



Formalising South Africa's National Space Programme

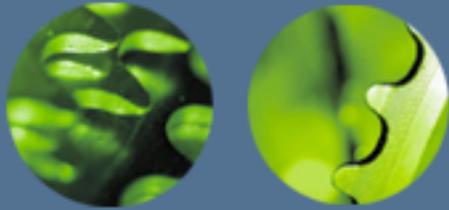
Dr V Munsami

**Chief Director: Space
Science and Technology**



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



Presentation Outline



National Space Programme

- Strategic Context
- Key Focus Areas
- Delivering on the Priorities



SumbandilaSat

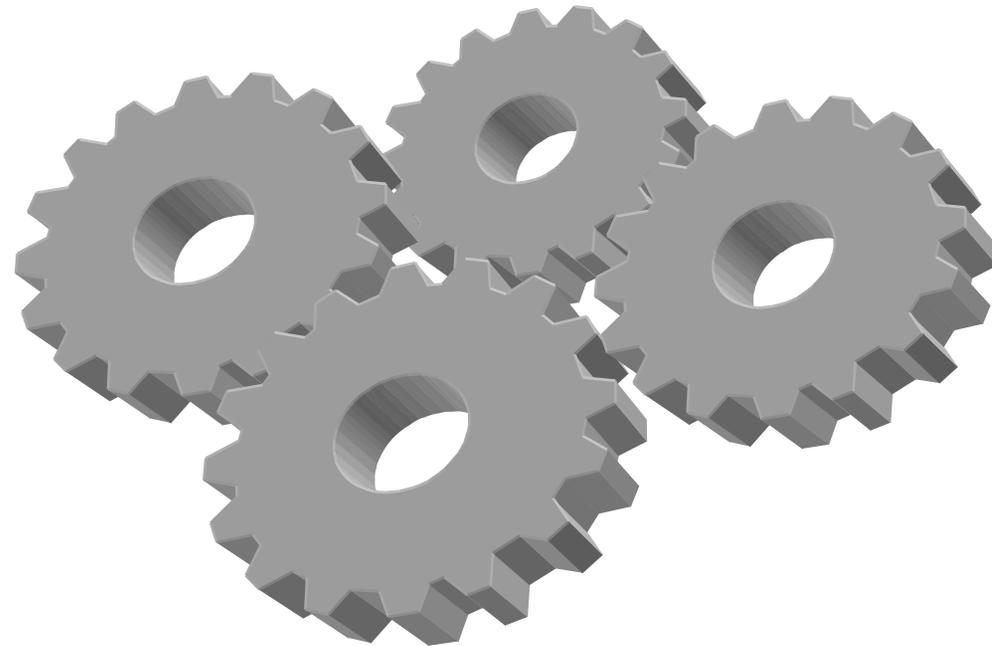
- Update



National Instruments

South African Earth Observation Strategy

**National
Space
Policy**



**National
Space
Strategy**

**South African National
Space Agency Act**



Strategic Context





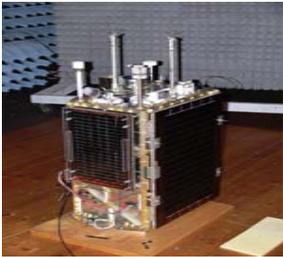
Vision



For South Africa to be among the leading nations in the **innovative utilisation** of space science and technology that **enhances economic growth** and **sustainable development** in order to **improve the quality of life** for all



Goals



To capture a global market share for small to medium-sized space systems



To empower better decision making through the integration of space-based systems with ground-based systems

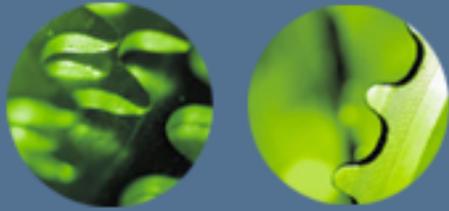


To use space science and technology to develop applications



Key Focus Areas





Key Focus Areas



**Environmental
Resource
Management**



**Health, Safety
and Security**



**Innovation and
Economic Growth**



Key Priority Areas

DPSA Social Development Local Government Correctional Service

Defense

SARS

Police

Health

DEAT

Agriculture



DWAF Foreign Affairs Communications Transport

Public Enterprise Home Affairs Safety and Security DTI

Treasury

Education

Labour

NIA

DME

Justice

Public Works

Sports

Presidency



Environment & Resource Management



- Environmental and geospatial monitoring
- Ocean, coastal and marine management
- Land management
- Rural development and urban planning
- Topographic mapping
- Hydrological monitoring
- Climate change mitigation and adaptation
- Meteorological monitoring



