

# ITU International Satellite Symposium

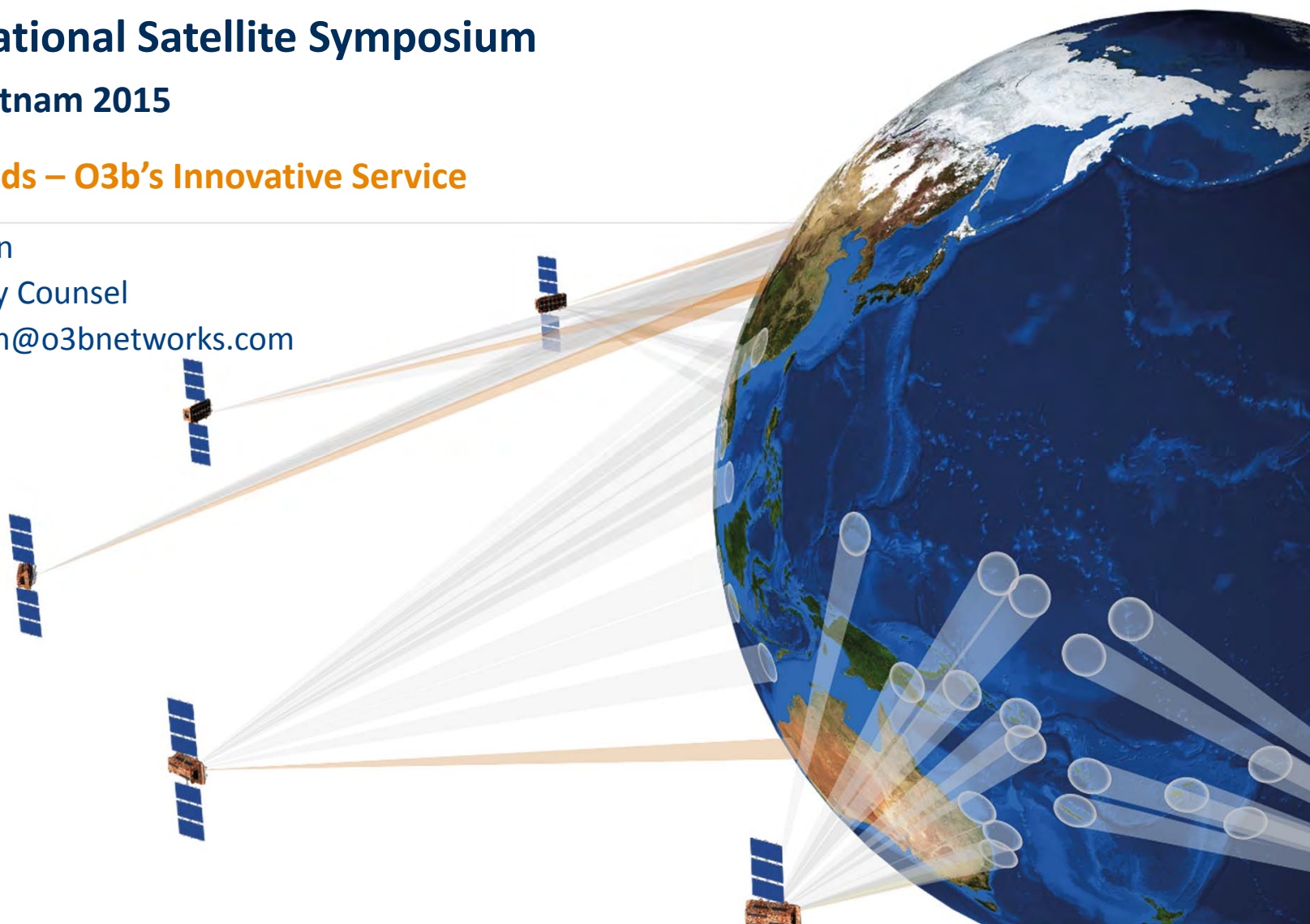
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## Satellite Trends – O3b's Innovative Service

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# O3b's Non-Geostationary Satellite/Constellation Design

