

KIBOCUBE EXPANDING POSSIBILITIES FOR SPACE EMERGING COUNTRIES



A SIDE EVENT TO THE 66TH SESSION OF THE
UN COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE

2 JUNE 2023 13:00 - 14:00 CEST

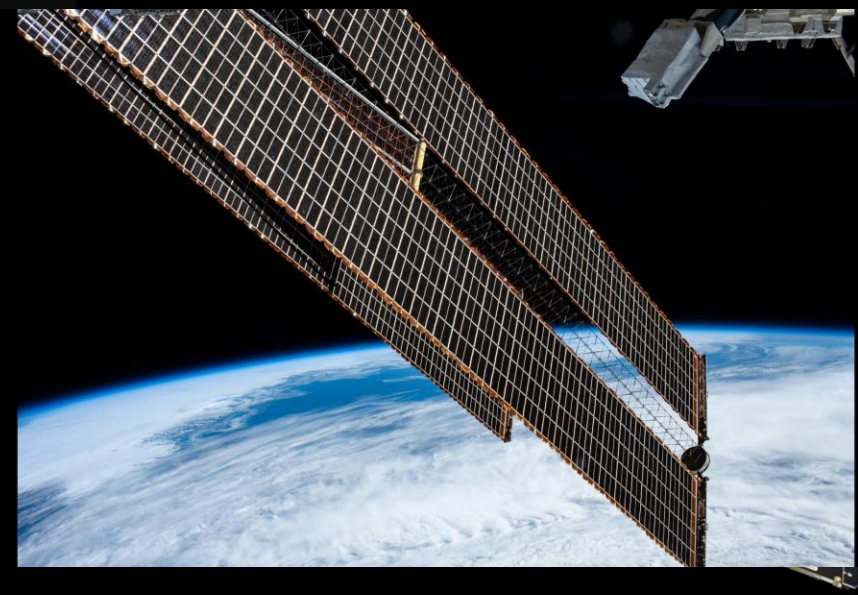
Space Unit
of The Mauritius Research &
Innovation Council
(MRIC)

www.spacemauritius.com

PRESENTED BY

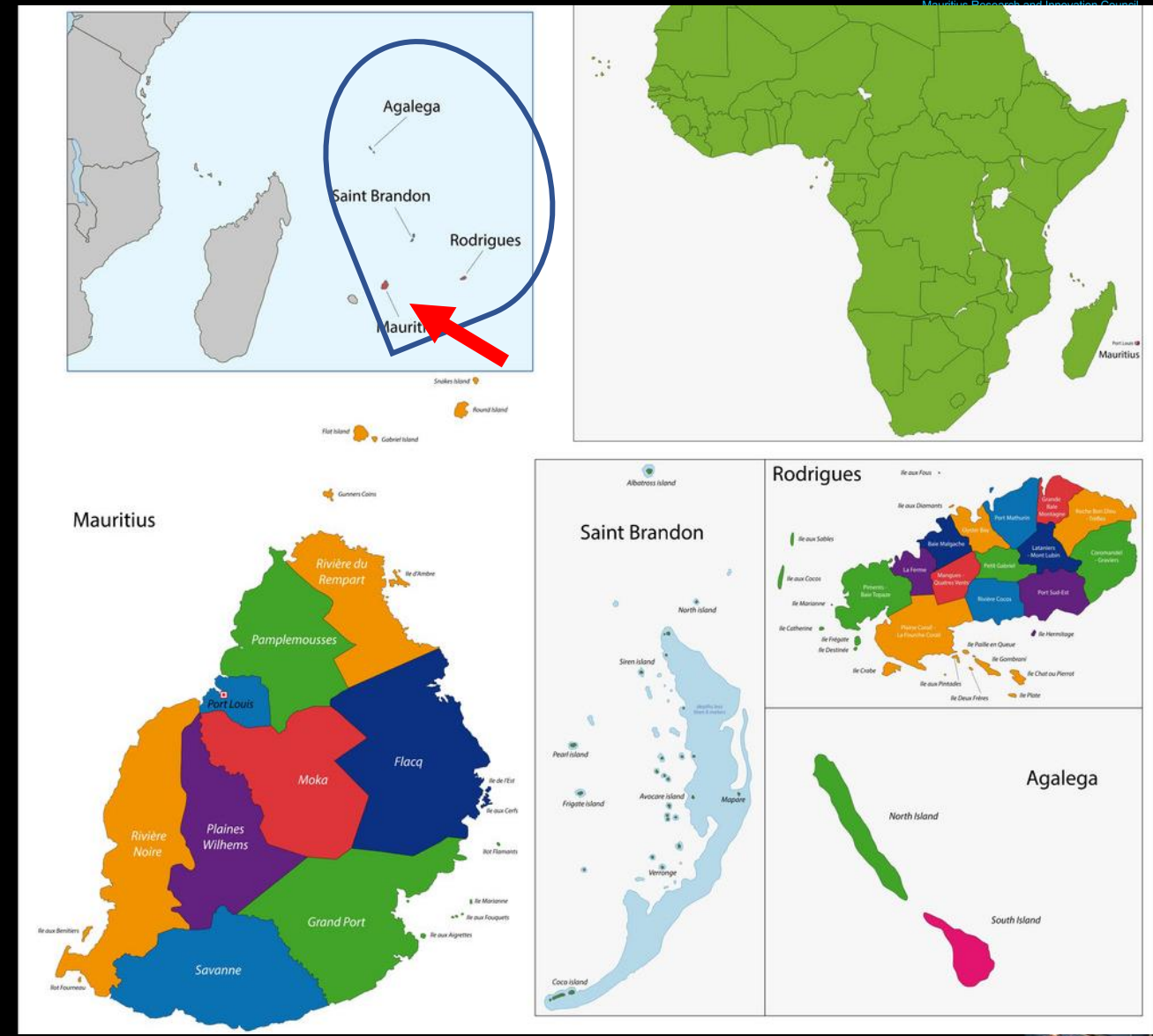
DR VICKRAM BISSONAUTH

RESEARCH COORDINATOR



Mauritius

- Total Area – 2040 sq Km
- Population – 1,265,475 (Estimated in 2019)
- GDP – USD 25,029
- Exclusive Economic Zone (EEZ) – 2.4 million sq km