Health, Safety and Security



- Disaster monitoring and relief
- Hazards forecasting and early warning
- Cross border risk



- Disease surveillance and health risk
- Asset monitoring



- Regulatory enforcement
- Defense, peacekeeping and treaty monitoring



Innovation & Economic Growth



- Tourism and recreation
- Communications
- Space science and exploration
- Space technology transfer and spin-offs
- Development of the space industry

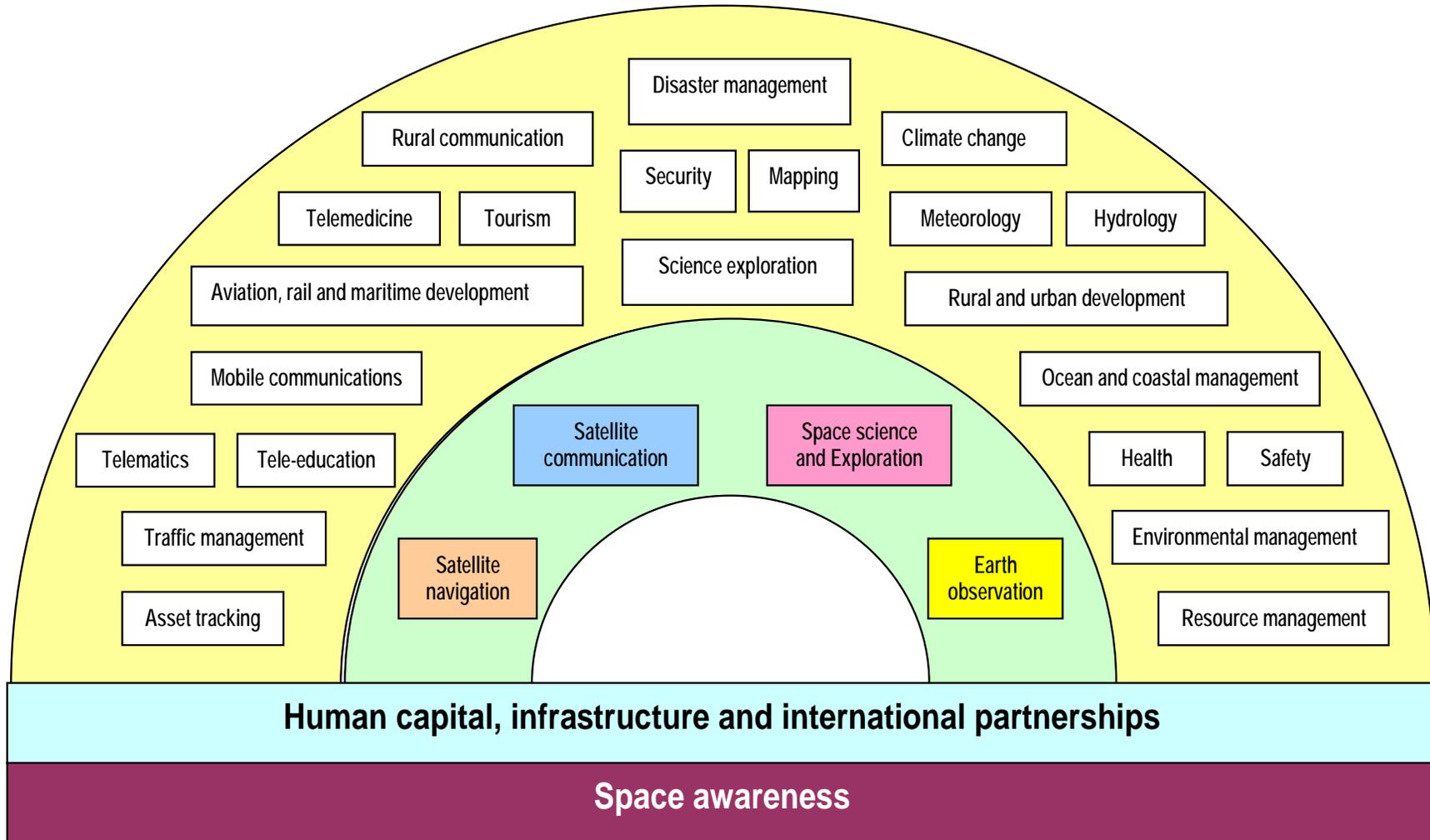


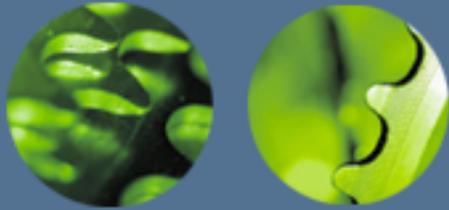
Delivering on the Priorities





