

Disaster Response and Recovery

Presented by
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—
Transformative connectivity: Satellite Workshop



Restoring Critical Communications and Connectivity

Disaster Recovery

Goals

- ▲ Remain responsive when disaster strikes
- ▲ Minimise service downtime during outages
- ▲ Prepare Solutions & ConOps in advance of events

Local challenges

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

What satellite connectivity brings

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



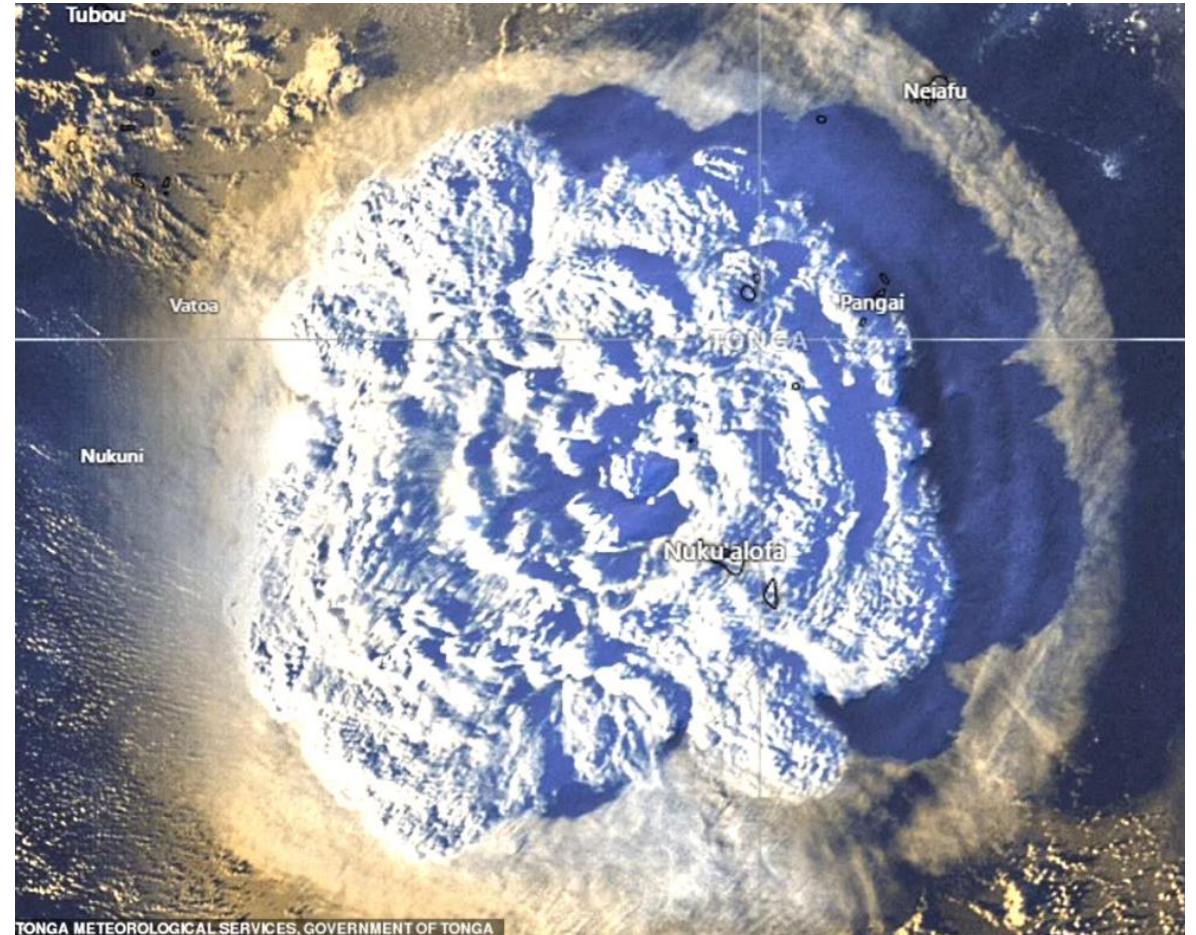
VALUE PROPOSITION

1. Ability to deploy CIR >1Gbps with fibre-like performance as stand-by/on Cells on Light Trailers
2. Dedicated capacity Scenarios & Operations
3. Useful re-purpose of capacity during non-events

Restoring Communications Networks

Reconnecting After Service Disruptions

- ▲ **SES is working with telecoms and mobile network operators**, as well as partners in restoring critical communications
- ▲ **Tonga connectivity restoration in 2022 and 2019**
 - SES enabled Digicel to restore first international calls in Tonga in January 2022 via GEO following the massive Hunga Tonga-Ha'apai volcano eruption and tsunami in June 2022
 - SES restored connectivity in the Polynesian country during the disruption when the Tonga Cable System, was cut in two places in January 2019
- ▲ **Papua New Guinea Earthquakes and Cable Cut**
 - In May 2019, connectivity in PNG was disrupted due to the damage caused to critical nodes of terrestrial and subsea transmission infrastructures following a 7.2 magnitude earthquake in 2019.
 - O3b Medium Earth Orbit (MEO) beam was deployed to deliver additional 1.5 Gbps of low-latency IP Transit service to ease network congestion on our partner's damaged primary link.
 - Sept 2022 earthquake: Partners ramping up O3b MEO capacity on demand for disaster recovery in Papua New Guinea



