



UNITED NATIONS
Office for Outer Space Affairs



مركز محمد بن راشد
للفضاء
MOHAMMED BIN RASHID SPACE CENTRE

وكالة الإمارات للفضاء
UAE SPACE AGENCY



VdA VIEIRA DE ALMEIDA

North-South and Cross-sector cooperation for Space Exploration

MAGDA COCCO VdA Partner

TABLE OF CONTENTS

1 Space cooperation

4 Towards the SDG

2 A new phase in space cooperation

3 **New paradigms of cooperation**
The Atlantic International Research Center

1. SPACE COOPERATION

“ States are free to determine all aspects of their participation in international cooperation in the exploration and use of outer space on an equitable and mutually acceptable basis”

UNOOSA Space Benefit Declaration

International cooperation is to be carried out for the benefit and in the interest of all States, irrespective of their degree of development and with particular account to be taken of the needs of developing countries

All States should contribute to promoting and fostering international cooperation on an equitable and mutually acceptable basis






2. A NEW PHASE IN SPACE COOPERATION



2. A NEW PHASE IN SPACE COOPERATION

NEW ACTORS

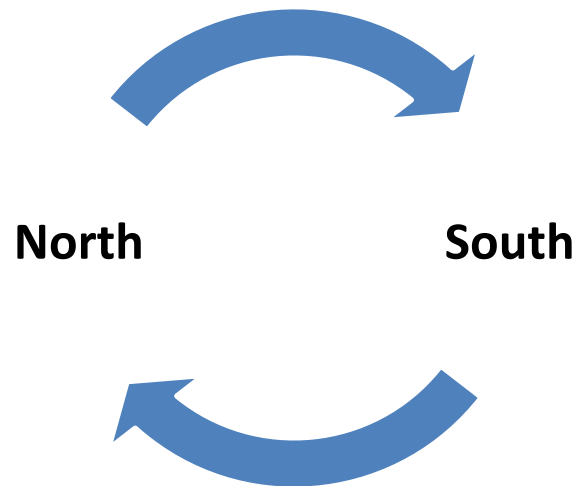


	 AGRICULTURE, ANIMAL HEALTH & RURAL DEVELOPMENT	 AQUACULTURE & FISHERIES	 BIOTECHNOLOGY & BIOENGINEERING	 CHEMISTRY & MATERIALS	 CONSTRUCTION & ENGINEERING
	 EDUCATION & TRAINING	 ELECTRONICS & ELECTRICAL APPLICATIONS	 ENERGY SERVICES & INFRASTRUCTURE	 ENVIRONMENT & CLIMATE CHANGE	 FOOD & BEVERAGES
	 HEALTH CARE APPLICATIONS, INFORMATICS & DEVICES	 HOSPITALITY & TOURISM	 INFORMATION COMMUNICATION TECHNOLOGIES & SOFTWARE	 PROFESSIONAL SERVICES & INSURANCE	 LEISURE & RECREATION
	 MANUFACTURING	 MINING, MINERALS & METALS	 OIL, GAS & FUELS	 PACKAGING & CONTAINERS	 PHARMACEUTICALS, NUTRACEUTICALS & VACCINES
	 RENEWABLE ENERGY	 SOCIAL & COMMUNITY DEVELOPMENT	 TEXTILES & APPAREL	 SUPPLY CHAIN, LOGISTICS & TRANSPORTATION	 WATER

2. A NEW PHASE IN SPACE COOPERATION



Not all Southern countries are benefiting of the space dividend but there is a growing interest and space activity in the South



2. A NEW PHASE IN SPACE COOPERATION

NEW AREAS OF COOPERATION

Traditional
space

Telecommunications

Earth Observation

Astronomy

Geolocation...

New
space

Space Tourism

Space Mining

Space Settlement

In-Orbit Services....

