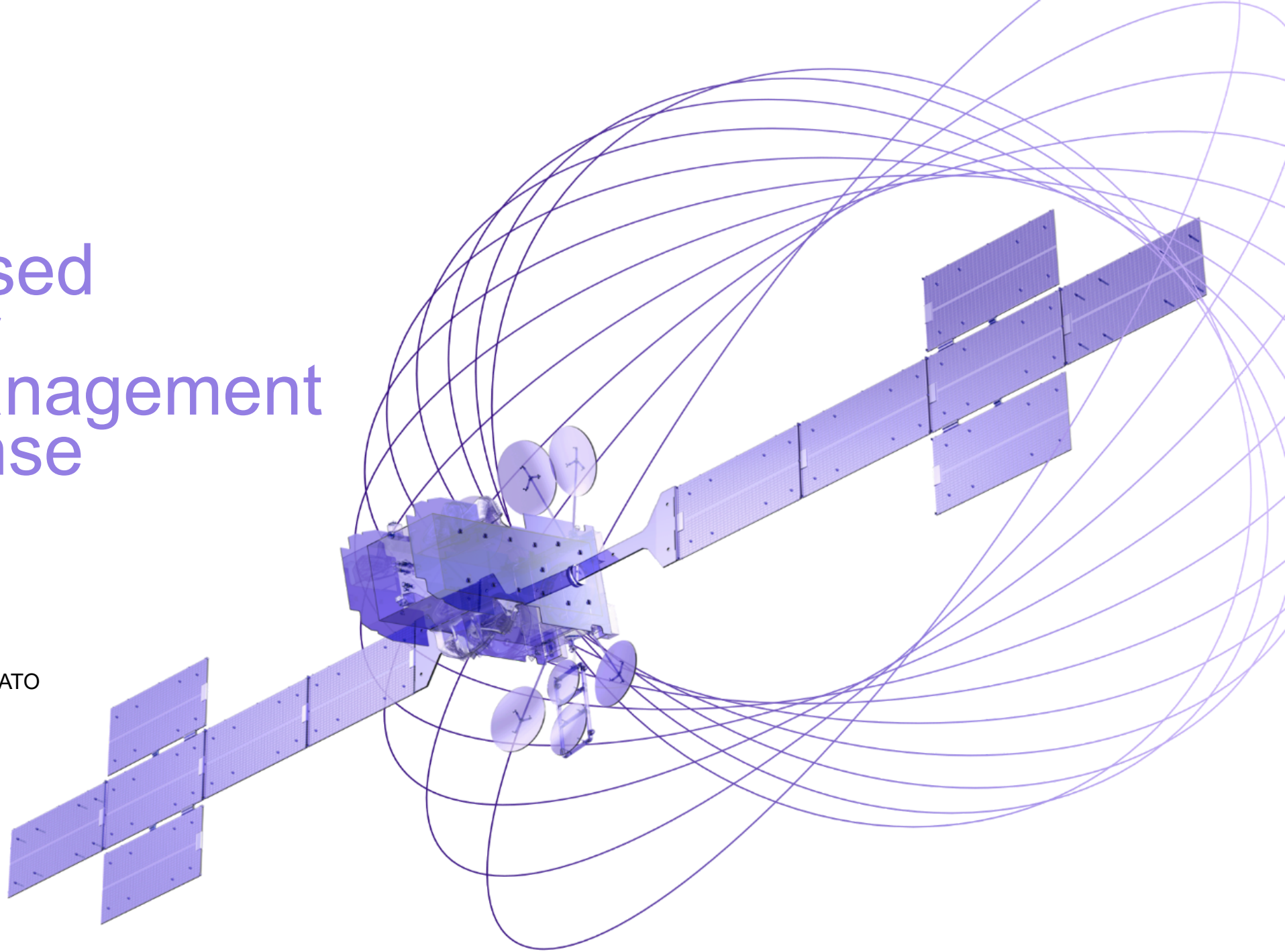
Satellite-based Services for Disaster Management and Response



Presented by
Fabio ROMANO
Senior Manager, EU Institutions and NATO
SES Space and Defense

31 October 2025


SES Headquarters
Betzdorf, Luxemburg

Our fleet today

Multi-orbit, multi-band satellite network of GEO, MEO, with strategic access to LEO satellites

