



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant agreement No 724034



AERO-UA Project

Strategic and Targeted Support for Europe-Ukraine Collaboration in Aviation Research



AERO-UA at a glance



- Type: Coordination and Support Action
- Project start: 1st October 2016
- Duration: 3 years

Partners:

European Partners



Coordinator



technology PARTNERS



www.technologypartners.pl



Ukrainian Partners



Project background



Call topic: MG-1.5-2016-2017

Identification of gaps, barriers and needs in the aviation research

Scope: Identification of barriers for increased collaboration in aviation research at EU level involving countries and regions with lower participation in the EU Framework Programmes and recently Associated Countries such as Ukraine.

AERO-UA focuses solely on Ukraine, because it has a huge aerospace potential but a comparatively low level of aviation research collaboration with the EU



Antonov AN-225 Mriya

Project Aim and Objectives



Overall aim of the AERO-UA project is to stimulate aviation research collaboration between the EU and Ukraine through strategic and targeted support.

High-level project objectives:

1. Identify barriers to increased EU-UA aviation research collaboration
2. Provide strategic support to EU-UA aviation research collaboration
3. Support EU-UA aviation research knowledge transfer pilot projects
4. Organize awareness-raising and networking between EU-UA stakeholders



Main Project Activities (1)



Barriers and recommendations



- Identification and analysis of barriers to increased EU-UA collaboration through survey of key aeronautics actors and interview of stakeholders
- Formulation of recommendations on collaboration enhancement and their communication to decision-making bodies

Strategic and targeted support



- Facilitation of Ukrainian representatives involvement in EU aviation research decision-bodies and key aeronautical networks
- Grants for travel to EU for research networking purposes

Capabilities promotion, awareness raising and networking



- Promotion of UA aeronautic research groups capabilities through Ukrainian Aeronautics Brochure
- Information and networking events in Ukraine, factory tours and technical visits

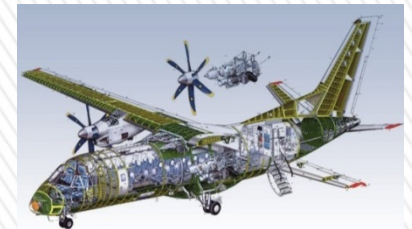
Main Project Activities (2)



Aviation research knowledge transfer **pilot projects** between UA and EU project partners

Pilot projects in Aerostructures

1. Advanced design of aerospace composite structures
2. Aerospace composite structural health monitoring system



Pilot projects in Aeroengines

1. Engine health management system
2. Advanced low-cost small turbine



Pilot projects in aerospace manufacturing

1. Manufacturing joints
2. Manufacturing aerospace composite structures





Results Achieved So Far

Barriers and recommendations

- Extensive survey on collaboration barriers conducted with Ukrainian aeronautics organisations - both academic entities (NAS research institutes and universities) and business entities (industry and SMEs).
- **Barriers and recommendations are documented in the “*Ukrainian Aeronautics Research and Technology Report 2018*”.**

Barriers and recommendations (2)

Main barriers to EU research collaboration expressed by the Ukrainian respondents:

- **Lack of motivation** due to difficulties to find partners (67 %), low success rate (58 %) and programmes complexity and bureaucracy (52 %).
- **Lack of awareness** of European collaboration opportunities, first of all, lack of information about partner search instruments (53 %), collaboration opportunities (45 %) and relevant legal and financial issues (44 %).
- **Lack of human resources** or talents in Ukrainian organizations, which need extra people (62 %) to enlarge research teams and cover new expertise and, especially, need young researchers (78 %).
- **Lack of adequate facilities**, hardware or software to perform advanced research and provide competitive R&D services, including new R&D facilities and equipment (98 %), modern computer facilities (40 %) and software (32 %).

Barriers and recommendations (3)



Level of Decision-Maker or Group	Recommendations
Ukrainian Government	<ul style="list-style-type: none">a) Implementation of the Funding Lawb) Research Spending Freedomc) Ukrainian Co-Funding for H2020 Projectsd) Ukrainian H2020 National Contact Points (NCPs)e) Reducing Ukrainian Bureaucracyf) Harmonising Aviation Laws and Certification Procedures between the EU and UAg) Harmonising the Science and Technology Innovation System between the EU and UAh) Ukrainian expertise Involved in EU Activitiesi) Intergovernmental Committee for Aeronauticsj) Ukrainian Aviation Government Agency

Barriers and recommendations (4)



Level of Decision-Maker or Group	Recommendations
European Commission	<ul style="list-style-type: none">a) EASN, EREA, ASD and PEGASUS Recommendationsb) Ukraine Oriented Topicsc) Fundingd) Bureaucracye) ERASMUS+
Ukrainian Partners	<ul style="list-style-type: none">a) Top Down Responsibilityb) Ukrainian Partner Long Term Commitmentc) Ukrainian Aerospace Cluster “Mechatronics”d) Seek Foreign Direct Investment
European Partners	<ul style="list-style-type: none">a) Ethicsb) Conferences and Trade Showsc) Sharing Success Stories



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For more details, see “*Ukrainian Aeronautics Research and Technology Report 2018*”

<https://www.docdroid.net/4gs4Bt8/ukrainian-aeronautics-research-and-technology-report-2018.pdf>