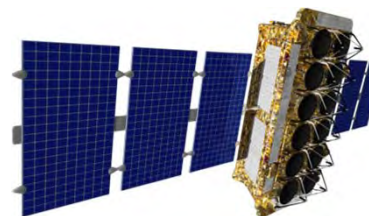
- Circular MEO NGSO equatorial orbit at 8,062 km altitude
  - Closer to Earth than GSO orbit
- 288 minute orbit period
- 12 satellites in orbit
- 10 steerable customer spot beam antennas on each satellite
- Beam coverage: ~700 km diameter on the ground
- Channel bandwidth: 216 MHz
- Coverage: ~45° N/S latitude



# Success of O3b Service Globally

## “Fiber Speed, Satellite Reach”

- Middle mile/Backhaul



## O3b is now in 20+ countries

## Over 40 customers now live over satellites

- Largest operator in the Pacific, outselling satellite and fiber in 2015
- Digicel Pacific (via O3b) increased capacity by 550% in 15 months



## O3b/HTS is needed to expand service to remote populations

- O3b has enabled 8 MNOs to launch 3G/4G services (Timor, Cook Islands, DRC, PNG)

## Revolutionizing connectivity in mobile backhaul, energy, and maritime sectors

- Digicel Samoa experienced higher average revenue per user (ARPU) and their retention and subscriber rates boosted after O3b connectivity

# Globally Harmonized Spectrum

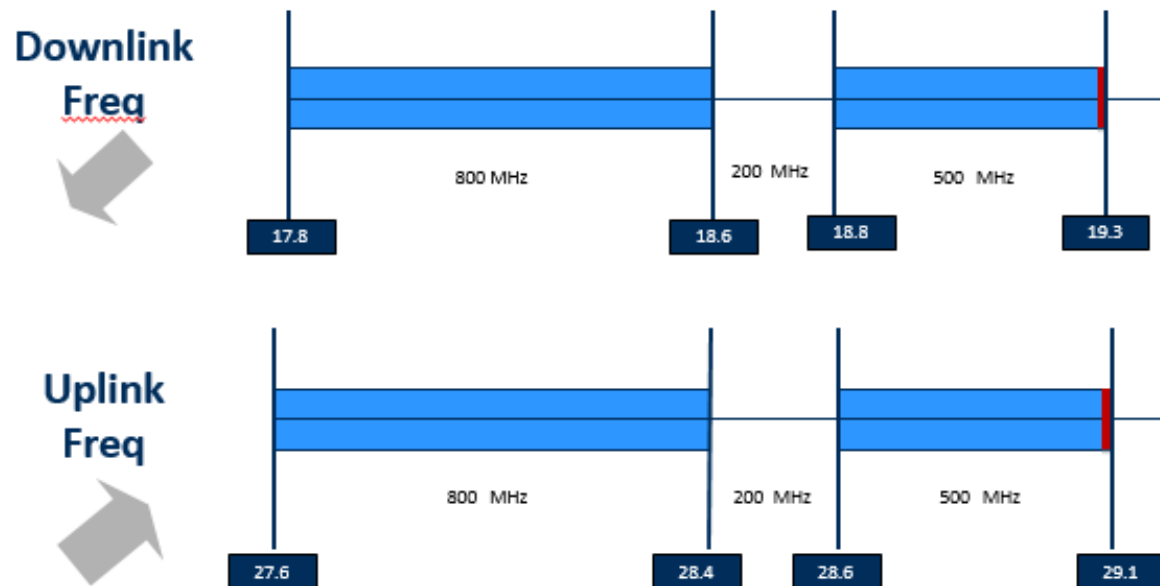


**O3b efficiently reuses Ka-band spectrum and protects GSOs/terrestrial services**

- Satellite is a truly international industry and harmonized allocations allow it to take advantage of economies of scale
- Stable global access to set frequency bands will bring down the cost of service and encourage innovation
- Regulatory certainty is necessary for new technologies