99%
coverage of the world's populated region

~150
teleports

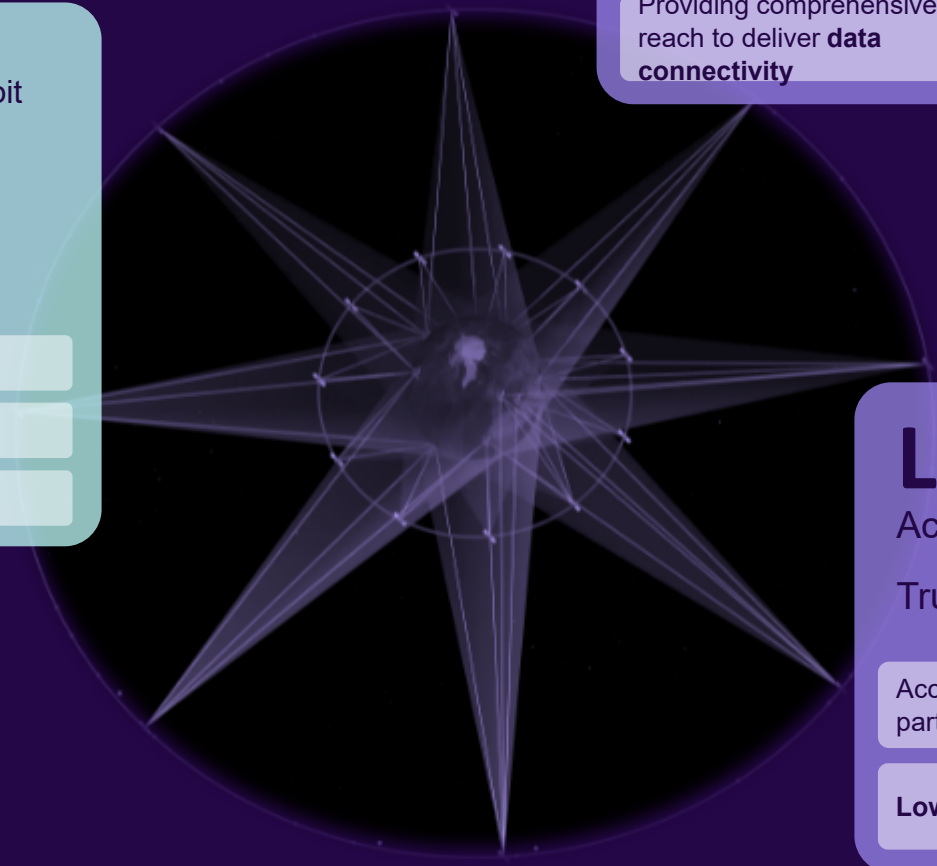
~50
Points of Presence (PoPs)

MEO Medium Earth Orbit

Fiber-equivalent data connectivity

~30 MEO HTS (O3b & O3b mPOWER)

- **High** throughput
- **Low** latency
- **Unique** flexibility



GEO Geostationary Earth Orbit

Unparalleled reach

~90 GEO

- Reaching **millions** of TV households **worldwide**
- Providing comprehensive reach to deliver **data connectivity**

