

Romanian Space Agency Space and Security

Dumitru Hasegan



Romanian Space Agency

- Established in 1991, **ROSA** become in 1995 an independent public institution under the authority of the **Ministry of Education and Research**
- **Mission***:
 - ◆ Coordinate the national space research and applications programs
 - ◆ Promote space development
 - ◆ Be the Government representative for international space cooperation
 - ◆ Develop specific project oriented research through its own centers
 - ◆ Coordinate the Inter-ministerial group on Security Research
 - *Law 40/93, Law 1/2007, Govt. Decisions 923/95 and 1574/2004



Romanian Space Programme

Goals (2001-2006)

- Contribute to the national and global scientific development by participation to international space missions and development of new projects
- Improve the national and regional security by means of peaceful space applications (2001)
- Contribute to the infrastructure of the information society
- Develop new space technologies, space spin-offs and commercial space applications
- **Human resources building** to meet the space science and technology development for the 21st Century
- **Give a model of capacity building** and support the national effort to continental and international integration



Romanian Space and Aeronautics Research Programme Subprogrammes 2001 - 2006

Space and Aeronautics Research

Policy and infrastructure

Space exploration

Space applications

Aerospace science and technology

Industrial development and spin-off



Romanian Space Programme Abstract

- Number of projects 2001-2006:
 - ◆ **171** (**39** – 2001, **40** – 2002, **20** – 2003, **72** – 2004 – *last call*)
- Participant organizations (Romanian) : **121**
- Professional staff involved: **680 full time equivalent**
- Funding:
 - ◆ Budget engagement limit 2001 – 2006 = 31,25 Meuro
 - ◆ **Budget engagement** = **28,75 Meuro (2001-2006)**
- Co-financing: **31%** - private and public partners
- Actors: R&D institutes, universities, companies, NGO's, SME's – public and private, most of them in consortia



Romanian Space and Security Research Programme

Second National Research and Technology Development Plan

- Public expenditures for RTD in Romania act since 2000 on the base of a multi-annual National RTD Plan (PN)
- First PN, launched in 2001 and terminated in 2006, included 12 thematic programs and some support actions
- AEROSPACE was a thematic program since 2001
- Defense and security RTD projects were initially included in different thematic programs
- SECURITY as a thematic programme was introduced in 2005 and lasted for only one year due to the overall ending of the first RTD Plan
- An intermediate programme – CEEEX – Research of Excellence – covering most of the PN1 thematic areas – was launched in 2005
- The thematic area “**Security and Space**” was included in the CEEEX objectives and the successful projects are providing the continuity PN1 ⇒ PN2



Romanian Space and Security Research Programme 2007 - 2013 – Second National RTD Plan

- The RO Government took a major political decision – **to almost triple the RTD public expenses** between 2007 and 2010 with the goal **1% of the GDP in 2010**
- The second RTD Plan – PN2 – has been drafted in 2005-2006 by means of a **foresight** exercise, achieved by a large consortia (25) of national organizations
- The RTD Strategy for 2007-2013 has been approved by the Government on 28 February 2007
- The overall public funding is **15,000 MRON (2,900 M μ)** for 2007-2013
- **SPACE and SECURITY** are included as a thematic area and provided for **8%** of the thematic funding

