase the efficiency of the European aeronautics industry. More effort is needed to map the yet unknown areas and dare to bring new partners in.

HOW?

Several university researchers in the NMS say that special treatment in terms of separate projects, instruments would be necessary in FP7. This is off course not in line with the common EU legal framework. However there is a need for special activities to enable the industry, and the research establishments of the NMS to access FP7. Some possible solutions:

- Map the aeronautical research potentials in the NMS and distribute this information and make the target audience aware of the information
- Enable experts of the NMS - researchers, managers of local companies with research potentials – to travel to EC events and relevant workshops (travel reimbursement)
- Help local key supporters of the NMS to lobby at decision makers for aeronautics in general – NMS will receive a lot of EC funds for development, aeronautics can be an area for investment
- Influence key players of the European Aeronautics Industry – large manufacturers, research organisations, coordinators of current successful projects – to travel to the NMS, meet with the local experts and learn the local research potentials for future projects

1. Bulgaria

1.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

STIL-BAS

Found in 1990 STIL-BAS is the largest national centre for fundamental research in the field of solar-terrestrial physics, in situ and remote investigation of the geospace, planets and interplanetary space, optical atmosphere emissions and space biology and medicine. Its main objective is to apply the results from the fundamental studies into technology innovations. STIL-BAS took part in the development of scientific programs, instruments and data analyses and in coordination of scientific programs for satellites, rockets planetary probes and manned space flights. The permanent staff is 80 people, including 47 scientists, 15 with PhD and 4 with D.Sc. degree and 2 full and 1 corresponding members of BAS.

Technical University of Sofia

The Technical University of Sofia is a major educational research and production complex offering highly qualified trainers, engineers and technical staff, with modern laboratory facilities and considerable capacities for experimentation and production. It is the largest higher engineering school in Bulgaria with long years of experience in training engineers. Fifty five thousand are the engineers who have graduated and with the knowledge and skills acquired here have contributed to the development of Bulgarian industry.

1.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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1.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

Aeronautical R&D related Organisations
Solar Terrestrial Influences Laboratory, Bulgarian Academy of Science
BIG 97
Technical University of Sofia

2. Cyprus

2.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

University of Cyprus (UCY)

Founded in 1989 the University of Cyprus is the largest and most prestigious higher education institution in Cyprus. The School of Engineering of the University of Cyprus has several faculty members and permanent researchers working in areas directly or indirectly related to aeronautics. The School was only recently established, but it has grown quickly to about 60 faculty members, some of them with prior or current work experience in NASA projects. Areas of expertise in the School of Engineering include the following:

1. Flow physics (flow simulation, optimization, modelling)
2. Communications
3. Composite materials (e.g. high performance laminated metal-metal composite sheets)
4. Manufacturing and nano-manufacturing processes (e.g. ultrasonic welding)

2.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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2.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

Aeronautical R&D related Organisations		
University of Cyprus – School of Engineering Frederick Institute of Technology	http://www.eng.ucy.ac.cy	http://ucy-compsci.org

3. Czech Republic

3.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

Czech aircraft industry companies are organized in an Association of the aviation manufacturers-ALV, which is a member of ASD ,

Vyzkummy a Zkusebni Letecky Ustav (VZLU), a.s.

VZLÚ is a major centre for aeronautic research, development and testing in the Czech Republic. The Institute successfully fulfils orders from the Czech as well as foreign industries comprising both civil and military sectors with the aim of providing worldwide customers with advanced technologies and professional services. VZLÚ is a joint stock company with the majority of shares indirectly owned by the Czech State. Total staff is around 340. VZLÚ ensures a wide range of research, developmental and testing work necessary for designing new aircraft including certification tests. For this reason VZLÚ disposes of unique facilities, e.g. wind tunnels, special loading systems for dynamic and static tests, gun equipment for bird strike structure tests, flying test-beds, climatic chambers, and many other specialized measurement and experimental systems.

Fields of Expertise:

- low and high speed aerodynamics
- strength of structure (static and fatigue testing)
- ground vibration testing (modal analysis)
- mechanical and climatic testing (environmental testing)
- acoustics
- test of hydraulic components
- prototype manufacture
- engineering design services
- design assistance in turbomachinery
- design and production of experimental equipment (e.g. wind tunnels)

Czech Technical University in Prague

In connection with ATM, within the Faculty of Electrical Engineering, the Department of Radio Electronics has nine researchers working with navigation procedures. They are contributing to the participation of the Czech Republic in the Galileo project and to the GARDA (Galileo Research and Development activities) project, where the Czech Technical University is responsible for the Galileo code and carrier tracking problems.

Brno University of Technology

The main scientific activities of the Institute of Aerospace Engineering (IAE) are focused on the application of modern computational methods in the area of the *aircraft design* and *aircraft structures testing*. Furthermore, IAE has researchers working within the domains of Civil-Military Cooperation, Safety, Environmental Impact and Implementation of UAVs to civil air transportation.

The Institute of Aerospace engineering has a long tradition of tight cooperation with the aircraft industry on new aircraft projects, in the area of applied research and also tests, which are conducted in Czech Civil Aviation Authority certified testing laboratory. Apart from testing, the IAE also performs studies such as the one on decreasing the number of aircraft accidents in general aviation in the Czech Republic and the Database of Aircraft Accidents of the Czech Republic, containing a study of civil aviation safety problems. CEATS-related research projects include a thesis work on “Modelling of Upper Airspace of Czech Republic in the fast-time simulation tool SIMMOD” and a PhD thesis “Increasing of Throughput on the Airport-Airspace Interface”.

AERO Vodochody a.s.

AERO Vodochody a.s. follows the tradition of AERO - aircraft factory, established in 1919. The main subject of enterprise of the company is: engineering, production, testing, repairs, overhauls and upgrades of training and combat military aircraft, aircraft parts and preparations, engineering and production of multi-purpose transport aircraft, aero-structures, foreign trade with military material, operation of Private International Aerodrome and aircraft work. The company is the largest jet training aircraft producer in the world (during the past 50 years, AV has manufactured about 2/3 of the world’s production of this type of aircraft).

EVEKTOR

EVEKTOR-AEROTECHNIK is a major civil aircraft producer in the Czech Republic. 35 years of tradition and experience in aircraft design and production, together with a team of the best specialists from Czech aircraft industry and innovative and marketing driven product design create a synergy that enable us to present the greatest possible value of the aircraft to their owners.

Letov Letecka Vyroba s.r.o.

