Project: ***Instructor Operation Station designed for space applications.*** **Acronym IOS**

Period 2014 - 2015

Coordinator: Technical University of Cluj-Napoca, **Partners:** STRAERO, Electronic April SRL, INCDO-INOE 2000

Project team: All 4 partners creates a mix between experimented and young researches covering all the implied research areas: mechanical, numerical modeling and simulation, digital control, automation , robotics, spacecraft dynamics, prototyping , IT and PR.

There are 27 people direct involved and additional 3 PhD students.

Description: For creating new systems and devices, valuable testing and simulation tools are necessary to create experiments and demonstrate the validity of the elaborated solutions. The capacity to create simulation systems increases the confidence of the partners in offering subcontracts within the frame of the ESA (European Space Agency) programs.

Project objectives:

Major objective:

The scientific grounding and the development of an Instructor Operation Station (IOS) designed for space applications in a form of a multirole robotized system that can be used as a standalone device for solution demonstration by simulation.

Specific objectives:

- a virtual platform to simulate processes, enables the remote control and monitoring experiments;
- a better defined concept for the Instructor Operated Station destined to space application;
- reach the industrial players for more niches applications; European partners for joint research programs;
- more readiness in human resources and the first steps for the ROSA recognition and the conformity with the ESA request for optional projects.

Activities:

WP1 Elaboration of the IOS conceptual model

- WP1.1 hypothesis identification for elaboration of the instructor operation station concept, with special attention on the constructive principles, critical points, working conditions, environment conditions, performance parameters , by using the corroborated date from all partners;
- WP1.2 the IOS conceptual model ;
- WP1.3 the IOS structural analysis;
- WP1.4 the Softrobot structure elaboration
- WP1.5 the mechatronic structure ;
- WP1.6 the IOS customized actuating and command elements ;
- WP1.7 academic results .

WP2 IOS Model functionality demonstration

- WP2.1 softrobot design;
- WP2.2 mechatronic structure design ;
- WP2.3 actuating and control system design;
- WP2.4 IOS experimental model elaboration.

Contributions to the STAR programme objectives:

- creates a testing and simulation platform for future solution;
- initialized a legislative and standardization center for readiness in ESA Programmes participation;
- establish a potential network of subcontracting companies considering the Technical University as promoter and main contractor for new ideas or/and startup factor.