

RAPORT ȘTIINȚIFIC

1. Scientific content of the workshop (achieved objectives, presented themes, conclusions / results, contribution to further development of future directions in the scientific domain of the workshop);

During 17th-18th of September 2008 it took place, at the National Institute for Aerospace Research 'Elie Carafoli', the exploratory workshop "Romanian research strategy in space domain and specific development directions". The workshop was organized by the Romanian Space Agency.

Main themes that were discussed during the workshop were: national space and security programme in international context, niche areas within national programme and national space and security strategy .

Within the first session there was presented the national research programme for space and security. There was presented the history of the efforts made for institutionalization of the aerospace and security research coordination and there were mentioned the main instruments for this starting with setting up the Romanian Space Agency – ROSA- in 1991 and re-organization of ROSA in 1995, the Horizont 2000 Programme and the 2 National Research, Development and Innovation Programmes – PNCDI I and II, with their specific 'AEROSPATIAL' and "Space and Security" themes.

The second session was dedicated to some niche areas that were identified for the future research activities in space domain. Within this session, several technical presentations were given. The following discussions were focused on spatial systems' role in global security, formation flying systems, knowledge management as infrastructure for evaluation of the national space activities.

- spatial systems' in global security
 - space systems – critical infrastructure
 - global systems connexion necessity, specific contributions on local level
 - main role in planet monitoring
- niche areas
 - spatial data storage and processing systems – data mining, GRID, advanced algorithms
 - network connected formation flying systems
 - knowledge management for space and security

One of the subjects discussed was transforming the results of the research activities in new products and technologies, and the way how all the process is financed, starting with the idea to the final product, passing all the technology readiness levels. There are 9 TRLs, level 1 being the basic research, level 3 having as result the laboratory model, level 6 being finalized with the prototip, while at the end of level 9 all the product, technology and market strategy are ready. Depending on the TRL, the product is financed with public money for the inferior levels, both public and private budget for mid levels and exclusively private investment during last levels. Having these in consideration, in a domain as complex and expensive as space, is clear that in order to get value from the research results is compulsory to have strategic partnerships with relevant big industrial groups at European / international level.

That is why during the workshop it was discussed the issue of creating a multidisciplinary excellence research center. As an example it was presented the Competency Center on

Information Extraction and Image Understanding for Earth Observation -

<http://www.coc.enst.fr/>), cooperation between DLR, CNES and TELCOM Paris. The Competence Centre conducts advanced research needed to design algorithms and methods for future information extraction systems to facilitate access to unexploited information in high resolution Earth Observation images, both optical and Synthetic Aperture Radar.

Its main topics of research are:

- Multidimensional signal modelling and estimation of high resolution satellite images
- Information theoretical approaches for data processing and analysis
- Information mining in large satellite image archives
- Scene understanding
- Machine learning and context-aware image understanding
- Image semantics and knowledge representation

The objectives of the Competence Centre are to carry out scientific and technological joint projects as approved by CNES and DLR; provide tools and practical solutions for CNES' and DLR's Earth Observation systems; propose new scientific and technological concepts to CNES and DLR; create a critical mass by cumulating part of the existing resources of the partners; develop scientific expertise, foster academic education and achieve scientific results; promote and develop a leading-edge research and academic focal point; carry out joint projects with third party funding.

Within this competence center there are developed complementary doctoral theses that are integrated in the view of obtaining new products or technologies.

There are several steps to be followed in the process of setting up such a center: a study on the necessity of the center, creating the infrastructure for the center, creating the jobs, selecting the human resources and evaluation of the centre after a specific period of time, based on scientific criteria and obtained results.

Following the discussions during the workshop, some specific recommendations were formulated:

- further develop and re-institutionalization of the Romanian Space Agency (ROSA) as representative, coordinating and high technology projects integrator structure
- full integration within the European Space Agency (ESA) within the next 2 years (2009-2010) and gradual increase starting with 2009 of the returnable (by PECS) national contribution
- develop ROSA's industrial and technological cooperation by strategic partnerships with relevant big industrial groups
- establish multidisciplinary centers for identified niche areas
- establish a multidisciplinary centre within ROSA for civil and security activities that would assure development of all technology readiness levels for future products
- define a national space and security strategy and programme, that:
 - assures all TRLs
 - support implementation of own space missions
- establish research and technological niches (5-9) where, with national capabilities Romania could gain key position on international space and security market, such as:
 - network connected formation flying systems
 - advanced storage and processing systems for space data (data minning, GRID< advanced algorithms)
 - knowledge management and multi-value management for applications in space and security domains
 - sub-orbital missions and aero-launching
- involvement in new international scientific, technological and application programmes
- Develop new infrastructure for space activities and modernization of old facilities (such as Cap Midia, Cheia Ground Station, INCAS, Maneciu, etc)
- Elaborate programmes for technology transfer in space applications
- Define specific mechanisms for innovation stimulation and acceleration
- Develop a scientific and technological park in aerospace domain