LEO Low Earth Orbit

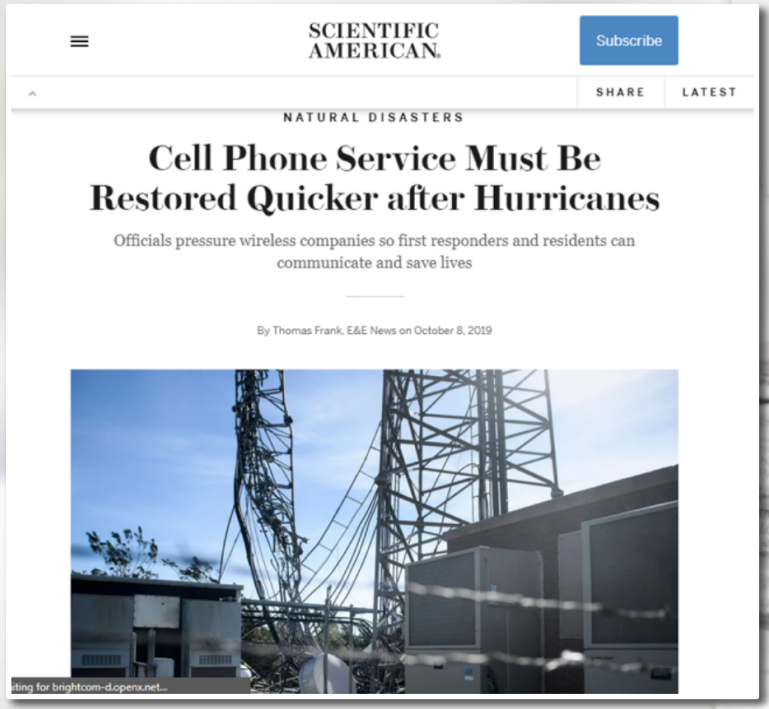
Access to LEO

True multi-orbit SATCOM

- Access to LEO capacity through partnership agreements
- **Low** latency

DISASTER RECOVERY news

WE LIVE ONLINE. HURRICANES AND BLACKOUTS MEAN ENORMOUS ISOLATION



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NATURAL DISASTERS

Cell Phone Service Must Be Restored Quicker after Hurricanes

Officials pressure wireless companies so first responders and residents can communicate and save lives

By Thomas Frank, E&E News on October 8, 2019

WIRELESS PROVIDERS ARE MOUNTING AN INVASION OF SUPPORT CREWS AND HIGH-TECH MACHINERY TO REPAIR AND RESTORE CONNECTIVITY IN THE STORM'S WAKE

CELL NETWORKS SUFFER OUTAGES IN HARVEY'S WAKE

DISASTER RECOVERY

Scalable and immediate connectivity solutions when and where needed

Global coverage with over 120+ satellites in both GEO and MEO orbits

Choice of C-Band, Ku-Band, and Ka-Band across the fleet

Ensure rapid and coordinated response with customers and partners

Different terminal choices for quick deployment and requirements

Ability to scale connectivity for long-term recovery

Disaster Recovery

Use Case

GOALS

- Minimize service downtime during outages
- Prepare Solutions & ConOps in advance of events

CHALLENGES

- Unpredictable location and number of events (natural & human made)
- Rapid self-relying deployment with unreliable infrastructure
- High bandwidth for all user types during surge times

SOLUTION

- Capacity deployable over wide regions
- Ready, all in one equipment
- Fibre-like restoration of speeds and performance

VALUE PROPOSITION

- Ability to deploy CIR up to 1.5Gbps with fibre-like performance
- Dedicated capacity Scenarios & Operations

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EMERGENCY.LU

Swiftly delivering on-demand crisis connectivity

>10 years of deployment

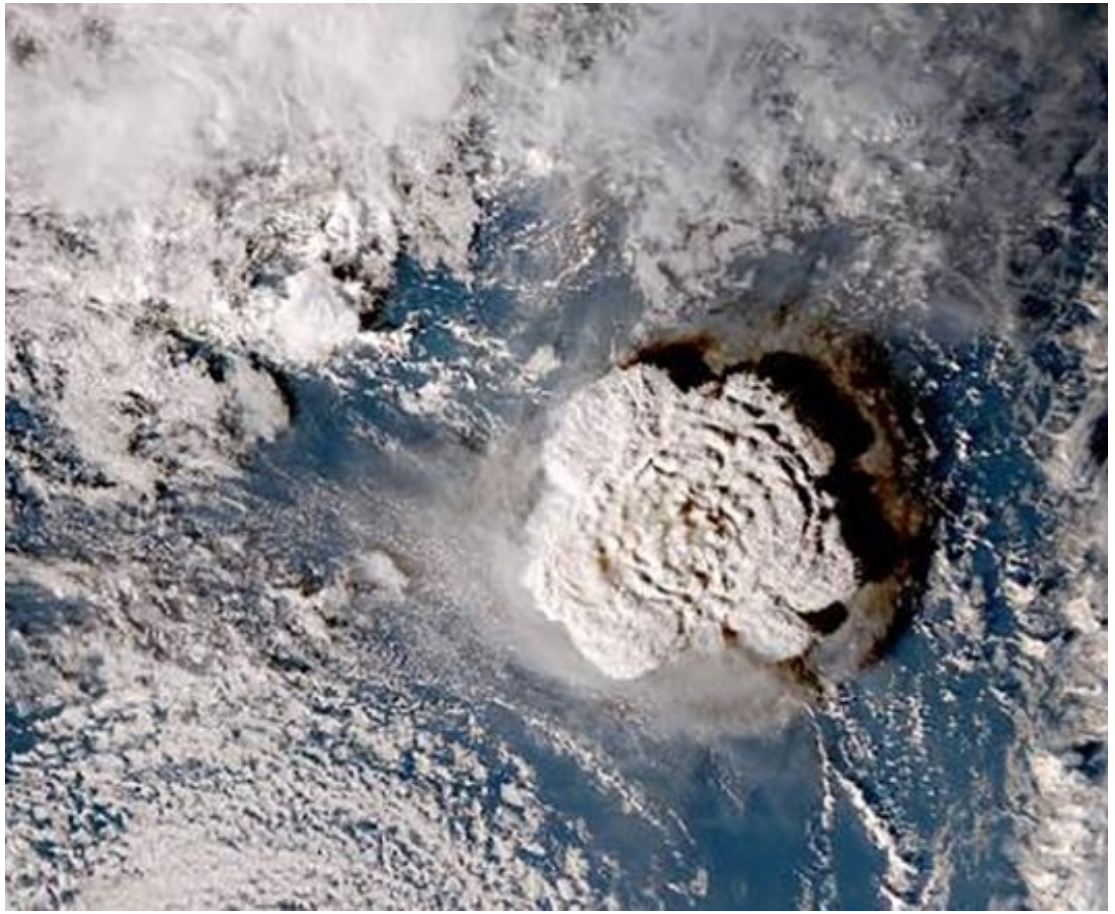
Restoring communication in disaster-stricken areas within 24 to 72 hours