Elements Needed

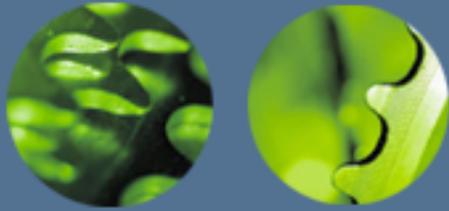




Earth Observation

Earth observation programmes

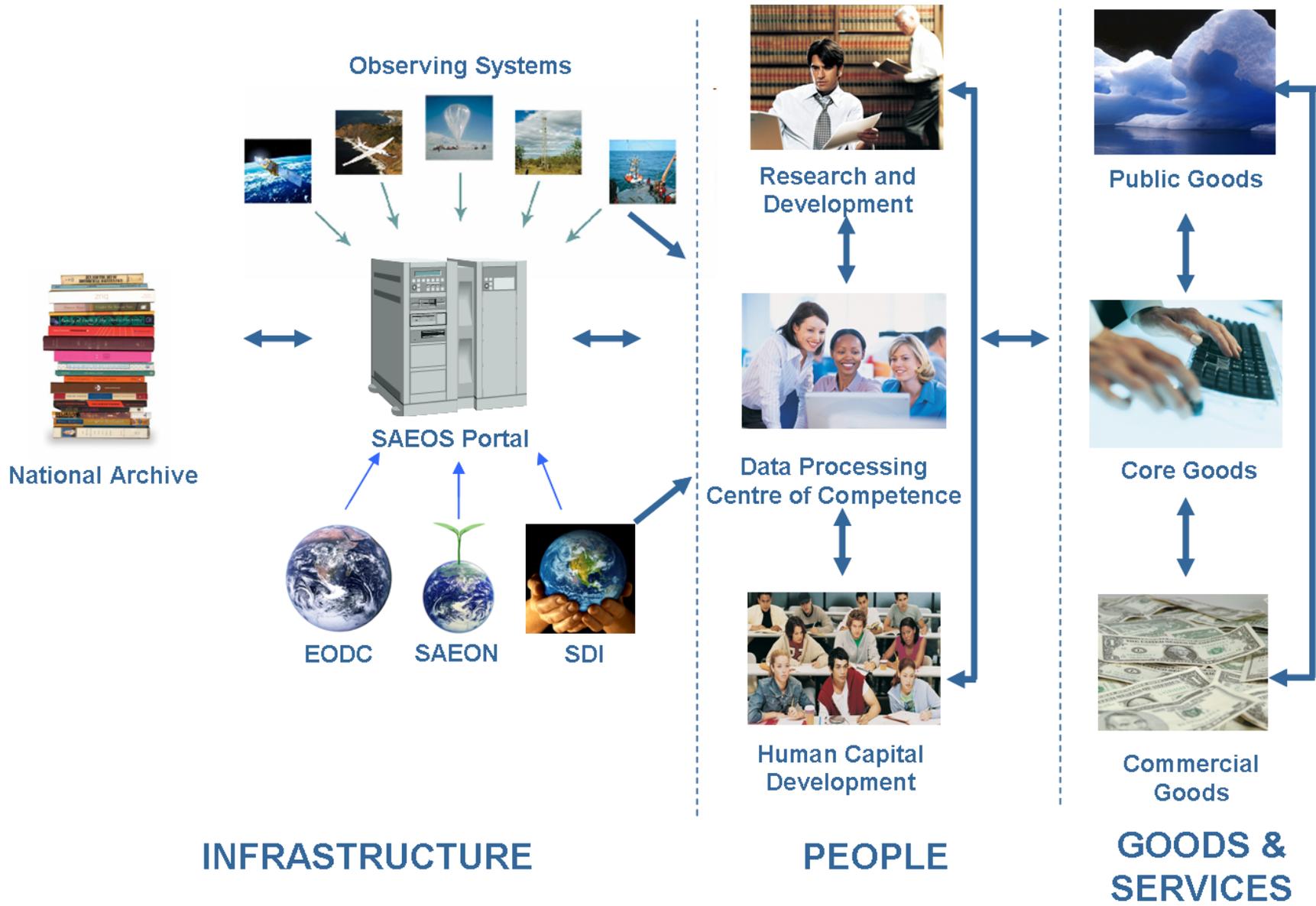
- Establish an earth observation data centre
- Develop a platform to integrate satellite and in-situ data
- Develop medium to high resolution payloads
- Establish centres of competence for optronics and synthetic aperture radar
- Develop the African Resource and Environmental Management Constellation in partnership with other African countries
- Consolidate the acquisition of space data for government



