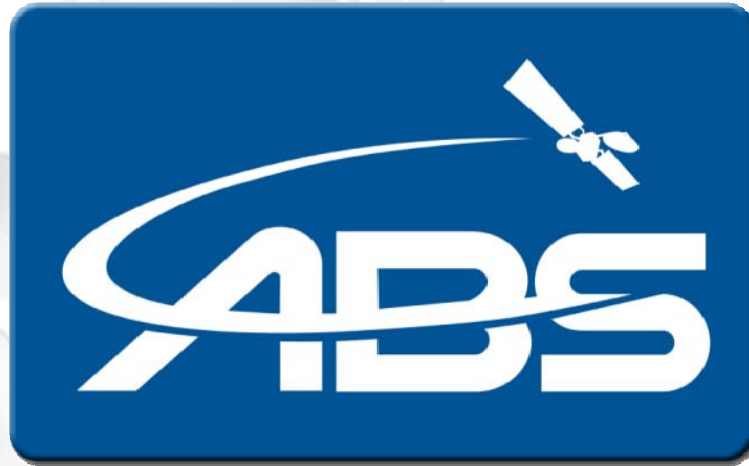


www.absatellite.com

Big Opportunities in the Digital Economies

Satellite Connectivity Forum
25th April, 2017



www.absatellite.com

Generic overview

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ABS Overview

- ABS was founded by CEO Thomas Choi in 2005. In Sep 2006, CVCI, ADM and a few independent investors financed the acquisition of the ABS-1 (then LMI-1) satellite.
- Permira Funds, the management team, and a few investors completed the acquisition of ABS from CVCI and ADM in Nov 2010
- ABS is one of the fastest growing satellite operators in the world (projected FY16 YoY revenue growth near 30%)
 - Seven satellites in orbit
 - In addition to ABS-6 (previously ABS-1), acquired ABS-3 (Agila-2), ABS-1A (Koreasat 2) and ABS-7 (Koreasat 3) in 2009 and 2010, ABS-2 launched Feb 2014, ABS-3A launched March 2015 and ABS-2A launched June 2016. ABS-1A decommissioned in 2015
 - Provides coverage to 93% of the world population
 - Satellite programs in design phase
 - ABS-8 (116.1°E)
 - ABS-9 (16° W)
 - ABS-10 (159°E)

Permira Satellite Credentials



- ❑ Permira has a dedicated team focused on TMT (Telecoms, Media, Technology) which has accounted for c. 1/3 of the Fund's investments since inception
- ❑ Among others, the Permira Funds have invested in the largest satellite operators in the FSS and MSS segments