Global coverage

Public-Private Partnership between Luxembourg Government and other companies

The Tonga Volcano Eruption

- On 15th January 2022, Tonga's underwater Hunga-Tonga-Hunga-Ha'apai volcano erupted.
- This eruption was "**likely the biggest recorded anywhere on the planet in more than 30 years**".
- The eruption caused subsequent tsunami and caused significant damage to Tonga.
- The disaster caused a break in the main undersea cable connecting the island nation to the rest of the world.
- Communication to the country was entirely cut off. Satellite phones are available but only supporting voice calls and SMS



Satellite images from JMA show the volcano eruption in Tonga on January 15.

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THE SOLUTION

Digicel Fiji 9M Antenna

Immediately following the eruption and tsunami:

- **Extensive capacity** on NSS-9 was used for the immediate disaster recovery response
- Capacity Supported:
  - Link 1: 100+ Mbps (Transmit from a 9.3m and Receive via 3.7m Antenna in Tonga and 9m Antenna in Fiji)
  - Link 2: 100+ Mbps (Transmit and Receive from a 4.5m Antenna in Tonga and 9m Antenna in Fiji)

Hurricane Relief

Restoration of communications and providing business continuity following a hurricane Maria in Puerto Rico.

Situation	▲ Hurricane Maria in September 2017 caused widespread destruction of cell towers, roads, and basic infrastructure in Puerto Rico ▲ Majority of fibre cables going into Puerto Rico were lost; major companies and government buildings lost communications
Solution	▲ SES's O3b MEO recovery solution and Google's Project Loon was brought in to restore connectivity in the community, support rescue workers & personnel. ▲ SES deployed a secondary communications link to fully restore the communications of a global supply chain company approximately 3 months
Result	▲ Rapid deployment of O3b MEO assets provided mobile backhaul, effectively connecting the balloons from Project Loon to the Internet delivering reliable, high-performance connectivity. ▲ Communications continuity partnership for a disaster preparedness solution

O3b MEO Terminals and Google's Project Loon

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Papua New Guinea Cable Cut

SES and PNG DataCo restore connectivity to earthquake-stricken Papua New Guinea

Situation

- In May 2019, a 7.2-magnitude earthquake struck near the town of Bulolo, Papua New Guinea
- DataCo customers' connectivity was disrupted due to damage to critical nodes of terrestrial and subsea transmission infrastructures between Port Moresby and Madang

Solution

- O3b MEO beam delivered additional 1.5 Gbps capacity
- Low-latency IP Transit service was provided within hours to ease network congestion on DataCo's damaged primary link.

Result

- Mobile networks and broadband internet access for corporate and consumer customers operated by PNG DataCo have been restored, providing business continuity to those affected by the cable cut.