Letov is the oldest aircraft manufacturer in the Czech Republic. Company was founded in 1918 by the Czechoslovak Defence Ministry to repair the aircraft of the Czechoslovak Air Force obtained after the WW I. Since 1991 Letov has been delivering parts and subassemblies for the Airbus aircraft. During 1997 from the former Aircraft Product Division the daughter company LETOV LETECKÁ VÝROBA, a.s, was established. The new company is responsible for the production of parts and subassemblies for the Airbus aircraft and for the new Czech combat aircraft L-159 ALCA.
Since June 1, 2000 the company became the 100% daughter company of Latecoere, France http://www.latecoere.fr/

Aircraft Industries, a.s

The company was established in 2004 as an successor of former LET a.s company- theblargest civil aircraft manufacturer in Czech Republic It has developed and produced over 7000 aircraft of various types and categories since 1936.(L-410 alone reptesent over 1100aircraft produced and delivered by the factory).
The company can offer technical assistance and services in the field of airframe and system design, static and dynamic analyses, vibration tests, reliability analysis,aerodynamics, ground and flight testing.

UNIS, spol. S.r.o.

The company's major filed of activity consists of technological process control. Research and development activities of UNIS are divided into two spheres – development of software and hardware tools for embedded application creation (Processor Expert) and design and production of mechatronic systems for airborne, automotive and industry applications. The providing of the complete customer service is the integral part of UNIS activities.

3.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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Luboš Janko	Head of a dept.	Czech Techn. Univ. Prague	+420 224 357 372 janko@fsik.cvut.cz
Antonín Pištěk	Director of LU	Brno Univ. of Technology	+420 541 142 226 pistek@fme.vutbr.cz

3.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

Aeronautical R&D related Organisations
Aero Vodochody, a.s.
Air Navigation Services of the Czech Republic
Aircraft Industries a.s.
Brno University of Technology
Ceske vyoké uceni technické v Praze (CVUT)
Czech Airports Authority
Evektor – Aerotechnik a.s.
Evektor spool, s.r.o.
Institute of Thermomechanics – Academy of Sciences of the Czech Republic (CZ)
Letov Letecka Vyroba s.r.o.
MESIT pristroje spool. S.r.o.
Nuclar Research Institute Rez Plc.
PBS Velka Bites, a.s.
Quittner & Schimek s.r.o.
SHM Ltd.
Skoda Vyzkum s.r.o.
UNIS, spool. S.r.o.
Univerzita Tomase Bati ve Zline (UTB)
Vyzkummy a Zkusebni Letecky Ustav (VZLU), a.s.
Walter Engines a.s.

4 Estonia

4.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

Aviation in Estonia dates back to 1921, when the first carrier company 'Aeronaut' was founded. Today the activities in the field of civil aviation are coordinated by the Estonian Civil Aviation Administration (ECAA), which is a governmental institution within the administrative area of the Ministry of Economic Affairs and Communications. Its main objective, under its Statutes, is to ensure flight safety in civil aviation by carrying out appropriate safety oversight and exercising law enforcement powers. Supplementary tasks of the ECAA are to execute national economic policy and represent the State in the field of civil aviation.

In addition, ECAA:

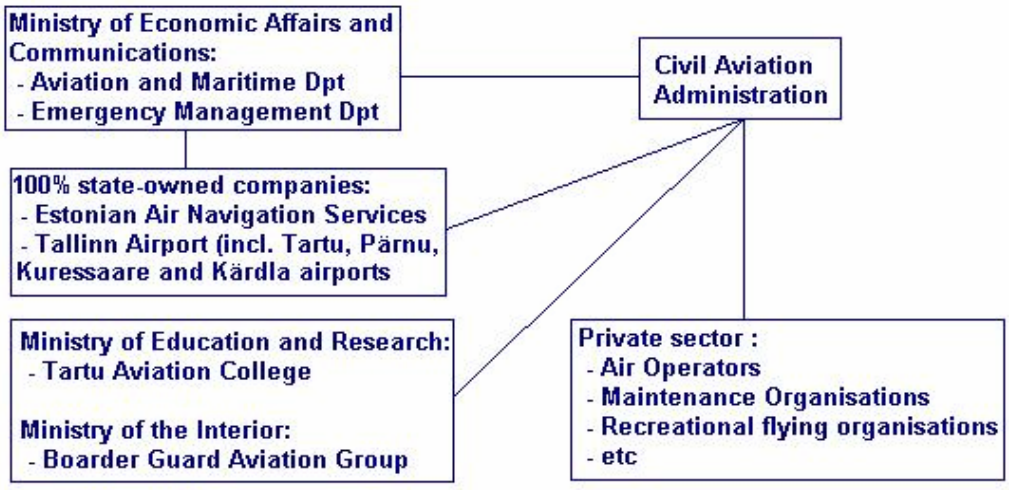
- provides aviation industry and other parties involved with relevant information on regulations and standards in the field of civil aviation;
- provides assistance to the Ministry of Economic Affairs and Communications in legislative drafting and advises on drafting development plans related to civil aviation;
- co-ordinates the implementation of aviation-related projects and participates in their implementation.

In carrying out its tasks, ECAA is provided with appropriate budget and legal framework. Legislative framework can be divided into two main categories:

1) legislative framework necessary for the functioning of ECAA as a public administration organisation, and

2) legislative framework regulating civil aviation activities (aviation regulations).

The structure of Estonian aviation can be described by the following diagram:



Tartu Aviation College

Aerospace education in Estonia is focused on civil aviation transport and necessary military activities. Tartu Aviation College (TAC) is a state higher aviation school of professional higher education and research, providing aviation diplomas and training aviation specialists. The studies are conducted in accordance with the standard curricula meeting the requirements of the Ministry of Education and Science of the Republic of Estonia, ICAO, JAA, EASA and Eurocontrol. The specialities taught at TAC are:

1. Air Traffic Service
2. Management of Communication and Navigation Systems
3. Aeroplane Piloting
4. Helicopter Piloting
5. Aviation Company Management
6. Aircraft Maintenance

TAC is providing the training in Human Factors and System Safety at the master studies level.

The main directions of research activities are the following:

- Quality, economy and methodology in education;
- Geography and economics of air transportation;
- Internal combustion engine, diagnostic methods and equipment;
- Human factor and system safety in aviation;
- The effect of aviation activities on the situation of Estonian environment.