**MAURITIUS RESEARCH
AND INNOVATION COUNCIL**



Apex body
Advising
Government on
Applied
Research and
Innovation



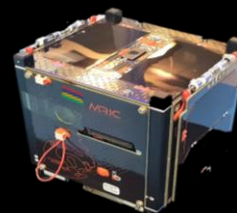
Promotes
collaborative
and inclusive
Innovation



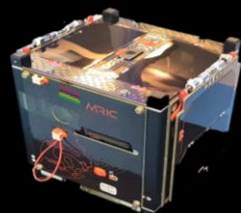
Fosters high
quality R&D and
innovation in the
Republic of
Mauritius

Mauritius now a space faring small island developing state

3rd Round Kibocube Program winner in 2018



Republic of Mauritius Winner KiboCUBE - 2018

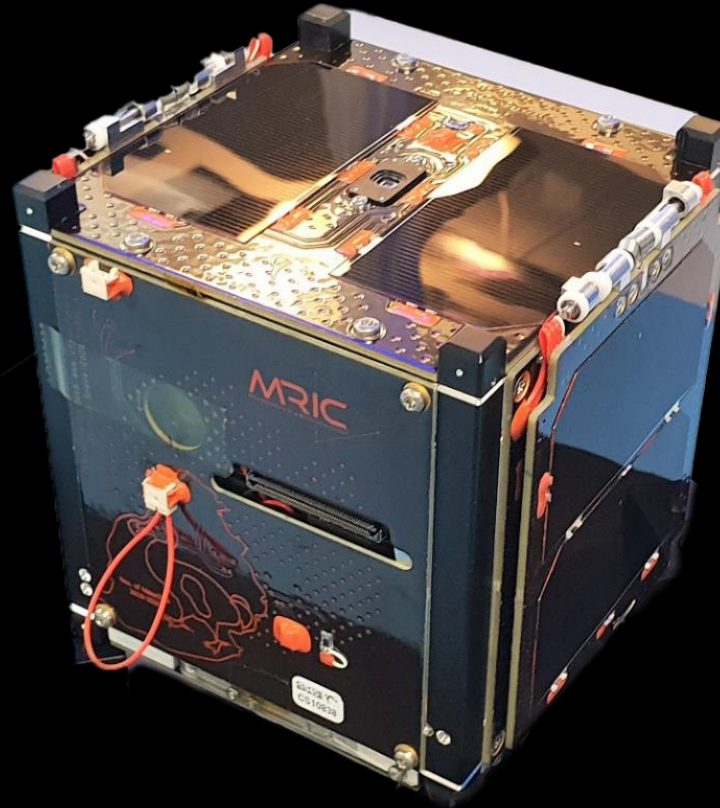


MIR-SAT1 – Mauritius Imagery Radiocommunication Satellite 1

Build capacity in satellite/space technology

Satellite Communication Once in space

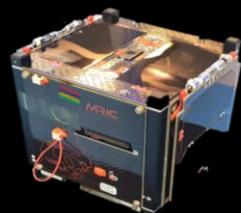
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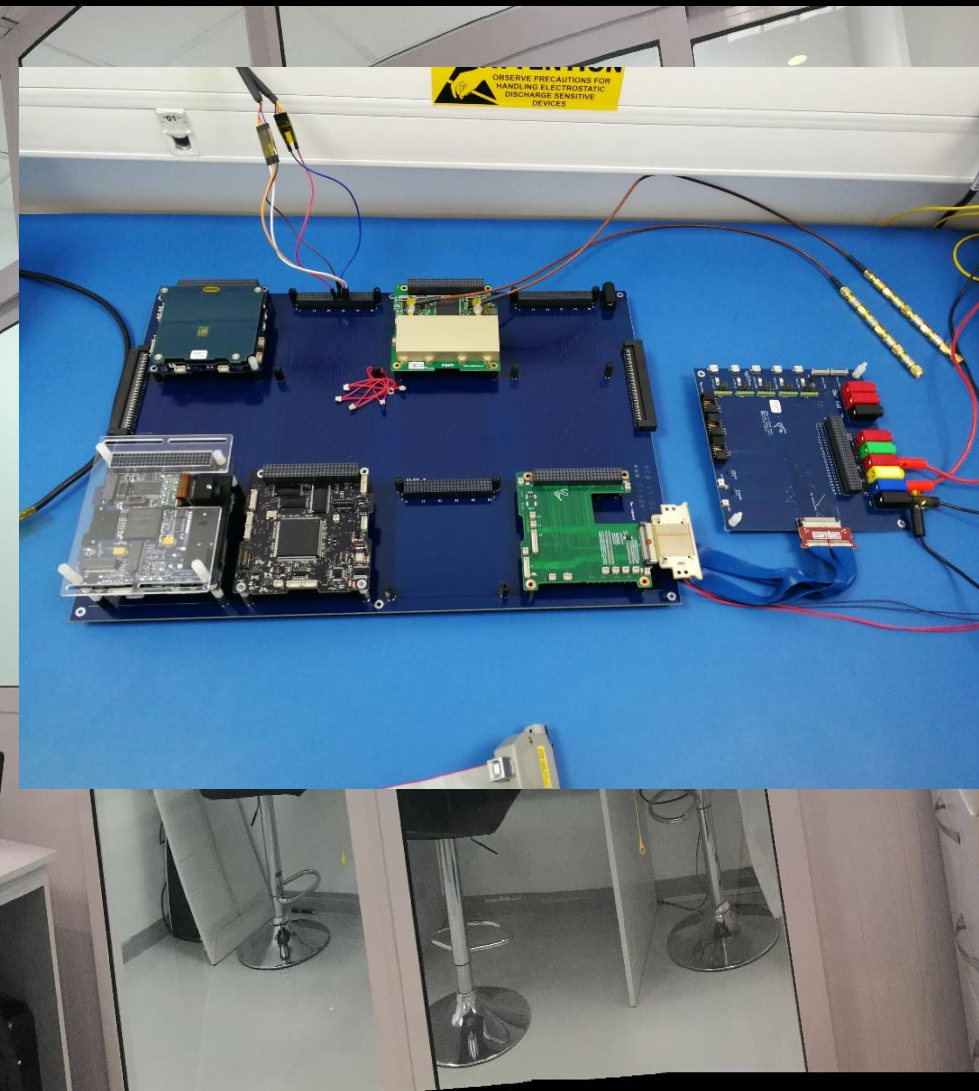
Use on-board payload to capture images of Mauritius and its EEZ

