CanSat Ghana

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XAVIER SPACE SOLUTIONS
A SPACE & SATELLITE COMPANY
Developing Space Science in Ghana through Experimental Satellites

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Space in Ghana

Rich culture of night-sky observations and a growing research in Astronomy & Space science.

**SPACE & ASTRONOMY INSTITUTIONS**

- Ghana Space Science & Technology Institute
- All Nations University - GhanaSat-1
- Ghana Radio Astronomy Observatory
- Ghana Planetarium
- Xavier Space Solutions
- Cansat Ghana

**SET-BACKS**

- No formal education in Space & Astronomy.
Space in Ghana - Space policy 2023

HOW WE ARE ADDRESSING THE SET-BACKS?

- Astronomy & Space outreach activities.
- Human resource & capacity building through experimental satellites.
- Ghana Space Policy.
- Astronomy & Space science conferences
  - introducing astronomy as a course in Universities.
Space Needs in Ghana

HUMAN RESOURCE DEVELOPMENT & ADVANCEMENT IN SPACE RESEARCH

- Job opportunities in space science.
- Development of satellite technology for IoT applications.
Space Needs in Ghana

DEVELOPING SUSTAINABLE SPACE TECHNOLOGY
FOR SOCIAL & ECONOMIC GROWTH/DEVELOPMENT

Food security and improved agriculture.
Space Needs in Ghana

ENVIRONMENTAL PROTECTION - LAND USE

Proper use of land and natural resource management.
Space Needs in Ghana

DISASTER MANAGEMENT

Periodic flooding events in cities and rural areas.
Space Needs in Ghana - summary
CanSat Ghana

Formally known as Ghana CanSat Rocketry Championship (GCRC). A project (now a registered NGO) introduced by Xavier Space Solutions.

GOALS AND OBJECTIVES

- Introduce and sustain the interest of students in Space science through experimental satellite projects.
- Organise the first-ever student satellite design competition in Ghana.
- Promote astronomy and space science in Ghana and Africa.
- Promote the study of STEM (Science Technology Engineering and Mathematics) in high and secondary school and university levels in Ghana.
CanSat Ghana

- Made in Ghana experimental satellite modules (Nyarkoa) for introducing space science, coding and electronics to students.

FEATURES/WHAT IT CAN DO

- Transmit data between payload (in flight) & ground station.
- Weather/climate monitoring.
- Crop growth monitoring.
- Remote sensing.
- Comes with its own mission software.
CanSat Ghana - CanSat module
Progress

Phase 1 (Tertiary campaign): We reached 17 tertiary (150 students) institutions in Ghana in 2021. Both private & public institutions.

Phase 2 (Elementary campaign): we targeted 3 regions and reached 23 elementary schools (400 students). Both private & public schools.
Outcomes

**Phase 1 (Tertiary campaign):** a 10% increase in students learning STEM related courses in tertiary schools reached.

**Phase 2 (Elementary campaign):** Early results - positive impact on other African countries to get involved in experimental satellite projects (as part of building their space program), for eg. Eritrea, Guinea, Sierra Leone, Zimbabwe, Tunisia, etc. Also, we have involved local electronics companies in developing space technologies.
The future of Space in Ghana

- Establishment of an experimental satellite hub in Ghana through CanSat Ghana.
- Building prototype CubeSats - Xavier Space Solutions.
- Collaboration with the Ghana Space Science & Technology Institute (other government stakeholders) on promoting Space in Ghana.
- Collaborations with other African countries to begin experimental satellite projects.
Developing the local space ecosystem - what needs to be done?

- Introduction of Astronomy at all levels of the Ghanaian education system: formal education in Astronomy & Space science.
- National space policy - clear path to the development of space technology and research.
- Support in the form of funds for space research - for example the GRAO.
- Collaborations between the national space agencies & local Tech companies.
- International space research collaborations: conferences, research collaborations, exchange programs etc.
Thank you!

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