"The fact that connectivity services were restored in the shortest possible time at critical areas where our primary linkages were down has helped the local communities, businesses and organisations greatly."
– Paul Komboi, Managing Director of PNG DataCo

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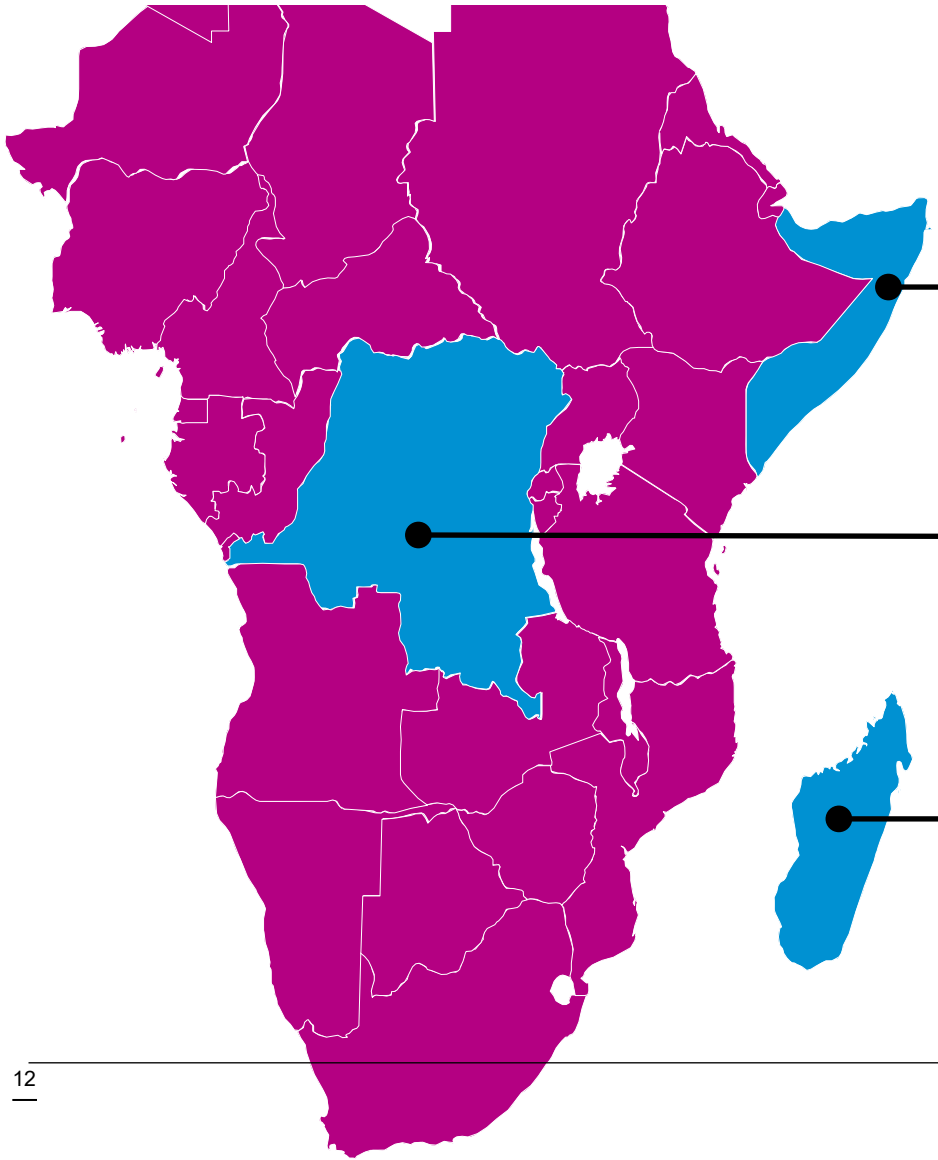
SES Ensuring Uptime for critical outages