# O3b Frequency Plan & ITU Rules

- O3b is an FSS system fully compliant with ITU Radio & Regulations
- O3b uses frequencies in the Ka-band allocated to the FSS
- O3b system reuses all frequencies and both circular polarizations in every region
- O3b steerable spot beam technology ensures further spectrum efficiency



## Key:

- Denotes 3b Initial Constellation frequencies
- Denotes O3b Additional Complete Constellation frequencies
- Frequency in GHz
- O3b Telemetry & Command Bands

# Earth Station Innovations

- Innovations in satellite systems have brought about innovations in earth stations
- Higher data rates at lower price points
- NGSO systems are investing millions of dollars into the development of cheaper, more resilient earth stations

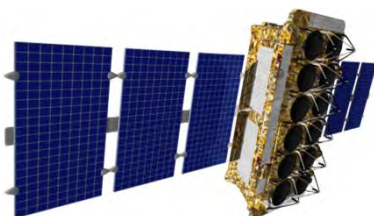
**Kymeta** is using meta-materials to develop a flat panel antenna for satellite systems, including O3b



**AvL** is developing transportable terminals (such as 85 cm) that are ideal for disaster response efforts



# Satellites' Role in ICT Infrastructure – Some Considerations for Regulators



- Multiple elements of a telecommunications ecosystem – fiber, mobile, satellite – are needed to get ICT to end users
- Satellite strengthens the resiliency and diversity of the telecommunications ecosystem
- Satellite is ideal for areas that are ‘non-viable’ for terrestrial technologies
- O3b has partnered with enterprise customers that have developed a 4G/LTE “bubble” for remote or underserved regions
- Satellite continues to develop new services to enhance mobile capacity and coverage
- Satellite can support extension of terrestrial networks into previously unserved areas



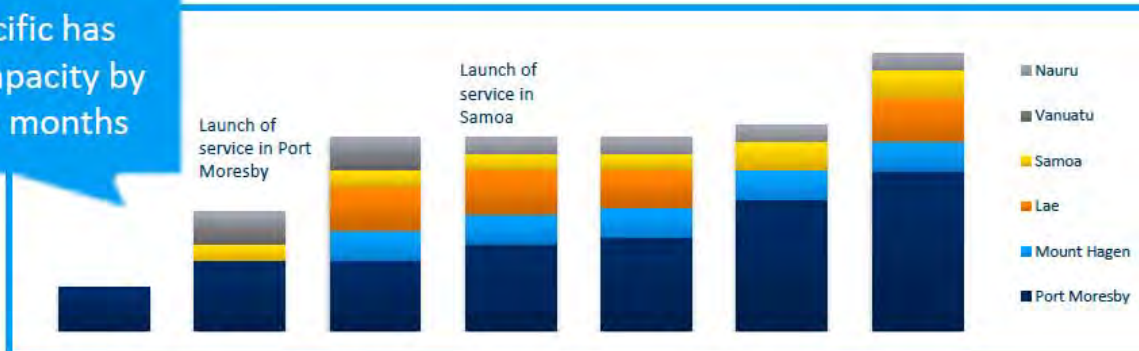
# O3b Enables Mobile Data Services

Places control in the mobile network operators' hands through a pool of bandwidth shared dynamically between multiple sites

Supports 2G, 3G and 4G-LTE voice and data services

Enables mobile operators to provision high availability, high speed trunks from the middle mile aggregation layer of the mobile network to the core network

Digicel Pacific has increased capacity by 550% in 15 months



"O3b is a brilliant solution to drop in and drive data usage. We can offer better throughput to our customers and they recognise the value"

Digicel PNG



# Example of the O3b Impact: Samoa



“Digicel provides faster downloads, higher productivity and the best value in Samoa,” said Rory Condon, CEO of Digicel Samoa.

“We are able to provide these vital benefits to our customers because of our low latency services—and that is one of the primary features of O3b.”

- September 2015 marked one year of O3b service to Digicel Samoa
- Digicel uses O3b connectivity to fuel the growth of 3G data users, as well as Digicel Business services (including cloud and enterprise services)
- Digicel ramped up its contracted capacity by more than 70% just four months after the service went live



*Fiber Speed. Satellite Reach.*