Digipeater (2-way Communication)

**MIR-SAT1 deployed in Space in June 2021 and phased out in April 2022
10 months orbiting in space**

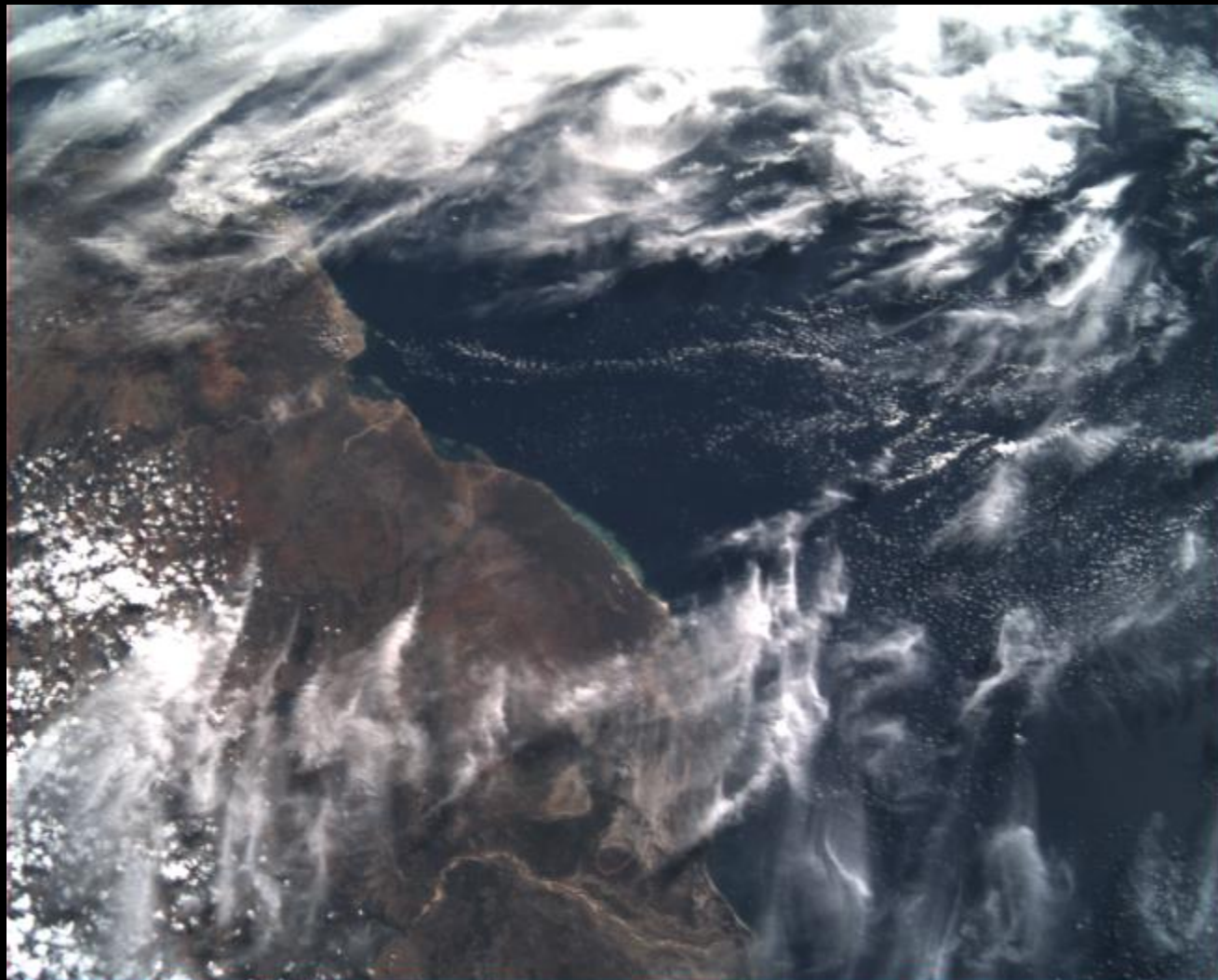


MRIC Ground Station





Photos Taken by MIR-SAT1



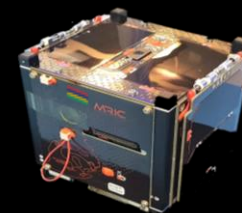
Photos Taken by MIR-SAT1



OUTREACH

- Apprising Government on the importance of Space/satellite technology as an emerging new potential socioeconomic pillar and Innovation driver
- Incentivising young Mauritians to consider Space and Satellite Technologies as a future career

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Support from the Prime Minister of the Republic of Mauritius and Minister of Information Technology, Communication and Innovation

