

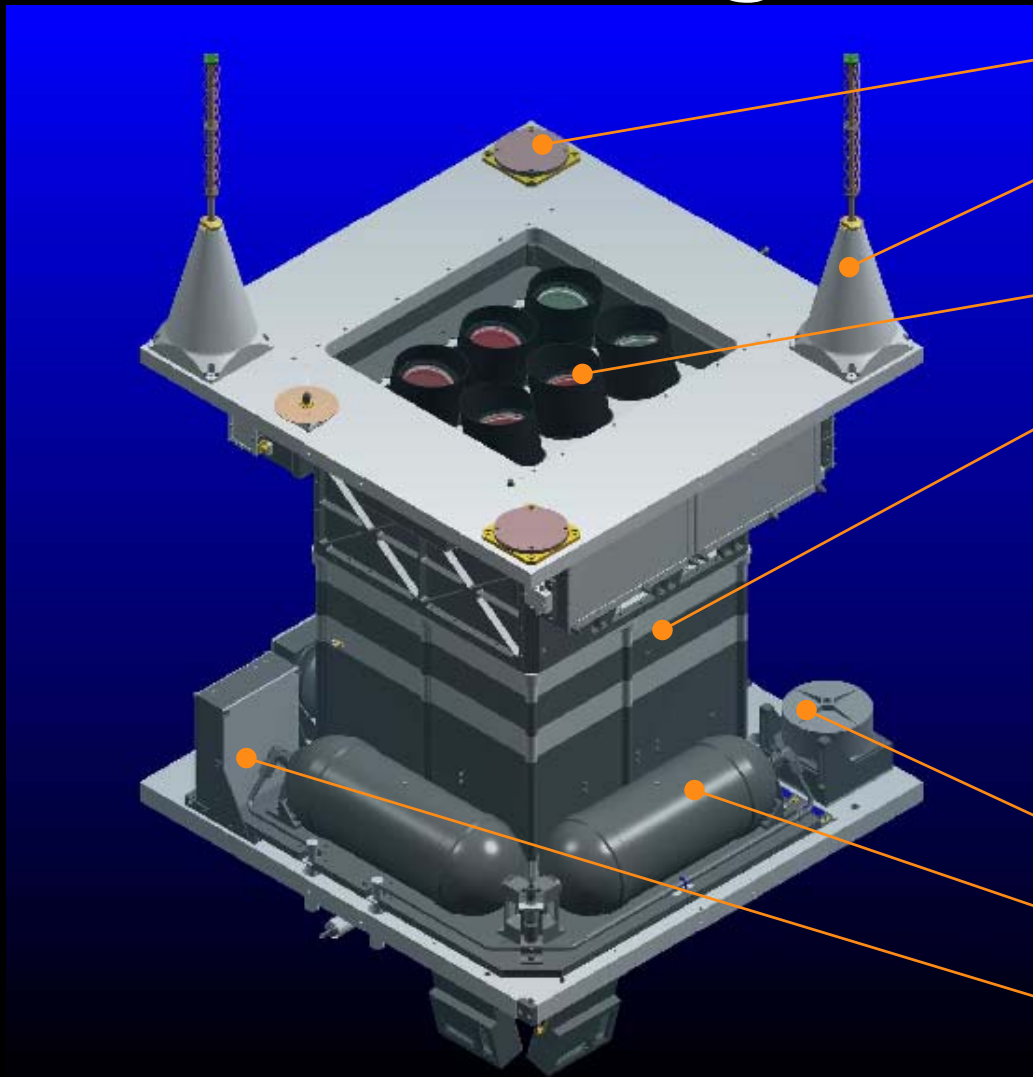
Introduction



- NigeriaSat-1 is an Earth-Observation microsatellite
- Orbit
 - Circular, 686km altitude, sun-synchronous orbit
 - 600km swath width, 3-band multispectral, pushbroom scanning
- ~100kg spacecraft, designed for 5 year minimum life
- Imaging payload
 - ~32m GSD (ground sampling distance / resolution)
 - 0.52-0.62(Green), 0.63-0.69(Red), 0.76-0.86(NIR)
- On-board data storage
 - 2 x 0.5Gbyte SSDR to support imaging
- Store and Forward communications
- 3.7 m parabolic dish ground station, in N