New
Earth

Artificial
Intelligence

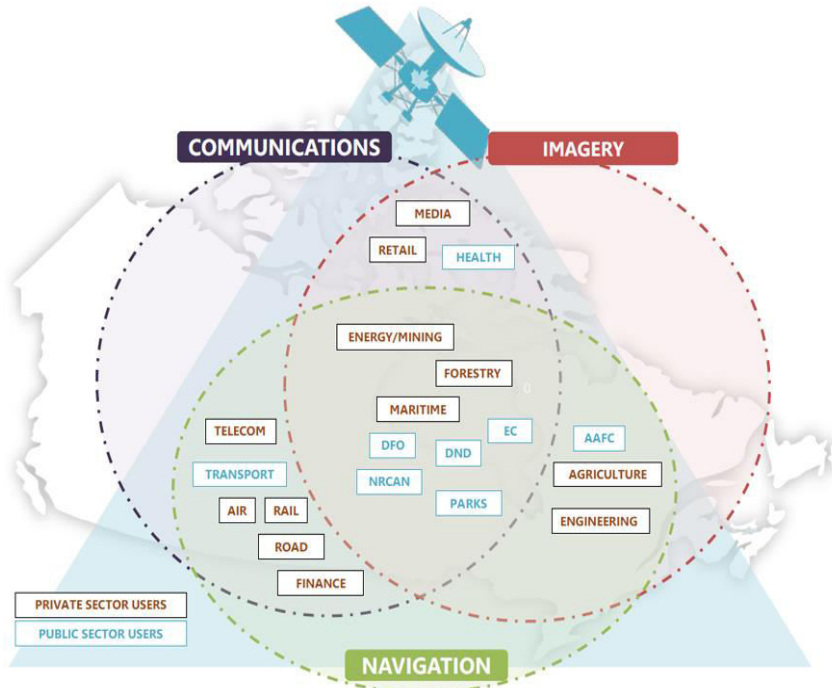
Internet of Things
(IOT)

Smart cities

Robotics....

2. A NEW PHASE IN SPACE COOPERATION

CROSS-SECTOR COOPERATION



Both public and private entities in the various relevant sectors must be included in the conversation and are active in space, in the context of their specific services and in a 360° perspective



Need to ensure collaboration and development of the synergies arising from the interaction between the various sectors and industries.

Fragmented and compartmentalised views of space lead to a fragmented and compartmentalised space market

2. A NEW PHASE IN SPACE COOPERATION

Is the new space age a threat to cooperation ? Why cooperate ?

1 Cost reduction

2 Added value workforce

3 Diplomatic asset

4 Tool against social and economic divides

5

Global problems / Global Interventions
Global Solutions

6

Tool for innovation

7

Catching up to technology

8

...

3. NEW PARADIGM OF COOPERATION -



ATLANTIC INTERACTIONS



What is it ?

Who's in it?

What for?

3. NEW PARADIGM OF COOPERATION –AIR CENTER

THE ATLANTIC INTERACTIONS

Is built on the success of existing international framework agreements such as the 2013 “Galway Statement on Atlantic Ocean Cooperation” between the European Union, the United States and Canada, and supports the objectives of ongoing initiatives such as the Atlantic Ocean Research Alliance (AORA).

It is supported by decades of efforts by Atlantic countries to **foster scientific cooperation** and creates **synergies with existing public and private initiatives** at national, European and international level.

3. NEW PARADIGMS OF COOPERATION – AIR CENTER

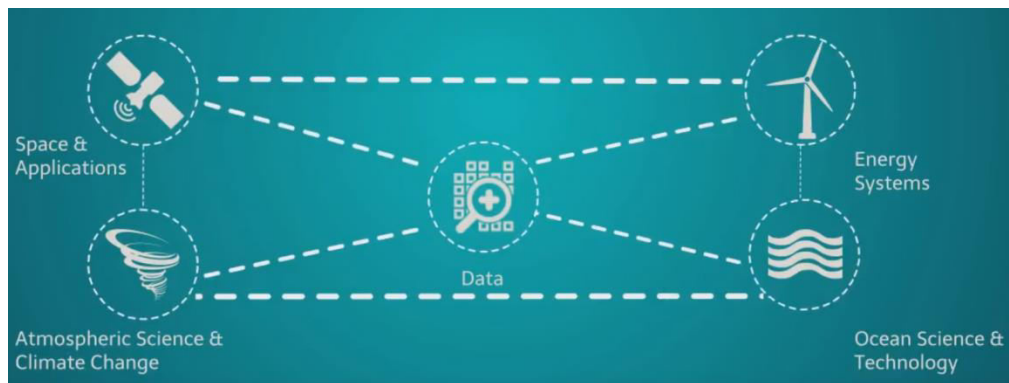
Throughout 2016 and 2017, a series of workshops on Atlantic Interactions were held in a number of cities around the Atlantic, as well as in other locations - Bangalore (India), Luanda (Angola) and Abuja (Nigeria), that have mobilized researches worldwide towards the development of a **new science and technology agenda** for an integrative approach to the Atlantic.