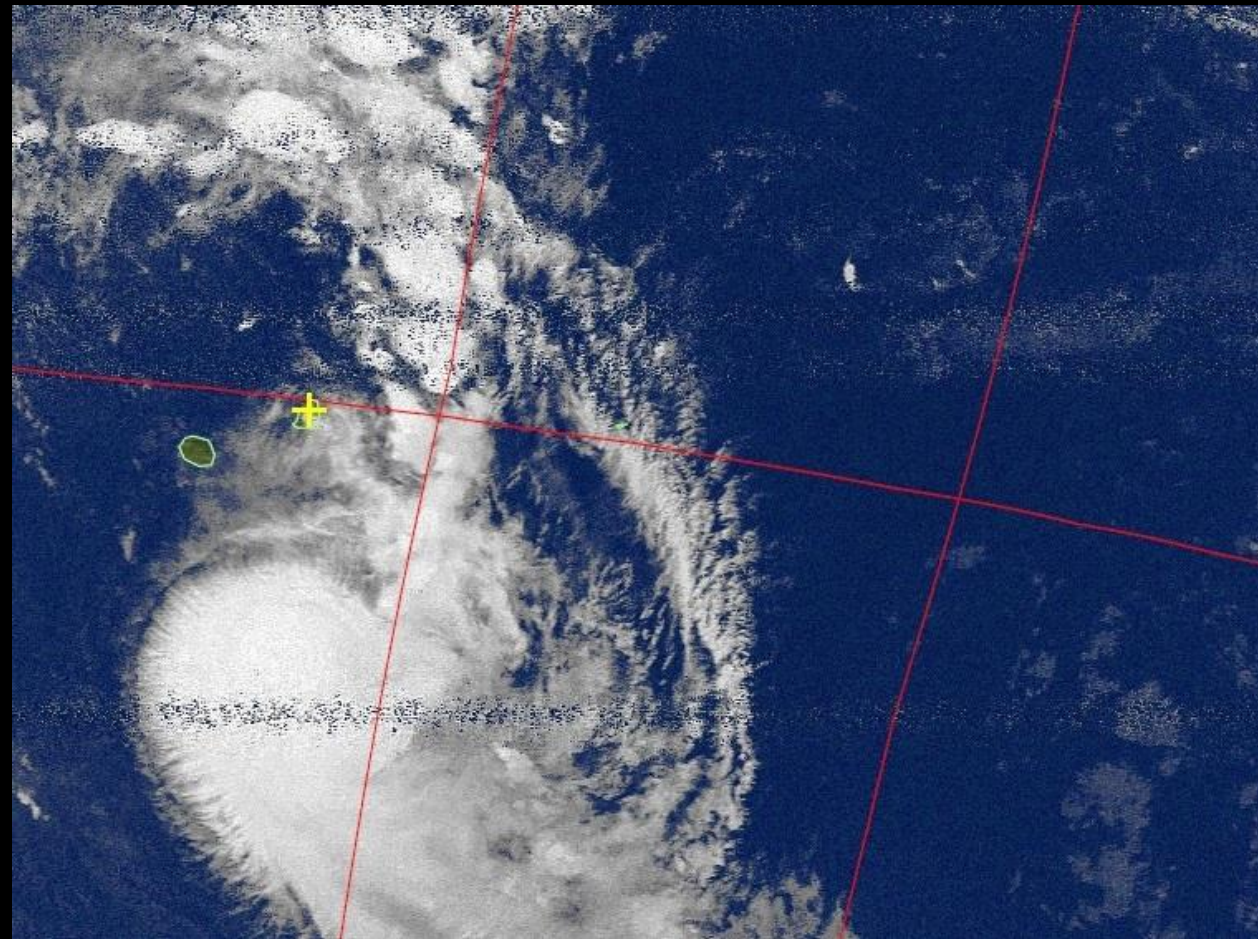
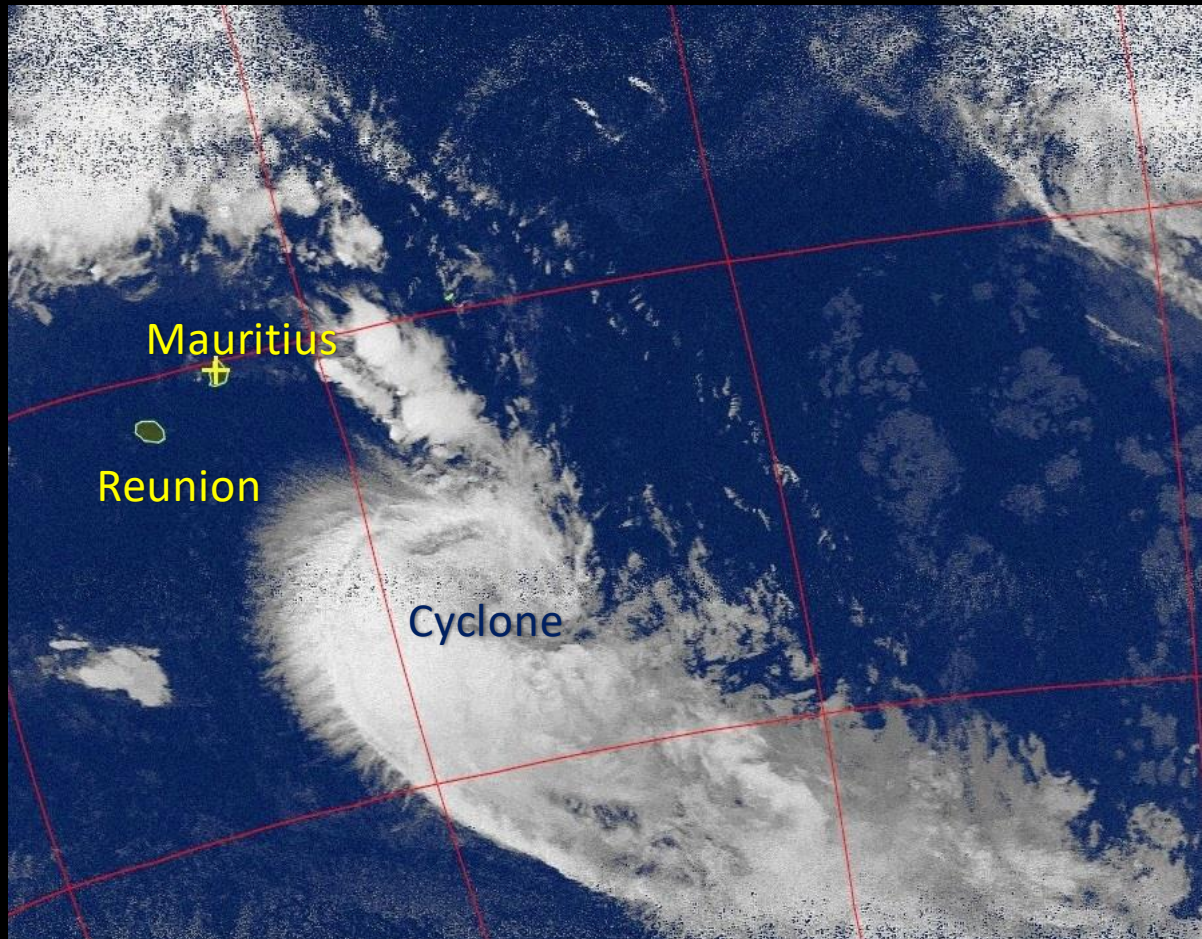