Somalia
Fiber Outage of **21 days**

Rep. of Congo
Fiber Outage of **15 days**

Madagascar
Fiber Outage of **14 days**

12

Mercy Ships

Changing Lives

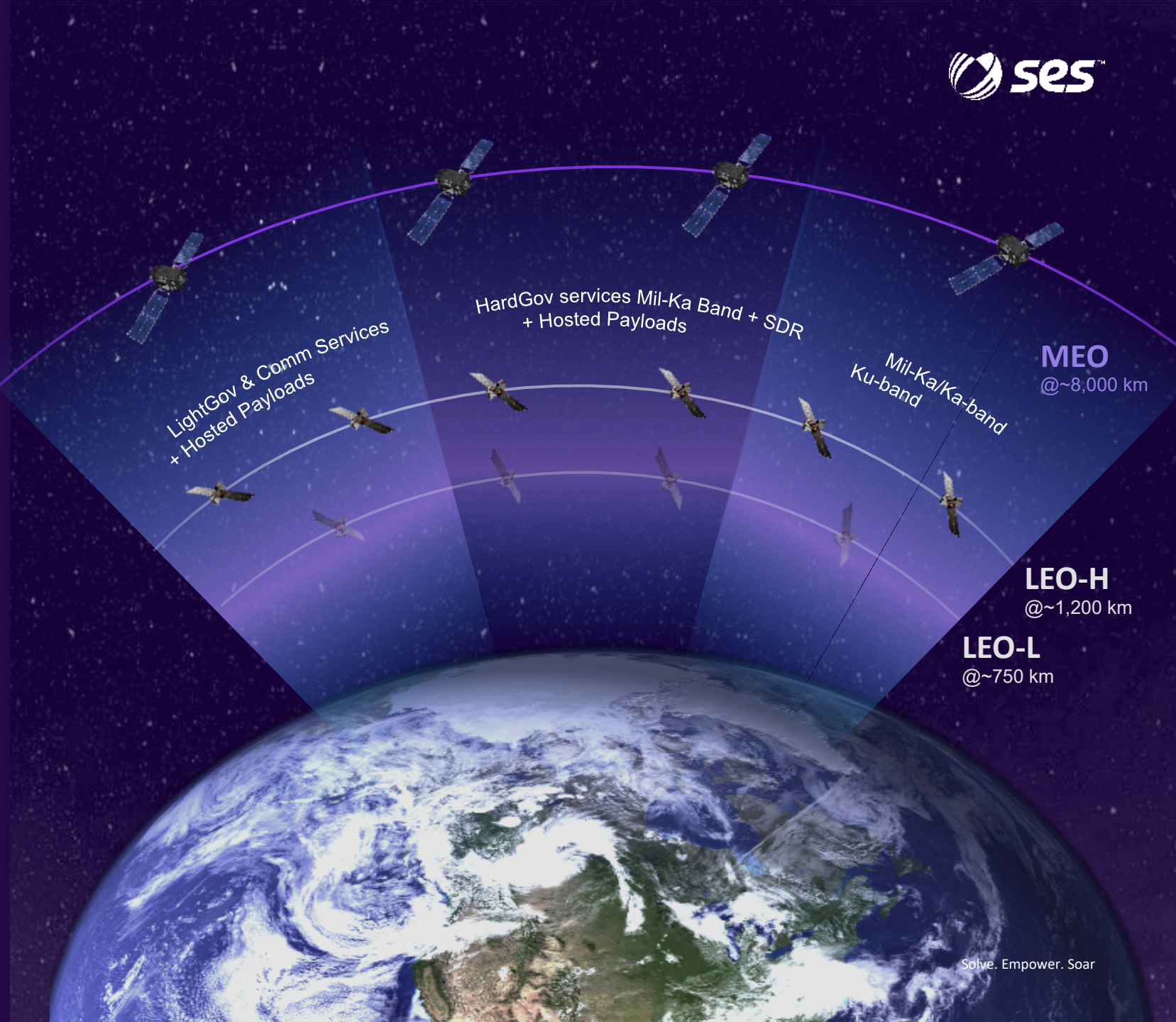
- **Operates the world's largest non-governmental hospital ship**
- **Provides free surgical care, dental services, and medical training in Africa.**
- **Partnership established in 2021 as part of SES's ESG initiative.**
- **SES provides vital satellite connectivity, equipment, and maintenance.**
- **Enabling life-saving procedures, training, and communication.**
- **Reliable connectivity to both Mercy Ships: Africa and Global**
  - Medical: Enables consultations, telemedicine, and real-time data exchange.
  - Operations: Supports navigation, logistics, and administration
  - Crew Welfare: Keeps 900+ crew connected to their families. Improving morale and retention

IRIS²

Flexible multi-orbit, multi-band regenerative payload with enhanced security

Enhanced security

Innovative design architecture



Thank you