General recommendations

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- *Financial instruments for scientific research*
 - Define dynamic work programmes, having objectives and specific values defined on stages
 - programme management done by organizations having specific competence
 - monitor projects after their ending in the view of transforming the results into applications / products
- *National / international evaluation system*
 - Develop specialized and divers evaluation mechanisms in accordance with the domain and type of research
- *Research infrastructure*
 - Develop networks and interdisciplinary specialized groups
 - Concentrate finance on specific directions on national and international levels
 - Preferentially stimulation of several universities having tradition and experience, for developing fast in order to achieve an international competitiv academic level (top 100)
 - “Research intensive university” – strenghten research component of the universities by attracting the young students inr esearch activities

2. Information on event organization

The exploratory workshop “Romanian research strategy in space domain and specific development directions” (WE7) was part of the seria of exploratory workshops organized within the first edition of the conference ‘Diaspora in the Romanian Scientific Research’ that was held during 17-19th of September 2008. WP7 was organized by the Romanian Space Agency (ROSA). The event took place in the amphitheatre of the National Institute for Aerospace Research ‘Elie Carafoli’ in Bucharest, institute having long tradition in scientific research in romanian aerospace sector.

The application for the organization of the workshop was submitted within ‘Capacity’ programme of PNCDI II, at the National Council for Scientific Research in Higher Education – CNCSIS, in iune 2008.

During July, the organizers of the workshops participated to the coordinating meetings initiated by CNCSIS in order to set up details for the workshops. CNCSIS have developed the web site deidcated to the conference and also dedicated to all the workshops and sent the invitations to all the participants.

During august, the onfirmations for participation were received. The participants that did not reply to the invitation were contacted again.

The list of participants coming from Romania was modified according to the replies received from them and also new personalities were invited. ROSA personnel was involved in all these activities.

Early September, the fnal agenda of the workshop WE7 was published on ROSA’s web site.

The prints for the workshops were also ordered.

During this period there were made the travel and accomodation arrangements for the guests from abroad for those that had requested support.

During the workshop, the keyspeakers gave the presentations that were programmed and the participants got involved in the discussions raised by the themes presented.

There was internet facilities in the room, and that allowed online demonstrations.

Coffee breaks and lunches for the 2 days were organized close to the aircrafts models exhibition in INCAS, participants having the possibility to visit it.

3. Final programm of the workshop



Exploratory workshop with the Romanian Diaspora “Romanian research strategy in space domain and specific development directions”

17th – 18th of September 2008
220 Iuliu Maniu Bd., 061126, Bucharest

Wednesday 17th September 2008

09:00 – 12:00 Morning Session

220, Iuliu Maniu Bd, 061126, Bucharest

National Space and Security Programme in international context – Marius-Ioan PISO, President @ CEO, Romanian Space Agency (ROSA)

Specific contributions – Dumitru HASEGAN, Director, Institute for Space Science (ISS); Catalin NAE, Director, National Institute for Aerospace Research (INCAS)

Panel I: Space systems’ role in global security – Chair: Marius-Ioan PISO; Raportor: Iulia SIMION

14:00 – 17:00 Afternoon Session

220, Iuliu Maniu Bd, 061126, Bucharest

Niche domains in the national programme – Mihai DATCU, DLR

- Network connected formation flying systems
- knowledge management for space and security – Liviu COTORA, Director, Integrator Group
- space systems and critical infrastructure – Liviu MURESAN, Executive Director, EURISC Foundation

Panel II Knowledge management for space and security– Chair: Liviu COTORA; Raportor: Anca Liana RACHERU

19:00 Networking Event

Institutul National de Cercetare - Dezvoltare Pentru Masini si Instalatii Destinate Agriculturii si Industriei Alimentare - INMA

Thursday, 18th September 2008

09:00 – 12:00 Morning Session

220, Iuliu Maniu Bd, 061126, Bucharest

National Space and security strategy – Anca Liana RACHERU si Iulia SIMION, Romanian Space Agency (ROSA)

Panel III National space and security strategy

14:00 – 17:00 Afternoon Session

220, Iuliu Maniu Bd, 061126, Bucharest

Remarcable results of national research activities in space and security domain

19:00 Conference opening gala

Victoria Palace

Friday, 19th September 2008

09:00-09:30 Opening

Parliament Palace, C.A. Rosetti room

Welcome:

Mr. Anton ANTON, President, National Authority for Scientific research - ANCS

Mr. Ionel HAIDUC, President, Romanian Academy

Mr. Jose Manuel SILVA RODRIGUEZ, General Director, European Commission, DG Research