User Requirements

Key Priority Areas	Specific Needs	Earth Observation										Navigation & Positioning	Communication	Space Exploration
		Spatial Resolution Required								Temporal Frequency	Geographic Area			
		< 50cm	50cm - 1m	1m - 2.5m	2.5m - 5m	5m - 10m	10m - 20m	20m - 30m	>30m					
Environmental Resource Management	Environmental and geospatial monitoring				•	•	•	•	•	Annual	National			
	Ocean, coastal and marine management		•	•	•	•	•	•	•	Annual	SADC			
	Land management				•				•	Seasonal	National			
	Rural development and urban planning		•	•	•					Annual	National	•		
	Topographic mapping						•	•		Annual	National			
	Hydrological monitoring					•	•			Twice per annum	National			
	Climate change mitigation and adaptation					•	•			Daily	SADC			
	Meteorological monitoring		•	•	•	•	•	•	•	Daily	SADC			
Health, Safety & Security	Disaster monitoring and relief	•	•	•	•	•	•	•	•	Daily when required	SADC	•		
	Hazard forecasting and early warning					•	•	•	•	Twice per annum	SADC			
	Cross-border risks	•	•	•		•			•	2-4 times per annum	SADC	•	•	
	Disease surveillance and health risk					•	•			Twice per annum	National			
	Asset monitoring									Continuous	SADC	•	•	
	Regulatory enforcement	•	•	•		•			•	2-4 times per annum	National	•	•	
	Defence, peacekeeping and treaty monitoring	•	•	•		•			•	High turn around time	Africa	•	•	
Innovation & Economic Growth	Tourism and recreation				•	•	•	•	•	Annual	National	•	•	
	Communication									Continuous	SADC		•	
	Space science and exploration										National	•	•	•
	Space technology transfer and spin-offs				•	•	•				National	•	•	•
	Development of the space industry				•	•	•				National	•	•	•

SPACE APPLICATIONS VALUE CHAIN





SOUTH AFRICAN EARTH OBSERVATION STRATEGY



You are here: Home

Stakeholders

- SAC
- SADCO
- SAEON
- SANBI

SAEOS (The South African Earth Observation Strategy) directly supports the access to and visualization of data dealing with the societal benefit areas identified by GEO.