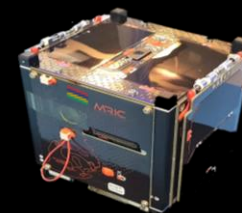
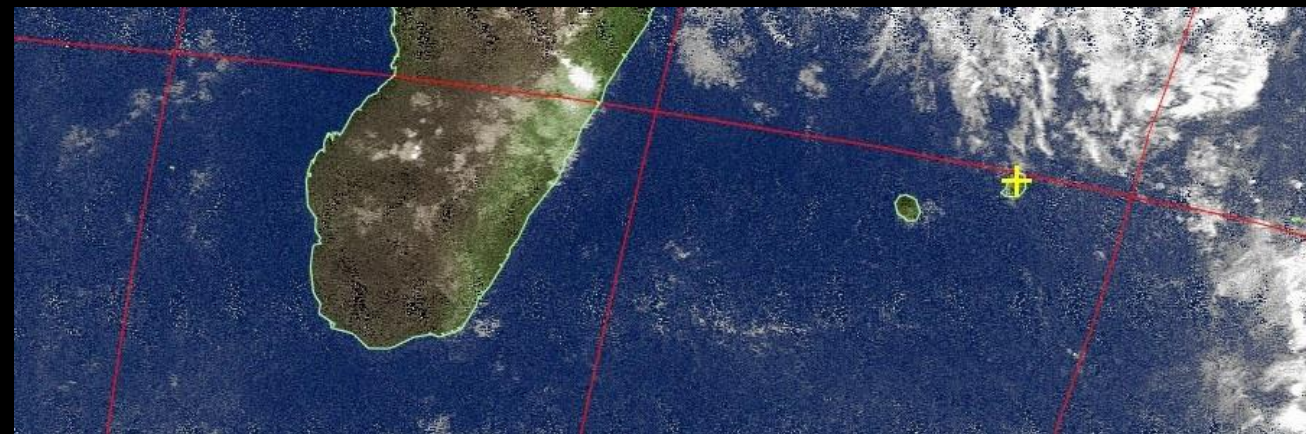
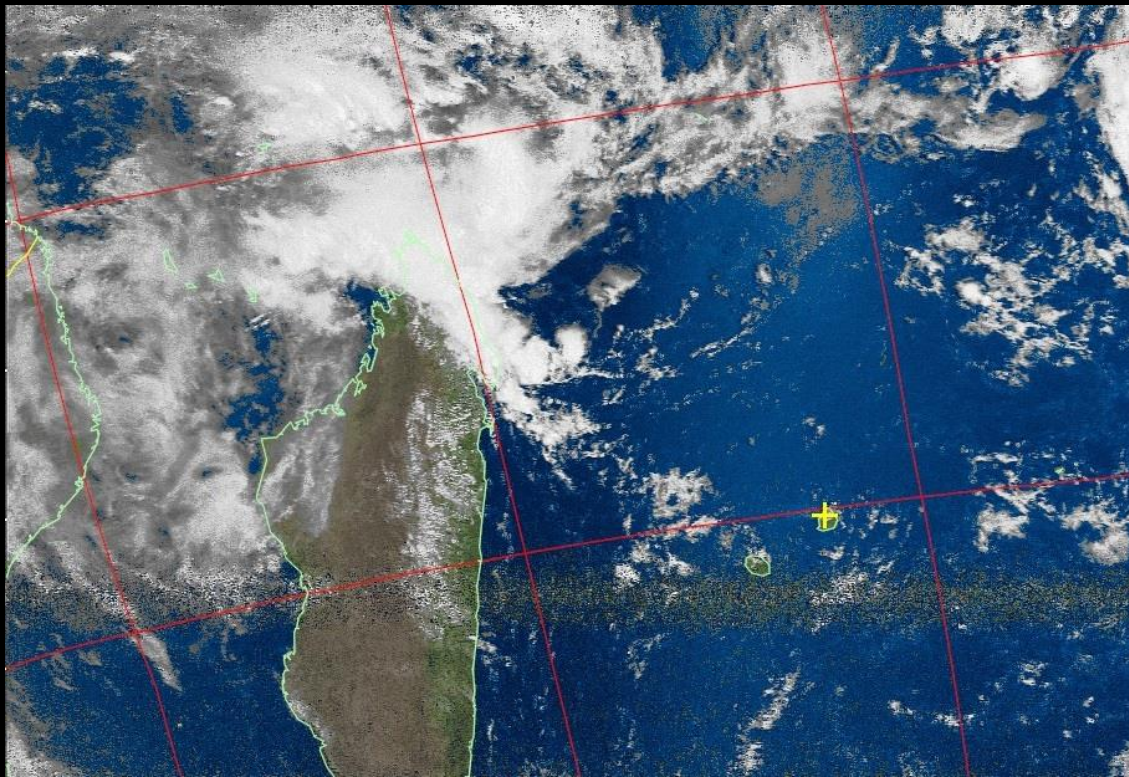
Capacity Building – LEO Receiving Antenna