09:30-10:50 Session 1 – Financial Mechanisms for Scientific Research

Moderator: Prof. Ioan DUMITRACHE, President, CNCSIS

10:50-11:00 Value Creation through Globalization, Innovation and Research

Mr. Mihai TUDOR, IBM Country General Manager

11:00-11:30 Coffee break

11:30-13:00 Session 2 – Research Infrastructure

Moderator: Mr. Anton ANTON, President, ANCS

13:00-13:30 Press Conference

Mr. Anton ANTON, ANCS

Mr. Ionel HAIDUC, Romanian Academy

Mr. Jose Manuel SILVA RODRIGUEZ, EC, DG Research

13:00-14:00 Launch break

14:00-15:30 Session 3 – National / International Evaluation System

Moderator: Mr. Ionel HAIDUC, President, Romanian Academy

15:30-16:00 Coffee break

16:00-17:30 Session 4 – General

17:30-18:00 Conclusions

Mr. Anton ANTON, ANCS

Mr. Ionel HAIDUC, Romanian Academy

Prof. Ioan DUMITRACHE, President, CNCSIS

20:00 Conference closing ceremony

Romanian Atheneum

4. Final list with invited key speakers

1) *Dr. Mihai DATCU*, GERMANIA – Centrul Spatial German (DLR)

Doctor, Profesor si cercetator la Agentia Spatiala Germana (DLR), vasta experienta profesionala in domeniul teoriei informatiei cu specializare in teledetectie radar, membru al Comitetului Agentiei Spatiale Europene pentru informatie imagistica, mai mult de 100 de lucrari publicate.

Date de contact:

e-mail: mihai.datcu@dlr.ro

2) *Dr. Simona NICULESCU*, FRANTA – Universite Brest

Doctor in teledetectie, specialist si lector la Universitatea Brest, specializare in sisteme de informatie geografica bazate pe teledetectie satelitara

Date de contact: e-mail: simona.niculescu@univ-brest.fr

3) *Dr. Florin PAUN*, FRANTA – ONERA

Date de contact:

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Dr. Florin Paun is New Business Deputy Director at ONERA – France National Aerospace Research Centre, since January 2005, in charge with the Technology Transfer and International Business Development and defines programs and new partnership policies focusing on complementary knowledge, cross supporting offers, mutual intellectual property valuation, joint spin-off,...

Previously, Senior Science and Technology Expert, he coordinated the Multifunctional Materials program at ONERA and also gave courses for master degree in aerospace.

He obtained an Executive Certificate in Management and Leadership from MIT Sloan School of Management, Boston 2007, his PhD at ENSICA, Toulouse 1998 and got his Master in Aerospace Engineering at the Aeronautic Faculty in Bucharest 1993.

Dr. Paun has also an extensive business development experience out of the aerospace domain, especially in emerging East-European markets. He had created his own Engineering and Development Company and he is an associated founder of a dynamic start-up in France. He is also founding member of the think tank “Club de Bucarest”, the first Parisian think tank of independent professionals from Eastern Europe.

Published Papers:

Advanced Engineering Materials; Materials Science Engineering: A; Scripta Materialia; Aerospace Science and Technology Journal; International Journal of Fracture; Computing in Science and Engineering; American Society for Testing Materials; Journal of American Society of Acoustics

Congress:

Numiform 2004 (USA); Euromech 2004 (France); BIOMED 2004 (Romania); Internoise 2003 (South Korea); 2001 (Netherlands); EUROMAT 2003 (Switzerland); 2001 (Italy); 1999 (Germany)

Paun has been quoted in multiple international newspapers including: Aerospace Testing Magazine, Les Echos, l'Usine Nouvelle and Air & Cosmos.

4) *Dr. Liviu COTORA*, FRANTA – Integrator Group

Date de contact: e-mail: liviu.cotora@integrator-group.com

5. Final list of participants

BADEA	Alexandru	Agentia Spatiale Romana - ROSA	Romania	alexandru.badea@rosa.ro
BERBENTE	Corneliu	Universitatea Politehnica Bucuresti	Romania	
CONSTANTINESCU	Virgiliu Niculae	Academia Romana - Comisia de Astronautica	Romania	vnc@k.ro
HASEGAN	Dumitru	Institutul de Stiinte Spatiale	Romania	hasegan@venus.nipne.ro
MURESAN	Liviu	Fundatia EURISC	Romania	muresan@eurisc.org

NAE	Catalin	Institutul National de Cercetari Aerospatiale "Elie Carafoli" - INCAS	Romania	cnae@incas.ro
PISO	Marius-Ioan	Agentia Spatiale Romana - ROSA	Romania	marius-ioan.piso@rosa.ro
PRUNARIU	Dumitru Dorin	Agentia Spatiale Romana - ROSA	Romania	dorin52@gmail.com
SERBAN	Florin	Advanced Studies Research Centre - ASRC	Romania	florin.serban@asrc.ro
STOIA	Marius	UPB	Romania	marius.stoia@rosa.ro
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OPRISIU	Cornel	Institutul National de Cercetari Aerospatiale "Elie Carafoli" - INCAS	Romania	coprisiu@incas.ro
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6. Statistic information about participants (age, geographical distribution)

Having in consideration that most of the space scientific community in Romania is located in Bucharest, the participants were exclusively from Bucharest, except the guests coming from abroad.

The event raised the interes of people of different age, starting with very young people at the beginning of their carrer, ending up with people having vaste experience in the domain.

7. Workshop prints, presentations, web site

Pictures taken during the event, workshop dedicated web site print and all the prints offeresd during the event are loaded on the attached CD.

Project Director,
Dr. fiz. Marius-Ioan PISO
President & CEO
Romanian Space Agency (ROSA)