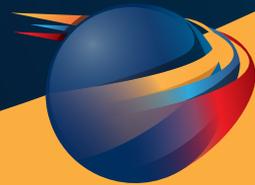


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AGENCIA BOLIVARIANA PARA
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30TH WORKSHOP
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DEVELOPING AN INTEGRAL SPACE EDUCATION PROGRAM

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ENG. ROGELIO MORALES

2023

BAKU-AZERBAIJAN, 29 SEPTEMBER - 01 OCTOBER 2023

     **AbaeVzla**



I N D E X

- 01** **SPACE SECTOR**
Present, Statistics and Careers demand | **01.003**
- 02** **EDUCATION SYSTEM**
Present and Statistics | **02.006**
- 03** **PROPOSAL**
Purpose & Goals, Pillars and Strategies | **03.008**
- 04** **CHALLENGES**
Difficulties to overcome | **04.013**





SPACE SECTOR

Today, the space sector presents itself as an unquestionable driver of economic and social development in a country by bringing together a variety of disciplines, scientific and technological innovations, and a diversity of high-value-added industries that could offer Venezuela the opportunity to establish and consolidate a sustainable national development with a long-term strategic vision.



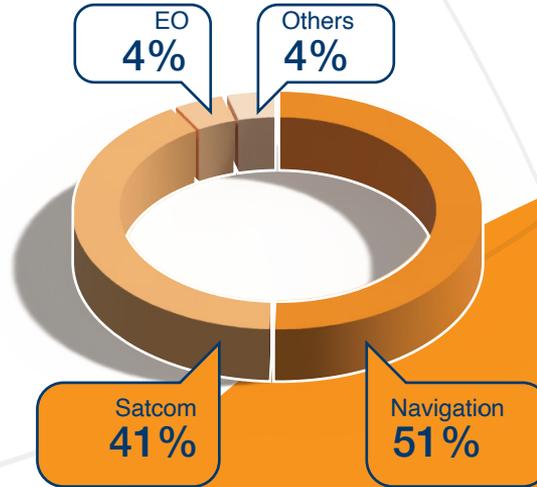


SPACE SECTOR STATISTICS

SPACE MARKET VALUE CHAIN



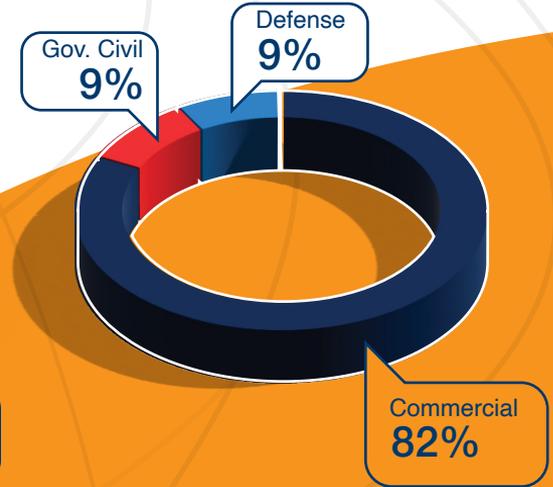
SPACE MARKET BY APPLICATION



\$337B

Euroconsult

SPACE MARKET BY CLIENT



\$337B

Euroconsult





SPACE SECTOR CAREERS DEMAND



01

SCIENTISTS

SPACE SCIENTIST

PHYSICAL SCIENTISTS

LIFE SCIENTISTS

PHYSICIANS

ENGINEERS & TECHNICIANS

AEROSPACE ENGINEERS

ELECTRONICS ENGINEERS

COMPUTER SCIENTISTS

SYSTEM ENGINEERS



02



03

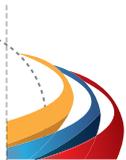
OTHER PROFESSIONALS

CONTRACT SPECIALIST

FINANCIAL ANALYSTS

HR PROFESSIONALS

BUSINESS STRATEGISTS





EDUCATION SYSTEM

To accomplish this goal, a coherent, viable, and disruptive national education strategy must be established in order to build the critical mass of personnel needed to accelerate and consolidate a national space sector.

In that sense, there are important capacities and possibilities in the country to meet the challenge proposed.



VENEZUELA EDUCATIONAL SYSTEM





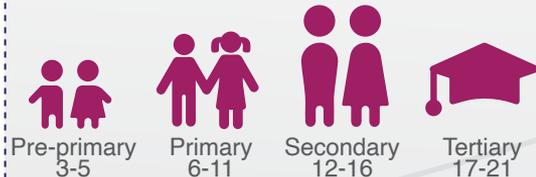
EDUCATION SYSTEM STATISTICS

SCHOOL-AGE POPULATION BY EDUCATION LEVEL

| | |
|-------------|-----------|
| Pre-primary | 1,487,246 |
| Primary | 3,261,349 |
| Secondary | 2,627,453 |
| Tertiary | 2,660,784 |

Total 10,036,832

Represents **27%** of the total



Source UNESCO

HUMAN TALENT DEDICATED TO R&D ACTIVITIES BY EMPLOYMENT SECTOR

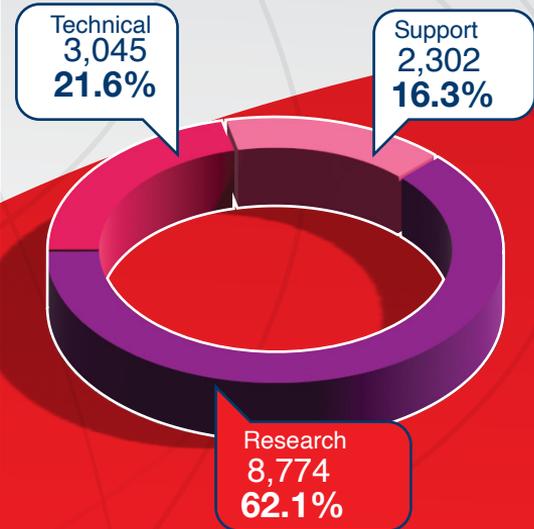
| | |
|----------------------------------|-------|
| Universitary | 9,163 |
| Government | 4,155 |
| Others | 764 |
| Public & private companies | 90 |