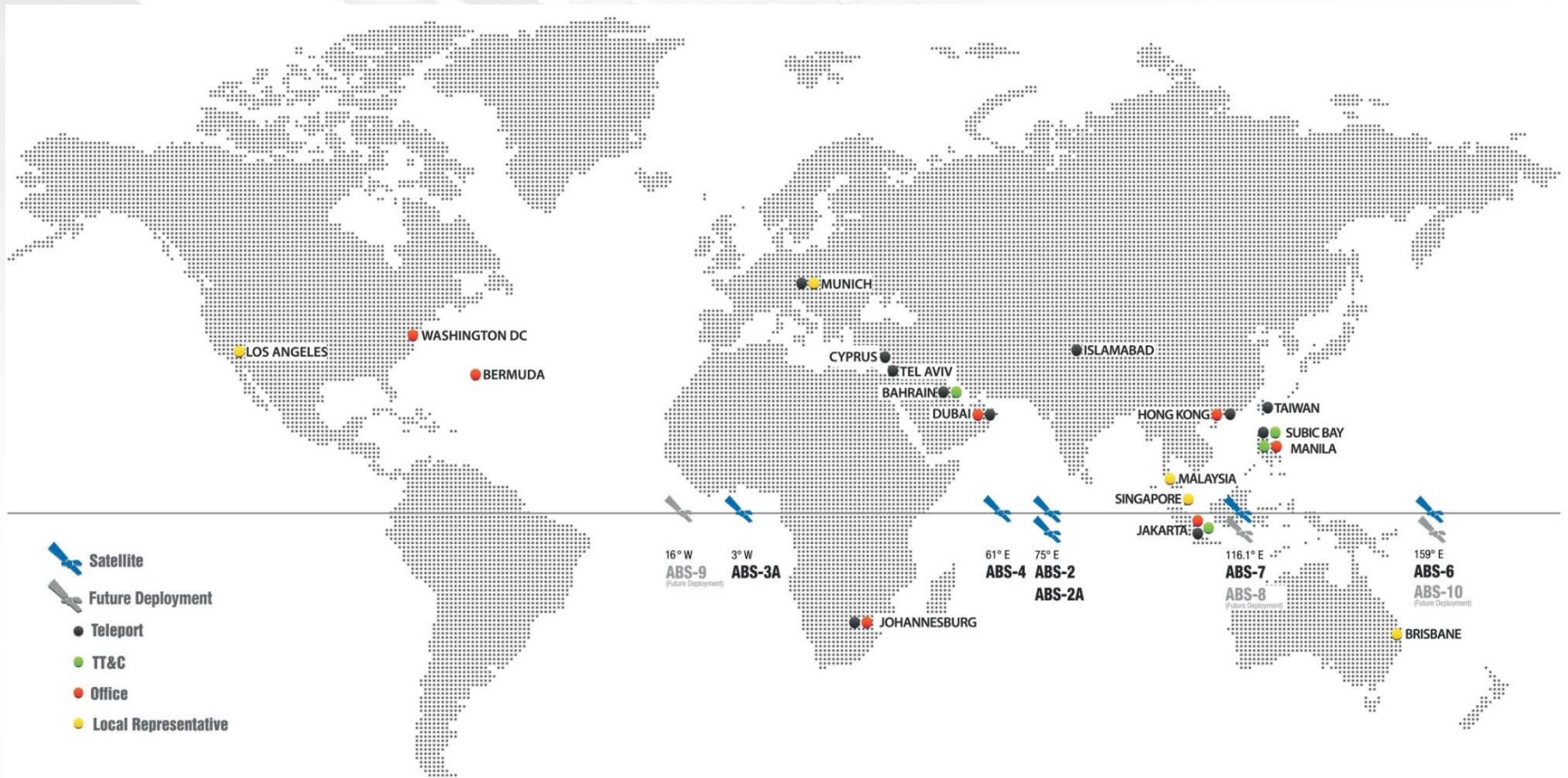
- ❑ Provider of global fixed satellite services, acquired in 2004 in a US\$5bn transaction.
- ❑ Key actions included:
 - Pursued new growth opportunities (e.g. managed services)
 - Successful \$6.2 billion acquisition of Panamsat
 - Realization of cost, capex and revenue synergies
 - Exited the investment in 2008 through a private sale for c. \$16 billion



- ❑ Global mobile satellite services provider, acquired in 2003 in a US\$2bn transaction.
- ❑ Key actions included:
 - Initially bringing together extremely disparate shareholder bases
 - Crucial launch of the first "I-4" (and further launches)
 - Roll-out of broadband Global Area network allowing video steaming and other high bandwidth products (investment in next generation networks)
 - Capacity management and improved operational efficiencies
 - Exited the investment in 2005 through an IPO on the London Stock Exchange

