

## THE RESEARCH PROJECT OF THE CENTRE OF EXCELLENCE FOR AIR TRANSPORT

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*Summary: This paper is about new scientific research project: Centre of excellence for Air Transport -ITMS 26220120065, which is realized at Air Transport Department of University of Žilina in cooperation with Flight Training Organization (FTO) – Air School of the University of Zilina. This project is co financed from sources of EU, which supports research activities in Slovak Republic. The project focuses on the impact of air transport on environment, including photogrammetry and surveillance of electromagnetic compatibility of monitoring of radio navigation and radio communication equipments.*

*Key words: sources EU, project, environment, photogrammetry, navigation equipment, radio communication equipment*

### INTRODUCTION

Air transport department and Flight Training Organization (FTO) – Air School of the University of Žilina have long years of experiences in dealing with the science-research projects in the field of air traffic. They focus on increasing of quality and effectiveness of pilot's training, increasing of safety and quality of civil aviation as well as air traffic controlling.

### 1. THE STRATEGIC AIM OF THE PROJECT

The strategic aim of the project is to increase the quality of the Air transport department as a research workplace on the field of planning of the transport development, taking into account the consequences in economic and environmental area. The aim of the project is in accordance with the global aim of the Operational program Research and development and thanks its specialisation supports Operational program Research and development supports increase of the competition ability of Slovak economics, international prestige of research in SR and its connection with the private sector contributes to the lowering of the regional disparity and to the production of the new job vacancies.

Strategic aim of the project is in accordance with the main aim of the call Operational Programme Research and Development „To increase the quality of research centres and to support excellent research with the emphasis on the areas with strategic importance for further development of economic and society.

The strategic aim is connected with all three specific intentions of the call:

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- to support the concentration of the best (excellent) research-educational teams to the monothematic centres with defined intentions for realisation of research activities in set scientific branch,
- to stimulate the formation of the infrastructure of research and development of the best and the most perspective workplaces for cooperation in the European research space,
- to support the integration of the best workplaces for research and development, especially in the European research space.

The project follows the requirements of the frame activity of support important and developing projects with the strategic importance for further development of the economic and society. Air transport belongs to the priorities of the research and development that 7RP of EU is also focused on. Slovak republic and University of Žilina is actively participating on the field of research in preferred zone focused on transport. The realisation of the applied project will contribute to the increase of quality of the research infrastructure at University of Žilina and will enable to increase the participation of University of Žilina on the projects realisation and to spread the international cooperation.

## **2. THE SPECIFIC AIMS OF THE PROJECT AND THEIR SEQUENCE ON THE LONG-TERM INTENTIONS**

One of the specific aims of the project is to develop the laboratory for flight verifying of the aviation support equipment and to increase its safety which will lead to the increase of quality of Air department research workplace focused on flight monitoring of aviation ground support equipment.

The second specific aim of the project is the measurement of environmental impact of the air transportation. In consideration of the fact, that there is no way of obtaining meteorological data from research aircrafts applied in Slovakia, the special flight laboratory of University of Žilina presents the unique way of obtaining the information especially concerning the cloudy formation (base and upper-level cloudiness, state of matter, visibility in particular cloud types), turbulence, icing and concentration of the environmental gases and short-waves and long-waves radiation as well.

Flight laboratory presents irreplaceable source of meteorological information within the airport area and equally along chosen flight route within whole flight era Bratislava FIR.

After fulfilling both aims it will be possible to realise further research-development projects in the future with the strategic importance for next development of SR economics and within European research space as well.

One of the long-term intents of state and science politics for the period till the 2015 is to create conditions for development of science and technique and faster integration of the research results into the practice. This intent require realisation of more arrangements in whole system of Slovak science and technique. The main aims of the state science and technique politics are:

- To increase the participation of science and technique on the whole development of Slovak republic – the intensive involvement of science and technique into the solving of economic and social problems of Slovak republic. The increase of participation of the science and technique on the country development will lead to the increase of the Slovakia contribution to the grow of competition ability of whole EU.
- The effort for increasing of participation of science and technique on the whole development of Slovakia, where it's necessary to ensure such conditions for their development and utilization that will consider the specifics of their evolution in the Slovakia on one hand and also consider aims and intentions for building European research space on the other hand. The conditions for working system have to be synchronized so that the science and technique would be able flexible react to the internal (national) but to the outer (international) requirements as well.
- To ensure the conditions for development and utilisation of science and technique towards fulfilling the set aims.

Building the laboratory of air department focused on the flight verifying of aviation ground support equipment and on the environmental impact of air transport is fully in accordance with science-research activities of the working place at University of Žilina.

It refers to the projects on the field of research such are SWIM- SUIT (System Wide Information Management - Supported by Innovative Technologies), AirTN Aeronautics ERA-Net as one of the Key Enablers of the Prosperous Development of Aeronautics in Europe, CEARES „Central European Aeronautical REsearch Initiative“ and ASSET „Aeronautic Study on Seamless Transport“. Results obtained from the flight verification are expected to be used in prepared projects 7RP that are focused on increasing safety and development of air transport regarding to the environmental aspects of airport operation (TOTAL AIRPORT, ASSET 2, SESAR - CEARES, APASI).

### **3. SOLVING THE PROJECT AND ITS ACTIVITY**

The first part of the research and related activities are focused on the laboratory building for flight verifying of aviation ground communication, radio navigation and tracking equipment with the emphasis on increasing safety of aviation support technique.

Activities enable transfer of the knowledge into the practice by modernisation of the flight laboratory that will allow the access for professional community to the systems of aviation support equipment. Flight laboratory allows vertical and horizontal measurement of the electromagnetic profile for chosen types of support equipment. The utilization of the

information in the practice will be realised via project publicity. The result is the connected and logic scheme of flight and off-line laboratory and their mutual interactivity (processing of the technical documentation of the device equipment for flight laboratory, requirements for device equipment and flight laboratory, electromagnetic compatibility of equipment, design of the workplace from the point of view of ergonomics and measurement requirements).

The second part of the project deals with the method and possibilities of building the laboratory for flight verifying of environmental impact concerning air transport. It describes preparation and realisation of obtaining the specialised meteorological and environmental equipment base for flight laboratory designed for flight levels from earth ground to 3km above ground surface. The aim of the monitoring system is to profile the best equipment base for measuring environmental gases, meteorological elements and occurrences as it gets and to ensure obtaining and installation of the equipment for flight laboratory as well.

## CONCLUSION

This project similar to other projects is focused on science-research activity and on building excellent workplace, increasing its present quality. Solving this kind of projects is nowadays necessity at the universities due to continue increasing demands for instrumental and information-communicational equipment of the working sites. These projects are the proofs of the fast grow of scientific findings that result to the requirements of experimental verifying knowledge and technologies using virtual reality.

Their role is to create unique monitoring and evaluating systems for air traffic in Slovakia that will participate in the research of innovating technologies on the field of transportation. This fact brings advantages especially in perspective future, connecting findings, interdisciplinary and complexity of evaluating particular results of research tasks. Intensive reconnecting of research and practice and formation of the partnerships at the universities level will lead to the increase of the quality of the science and research of applicant.

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