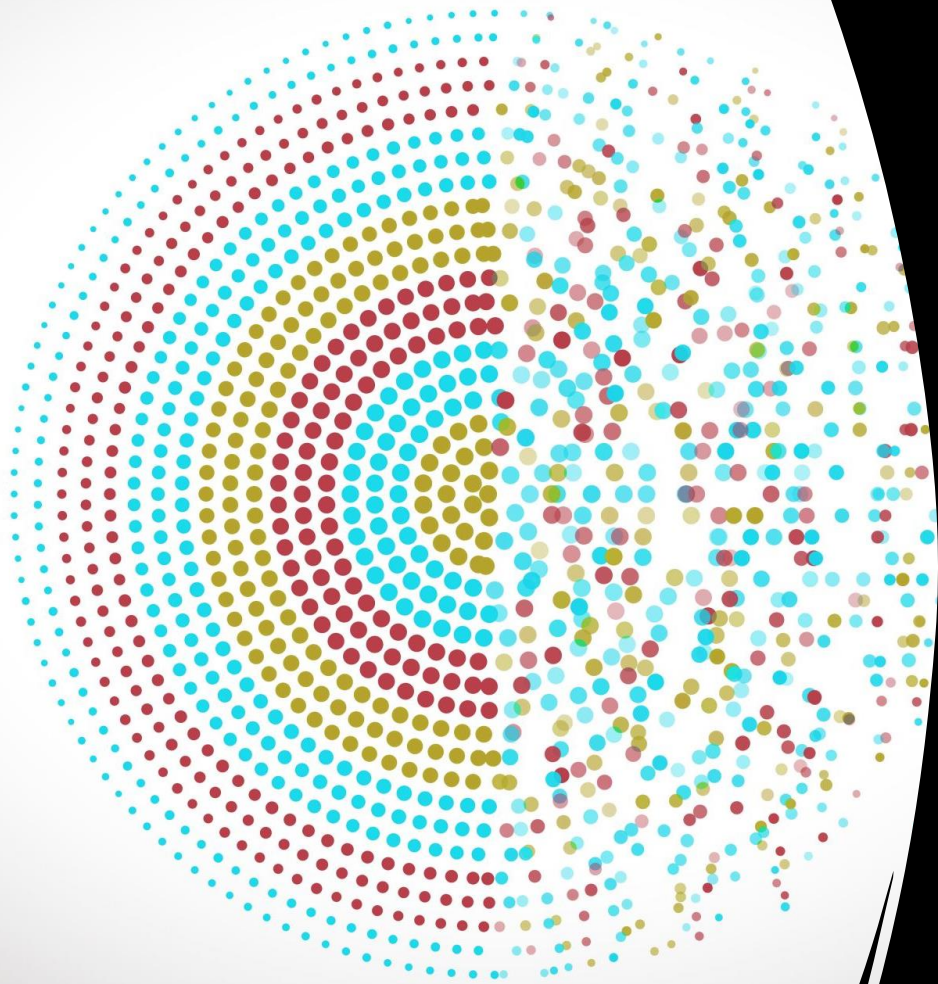
- 100 Students from 12 schools and 5 Universities trained
- 17 teachers/lecturers trained
- Each of participating school given the antenna for free

Images Captured with the simplified Antenna by secondary school students in Mauritius



Images Captured with the simplified Antenna

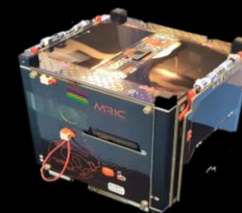




Leveraging on Government facilitated bilateral relationships with friendly countries to push forward the space Agenda

- MoU with Indian Space Research Organisation
- Framework Agreement with Mohamed Bin Rashid Space Centre, UAE
- Collaborative Agreement with Surrey Space Centre, UK

LIVE Conversation with Emirati Astronaut Dr Sultan AlNeyadi on the ISS





ISS CALLING MAURITIUS



Dr Sultan AlNeyadi

Emirati astronaut,
on board of the
International Space
Station talks LIVE
with Students of
Republic of Mauritius