ELI Military Simulations Ltd

ELI is the leader of the Baltic countries in developing and producing simulators and training systems for police and defence forces. ELI is located in Tallinn, Estonia and started the business in 1995 with simulators for rifles and antitank weapons to learn and improve the operational use of small arms in near-realistic situations.
The list of products includes:
Recoil and reload for small arms with built-in CO2 system,
Software to learn anti-tank weapons,
Innovative new idea in mortar simulation,
CO2 operated mortar simulator M-GOLF for 81mm and 120mm, designed for operations in open landscape.
Interactive simulator ALFONS
Radio controlled target systems for infantry and sub-calibre anti-tank weapons
UAV related products – catapults, trackers, generators, ground control systems and gimbals

In cooperation with the Department of Mechatronics of Tallinn University of Technology they have designed and constructed an unmanned aerial vehicle (UAV) upon the request of the Estonian Defence Forces. The same team is currently performing studies in order to develop a mini-class universal purpose unmanned aircraft. This UAV will be offered for different governmental and

scientific missions like pollution monitoring, geophysical prospecting and disaster monitoring and coast guard services. All these benefits can be used in parallel in military applications.

Department of Mechatronics of Tallinn University of Technology

Main activities:

- Higher education, master and doctoral courses in mechatronics, machine science and instrument engineering, metrology and designing and quality engineering;
- R&D, continuing education and development in mechatronics, machine- and instrument engineering;
- Consultations and projects in mechatronics, machine- and instrument engineering (expert assessment, calibration of measurement equipment, integrated product development, coatings, quality systems, terminology etc)

Department of mechatronics is actively involved in the development of unmanned aerial vehicles in cooperation with ELI Military Simulations Ltd. They have remarkable competence in flight mechanics, control systems of UAV and EGV, structural design and testing.

Estonian Air Navigation Services

Estonian Air Navigation Services (ANS) is a modern, rapidly developing company operating under the auspices of the Ministry of Economic Affairs and Communications of the Republic of Estonia. It is a state-owned business entity, the major function of which is to provide quality services to air traffic in accordance with international standards as well as to ensure flight safety in Tallinn Flight Information Region. The core activities are:

- Ensuring safety of air traffic in the assigned airspace;
- Provision of air traffic services;
- Airspace management and planning;
- Preparation, exchange and promulgation of aeronautical information;
- Coordination of search and rescue;
- Aviation consultancy services and expertise;
- Project management;
- Building inspection

Air Maintenance Estonia

AS Air Maintenance Estonia (AME) is an Aircraft Maintenance and Repair Organisation, located in the premises of Tallinn Airport. With around 100 employees, AME is relatively small but flexible and reasonably priced MRO provider in Scandinavian and European market.

AME is fully owned by SAS Technical Services (STS) and is member of SAS Group. AME offers aircraft maintenance services ranging from ad hoc to Base maintenance activities on Boeing 737 both Classic and NG, Line maintenance to different aircraft types and aircraft components maintenance. Supporting services are also provided, such as engineering, AOG services and 24hr customer service.

TRAGI Ltd

Tragi Ltd is a production company of top quality RC gliders. Their long-lasting models are designed to detail to meet the demand of everybody from top sportsmen to Sunday flyers. Tragi 703, Tragi 704 and Tragi 705 have kevlar/glass fuselage with carbon reinforcement; X or V tails with installed carbon pushrods for precise control. Wings and fuselages of all Tragi 703 – 705 modifications (also Tragi 701 and Tragi 702) can be combined i.e. it is possible to have one fuselage and several different wings for different purpose.

Archimedes Foundation

Archimedes Foundation is an independent body established by the Estonian government in 1997 with the objective to coordinate and implement different EU programmes and projects in the field of training, education, research, technological development and innovation.

Archimedes Foundation has been nominated for Estonian National Contact Point Organisation for EU Fifth, Sixth and Seventh Framework Programmes and thus is having responsibility for coordination and promotion of Estonian participation in FP5, FP6 and FP7. Archimedes is the coordinator of COST (European Cooperation in the field of Scientific and Technical Research), eContent and eTen programmes in Estonia. Archimedes is the implementing body for Socrates and Youth Programmes. Archimedes Foundation is the host of Estonian Current Research System and is entitled to organize the activities of the Higher Education Quality Assessment Centre.

The main objectives of the Archimedes Foundation are to manage and use the appropriations allocated to the Foundation to:

- promote and modernise Estonian education and science systems and reinforce co-operation with other spheres of society;
- prepare Estonian education, science systems and youth organisations for joining the European Union structures
- prepare Estonian education and science systems and youth institutions for participating in and implementing various programs of both the European Union and other programmes.

4.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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4.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

Tartu Aviation College

Department of Mechatronics of Tallinn University of Technology

ELI Military Simulations Ltd.

Estonian Air Navigation Services

Air Maintenance Estonia

5 Hungary

5.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

The **Hungarian Aerospace Research Platform (HARP)** was formed in 2006 in order to foster research co-operations within Hungarian organisations and to enable them to join international research programs. The five founding members of HARP are: Bonn Hungary, Budapest University of Technology and Economics (Department of Aircraft and Ships), Hungarian Aviation Industry Foundation, KFKI Vibration Laboratory, Slot Consulting. www.haif.org

Main objectives of the Research Platform:

1. To provide organizational framework for Aerospace research in Hungary
2. To help the best research organizations to diversify into aerospace
3. To support the Hungarian Aerospace Cluster in product development
4. To launch complex research projects with integrating members' capabilities
5. To participate in FP7 and other EU research programmes
6. To establish new R&D relationships with EU countries

Bonn Hungary

Bonn Hungary Electronics (BHE**)** was founded in 1991 for being an R&D company in the field of the microwave telecommunications. BHE employs highly skilled microwave experts, who have gained their experience in the industrial, military and space research groups at other companies. Many of them spent years in the USA, Japan and Germany as development engineers. The success of BHE in microwave research and development led soon to extend the company's activity. The company is equipped with state of the art microwave EDA softwares for simulation and uses modern electronic test and measuring equipment. The sensitive high reliability products are assembled in a fully antistatic clean room. In the machine shop, the manufacturing of components are made by skilled personnel on the most modern CNC milling machines.

Budapest University of Technology and Economics

The Department of Aircraft and Ships at the Budapest University of Technology and Economics works and has good results in the field of aeronautical sciences development and real flight situation modelling, aircraft state and parameter identification, unconventional flight analysis, control method development, investigation on post stall regimes, studies on special airplanes and air transportation management (investigation of regional flight, market forecast, airport development, development of methods for environmental load simulation, development of the personal air transportation system, investigation of the future ATM). In addition, BUTE also has experts working within the domains of Finance and Economics and of Regulation and Institutional Aspects.

BUTE has been contributing to the Hungarian aviation regulation process since 1986 where it has taken part in the technical support of the jurisdiction such as the naturalization of airworthiness and requirements, international regulations, preparation of the Hungarian regulations. It has also

performed different analyses of needs, development of forecast methods, planning and future development in connection with Hungarian regional flights.