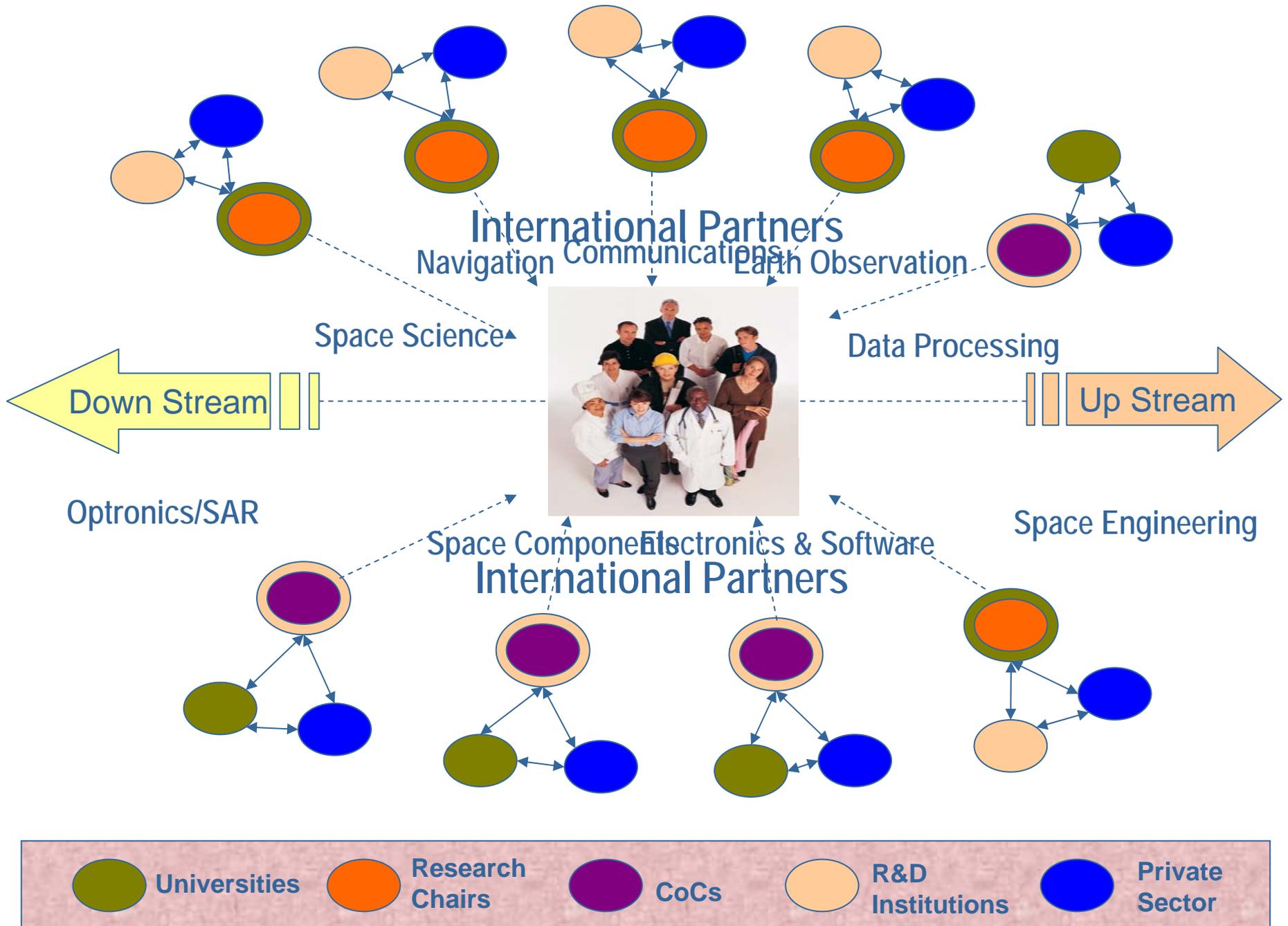
Funded by the Department of Science and Technology (DST), a platform is being created to serve as a centralised 'catalogue of catalogues', providing access to a vast array of scientific data and knowledge in and about South Africa.