Atlantic Interactions
Science and Technology
Agenda for an integrative approach to the Atlantic

3. NEW PARADIGMS OF COOPERATION – AIR CENTER

THE ATLANTIC INTERACTIONS SCIENCE AND TECHNOLOGY AGENDA

A holistic and integrative approach to Space, Atmosphere, Climate-Energy, Oceans and Data thematic areas in the Atlantic



Strong International Cooperation

- Blue economy
- Climate Observation
- Sea/space knowledge
- New space industries
- New energy sources
- New awareness of space culture and impact
- Earth Observation
- Deep-sea exploration

Atlantic Interactions

*A Science and Technology Agenda
for an integrative approach to the Atlantic:*

*Integrating Space, Climate, Oceans and Data Sciences
through North-South / South-North Cooperation*

Towards the
Atlantic International Research Center (AIR Center)

A white paper developed by a group of international experts promoted by the Portuguese Foundation for Science and Technology (FCT) with the support of an open international consultation and a series of research workshops and high-level events.

Portuguese Foundation for Science and Technology
(Fundação para a Ciência e a Tecnologia, FCT), Portugal
July 2022

RESEARCH IDENTIFIED ACTIVITIES	ATLANTIC INTERACTIONS THEMATIC AREAS				
	SPACE SYSTEMS AND APPLICATIONS	ATMOSPHERIC SCIENCE	OCEAN SCIENCE	CLIMATE CHANGE AND ENERGY SYSTEMS	DATA SYSTEMS
GLOBAL CHALLENGE: UNDERSTANDING, PREDICTING AND ADAPTING TO CLIMATE CHANGE					
Research to understand global, regional and local climatic patterns and climate change impacts		▲	▲	▲	
Integrate atmospheric and ocean information in global climate models		▲	▲	▲	
Monitor the large-scale Atlantic subtropical gyre circulation variability		▲	▲	▲	
Development of a regional earth system model for the Atlantic Ocean		▲		▲	
Research to understand the effects of aerosols in the cloud condensation nuclei (CCN) budget	▲	▲		▲	
Research to understand cloudiness transitions through the integration of in situ ground based, airborne and satellite data		▲			
Monitor the influx of atmospheric pollutants in the Atlantic region		▲		▲	
Use the high number of lakes available in different islands of Azores to reconstruct the climate of the Holocene, including the NAO and AMO				▲	
GLOBAL CHALLENGE: UNDERSTANDING THE ATLANTIC OCEAN SYSTEM AND ITS NATURAL RESOURCES FOR A HEALTHY AND PRODUCTIVE OCEAN					
Build knowledge on the deep ocean	▲		▲	▲	▲
Develop knowledge on the ocean soundscape around the Azores			▲	▲	▲
Develop efforts to conserve marine biodiversity			▲	▲	
Explore activities for a sustainable use of the oceans and promoting the blue growth			▲	▲	
Use blue biotechnology to sustainably exploit biological resources			▲	▲	
Foster marine technology developments			▲	▲	
Develop a sophisticated data analysis and modeling capability for the Atlantic Ocean	▲	▲	▲	▲	▲