Hungarian Aviation Industry Foundation (HAIF)

The private, non profit organization was founded by industry managers working for various aviation or aerospace companies and desire to promote and develop the Hungarian Aviation Industry. HAIF plays a role of a catalyst and facilitator in the industry development process while actively supporting the following project types:

- Research and development
- Supplier development
- Quality program development
- Training program development
- Productivity improvement
- NPI program
- Offset program
- Greenfield, Joint Venture, Acquisition program
- Airport and Business Park development program

KFKI Vibration Laboratory

The KFKI Research Institute for Particle and Nuclear Physics (RMKI) of the Hungarian Academy of Sciences became an independent legal entity on 1st January 1992. RMKI offers measuring possibilities and services for analitical purposes in the following fields:
Rutherford backscattering (RBS)
channeling
elastic recoil detection (ERD)
proton induced X-ray emission (PIXE)
nuclear reaction analysis (NRA)
positron annihilation spectroscopy: determination of the positron lifetimes and the measurement of the Doppler broadening of the annihilation radiation
Mössbauer spectroscopy: absorption, emission and conversion electron spectroscopy

SLOT CONSULTING

Slot Consulting is a Hungarian owned SME established in 2001. The company has been involved in several European Commission and EUROCONTROL aeronautical and ATM related research projects including: THENA (Thematic Network on Airports, DG TREN – FP5), CAATS (Cooperative Approach to Air Traffic Services, – DG TREN – FP6), OPTAG (Improving airport Efficiency, Security and Passenger Flow by Enhanced Passenger Monitoring, DG Research, FP6), SCRATCH IV (Support for CollaboRative Aeronautical TeChnical Research, DG Research – FP6), SCRATCH V, Airport CDM CBA (EUROCONTROL EATMP), SWIM (EUROCONTROL EATMP).

5.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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5.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

Hungarian Aerospace Research Platform

Bonn Hungary

Budapest University of Technology and Economics

HAIF

KFKI

Slot Consulting Ltd.

6 Latvia

Latvia does not have its own strong aviation industry. However, in Latvia there are a number of research establishments connected to some extent with the problematic of aeronautical science and technology and currently successfully working in this area. To the physical airframe testing and simulation facilities originated in Soviet times nowadays with EU co-funding are extensively used in applied research. It is envisaged that within several decades applied research will be carried out in the field of aerodynamics, airframe strength and fatigue durability, designing and calculations of light and super light experimental aircrafts, the theory and structure of engines etc in Latvia.

6.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

Riga Technical University (RTU)

The Aviation Institute of RTU has good achievements in the field of the aircraft structural analyse, theoretical and experimental research of the strength and fatigue durability, full scale testing of aircraft components, theory and technology of ultrasound non-destructive inspection of the aircraft thin-walled units, low-speed aerodynamics, composite material strength, UAV design and its experimental production and testing, automation of flight control and navigation. Laboratory of aircraft strength and fatigue durability has modern facilities of testing, measurement and control. At present time Aviation Institute is involved to implementation of 6FP project AISHA (*Aircraft integrated structural health assessment*) as one of the key players on research of the strength of structural elements, full scale testing and prediction of remaining strength and remaining lifetime of a structure with different kinds of damages.

In the field of progressive materials and structures the researches are carried out in Institute of Materials and Structures of RTU (RTU-IMS). The main expertise accumulated by RTU-IMS are follows: finite element analysis of sandwich and laminated composite structures, optimum design by planning of computer experiments and response surface methodology, identification of mechanical properties for composite materials and structures and fracture analysis of composites. Active participation of RTU - IMS in 5FP&6FP aeronautical activities cover projects as IP ALCAS (*Advanced Low Cost Aircraft Structures*), IP FRIENDCOPTER (*Integration of Technologies in Support of a Passenger and Environmentally Friendly Helicopter*), STRP COCOMAT (*Improved Material Exploitation at Safe Design of Composite Airframe Structures by Accurate Simulation of Collapse*), STRP POSICOSS (*Improved postbuckling simulation for design of fibre composite stiffened fuselage structures*) and STRP FANTASIA (*Flexible and near-net-shape generative manufacturing chains .and repair techniques for complex shaped aero engine parts*).

AVIATEST LNK

The company is a modern well equipped centre for research and testing of aviation and other sophisticated equipment the use of which demands minimizing risk factors. Aviatest LNK has indoor and outdoor laboratories-proving grounds with the area of 2,000 sq. meters each, which makes it possible to test whole planes, helicopters and many of their units. At present, tests are carried out on the plane TU-334 (Tupolev production) and the fuselage of helicopter Kamov-226 (Kamov production). Within the framework of resources increase program Aviatest LNK carries out full-scale

tests of cargo helicopter MI-26. The company also tests undercarriage, empennage and other crucial aircraft units, as well as airport equipment, e.g. lifts in the airport Riga, and different building constructions.

The laboratory employs more than 30 people, among who are scientists with PhD degrees, highly qualified engineers and other technical specialists. Tests are run by electronic and computer equipment which, in laboratory conditions, creates a close- to- reality loading process and conducts a wide set of measurements. The result of this work is a test report in full compliance with European quality standards, for which purpose the laboratory has a special accreditation certificate.

AERCOM

Firm AERCOM is Experimental Aerodynamics Department of State Civil Aviation Research Institute of former USSR.Specific expertise: Wind Tunnel Tests, Unsteady Aerodynamic Characteristics Experimental Evaluation, Mathematical Models of Stall Characteristics, Computer Simulation of Flight in Stall Conditions, Aerodynamics & Design of Wind Power Stations with Vertical Axes.
Specific test facilities: Low speed wind tunnel with two test sections (16 m^2 , flow speed up to 50 m/s ; 8 m^2 , flow speed up to 100 m/s),benches for testing models in static position and during harmonic angular oscillations, strain-gauge balances, special equipment for test in icing conditions. Electronic computer test data acquisition system for static and dynamic tests. Software for data acquisition control, test data processing, static and dynamic aerodynamic coefficients calculations. Specific software for dynamic stall characteristics mathematical modeling.
AERCOM is involved in international and national collaborations in aerodynamics and flight mechanics area.

6.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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6.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

AVIATEST LNK

Engineering firm LAS-1
Riga Technical University

Scientific-technical firm AERCOM
SCIENTIFIC PRODUCTION
FIRM TURBO

7 Lithuania

7.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

Vilnius Gediminas Technical University

VGTU comprises 8 faculties: Environmental Engineering, Architecture, Electronics, Fundamental Sciences, Mechanics, Civil Engineering, Transport Engineering, Business Management and Antanas Gustaitis Aviation Institute. There is also an Institute of Humanities, Department of Strategic Research, International Study Centre, Centre for Continuing Education, Foreign Language Training Centre, University Library, Computer Centre, 10 research institutes, 4 research centres, 19 research laboratories, publishing office "Technika", recreational facilities, cafes, canteens, clubs, etc. VGTU h ostel for foreign students is located in the university campus. University accommodation is guarantied to 100% of foreign students.