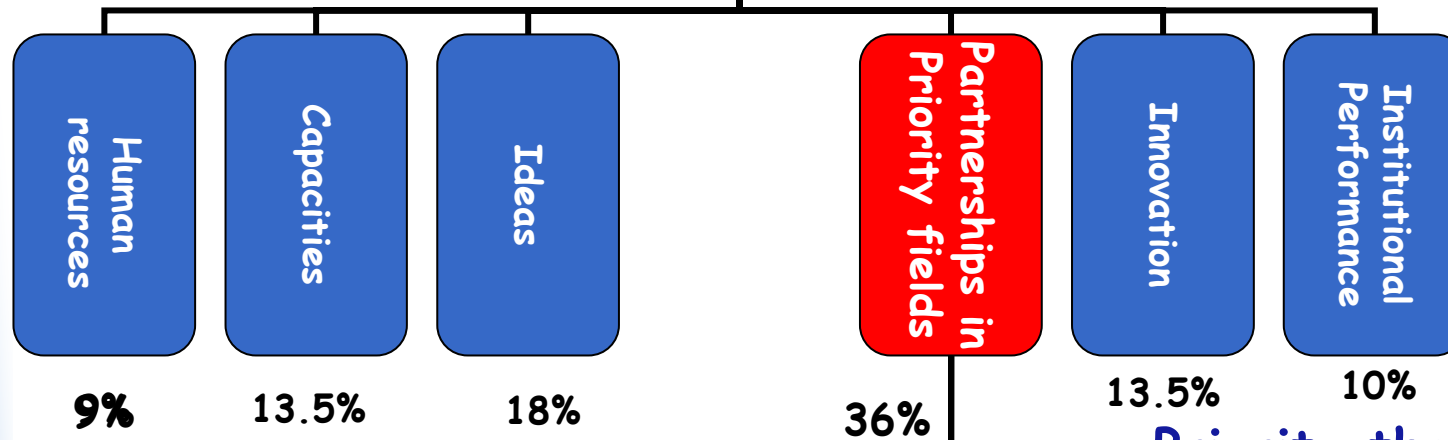




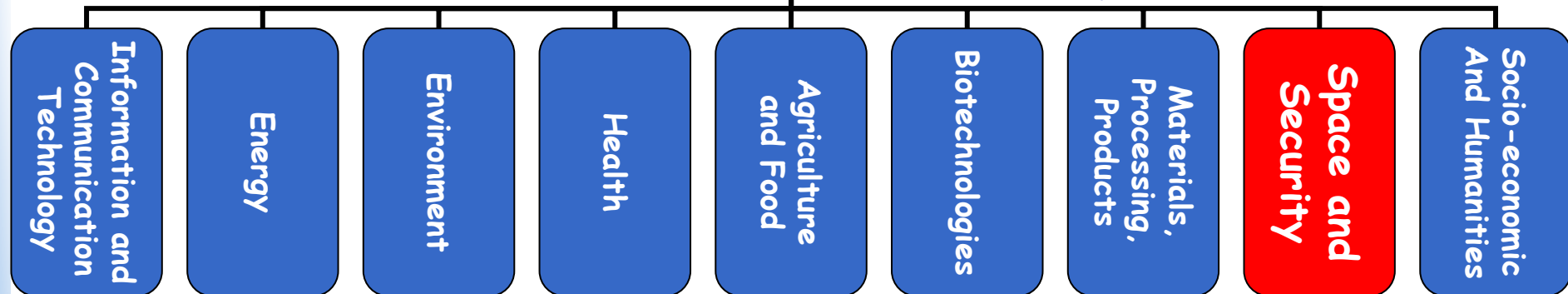
RO National
2nd RTD Plan

Ministry of Education and Research
National Authority for Scientific Research
Romanian RTD Plan 2007-2013

Programmes



Priority thematic areas



Romanian Space and Security Research Programme

Area 8. Space and Security

Area 8: Space and Security



Space Exploration

Space Applications

Aerospace technology

Security technology

Security systems and infrastructures

Romanian Space Programme

8.1 Space Exploration

1. Participation in circum-terrestrial space missions and in the solar system
2. Research and results in theoretical, experimental and computational models for phenomena specific to the Earth environment, Solar system, Universe and interactions between them, based upon space missions' experimental and observation results
3. Microgravity experiments
4. Research and instruments, scientific equipment and on board systems design for spatial platforms, on board and ground-based experiments
5. Microsatellites for operational exploration and utilization
6. Launch, operational and recovery systems for suborbital flight
7. Formation flying in a networked environment
8. Space data and knowledge management
9. Acquisition, processing and data analysis specific methods and algorithms: GRID, data mining, data fusion, change detection
10. Radar and multi-spectral data measurement and processing technologies
11. Tangible and intangible space strategy and infrastructure



Romanian Space Programme

8.2 Space Applications

1. Earth observation from satellites and aerospace platforms.
2. Satellite global navigation and positioning systems. GALILEO.
3. Spatial communication and relevant ground-based systems.
4. Space applications integrated for telemedicine, precision agriculture, natural hazards monitoring, global information systems.
5. Geospatial techniques.
6. Automatic and semi-automatic algorithms for spatial data.
7. Global monitoring systems. GMES.
8. Positioning-based systems and services.
9. Observation and monitoring systems and platforms.