R&D ORGANIZATIONS OF THE UNIVERSITY INSTITUTIONS IN THE COUNTRY

| | |
|----------------------------|------------|
| Public Universities / | 56 |
| Private Universities / | 25 |
| Public Universities R&D / | 210 |
| Private Universities R&D / | 43 |

Source ONCTI

HUMAN TALENT DEDICATED TO R&D ACTIVITIES BY TYPE OF PERSONNEL



Source ONCTI





PROPOSAL

In this regard, an integral space education program based on robotics and artificial intelligence (AI) is proposed as an after-school format to advance and place the Venezuelan education system at the top level in order to meet the capacities required to ensure a sustainable and resilient national space industry. In that sense, ABAE has implemented diverse initiatives in order to accomplish those objectives.



AI AND ROBOTICS IN EDUCATION





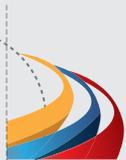
PROPOSAL

PROGRAM PURPOSE & GOALS

Develop national capacities in autonomous robotic platforms, to carry out space exploration missions in all its modalities and permanently in the Solar System. The program is designed to be completed in 12 years, from 2024 to 2036.

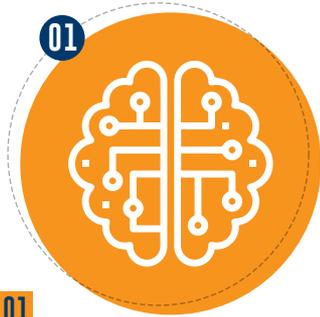
- 1. Develop an intensive and top-level education and research system to support the national space industry.**
- 2. Develop an autonomous, robust and reliable robotic swarm platform to guarantee the permanent exploration and study of the Solar System.**
- 3. Develop a high-tech national space industry to produce high value-added products and services.**
4. Guarantee Venezuela involvement, permanently and its own feet, in the international space arena.
5. Develop Space Dynamics Navigation Routes (SDNR) for the Solar System exploration.

PROPOSAL FOR A VENEZUELAN NATIONAL PROGRAM FOR ROBOTIC SPACE EXPLORATION

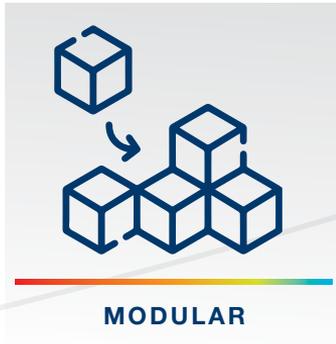




PROPOSAL PROPOSAL PILLARS



01
SELF DEVELOPMENT



MODULAR



02
AI-POWERED
TEACHING
AND MENTORING



ADAPTABLE



03
COLLABORATIVE
WORKING



PURPOSE-DRIVEN



PROPOSAL STRATEGY

For all levels of education, a curriculum with an emphasis on science, technology, engineering, mathematics, design, and science fiction is proposed. This approach will develop in students problem-solving skills, creativity, innovative thinking, multidisciplinary teams, leadership, critical thinking, and a proactive attitude applied to challenging robotics projects about space exploration topics.

TEACHERS EDUCATION

Teachers and AI to educate and prepare new teachers.

SPACE-RELATED EDUCATIONAL OPPORTUNITIES

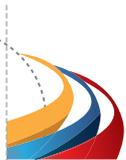
Learning opportunities at all educational levels, with a broad selection of subjects and courses (primary and secondary education).

PROMOTE STUDIES ON THE SUBJECT

Space robotics-related professions and academic fields. Additionally, events and competitions to promote space robotics-related careers.

SPECIALIZED EDUCATION

Develop specialized educational plans and facilities for young researchers and entrepreneurs.





PROPOSAL STRATEGY



PRIMARY SCHOOL

Robotic Space Kit (basic)
SaaS Education Platform
Itinerant Robotic Laboratory

Robotic Holidays & After-School Programs

Local and Regional Robotic Competitions

Student Grants



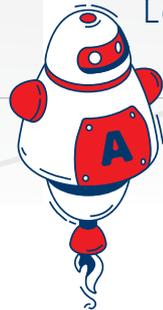
SECONDARY SCHOOL

Robotic Space Kit (advanced)
SaaS Education Platform
Itinerant Robotic Laboratory

After School Programs
Robotic Camps

Local, Regional and National Robotic Competitions

Student Grants



UNIVERSITY

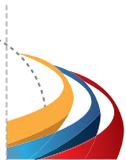
Robotic Space Kit (pro)
SaaS Design & Simulation Platform
Robotic R&D Laboratories

Robotics Training & Internship

Local, Regional, National & International Robotic Competitions

Student Grants

Startup Incubator





CHALLENGES

01

HIGH-QUALITY EDUCATIONAL INFRASTRUCTURE

02

QUALIFIED TEACHERS AND PROFESSORS

03

STUDENTS LEARNING CONDITIONS

04

PARENTS INVOLVEMENT

05

EDUCATIONAL INDICATORS





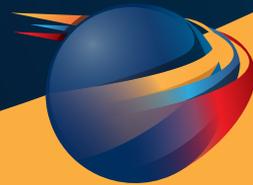
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