Leveraging O3b MEO for Connectivity Resiliency Efforts in Tonga

Extending Partnership to Provide Disaster Recovery Resiliency Network via O3b

Situation

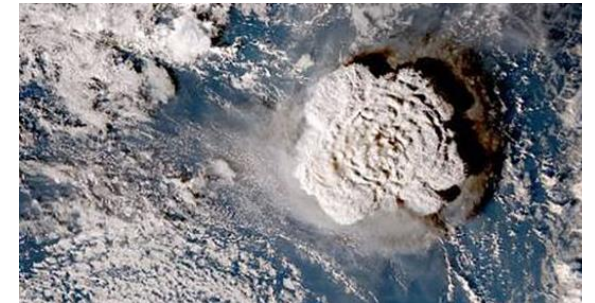
- ▲ The Kingdom of Tonga has suffered two major connectivity disruptions in the last four years, the latest being the result of the Hunga Tonga-Hunga Ha’apai volcano eruption and subsequent tsunami in January 2022.
- ▲ As the damaged cables are undergoing repairs, MEO satellite service will be the primary source of connectivity

Solution

- ▲ Digicel will leverage SES’s Medium Earth Orbit O3b satellites to provide reliable connectivity to Tonga for disaster relief
- ▲ Once the cable is fully repaired, it will become a resiliency service to the main cable that connects the island to Tongatapu.

Result

- ▲ The resilient connectivity will protect the Tonga population from future communication interruptions in the event of a natural disaster
- ▲ Deliver multiple Gbps of capacity for a quick-deploy connectivity



We are glad to extend our partnership with SES and continue leveraging their O3b satellite services to protect the residents of Tonga from future disasters,” said Mudassar Latif, Chief Technology Officer at Digicel Group

Hurricane Ian relief via O3b service

Dedicated O3b MEO network has been established by SESGS to support disaster response relief

Situation

- ▲ In September 2022, category 4 Hurricane Ian crashed into Southwest Florida with 150-mph winds, levelling communication infrastructure and terrestrial networks on its path.
- ▲ It was dubbed as the deadliest hurricane to strike the state of Florida since the 1935 Labor Day hurricane

Solution

- ▲ SES GS, SimbaCom responded with the deployment O3b MEO service in support of the AWS Disaster Response program and their standby partner, Help.NGO
- ▲ A rapid response vehicle (RRV) equipped with an AvL 2.4m terminal, along with two .85cm AvL terminals delivered O3b MEO connectivity to several locations.

Result

- ▲ Service allowed the delivery of fiber-like communications service to state agencies and distribution centres for Lee County residents and first responders.
- ▲ Interim broadband connectivity to the following Florida community resource sites: Florida Department of Financial Services, Distribution Centres, Fuel Relief Fund

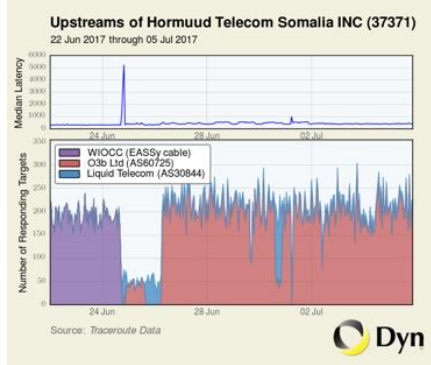


“We are immensely humbled to play our part in supporting AWS Disaster Response and providing enhanced fibre-like connectivity for their recovery efforts, with dedicated SLAs for critical life-saving missions.”

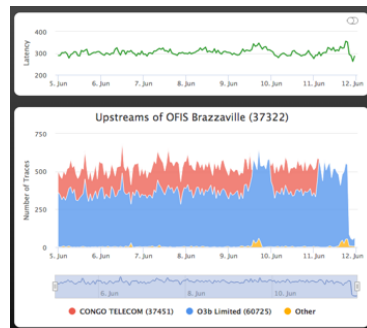
SES Government Solutions President and CEO David Fields