Antanas Gustaitis Aviotion Institute

The Institute comprises 3 academic departments - Aviation Technologies, Aviation Mechanics and Avionics, two separate practical training units - flight training unit and air traffic control training unit, laboratories, flight and air traffic control simulators. Some practical trainings take place in the premises of the technical centre of Lithuanian Airlines and in the premises of Lithuanian Air Navigation Services where the modern air traffic control equipment has been recently installed. Aviation institute possess 10 aircraft (Cessna–152, Cessna–172 and Cessna–310Q), thus future pilots have their flight practice in the aerodrome of Kyviškės, in the suburbs of the city of Vilnius and in the International Vilnius airport. The institute has co–operation with the appropriate institution in Latvia, Estonia, Sweden, England, Germany, Slovakia, Azerbaijan, Poland and Ukraine.

Research interests:

- Harmonisation of standards and procedures for air transport safety;
- Analysis of application of satellite navigation systems;
- Investigation of new aviation technologies and strategic development;
- Human factor analysis in commercial and sport aviation.

Aviation Specialists' Qualification Improvement Centre

Aviation Institute comprises the Aviation Specialists' Qualification Improvement Centre (ASQIC). The ASQIC's function is to provide with qualification improvement courses for aviation specialists in Lithuania and from aboard.

SAQIC organizes the following courses:

- Private pilot licence course (in Lithuanian and Russian languages);
- Commercial pilot licence course (in Lithuanian and Russian languages);
- Private pilots licence course (helicopter).

- Aviation specialist' qualification improvement;
- Aviation security.

Helisota

Established in 1997, Helisota Ltd. is the only technical maintenance, overhaul and upgrade facility for Mi-8/17 helicopters in the Baltic states. The company offer maintenance, repair and overhaul of the helicopter and its components, supply of spare parts and consumable materials as well as technical support. Their customers are government institutions and private companies in 25 countries world wide

Kaunas Aviation Plant

Kaunas Aviation Plant was established in 1919. Today, possessing more than 2500 sq.meters hangar type floor space, adjacent 600x60 m runway, and experienced engineers and technicians, it is engaged in the following activities:

- maintenance and overhaul of light aircraft;
- fabric aircraft re-covering and restoration;
- painting of aircraft;
- interior design and refurbishment;
- aircraft storage;
- lease of premises.

Termikas

Up to now Termikas Ltd. is working in aircraft, engine and glider world market for more than fifteen years. The company comply with laws and requirements of Lithuanian CAA and EASA Part 145.
Main goal of the company is to provide high quality overhauled YAK type aircraft, perform their maintenance, repairs, overhaul engines and propellers.
Termikas Ltd. is also allowed to work on Western type aircraft e.g. Cessna, Piper, Mooney, Socata.Termikas has good direct contacts with aircraft manufacturers, design bureaus, many maintenance organizations and private pilots. Everyone, who bought or overhauled an aircraft, glider or engine in the company, will get professional advice and help. They issued Flight and Maintenance Manuals and spare parts catalogues on CD.

Sportinė Aviacija (Sport Aviation)

Apart from building gliders, the factory has capacities to develop a large variety of aviation or non-aviation composite structures and constructions. The testing facility can be employed for comprehensive analysis of the company's projects and as a complimentary service for the company's customers as well. For these purposes the factory has its own strength test laboratory.

Oro navigacija (Air Navigation Service)

Communications, navigation and surveillance services are provided all over the Vilnius Flight Information Region.

Technical Department of flyLAL

Technical Department of flyLAL, new name „flyLAL Technics“ is EASA PART 145 approved Maintenance Repair Organisation. „flyLAL Technics“ performs following services:

- “Boeing 737-200”, “Boeing 737-300”, “Boeing 737-400”, “Boeing 737-500” Line and Base maintenance up to and including D-check, avionics system modification, structure repair;
- “Saab-2000” Line and Base maintenance including 8 years inspection, avionics system modification, structure repair;
- “Saab 340A/B” Line and Base maintenance including 4 years inspection, avionics system modification, structure repair.

All the work is performed by highly qualified engineers and technicians, who have gained their experience at world-class training centers, such as:

- SAS Flight Academy;
- Lufthansa Technical Training;
- Boeing Flight Safety International;
- Bureau Veritas,
- Crossair;
- Oxford Aviation College;
- CFM International;
- Sabena.

The department currently employs a staff of 162, including 65 engineers/technicians certified in accordance with EASA PART 145 and PART 66 requirements.

Lithuanian National Aeronautics Technology Platform (LNATP)

–***Lithuanian aviation industry***
•Association of Lithuanian Aviation Industry Companies
•Stock company “Helisota”
•Stock company “Kauno aviacijos gamykla”
•Stock company “Termikas”
•Stock company “Sportinė aviacija”
•State enterprise “Oro navigacija”

–***Lithuanian research organisations***
•Vilnius Gediminas’ Technical University
•Kaunas University of Technology
•Vilnius University
•Institute of Mathematics and Informatics
•Institute of Chemistry

7.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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7.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

Agency for International Science and Technology Development Programmes - AISTDP

Vilnius Gediminas Technical University

Kaunas University of Technology

Vilnius University

Institute of Mathematics and Informatics

Institute of Chemistry

8 Malta

Taking advantage of the country's small size, Malta has a focussed aeronautics network in which stakeholders interact to actively work together in various areas such as education and research. The country has developed niche research capabilities in a number of sectors in aeronautics. The network's key strength is in the stakeholders' human resources, which is backed up by excellent facilities to provide significant strengths in their respective capabilities.

8.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

Research Establishments - The University of Malta

The University of Malta is the only institution conducting research and providing higher education in Malta. Tracing its origins to the late 16th century, it now consists of 10 faculties and 18 institutes that service the country's needs in graduate training.

Focussing on traditional engineering disciplines, the Faculty of Engineering is responsible for the provision of the country's knowledge base in the profession. Accordingly, the faculty has a broad portfolio, covering the major areas of mechanical engineering, metallurgy, manufacturing, communications, electronics, control and power engineering. The faculty is research active in many fields across this broad spectrum.