11th May 2023 at 15:00hrs (Mauritius Time)
Join us online on #MRIC YouTube

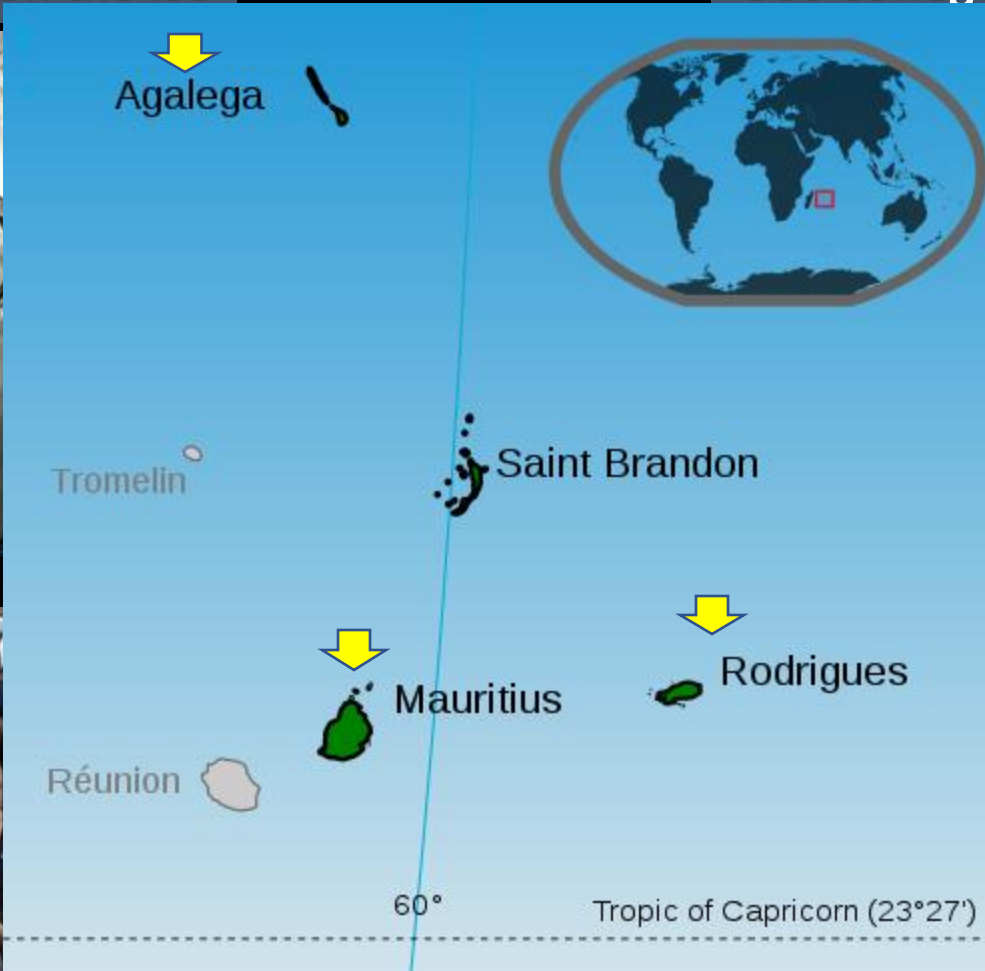


LIVE CONVERSATION WITH EMIRATI ASTRONAUT WITH REPUBLIC OF MAURITIUS

Dr Sultan Al Neyadi on the ISS



300 College Students in Mauritius

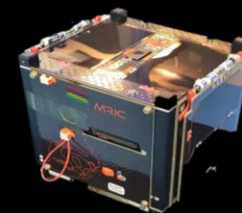


80 College Students in Rodrigues

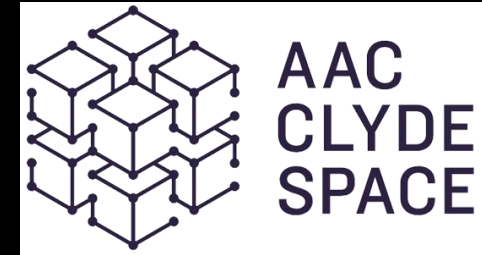


20 College Students in Agalega

Full Support from Government and Collaborators



MRIC Collaborators



On-going Collaboration Sp





Way Forward

Gearing towards
a Space Agency
in Mauritius

Mauritius Space Vision

Space Curriculum

- space faculty in universities
- Initiation of primary and secondary school students to space and satellite tech.

Space Start ups

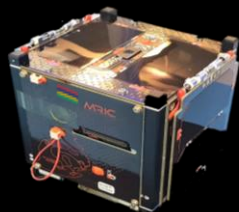
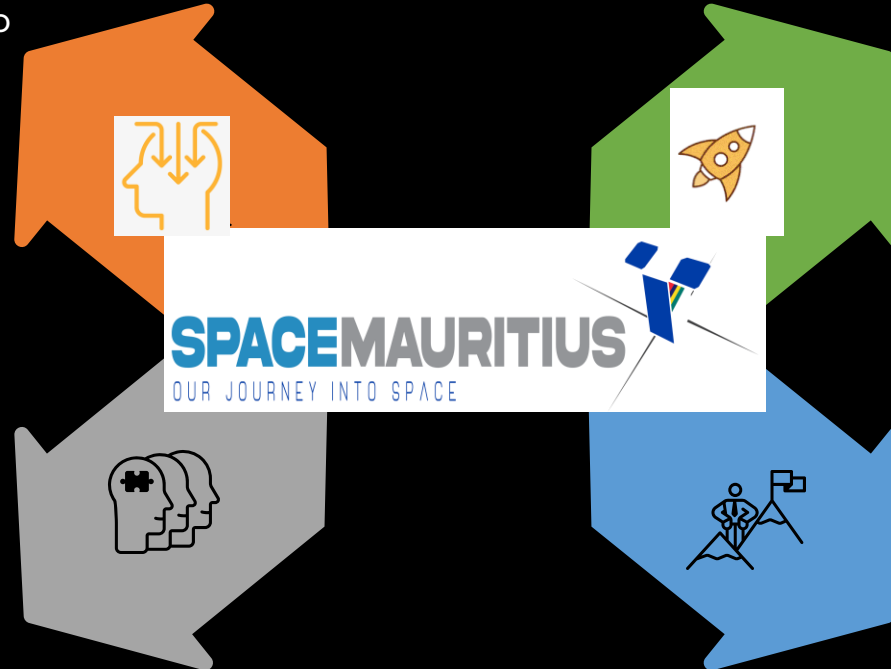
Facilitate startup development in space and satellite tech

International collaboration

Leapfrogging on friend countries' expertise in space

Research and Development

Engaging into R&D in space and satellite technologies
Use of space data to advise policy



MEET THE MIR-SAT1 TEAM



Dr Vickram Bissonauth

Project Coordinator

Overall project management and coordination

www.spacemauritius.com



Ziyaad Soreefan

Aerospace Engineer



Aerospace Engineer



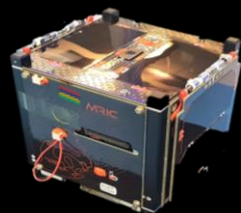
Koushul Narrain

Research Assistant



Kiran Tatoree

Research Assistant

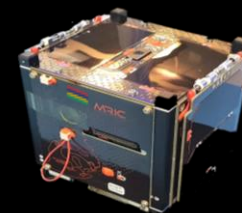
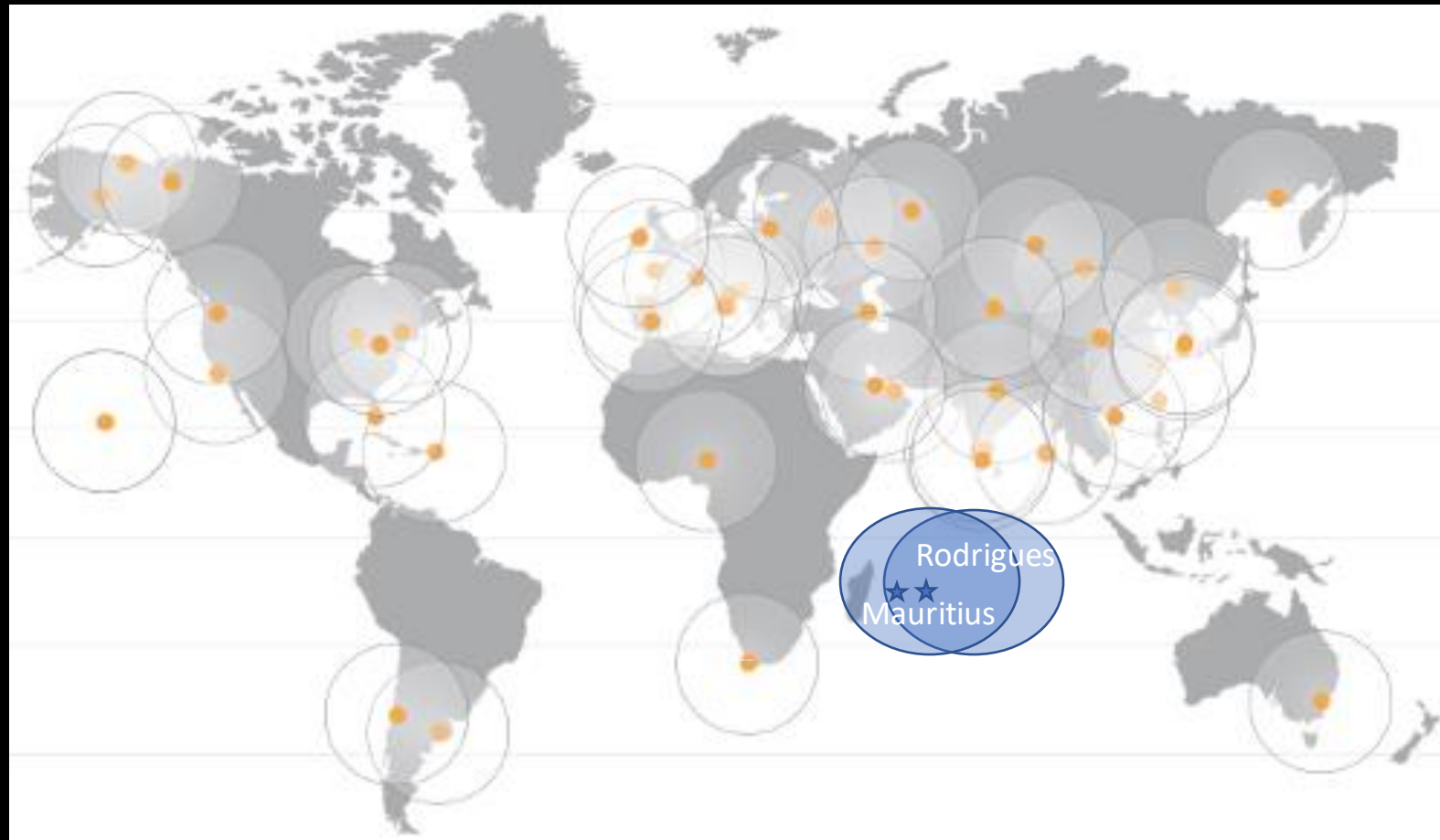