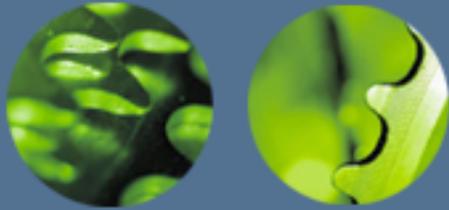
Search

- Spatial Search
- Benefit Areas

Manage portlets

Navigation



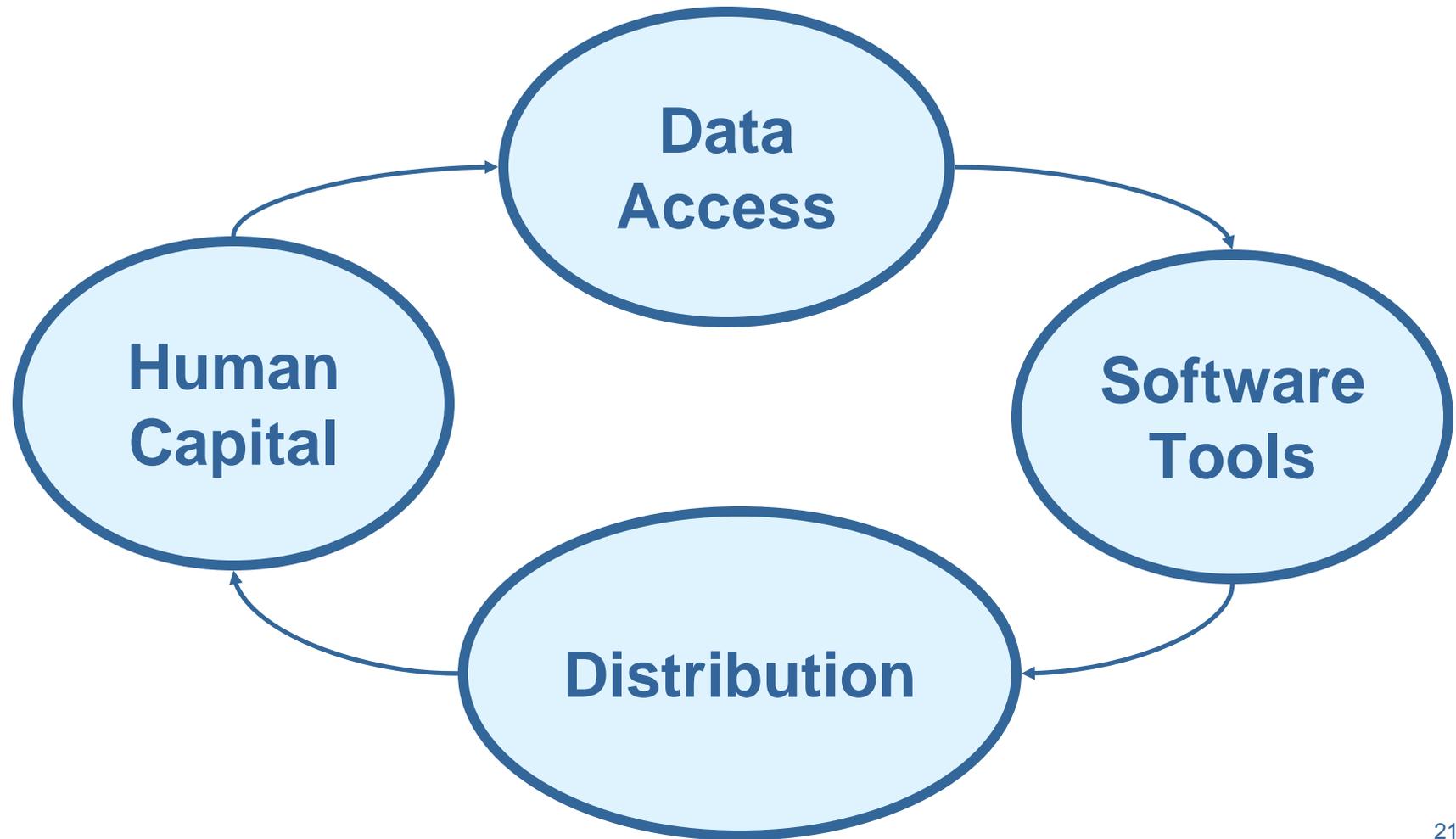


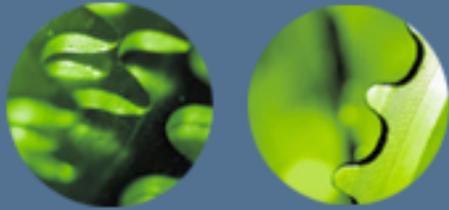
GEO Participation

- Co-Chair of GEO (China, EC, USA)
- Committee Co-Chairs
 - Science and technology
 - Capacity Building
 - Co-Chair Coordination Committee (C4)
- Leads
 - Sensor Web
 - GEOBON

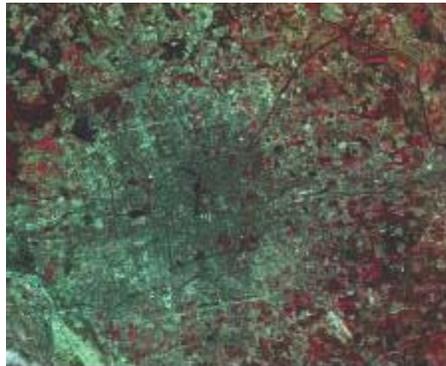


CEOS Participation





CEOS Participation



CBERS-2B

- SADC reception testing complete
- Ingest software completion by Oct 08
- SADC reception and free dissemination by Nov08



SAC-C

- Reception testing at SAC successful
- Discussions on free dissemination to SADC underway



Landsat

August 2008: U.S. Secretary of the Interior, Dirk Kempthorne, announced that the 35 years of archived Landsat data will be made available over the web free to the public by the end of the year.