One of the most successful research entities in the country, the Aerospace Applications Group brings together the various capabilities within the Faculty of Engineering, as well as those of the Faculty of Science, to focus on the applications in the aerospace sector. The group has accordingly drawn expertise in communication systems, information technology, electronic systems, physics, control, signal processing and systems engineering, amongst others and developed expertise in several avionics sectors such as airborne hardware and software system specification, design, development, modelling and simulation, test, evaluation and analysis. The group has applied these capabilities in projects involving aviation safety, air traffic management and airborne separation, trajectory management, hazard avoidance, cockpit display and alerting systems, IFE, radiation field modelling and on-board / airborne wireless systems, and datalink design.

Due to the nature of its setup, the activities of the group can quickly extend to cover other areas relevant to the aerospace sector, such as metallurgy, where applications may involve new coatings, surface treatments, fatigue testing and analysis and smart materials.

End Users

Malta has a number of end users that are interested in participation in research programmes. The major stakeholders have a strong human resource base of dedicated, graduate and professional personnel that are motivated by such activities.

Air Malta is Malta's national airline flying a mixed fleet of 14 aircraft comprising Airbus A319s and A320s, as well as Boeing 737-300s. It flies to 50 destinations and has strong technical and professional resources, with a core of flight crew with engineering degrees. As an end user and operator, Air Malta is capable of providing support and contributing to activities associated with design, trials and training throughout the civil air transport sector. It has been active in this area through participation in several programmes funded by the EC and the industry.

Malta Air Traffic Services (MATS) is the only air navigation service provider in Malta, a member state of Eurocontrol. An SME, its dedicated and motivated staff has participated in several ATM-related programmes such as Mediterranean Free Flight, Crystal Med and the RVSM programme. Meeting all ESRR requirements and a full member of CANSO, MATS can provide advisory contributions in design and implementation of ATM-related systems, as well as contributions to simulation, evaluation, in-flight trials and training. The Malta FIR is well suited for in-flight trials, having a broad mix of unused airspace and high-density traffic.

Lufthansa Technik Malta (LTM) is a joint venture between Air Malta and Lufthansa Technik AG. It is an EASA 145 approved MRO organisation performing C-checks and modifications on Airbus A320 and Boeing 737 family aircraft. The company has over 100 technical employees led by a core of specialised engineering professionals that is supported by a qualified technical and professional workforce. It is currently implementing a large expansion plan that will see it increasing its capability to also service twin-aisle aircraft.

Malta also has a number of **other potential stakeholders** that may participate in aeronautics research activities. These range from companies – including SMEs - involved in general industry, such as power electronics design and manufacturing houses, to other aeronautics end users such as Aeromaritime (MRO) and Malta International Airport (MIA).

8.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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8.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

Air Malta
Lufthansa Technik Malta
University of Malta
Malta Air Traffic Services

9 Poland

The Polish aeronautical industry was in the past involved in designing, certification and production of a/c up to commuter class (19 000 lb), subsonic jet trainer, and midsize helicopters. This activity included both airframes and engines (turboprops up to 1 000 HP, and turbo-jet up to 1 600 kG of trust). The industry was supported by relevant R&D (test) infrastructure – partially owned and located at airframes and engines integrators (each of them has own R&D capacity), and in a part possessed by Warsaw Institute of Aviation (established in 1926).

Due to political and economical changes the sector and their R&D support have been re-arranged. The industrial cluster – 'Aviation Valley' was created, and in addition the R&D support to it was also re-organized. The Centre of Advanced Technology 'AERONET – AVIATION VALLEY' was created following this reorganization. The idea for that centre was to group research institutes and technical universities significantly involved in R&D support of industries under industrial cluster "Aviation Valley". It is worth mentioning that the centre linked with the Institute of Fluid Flow Machinery in Gdansk and Technical University of Czestochowa in order to gain synergy with the most advanced institutions supporting already the sector of turbo-machinery (marine, and power generation). Traditionally two technical universities : Warsaw University of Technology and Rzeszow University of Technology having aeronautical faculties are deeply involved in research and training related to all aspects of aeronautics. Also Polish research aeronautics potential was integrated by establishing a Polish Network of Excellence whose strategic objective is to strengthen research activities both at local and European level. More integration between Polish industry and research is a result of setting up Polish Technology Platform for Aeronautics which has announced recently a Polish Strategic Research Agenda and at the moment being implemented with the financial support both of Ministry of Science and Higher Education and Ministry of Economy coming from national budget and structural funds. Talking about Polish aeronautics it is also worth mentioning a European Network of Excellence KMM-NoE (FP6 NMP contract) coordinated by the Institute of Fundamental Technological Research from Poland with some other Polish research key players in material science and some Polish industrial aeronautics partners whose interest is materials research.

Poland is also very active in different European initiatives like: ACARE, ASD, IMG4, JTI, EASN, EREA and many others.

9.1 KEY PLAYERS IN AERONAUTICAL RESEARCH

The Polish aeronautics R&D area consists of:
17 Technical Universities
15 Universities
2 Aeronautics Institutes
14 Aeronautics related Institutes

Aeronautics scientific, research and industrial consortia

Due to the great need for strengthening cooperation at European level as well as to facilitate cooperation at national level between research organizations and encourage cooperation between

Polish research area and industry there have been set up for this purpose scientific, research and industrial consortia described in more detail below.

Scientific Network „Aeronautica Integra"

The scientific network „Aeronautica Integra" - (**http://www.aeronauticaintegra.prz.edu.pl -** consists of ten scientific and research organizations (institutes, universities and tech. universities) and one industrial consortium Aviation Valley.
Mission and main goals:

- ✓ to integrate and to increase the activity of Polish scientific groups working in the area of aviation technologies (scientific and industrial partners) within research and education
- ✓ to build sound foundations for transfer of knowledge
- ✓ to increase participation of Polish partners in the EU Framework Programmes projects
- ✓ to develop co-operation between Poland and foreign partners
- ✓ to join European scientific networks and ESTP

The Centre of Advanced Technologies AERONET „Aviation Valley

The Centre of Advanced Technology "AERONET - Aviation Valley" -**http://www.aeronet.pl -** was founed in order to realize interdisciplinary, collective and long-term research and training program as well as effective implementation and commercialization of new technologies aimed at the aerospace industry.