3. NEW PARADIGMS OF COOPERATION – AIR CENTER

RESEARCH IDENTIFIED ACTIVITIES	ATLANTIC INTERACTIONS THEMATIC AREAS				
	SPACE SYSTEMS AND APPLICATIONS	ATMOSPHERIC SCIENCE	OCEAN SCIENCE	CLIMATE CHANGE AND ENERGY SYSTEMS	DATA SYSTEMS
GLOBAL CHALLENGE: UNDERSTANDING THE ATLANTIC OCEAN SYSTEM AND ITS NATURAL RESOURCES FOR A HEALTHY AND PRODUCTIVE OCEAN ECOSYSTEM					
Observe and monitor the large-scale Atlantic variability and change	▲	▲	▲	▲	▲
Research to understand major Earth Processes at Ocean Ridges and Ocean Crust Formation			▲	▲	
GLOBAL CHALLENGE: INCREASE THE SHARE OF RENEWABLE ENERGY IN THE GLOBAL ENERGY MIX AND IMPROVEMENT IN ENERGY EFFICIENCY					
Develop a micro-grid management tool to exploit the use of high penetration of renewable resources, including distributed generation		▲	▲	▲	
Foster the integration of multiple efficient and flexible storage systems		▲	▲	▲	
Develop a platform to better assess the efficiency of the renewable energy resources in the Atlantic				▲	
Develop tools and systems to manage the energy demand in buildings and large facilities to the availability of renewable energy resources				▲	
Develop new models to increase the use of renewable energy				▲	
Develop a system to better predict renewable energy assets failure due to weather conditions				▲	
ENABLING ACTIVITIES: SPACE SYSTEMS AND APPLICATIONS DOMAIN					
Reduce the cost of access to space for the launching of small satellites	▲	▲	▲	▲	
Acting as a regional collector of requirements for satellite monitoring systems	▲			▲	
Establish innovative geo-information services based in Earth Observation (EO) data for adoption and enhancement of the EU Atlantic Strategy (in particular EU Horizon 2020 project "AtlantOS") and its action plan and of National Ocean Strategies	▲				▲
"Atmosphere - ocean monitoring and environmental management"	▲	▲	▲	▲	▲

RESEARCH IDENTIFIED ACTIVITIES	ATLANTIC INTERACTIONS THEMATIC AREAS				
	SPACE SYSTEMS AND APPLICATIONS	ATMOSPHERIC SCIENCE	OCEAN SCIENCE	CLIMATE CHANGE AND ENERGY SYSTEMS	DATA SYSTEMS
ENABLING ACTIVITIES: SPACE SYSTEMS AND APPLICATIONS DOMAIN (CONT.)					
Establish a Surveillance platform / network to leverage the scientific leadership in the Atlantic	▲		▲		
ENABLING ACTIVITIES: DATA SCIENCE AND DATA VISUALIZATION DOMAINS					
Create a best in class Data Science team to extract value from Data, including Data scientists, Data engineers / Data software developers, Data solutions architects, Data platform administrators, Full-stack developers, Designers, Product managers and Project managers	▲	▲	▲	▲	▲
Design and develop a content analytics platform and methodologies to apply cognitive analytics solutions		▲	▲	▲	▲
Develop a cognitive process to predict future ocean conditions using a combination of physically-based models and large, heterogeneous data sets		▲			▲
Design and develop of cognitive security solutions to manage cybersecurity threats and keep data trustworthy					▲
Develop data visualization tools to promote understanding of the collected and analyzed data		▲		▲	▲
Integrate at scale, data collection curation, and storage with advanced computing and analysis – development of a Research Cloud dedicated to the Atlantic, the iAtlantic	▲	▲		▲	▲
CROSSCUTTING ACTIVITIES					
Atlantic Ocean Coastal Cities Network (AOCCN) - The City-Ocean Interface	▲	▲	▲	▲	▲
Addressing technology transfer	▲	▲		▲	▲
Promoting scientific literacy: Knowledge for Space - Space for Knowledge	▲	▲	▲	▲	▲

