SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (D3)
Space Technology and System Management Practices and Tools (4)

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INSA VIRTUAL LABS: A NEW R+D FRAMEWORK FOR INNOVATIVE SPACE SCIENCE AND TECHNOLOGY

Abstract

The company INSA (*Ingeniería y Servicios Aeroespaciales*) has given support to ESA Scientific missions for more than 20 years and is one of the main companies present in the European Space Astronomy

Center in Madrid since its creation.

INSA personnel at ESAC provide high level technical and scientific support to ESA for all Astronomy and Solar System missions. In order to improve and maintain the scientific and technical competences among the employees, a research group has been created with the name *INSA Virtual Labs*. This group coordinates all the R+D activities carried out by INSA personnel at ESAC and aims to establish collaborations and improve synergies with other research groups, institutes and universities. This represents a great means to improve the visibility of these activities towards the scientific community and serves as breeding ground for new innovative ideas and future commercial products.

INSA Virtual Labs is funded within the frame of INSA's R+D program and has established agreements with other space agencies and research entities. Many research projects have been created in the past years and are growing exponentially covering several areas of interest:

Scientific Computing

- Torres Quevedo: Technical studies for scientific data analysis (GRID)
- HIDDRA: Highly Independent Data Distribution and Retrieval Architecture
- PrimiaB: PRoject Information Management In a Box
- EXPAND: Distributed archive system
- Medical Image Processing: Radiotherapy treatments optimization
- Automatic Radio Frequency Interference Detection

High Energy Astrophysics

- MAGIC: Gamma-ray astronomy at gamma-ray energies with high sensitivity
- CTA: Cherenkov Telescope Array: next generation gamma-ray observatory

Solar System Exploration

- SOLab: Solar System Science Operations Laboratory
- Study and analysis of Mars Analogues

Education and Public Outreach

- PARTNeR: Educational Project with NASA's Radio Telescope at MDSCC
- CESAR: Cooperation through Education in Science and Astronomy Research
- VLABS: Virtual space for project collaboration

Support to Observation Campaigns and Individual Research Projects

These projects allow INSA personnel at ESAC to expand their own research activities and to keep up to date with the main developments on their preferred research elds. This approach has proven to be effective for the creation of new research contracts and innovative solutions.

All activities and projects are reported on an internal collaborative environment to share working documents, datasets and images. An external site is also available at: www.insa-vlabs.org. This paper gives a summary of the main activities within each one of the abovementioned areas.