Rzeszow University of Technology – coordinator
Lublin University of Technology – partner
Lodz University of Technology – partner
Silesian University of Technology – partner
Warsaw University of Technology – partner
University of Rzeszow – partner
The Szewalski Institute of Fluid-Flow Machinery-partner
Czestochowa University of Technology - partner
Institute of Aviation – partner
Institute of Fundamental Technological Research – partner
Institute of Fluid Flow Machinery – partner
Aviation Valley Association – partner

The Centre of Advanced Technologies "AERONET - Aviation Valley became active in the following main scientific fields pertaining to aviation and related areas:

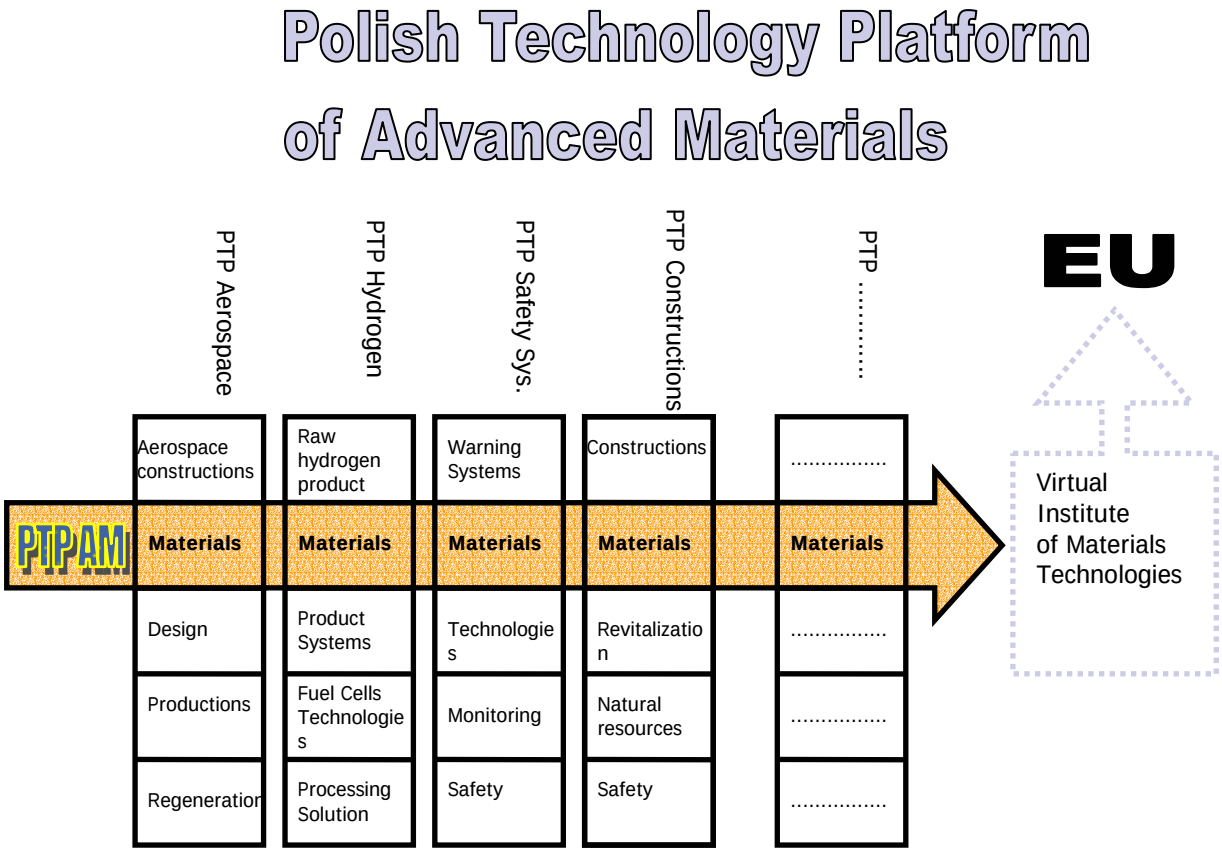
- design and testing of aviation structures and propulsions,
- aviation teleinformatics and avionics systems,
- modern materials and surface engineering processes,
- modern production techniques in the aerospace industry

R&D potential of Polish technological platforms (PTP)

(http://www.kpk.gov.pl/ppt/)

- 26 PTPs
- PTPs consist of: major industrial partners, commercial chambers, professional associations, research institutes, universities; including Centres of Advanced Technology, CoE

Below it can be seen how their integration at materials research level.



Network of excellence on „knowledge-based multicomponent materials for durable and safe performance" – KMM-NoE

(**http://www.kmm-noe.org/**)

KMM-NoE conducts materials research in:

- Intermetallics for High, Moderate, Low Temperature Applications (HiMoLo)

γ-TiAl based materials:

- New Particulate Al and Ti Matrix Composites Produced by Self-high Temperature Synthesis (PARTMMC)
- Direct Powder Deposition (DPD) of MMC for Aerospace Components with Tailored Functionality (DEPOSITCERMET)
- Metal-ceramic Nano-structured Bulk Composites and Coatings (NANOCERMET)
- New Multi-functional 3D Cellular/Porous Metallic Materials/Assemblies with Graded Pore Density/Geometry (CELMET)

KMM-NoE research work is conducted on the needs of aerospace and automotive industries

Research and Development Laboratory for Aerospace Materials

Activities of the laboratory

Monocrystals / directional crystallization
- ⇒ laboratory vacuum furnace for directional crystallization of nickel base alloys (*ald*)

Heat and creep resisting coatings
- ⇒ laboratory equipment for cvd coatings deposition (*ionbond*)

High speed machining
- ⇒ high speed machining center (*deckel maho*)

Materials characterization
- ⇒ microstructure examination
- ⇒ phase transformations and and phase composition analysis
- ⇒ analysis of chemical composition
- ⇒ testing of mechanical properties
- ⇒ heat treatment, thermodynamics of the alloys
- ⇒ nondestructive testing

Institute of Fluid Flow Machinery (IFFM)

(**http://www.imp.pg.gda.pl/**)

Main Facilities:

MTI-2100 Photonic Sensor, LeCroy Waverunner-2 LT264, Waveform generator TGA 1241, Piezo Linear Amplifier EPA-10440, QuickPack biomorph actuators

9.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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10 Romania

10.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

INCAS - National Institute for Aerospace Research "Elie Carafoli"

INCAS has carried out its activity under different names and structures since 1950 when The Applied Mechanics Institute of the Romanian Academy was established. In 1965, the Institute of Fluid Mechanics has separated as a company specialized in the aeronautical and space fields. Starting with 1968 IMFCA (ICSITAV in 1985) assumed control of all the Romanian aeronautical research. In 1990 ICSITAV became the Aviation Institute, as the unique company for research and design in Romania. In 1995 National Institute of Aerospace Research "ELIE CARAFOLI" - INCAS was separated from ICSITAV with the aim to preserve and develop the aerospace capabilities of Romania

INCAS basic activities are:
- Conceptual design and industrial integration for civil and military products
- Aerodynamic design and optimization
- Applied aerodynamics and wind tunnel testing
- Flight dynamics analysis
- Handling qualities
- Structural design
- Systems integration
- Numerical analysis and code development
- technical assistance
- consulting
- Issuing of quality certificates.