3. NEW PARADIGMS OF COOPERATION – AIR CENTER

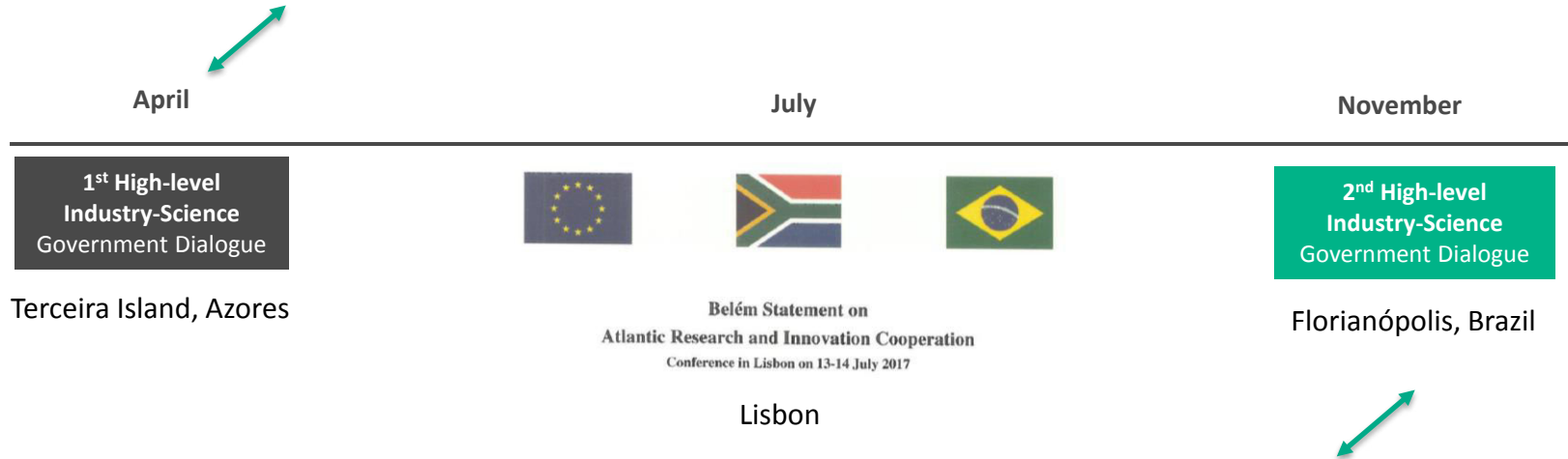


(governance)

- Promote a new **holistic and integrative approach to knowledge on space, climate-energy, oceans and data scientific areas** and related issues in **the Atlantic** (...)
- Foster an **inclusive approach to science, technology and economic development** (...)
- **Establish a network of research sites in various Atlantic islands** in north and south Atlantic, in close interaction with research, academic and business organizations worldwide, including those across both **south and north Atlantic countries, AS WELL AS NON-ATLANTIC COUNTRIES**
- **Facilitate the access to space data** from the unique position of the Azores (...)
- **Stimulate the test of new renewable energy sources** and their integration in smart networks in islands environments (...)
- Promote **new research in deep-sea** (...)
- Facilitate the **establishment and use of new mega-sets of data on climate, atmosphere, earth, ocean and energy** related themes (...)
- (...) contribute **for the understanding and risk mitigation of the derived natural hazards, namely earthquakes, volcanism, tsunamis;**
- Promote and foster the education and knowledge agenda “knowledge for Space – Space for knowledge” (...)

3. NEW PARADIGMS OF COOPERATION – AIR CENTER

A High Level Meeting was held in Terceira Island, Azores, in April 2017. This meeting was aimed at addressing the need to further study and conduct research in Atlantic regions . This was a major milestone for the development of the Atlantic International Research Center (AIR Center), with headquarters in the Azores.



Discussion on the R&D Agenda on “Atlantic Interactions” and implementation of the Atlantic International Research Center (AIR Center) - MoU

3. NEW PARADIGMS OF COOPERATION – AIR CENTER



AIR CENTER

ATLANTIC INTERACTIONS:

TOWARDS A SCIENCE AND TECHNOLOGY AGENDA
FOR AN INTEGRATIVE APPROACH TO THE ATLANTIC



4. TOWARDS THE SDG

An holistic and integrative approach to Space, Atmosphere, Climate-Energy, Oceans and Data thematic areas in the Atlantic can tackle several Sustainable Development Goals:

 **End hunger**, achieve food security and improved nutrition and promote sustainable agriculture

Ensure access to affordable, reliable, sustainable and modern **energy for all**

 Make **cities and human settlements inclusive, safe, resilient and sustainable**,

Take urgent action to **combat climate** change and its impacts

 **Conserve and sustainably use the** oceans, seas and marine resources.

strengthen the means of implementation and revitalize the
global partnership for sustainable Development



4. TOWARDS THE SDG

The participants to the Forum:

Dubai Declaration

(...)

7. Emphasize that, in order to strengthen socio-economic development, **an integrated approach is required among the space sector and other sectors, including environment and climate change, health, water, information and communication technology, and management of resources**, to better understand and meet the needs of end-users and society at large;

OUR CONTACTS

Aerospace Sector (VdA)

Magda Cocco

Partner
Email: mpc@vda.pt
Tel: (+351) 21 311 3487

Isabel Ornelas

Senior Associate
Email: igo@vda.pt
Tel: (+351) 21 311 3487



 VIEIRA DE ALMEIDA

www.vda.pt