NigeriaSat-1 Configuration

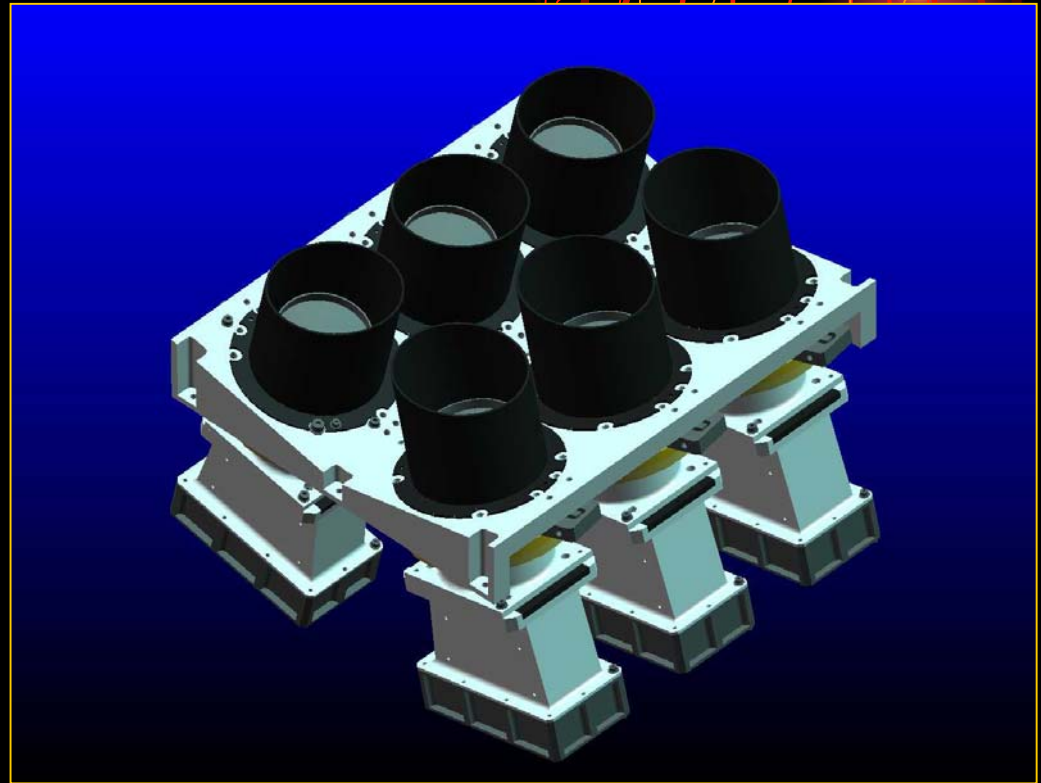
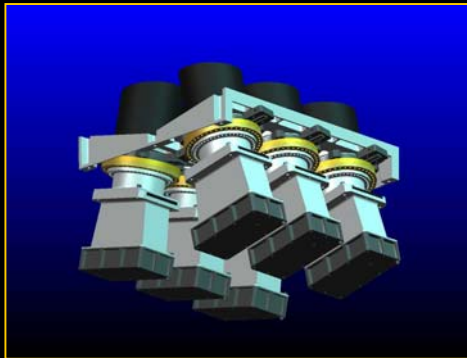


- Patch antennas
- QFH antennas
- Camera banks
- Module stack
 - SDR
 - OBC386
 - GPS/SA1100
 - OBC186
 - ADCS
 - Power
- Yaw wheel
- Propulsion tank
- Propulsion controller