Major aeronautical programs:
- IAR 93 - Single-seat close support, ground attack and tactical reconnaissance aircraft
- IAR 99 - Advanced training aircraft and close air support
- IAR-95 - Supersonic fighter project
- IAR – T - Remote control training and surveillance aircraft
- ECO- 100 - side-by-side multipurpose light aircraft;
- IAR 300 helicopter - life cycle and hydraulic tests;
- MM-241 missile
- MIG 21 upgrade to NATO standards

INCAS is also involved in national space research activity, under ROSA – Romanian Space Agency, related to the participation in international space programs. The basic activities are related to:
- Satellite data reception centre;
- Information centre for aerospace documentation;

- Small satellites and formation flying

Participation in R&D projects at EU level:

CASH	*Collaborative Working within the Aeronautical Supply Chain, 2000*
EXPRO	*Experimental and Numerical Study of Reacting Flows in Complex Geometries, 2001*
IMAGE	*Interoperable Management of Aeronautical Generic Executive Software, 2003*
EGEE	*Enabling Grids for e-Science, 2004*
SEE-GRID	*South-Eastern European Grid-enabled e-Infrastructure Development, 2005*
UFAST	*Unsteady Effects in Shock Wave Induced Separation, 2005*
CESAR	*Cost Effective Small Aircraft, 2006*
AVERT	*Aerodynamic Validation of Emission Reducing Technologies, 2006*

COMOTI National Research and Development Institute for Gas Turbines

Established in 1985 under the name of the Scientific Research and Technologic Engineering Centre for Aircraft Engines, within the former “Increst” National Institute, COMOTI becomes the Research and Development Institute for Gas Turbine in 1996.

COMOTI employs 170 specialists out of which more than half are university graduates. COMOTI’s activities are carried out in its main promises of Bucharest, as well as with Bucharest and Iasi Universities, Magurele Base and Sf. Gheorghe, Tulcea experimental Base. COMOTI has the reputation of a successful research, development and innovation organization due to its remarkable results in the field of aircraft and industrial gas turbines as well as in that of high speed bladed machines.

Main activities:

- Aero jet engines: ultra high bypass ratio fan, noise prediction of jet, thermal coating for high temperature parts.
- Industrial gas turbines: development of aero gas turbines in industrial gas turbines up to 2.5 MW shaft power
- Industrial centrifugal compressors for natural gas and for air
- Co-generation
- Air centrifugal blowers for waist water treatment plant
- Industrial noise reduction of jets

Participation in R&D projects at EU level:

- The ABRANEW Program
- CoJeN
- THE "JEAN"
- METHOD
- THE SILENCE(R)
- VITAL European Programme

ROSA – Romanian Space Agency

Established in 1991, ROSA becomes in 1995 an independent public institution under the authority of the Ministry of Education and Research.

Main activities:

- Coordinate the national space research and applications programs
- Promote space development
- Be the Government representative in the international space cooperation
- Develop specific project oriented research through its own centres
- Coordinate the Inter-ministerial group on Security Research

Major projects:

- **Policy and infrastructure**
  - Capacity building: technology park, centres of excellence, quality management, GRID, concurrent engineering
- **Space exploration**
  - Space missions: (INTERBALL, CLUSTER, PLANCK, COROT, AMS) Space science, microgravity & life science
- **Space applications**
  - Satellite communications, Earth observation, GNSS, precision farming, disaster management, telemedicine, GMES, GALILEO, LPIS, software
- **Aerospace science and technology**
  - Aerodynamics and flight dynamics, C3 systems, onboard technology
- **Industrial development and spin-off**
  - Aerospace platforms (UAV's, IAR-99, AEROTAXI), components, high speed facilities, infrastructure

10.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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10.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

INCAS – National Institute for Aerospace Research "Elie Crafoli" S.A.

COMOTI - National R&D Institute for Gas Turbines R.A.

STRAERO – Institute for Theoretical and Experimental Analysis of Aeronautical Structures S.A.

INAV – Institute for Aviation S.A.

SIMULTEC – Simulatoare pentru Aviatie S.A.

ELAROM – Electronica pentru Aviatie S.A.

CPCA – Centrul deProiectare si Consulting pentru Aviatie S.A.

ROSA – Romanian Space Agency

INAS - Institutul Pentru Analiza Sistemelor S.A.

ELPROF – Electronica Profesionala S.A.

UPB – University Politehnica Bucharest, Faculty of Aviation

MTA – Military Technical Academy

11 Slovakia

11.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

University of Zilina

The Faculty of Operation and Economics of Transport and Communications focuses on engineering, operational-technological and commercial-economic disciplines and has experts working in transport and communications (Road and Urban Transport, Air Transport, Water Transport, Railway Transport and Postal Service and Telecommunications). With the exception of Human Factors and Economics, the Air Transport Department has several focus areas, civil-military cooperation and ANS-personnel training included.

Among others, the faculty was involved in the:

- Slovak ATM Convergence and Implementation Programme
  (The faculty participated in the development of the material for the harmonization and integration plans, programmes and documents used for the strategy and concept of development of the Slovak Air Traffic Management system).
- Advanced Safe Separation Technologies and Algorithms (ASSTAR) project
- Safety requirements for establishment and operation of ATM/CNS.
- Audit of ESARR application in Air Navigation Services of the Slovak Republic.

12.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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12.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

University of Zilina

12 Slovenia

12.1. KEY PLAYERS IN AERONAUTICAL RESEARCH

University of Ljubljana

The Faculty of Maritime Studies and Transport (FPP) is an integral part of the University of Ljubljana. The is an education and training institution that also engages in scientific and research work predominantly in the field of maritime studies and transport.

The institutions has experts working at all the field of ATM (civil – military co-operation, Finance and Economics, Human Factors, Safety, Information Technology, Environmental Impact, Navigation Procedures) but the focus is especially on:

- Regulation and Institutional Aspects
- Environmental Impact
- Logistics of Air Transportation

Examples of ATM projects are:

- Advanced Safe Separation Technologies And Algorithms (ASSTAR)
- Safety Requirements for Establishment and Operation of ATM/CNS

12.2. CONTACT POINTS FOR AERONAUTICAL RESEARCH

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12.3. LIST OF AERONAUTICAL RESEARCH RELATED ORGANISATIONS

Adria Airways
HYB proizvodnja hibridnih vezij, d.o.o.
Institut Jozef Stefan
Slovenian ool and Die Development Centre (TECOS)
University of Ljubljana