

THE UNITED REPUBLIC OF TANZANIA



# Tanzania Space Sector

## Progress, Applications, and Challenges



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# Overview



- ❑ Tanzania Space sector is still in its infant stage, Tanzania does not own any Satellite , It is only the user of Satellite based services from other countries.
- ❑ Satellite based services is currently used for various purposes, including agriculture, natural resources management, blue economy, land management, Transportation (air and marine time), weather , and disaster management.
- ❑ This presentation will discuss the development progress and issues facing Space sector in Tanzania.

# Needs of Space/Satellite Technology in Tanzania



## Communication and Broadcasting

To establish efficient and reliable Services in remote areas, enabling access to digital services;

## Land Management

To create maps, identify areas of interest, and track land use changes over time.

## Enhanced Agriculture And Food Security

To track crop yields, identify areas of drought or flooding, and monitor pests and diseases.

## Improved disaster management:

To improve disaster preparedness, response, and recovery efforts, reducing the impact of natural disasters on communities and infrastructure.

## Satellite navigation and transportation:

To enhance efficiency in transportation networks.

## Natural resource management:

To track deforestation, identify areas of water scarcity, and monitor mineral deposits to ensure resources are used sustainably.

## Natural resources management:

leveraging satellite imagery, to identify potential resource-rich areas, attract investment, and develop its mining and energy sectors more efficiently, leading to economic growth and job creation.

## Tourism and conservation:

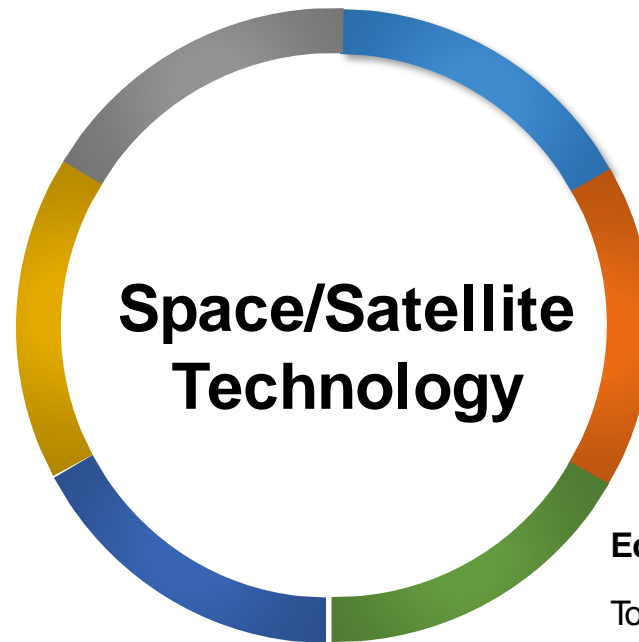
To support wildlife conservation efforts, help manage national parks, and attract eco-tourism, boosting Tanzania's tourism industry.

## Education and research:

To provide real-time data for scientific research projects, and promote collaboration with international institutions, leading to the development of a skilled workforce, and innovation.

## Security and Peacekeeping Mission:

To collect, analyze, and share data to provide intelligence on potential threats, to track and monitor activities, and to respond to emergencies..