Strategic and targeted support

- AERO-UA has enabled Ukraine to have an observer to ACARE Member State Group (Mr. Viktor Shulepov, UkrRIAT)
- AERO-UA has enabled Ukraine to have a representative to CS2 States Representative Group (Mr. Igor Rybalchenko, KhAI)
- AERO-UA has awarded travel grants enabling 15 UA aeronautics experts to attend European aviation conferences, info-days and trade shows

Strategic and targeted support (2)



AERO-UA has supported the preparation of 17 H2020/CS2 proposals involving UA aviation organisations with 4 successfully funded:

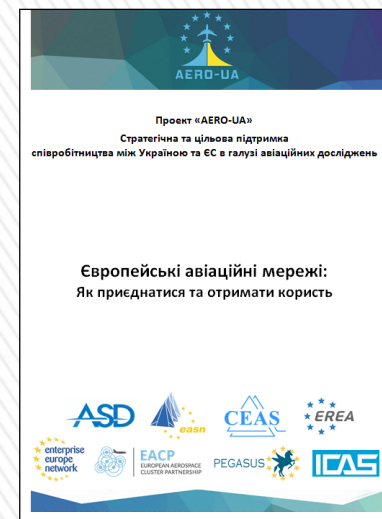
- **PARE** - Perspectives for the Aeronautical Research in Europe – H2020
- **DiCoMI** - Directional Composites through Manufacturing Innovation – H2020
- **AMBEC** - Advanced Modelling Methodology for Bearing Chamber in Hot Environment – CS2
- **DENOX** - Innovative NOx Reduction Technologies – CS2



Capabilities promotion, awareness raising and networking



- AERO-UA has published and distributed:
 - Ukrainian Aeronautics Research and Technology Groups Brochure
 - Guidebook in Ukrainian on how to participate in European aviation networks



Capabilities promotion, awareness raising and networking (2)



AERO-UA has organised factory tour, technical visits, information and networking events in Kyiv, Warsaw, Kharkiv, Toulouse and Zaporizhia (e.g. 30+ B2B meetings at Aeromart Toulouse)



Aviation research knowledge transfer pilot projects UA and EU project partners



Pilot projects have resulted in 5 journal papers

Partner(s) Involved	Title	Journal	Date
KhAI	<i>New Approach to Torque Measurement Unit Development and its Calibration</i> , Sirenko Feliks, Yepifanov Sergiy, Podgorsky Kostyantyn and Nechunaev Sergiy	Journal of KONBiN (Journal of the Polish Air Force Institute of Technology), Volume 46: Issue 1 (Jun 2018).	2018
PEWI-NASU and KhAI	<i>Acoustic emission during composites testing</i> , Nedosieka S., Nedosieka A., Gurianov A. (PEWI), Shevtsova M., Vambol A. (KhAI)	Technical Diagnostics and Non-Destructive Testing, Journal published by PEWI-NASU	2018
KhAI and IPMS-NASU	<i>Physical and mechanical properties of polymer-based composites reinforced by weft knitted carbon fabrics</i> , Shevtsova M. (KhAI), Mazna O., Dmukhovskiy R., Morozova V., Obodeeva I., Chabanenko A. (IPMS NASU)	Abstracts of 2018 E-MRS Fall Meeting and Exhibit	2018
KhAI and IPMS-NASU	<i>Electrical and physical properties of weft-knitted fabrics and polymer-based composites reinforced by such fabrics</i> , Stavychenko V., Purgina S., Shevtsov V. (KhAI), Kokhany V, Mazna O., Obodeeva I. Vasilenkov Yu. (IPMS NASU)	Abstracts of 2018 E-MRS Fall Meeting and Exhibit	2018
KhAI and IPP-NASU	<i>Experimental investigation of adhesive strength characteristics for titanium-composite joint</i> , Shevtsova M. (KhAI), A. Zinkovskii, A. Fainleib, V. Kruts, K. Savchenko (IPP-NASU)	Abstracts of 10th International Conference “Advanced Materials and Technologies: from Idea to Market”, Ninghai, China	2018

Aviation research knowledge transfer pilot projects UA and EU project partners (2)



Pilot projects have resulted in presentations at 6 scientific conferences/workshops

Partner(s) Involved	Title	Conference or Workshop	Date
FED	Discussion for an engine health control system concept	"Mechatronics" Cluster meeting at SE "Kommunar", Kharkiv	19 April 2018
KhAI	Presentation on "Gas Turbine Diagnostics", Prof. Sergyi Yepifanov (KhAI)	TurboExpo 2018, Oslo, Norway	10-15 June 2018
FED	Presentation of "Mechatronics" cluster's R&D capabilities to cooperate with European partners in aviation engines, units and systems.	International symposium on sustainable aviation (ISSA-2018), La Sapienza University, Rome	8-13 July 2018
All partners	Presentations and discussions about different aspects of applying composite materials to aerospace applications	'Composites in Action' workshop, University of Manchester	19-23 November 2018
KhAI and ITWL	Presentation on "Regularized Identification in Engine Models Matching with Measured Data", Prof. Sergyi Yepifanov (KhAI)	NATO AVT-306 Research Specialists' Meeting on Transitioning Gas Turbine Instrumentation from Test Cells to On-Vehicle Applications, Athens, Greece	10-12 December 2018
KhAI and ITWL	Presentation on "The Precision Analysis of a Relative Phase-Difference Torque Measurement Unit", Prof. Sergyi Yepifanov (KhAI)	NATO AVT-306 Research Specialists' Meeting on Transitioning Gas Turbine Instrumentation from Test Cells to On-Vehicle Applications, Athens, Greece	10-12 December 2018



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