Romanian Space Programme

8.3 Aerospace technology

1. **Aeronautics techniques, flight dynamics,**
2. **Launch, operation and recovery systems for sub-orbital missions**
3. **Launching and orbiting techniques**
4. **Manned and unmanned specialized platforms and spaceflight devices**
5. **Sensors, on board and ground-based systems and equipments research and development, space results' spin-off development**
6. **Advanced methods and techniques for simulation, command and control, aerial, aerospace and space flight devices design and production**
7. **Aerospace flight dynamics systems and methods, platform altitude control. Optimal control systems. Aerospace traffic control and ground-based systems**
8. **Quality analysis, testing and control systems, specifics to the space, aerospace and aeronautics fields**
9. **Aerospace and space technologies, systems, devices and equipments**



Romanian Space and Security Research Programme 2007 - 2013 – Second National RTD Plan

- Government decision to start funding – May 2007
- First call for PN2 – thematic areas - June 2007
 - ◆ Evaluation for the first call – electronic – with experts selected from an unique database of the National Authority for Scientific Research
- Four types of RTD projects:
 - ◆ **Exploratory research projects**
 - ◆ **Complex projects**
 - ◆ **Research career development**
 - ◆ **Targeted RTD**
- **Space and Security** – expected public funding
 - **480 MRON ~ 160 M μ for 2007 – 2013**
 - **Including basic research and infrastructure and excepting ESA contribution**



Summary

- Romania considers together Space and Security as a strategic and operational RTD priority
- Romania is rapidly increasing the public investment in RTD for 2007-2013
- ROSA is the public technology and representation organization, acting as the horizontal manager for specific RTD
- Space and Security RTD, due to the multi-disciplinarity, gives engines for the overall scientific, technology and industrial development and competitiveness
- The participation to ESA, FP7 and international cooperation is a major priority, supported by the capabilities, the status of EU MS and the national policy



Further steps

- International cooperation:
 - ◆ Participation to European Space Agency space missions and projects with a view to full ESA membership 2010;
 - ◆ Keeping in harmony the contribution to FP7 of the EU
 - ◆ Developing further involvement within European and NATO Agencies (EDA, EUSC, RTO)
 - ◆ Wide bi-lateral cooperation (NASA, CNES, DLR, third countries)
- National level
 - ◆ Keeping the substance objectives lead by the National RTD Plan
 - ◆ Further developing its national space infrastructure and human resources to reach the European average level,
 - ◆ Investment in its own areas of core competencies.
 - ◆ Involvement of national private and public actors towards business and societal oriented applications
 - ◆ Define metrics for 2008 – 2020

The Plan for European Co-operating States (PECS)

- **February 17, 2006** - Romania becomes third ESA European Cooperating State by signing the European Cooperating State Agreement –
ratification by Law Nr. 1 / 2007
- **February ÷ December 2006** - Projects proposal, evaluation and selection
- **February 14, 2007** – the signature of the Charter
- The funding = 2 M μ / year (for 5 years)

The Plan for European Co-operating States (PECS)

No.	Romanian Project title	ESA Mission(s)
1	Scientific exploitation of the <i>Planck</i> -LFI data (Planck-LFI_SED)	Planck
2	Kinetic investigation of the Earth's and Venerian plasma layers (KEV2)	Cluster Venus-Express
3	Energy Conversion and Transfer in the Solar Wind – Magnetosphere – Ionosphere System (ECSTRA)	Cluster
4	Romanian GRID middleware repository for Space Science Applications (RoSpaceGRID)	Planck Cluster Venus-Express

The Plan for European Co-operating States (PECS)

No.	Romanian Project title	ESA Mission(s)
5	Participation of the Romanian team in the COROT mission	COROT
6	Romanian contribution to the Sun-Heliosphere Studies	SOHO TRACE
7	Improving relative position of reference stars around ICRF radiosources	GAIA
9	Growth and survival of colored fungi in space – “CFS”	International Space Station ESA-SURE AO April 2006

ESA Cosmic Vision 2015-2025

The coherent 10-year plan is structured around four main questions concerning the Universe and our place in it:

1. what are the conditions for planet formation and the emergence of life?
2. how does the Solar System work?
3. what are the fundamental physical laws of the Universe?
4. how did the Universe originate and what is it made of?

A satellite view of the Earth showing the continent of Europe. The top left corner features the vertical stripes of the Romanian flag: blue, yellow, and red. The text is overlaid on the image.

romanian space agency

Space tools for a better life

- **Science**
- **Technology**
- **Enterprise**
- **Capacity building**
- **Security**