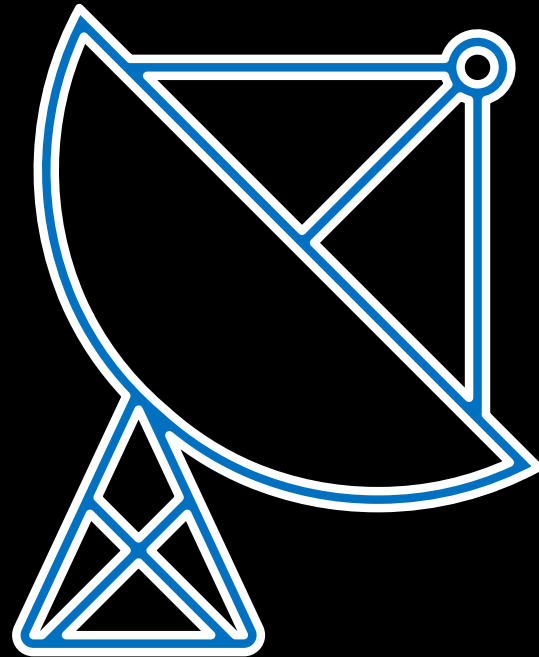
In the pipeline



Blindspot in Indian Ocean



Satellite
Tracking



Government 2
Government Agreement

NEREUS – A Space-Based Maritime Surveillance System for Fisheries Monitoring and Anomaly Detection

Satellite-based IUU detection tool

Near-Real time operation

Mapping of Spatiotemporal patterns of fishing vessels

Detection of Suspicious Behaviour

Risk threshold for IUU detection

Data Sources

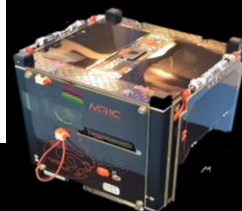
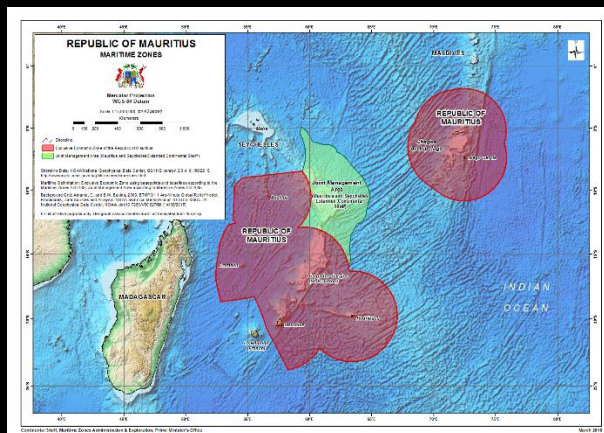
Synthetic Aperture Radar

Automatic Identification System

Vessel Monitoring System


Thermal Infrared

Multispectral



MBRSC - Payload Hosting Initiative (PHI)

Developing a payload which will fly on-board MBRSC 12U Satellite



مركز محمد بن راشد
للفضاء

MOHAMMED BIN RASHID SPACE CENTRE

Vision 2030: Mauritius Space Roadmap

International Collaboration

- Proposal for collaboration with islands of the Indian Ocean
- Space Sector partnership with our International Partners for acquisition of space technology

Policy and Laws

- Drafting a National Space Policy
- Establishing a national space law, in compliance with the International Space Law, for peaceful and sustainable use of the space environment

Space Infrastructure

- Update existing Infrastructure
- Setting of labs to R&D and Testing



Capacity Building

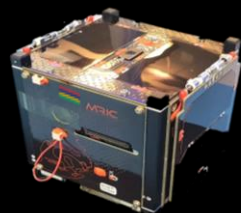
- MRIC Engineers train by International Partners
- Collaboration with educational institutes for capacity building in Mauritius

New Missions

- Initiative to develop space projects in collaboration with International Partners

Space Agency

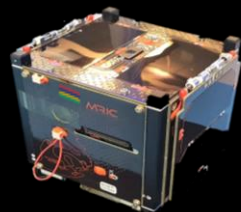
- Setting up an organisational framework responsible for the activities of the space sector



Collaboration Avenues

- Satellite tracking
- Joint satellite Mission
- Exchange Programme for Engineers and Scientists
- Low Earth Orbit (LEO) Receiving Antenna Programme
- Startups in the Space field

African Space Agency



Thank you

WEBSITE

www.mric.mu

www.spacemauritius.com