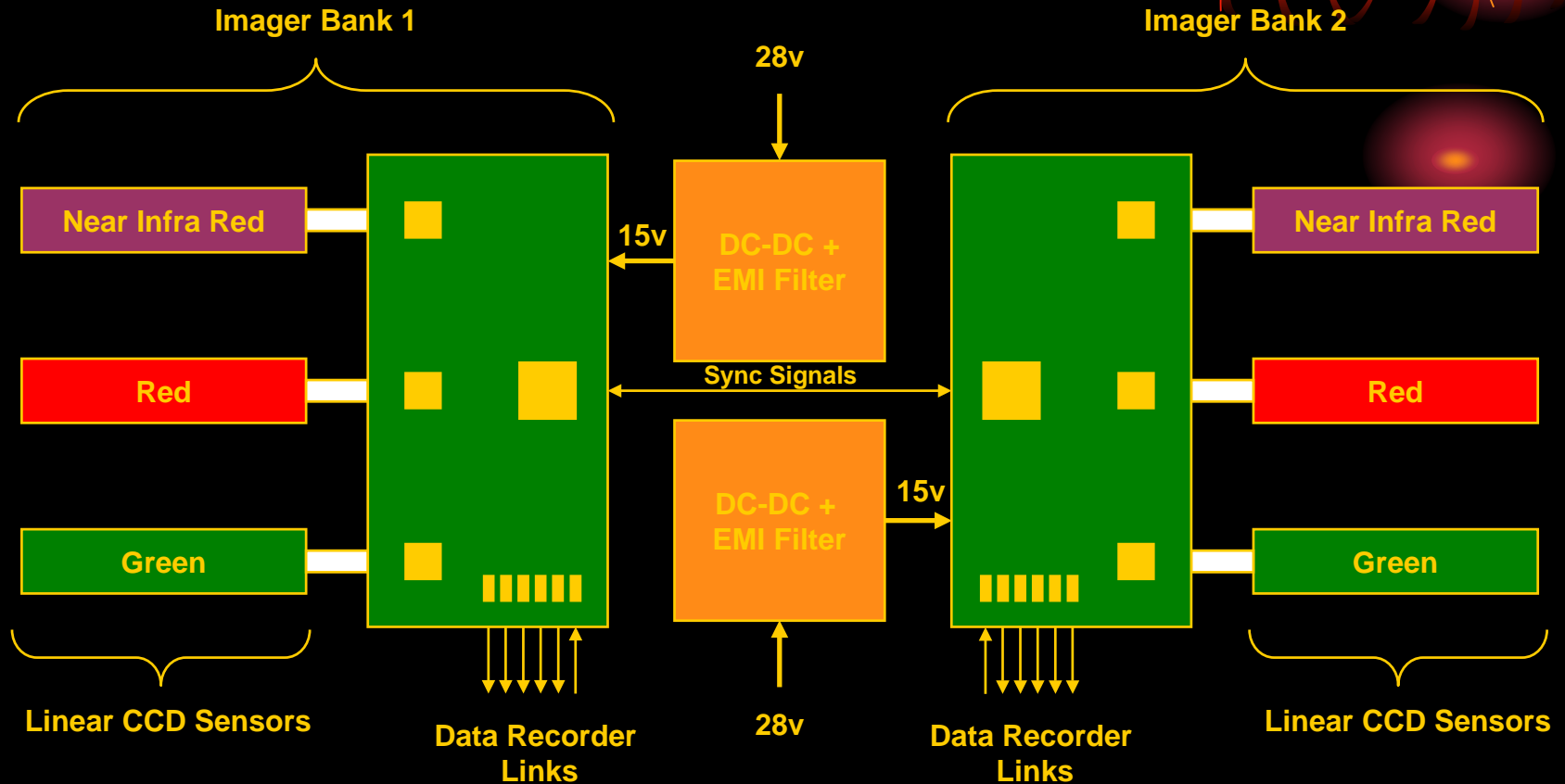


NigeriaSat-1 Imager

- ❖ 1 imager, split into 2 banks
- ❖ Each bank has 3 channels
- ❖ 3 channels(bands) of red, green and nearIR



Imager Configuration





Imager capability(1)