Restoring Communications Networks

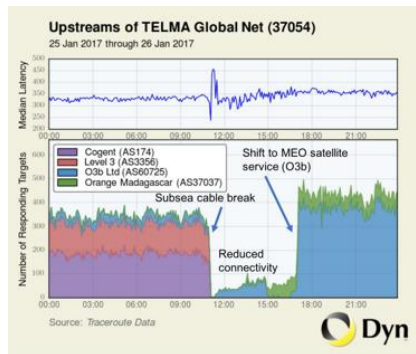
Reconnecting After Service Disruptions



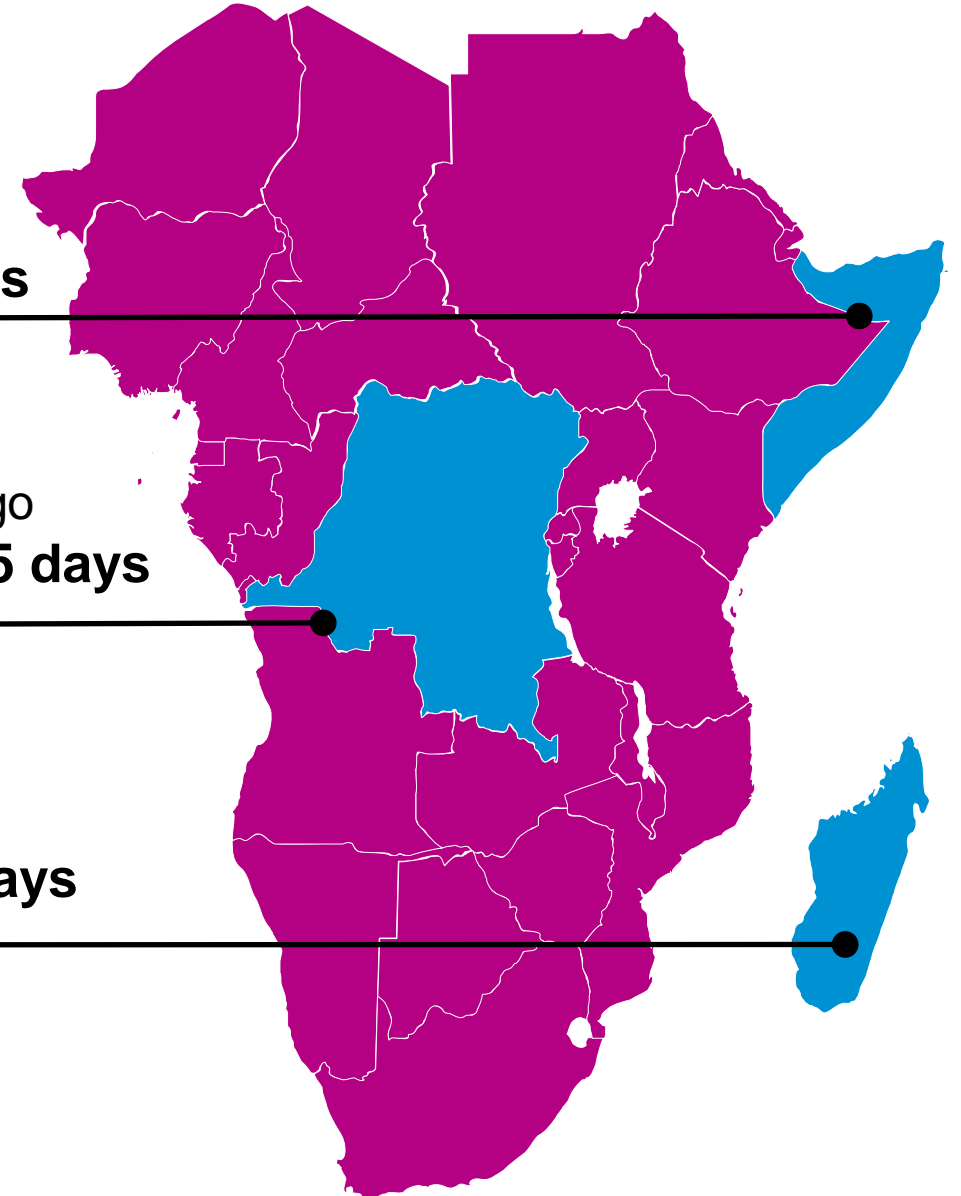
Somalia
Fiber Outage of **21 days**



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



Madagascar
Fiber Outage of **14 days**



Governments & Institutions

Delivering on-demand crisis connectivity

EMERGENCY.LU

Re-establishing communication
after disaster in 24-72 hours



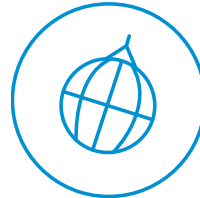
>10 years of deployment

to over 20 locations around the world



Seamless communication

across emergency and telephone services



Global coverage

with quick-deploy capacity



**Public-Private Partnership between Luxembourg
Government and other companies**

(HITEC Luxembourg, Luxembourg Air Rescue and SES)
to serve organisations such as UN World Food Programme,
Emergency Telecommunications Cluster

Recommendations for Preparedness

- ▲ Ensure satellite systems have sufficient access to harmonised spectrum resources
- ▲ Invest in satellite infrastructure before its needed
- ▲ Enable competition among satellite operators
- ▲ Authorise free circulation and use of earth stations
- ▲ Incentivize broadband network providers to build satellite-based backhaul into network
- ▲ Design and adopt disaster recovery plans

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