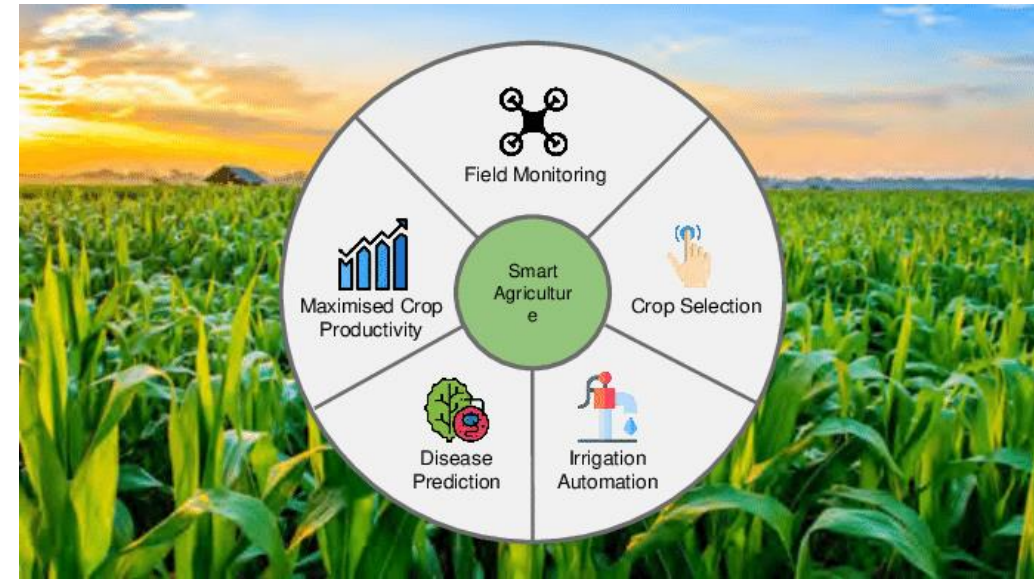


# Challenges in use of Space/Satellite technologies in Tanzania



## Challenges in Agricultural Remote Sensing

- Not Earth Observation Satellite for Tanzania
- Limited Skills for Satellite Remote Sensing
- Limited accessibility to remote sensing technology and Data Interpretation



# Natural resources management & Tourism



- To monitor the boundaries of protected areas and Map deforestation
- Monitor illegal activities like Poaching, and deforestation
- Assessment of ecosystem health and changes over time
- Track wildlife populations and biodiversity and assess the impact
- Mining and other activities on the environment and water Resources.



## Challenges in Natural Resources Management

- Limited remote observation due to the vastness of the areas.
- Data Interpretation and accessibility of data into policy and decision-making processes



# Blue economy



- Fisheries Monitoring
- Oceanography and Climate Research
- Maritime Surveillance and Security
- Offshore Resource Exploration
- Coastal Zone Management
- Shipping and Navigation
- Disaster Management



## Challenges

- Limited data availability and coverage in remote observation marine areas
- Technical challenges in oceanic data collection and analysis eg. Offshore Resource Exploration



# Land management



- Land Use Planning
- Environmental Monitoring
- Land Degradation Monitoring
- Urban Planning and Development
- Geographic Information Systems (GIS)

## Challenges

- Difficulties in Developing GIS Datasets for various Sectors
- Lack of robust Interoperability Database System



# Disaster management



- To monitor natural disasters, such as floods, droughts, pests in agriculture and earthquakes.
- To assess the impact of disasters, and to plan for future disasters.
- To monitor floods, assess the impact of droughts, and plan for future earthquakes.



## Challenges

- Lack of a Remote Control Center (RCC) that can monitor the whole country
- Lack of Incidence Management System and Rapid Response Solutions



# Surveillance to reduce Crime in Cities

- Crime Hotspot Monitoring
- Traffic Monitoring
- Urban Surveillance
- Emergency Response and Disaster Management
- Intelligence Gathering and Investigation Support
- Remote Monitoring of Critical Infrastructure

## Challenges

- Lack of a Remote Control Center (RCC) that can monitor the whole country
- Lack of Incidence Management System and Rapid Response Solutions



# Current Space/Satellite Initiatives

- Establishment of Tanzania Space Agency
  - Steering committee appointed
  - Technical Team appointed
  - Three working groups appointed
- Establishment of Key training Programs
    - Higher learning Institution selected to develop various space related training courses/programs
    - Dar es Salaam Institute of Technology to establish technician/operator training programs, CubeSat training, Satellite remote sensing data center and certification courses

# Country Needs: Earth Observation and Communication Satellite



- ❑ Remote sensing will make significant progress in Tanzania
- ❑ Remote sensing is targeted to be used to make decisions about agriculture, natural resources management, the blue economy, land management, and disaster management just to mention a few.
- ❑ Communication Satellite will provide communication to rural areas
- ❑ Communication is targeted to be used to establish e-health and e-education for rural areas
- ❑ Health specialist will provide services to people in rural areas who can not afford to travel to urban for treatment.

# Issues Facing Remote Sensing



Lack of Satellite Ground Infrastructure



Lack of access to remote sensing data and imagery



Lack of coordination between different government agencies



Lack of Satellite Mission Control Center



Lack of technical expertise and training



High cost in launching a satellite, maintaining its health in orbit acquiring and processing satellite data



Insufficient awareness and collaboration among stakeholders



Thanks

# Conclusion



Remote sensing has the potential to make a significant contribution to the development of Tanzania. However, there are a number of issues that need to be addressed in order to realize this potential as mention some of them

This collaboration not only signifies the beginning of a new chapter but also paves the way for a multitude of opportunities for both parties to mutually prosper and thrive through this partnership.