GLOBCOVER



Radarsat Africa Mosaic

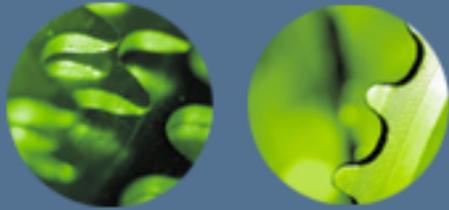
CSA committed access to Radarsat Africa mosaic





Update on SumbandilaSat





Specifications

Applications	Earth Observation
Orbit	Sun-synchronous
Altitude	500 km
Inclination	97.4 deg
Launch Mass	82 kg
Design Lifetime	3 years
Imager	6 spectral bands
Ground Sampling Distance	6.5 m
Swath	45 km
Stabilization	3-axis
Solar Panel Power	65 W
Peak Power per Experiment	10 W



Payloads

- Very Low Frequency Experiment
- Radiation Experiment
- Fixed String Vibration Experiment
- Software Defined Radio
- Amateur Radio
- Store and Forward



Launch Integration



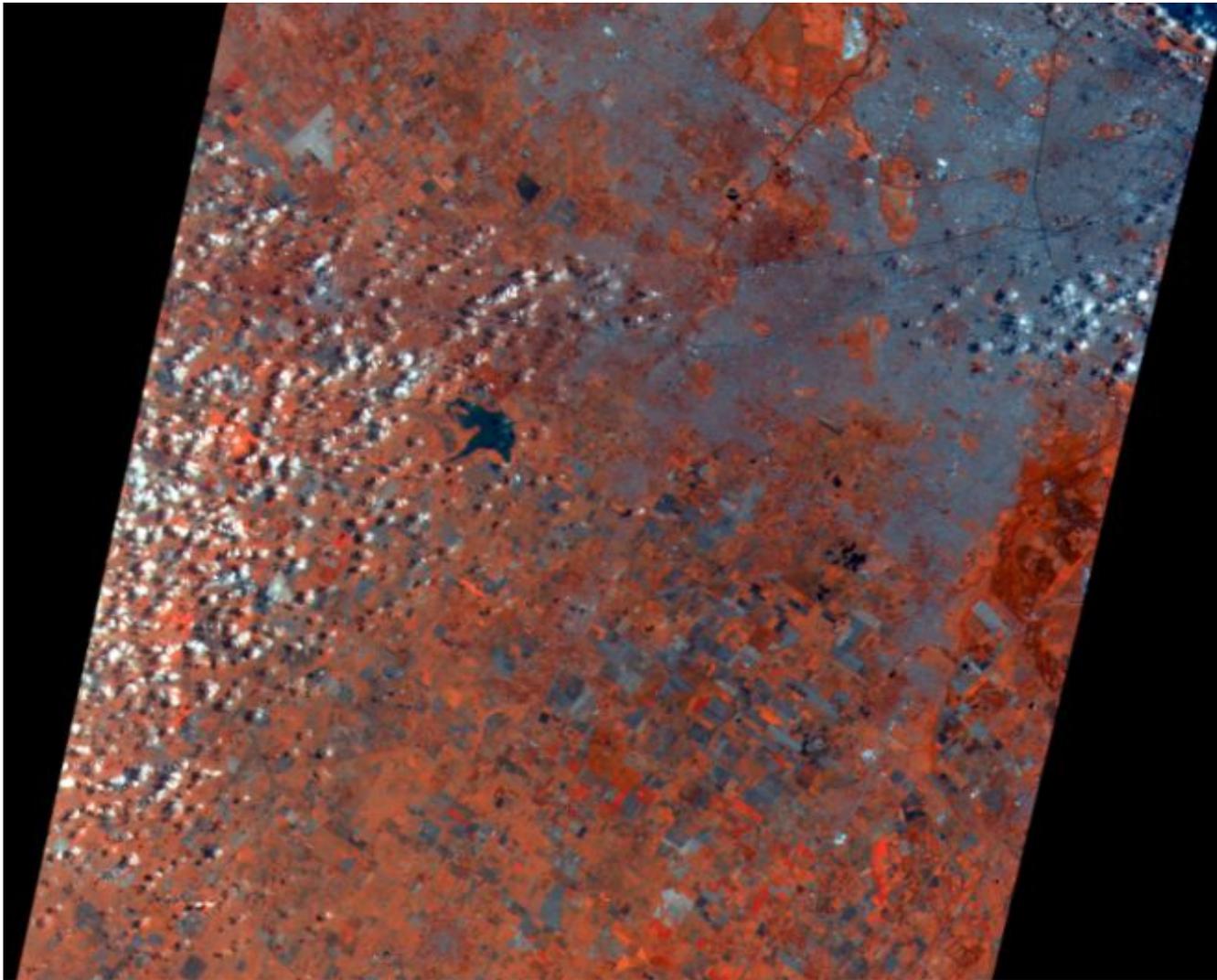


Mission Statistics

- ✓ Number of orbits: >2300
- ✓ Weeks in space: 22
- ✓ Distance travelled: 0.66 AU
- ✓ Activities uploaded: >1600
- ✓ Images taken: 120