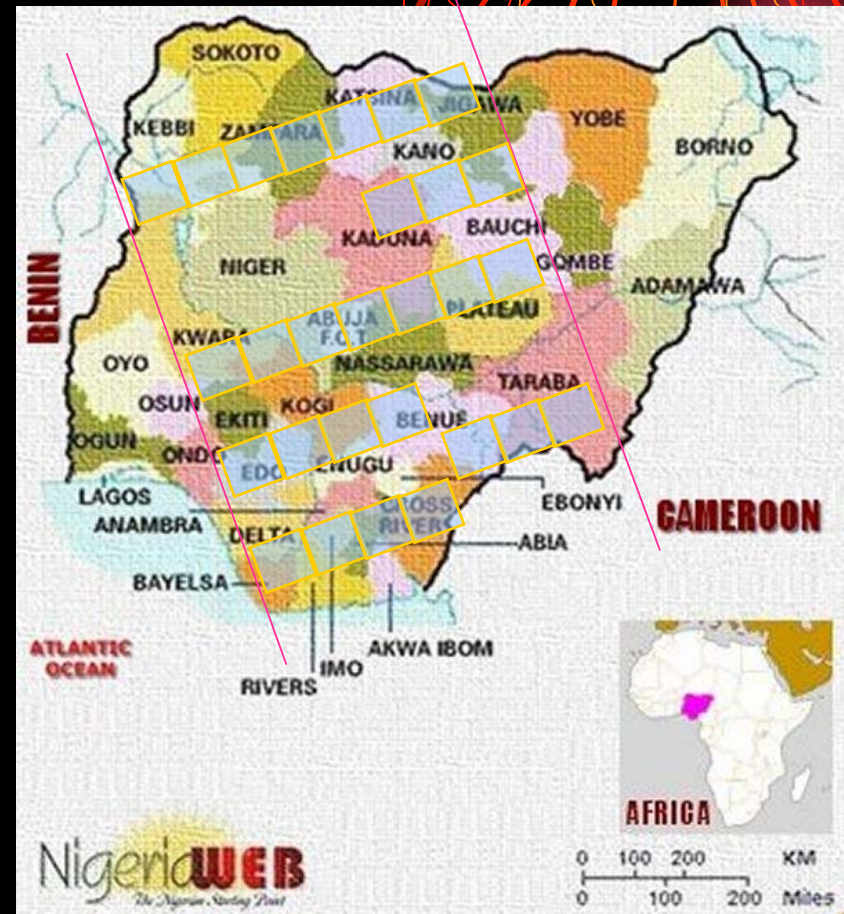
Satellite (Instrument)	Landsat 4+ (TM)	Spot (HRV)	UoSAT-12 (MSC)	NigeriaSat-1 (DMC Imager)	DMC – 5 s/c (DMC Imager)
Swath	185km	60km	55km	600km	600 km
Typical Revisit	16 days	26 days	7days	3 - 5 days	1 day
GSD	30m	20m	32m	32m	32 m
Pixels	6000	3000	1680	19000	19000

Imager capability(2)



Nigeria Statistics

- Covers an area of 923,768 square kilometres
- Approx. dimensions for Nigeria
 - 1053 km x 877 - 1200 km
- Latitude between 4 -14 ° North of the equator
- Longitude between 3 -15 East
- For convenience an image tile of size 80 km x 80 km is defined
- Maximum image for storage is 600km x 300km
- Can define size of image to be taken – “windowing” - allows effective use of data storage



Operations strategy



- Earth observation imaging to be done over any specified area of the globe.
- Global daily revisit achieved by DMC
- The imaging data acquired is stored in on-board memory(SSDR) and then later downloaded when the spacecraft tracks the groundstation, using high speed communications.
- Automated operations Ground control

TARGET APPLICATIONS.

- Agriculture:- Crop yield assessment, yield production determination of remedial actions to be taken to forestall failure.
 - Land Resources:- Oil and Solid Mineral exploration, exploitation management, detection of faults lineaments and other geological features.
 - Water Resource:- Quantity, quality of both surface and underground water, rain protection
- etc
- Ecosystem:
 - (i) Evaluation and monitoring of vegetation and land use.
 - (ii) Evaluation and monitoring of aquatic ecosystem.

Disaster Monitoring and Management

ALL THESE APPLICATIONS REQUIRES TIMING AND POSITION INFORMATION TO VARYING DEGRESS OF ACCURACY



Overview of The Nigeria Communication Satellite



- Objective
 - Provide a ICT Infrastructure to meet the Telephony, Broadcasting and Broadband needs of the Continent.

Baseline Configuration.

- Payload: 14 Ku, 6 Ka and 2 L-bands Transponders
- EOL: 15 years
- Target launch: 2006
- Coverage: Africa,
Mediterranean
Europe and
middle east



SBAS-Initiative



- A product of Awareness on GNSS from regional workshops.
- Designed to provide seamless navigation of Africa.
- Open for strategic partnership with Services providers (particularly the Galileo and GPS).
- Enhance of Signal integrity, continuity, availability and reliability.
- Enhance GNSS applications in Mapping, GIS and positioning and timing based applications.



THANK YOU

