

## MEMORANDUM OF UNDERSTANDING

### Between

**Federal State Unitary Enterprise CENTRAL AEROHYDRODYNAMIC INSTITUTE named after Professor N.E. Zhukovsky, located at Zhukovsky, 140180, Moscow Reg., Russian Federation,**

represented by Prof. Sergey L. Chernyshev, Director General

hereinafter, "TsAGI",

### and

**the University of Patras, located at University Campus, 26504, Rio Achaia, Greece,**

represented by Prof. Venetsana Kyriazopoulou, Rector

hereinafter, "UPATRAS"

participating in this MoU

with

**the LABORATORY OF TECHNOLOGY AND STRENGTH OF MATERIALS of the Mechanical Engineering and Aeronautics Department, University of Patras, located at Panepistimioupolis, 26500, Rion Patras, Greece,**

represented by Prof. Spiros Pantelakis, Director,

hereinafter, "LTSM-UPATRAS"

### **A. COMPETENCES OF THE PARTNERS IN THE DIRECTIONS INTERESTED FOR COOPERATION**

TsAGI: The Laboratory of Strength of Perspective Airframes (LSPA-TsAGI) is a part of Department of Static and Thermal Strength at Central Aerohydrodynamic Institute (TsAGI). The activities of the laboratory are focused on development of novel composite and hybrid aircraft primary structures, building up numerical and experimental methods of strength analysis for perspective airframes, education of undergraduate and postgraduate students in the field of Strength Analysis and Structural Optimization. The laboratory have been established in 2013 on the basis of the research group of the Strength Department focused on innovative research projects on perspective composite structures. The specialists of the laboratory have a successful experience of participation in a number of Russian and International projects, including EU Framework projects FP6 NACRE, FP7 MAAXIMUS, FP7 ALaSCA, FP7 PoLaRBEAR and others. The competences of LSPA-TsAGI are focusing on development of new generation of airframes with high weight efficiency and strength characteristics by the means of:

1. Development of novel structure layouts and concepts for composite and hybrid primary aircrafts structures.
2. Multilevel approach to multidisciplinary optimization and designing of perspective airframes with conventional and non-conventional layouts.
3. Development of experimental methods for confident strength analysis of composite airframes.
4. Application of specific methods and tools of structural optimization.

LTSM-UPATRAS: The Laboratory of Technology and Strength of Materials (LTSM) is part of the Department of Mechanical Engineering & Aeronautics at University of Patras. The lab activities are focused on education of undergraduate and postgraduate students, basic and applied research on the fields of Materials Science, Strength of Materials and Structural Analysis. LTSM has established a national and international reputation in the research area of aeronautical materials and structures through participation in more than 80 international research projects and has been emerged as the focal point for aeronautics research in Greece. Since 2002, LTSM holds the Directorate of the European Aeronautics Science Network (EASN). The Competences of LTSM-UPATRAS are focusing in aeronautics and include, but are not limited to, the following topics:

**i) Materials**

- Mechanical Behaviour
- Non-Destructive Evaluation
- Environmental attack and mechanical behaviour in aggressive environments

- Composite Materials
- Nanomaterials, Multifunctional Materials, Selfhealing Materials
- Multi-scale Damage Modelling

## ii) Structures

- Aerostructures
- Linear and Non-linear Analysis
- Structural Modelling and Validation
- Multi-scale Structural Simulation
- Impact and Crashworthiness
- Bolted and Adhesive Joints
- Structural Health Monitoring
- Maintenance and Repair
- Simulation of Manufacturing Technologies

## B. AIMS OF THE MoU

- Building up strategic and long-term cooperation in aeronautics research and development activities related to national, bilateral and EU Framework programmes. It includes exchange of information about supply and demands of the parties of this MoU, exchange of information about cooperation opportunities in local and international projects and programmes, as well as exploration of the opportunities of jointly submitting applications to national, international and EU sources for funding.
- Developing and reinforcing national and international competences in aviation research and innovation.
- Exchanging information about or, co-organising, training, conferences, seminars or cooperation days.

## C. TERMS

- This MoU shall become effective upon its execution by both parties.
- It is understood that the Parties shall be responsible for their own costs as incurred in operating under this MoU.
- It is agreed that the signature of this MoU does not preclude either of the Parties from signing a similar document with any other party or parties.

In ..... , on 15<sup>th</sup> / 12 / 2015, in 2 original copies.

On behalf of TsAGi



Prof. Sergey L. Chernyshev  
Director General

On behalf of UPATRAS



Prof. V. Kyriazopoulou  
Rector

On behalf of LTSM-UPATRAS



Prof. Sp. Pantelakis  
Director