Sample Images



Buenos Aires (Argentina)
Full scene (60km x 52km)
False colour (NIR, Red)

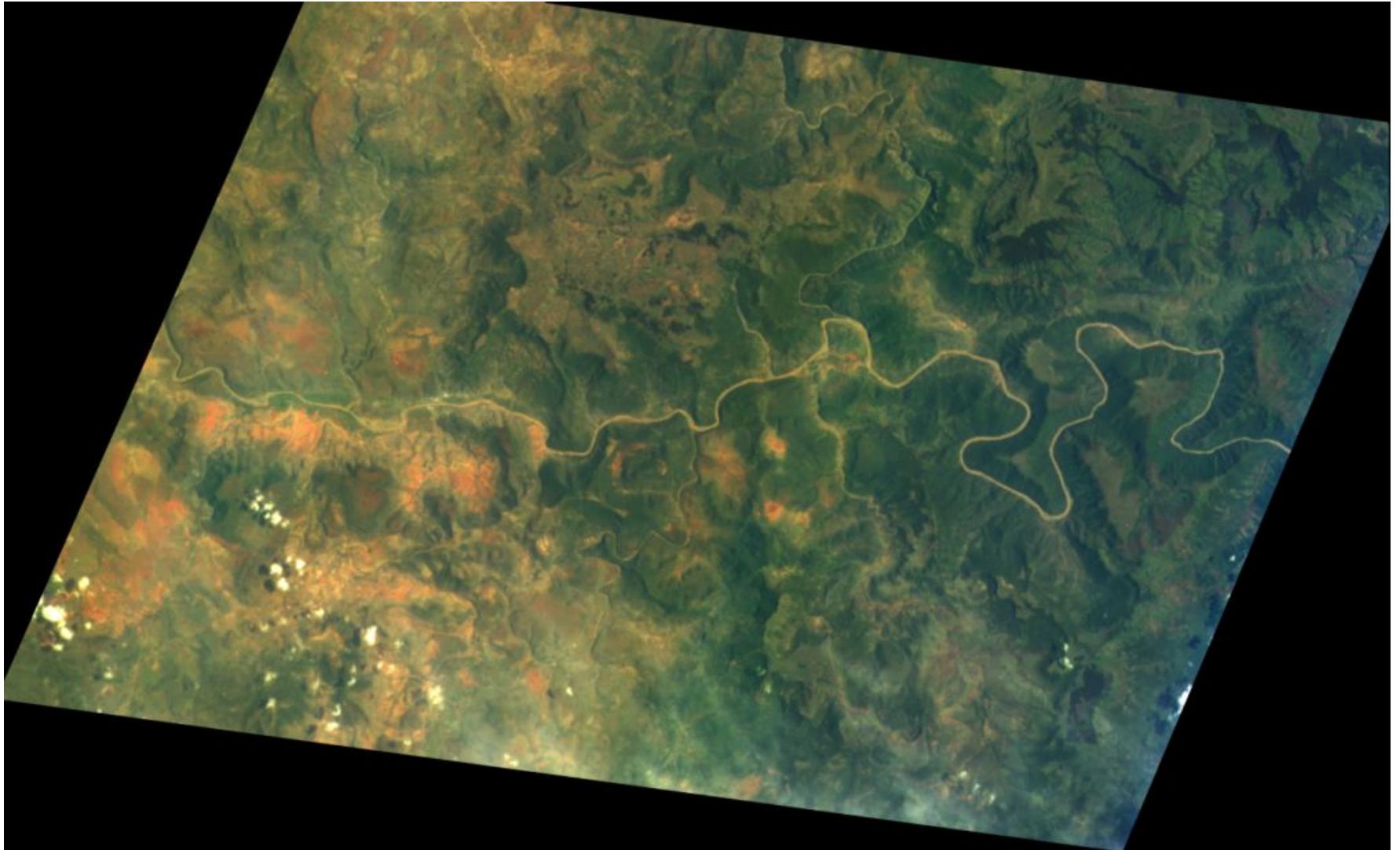


Sample Images





Sample Images





THANK YOU