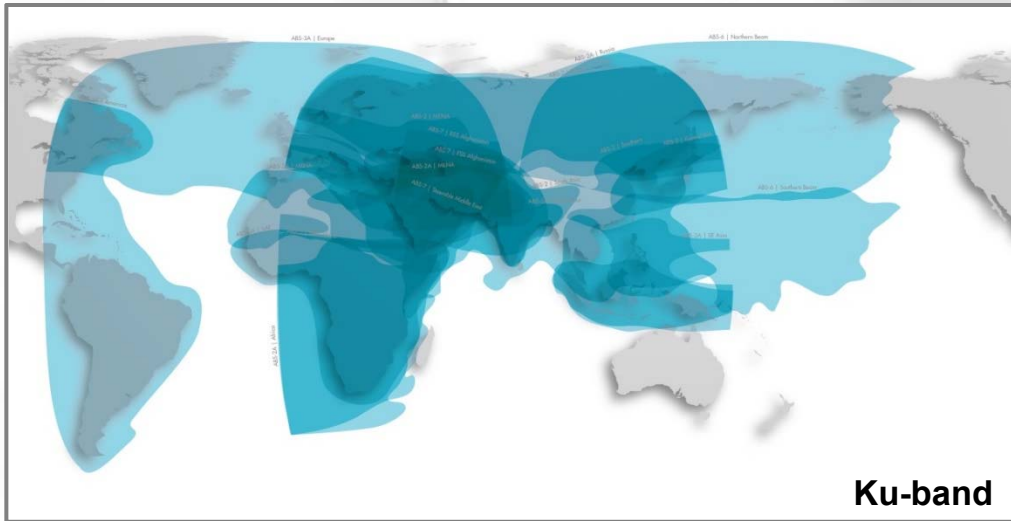
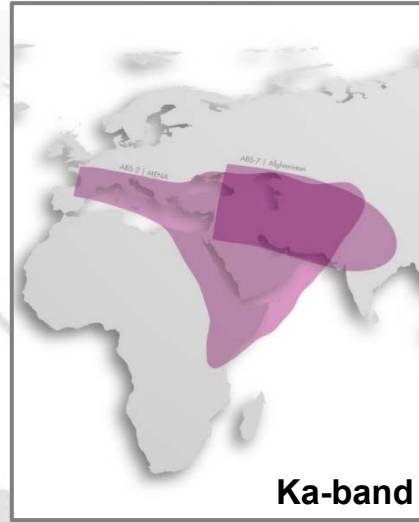
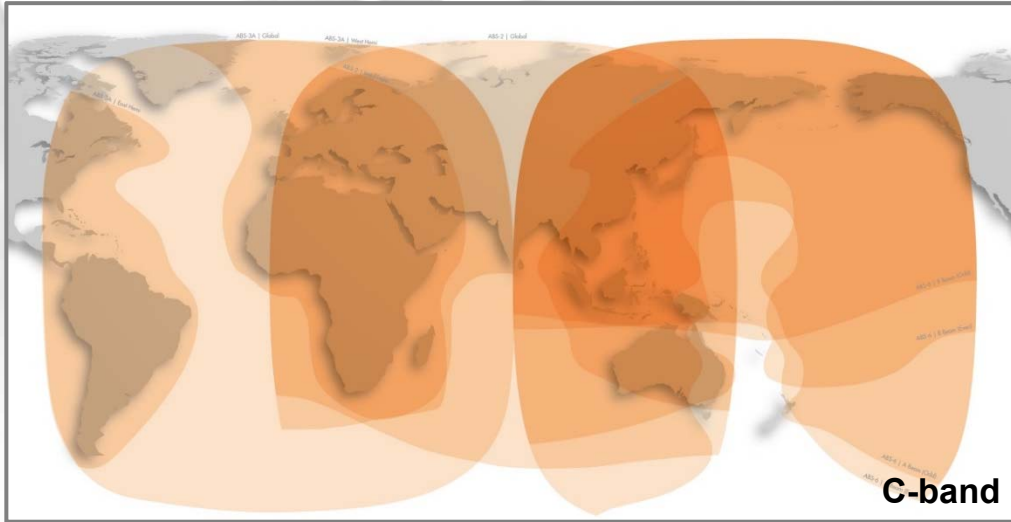


ABS Global Operations



ABS' global facilities provide customers with value-added services capabilities and a multitude of service options

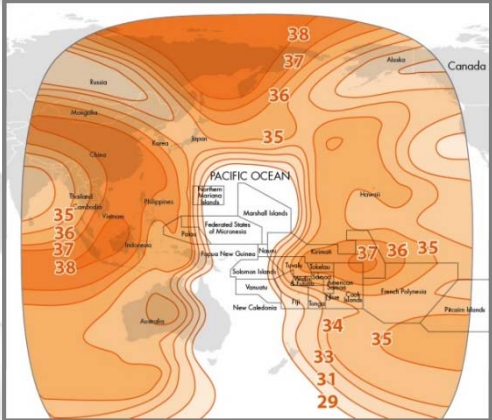
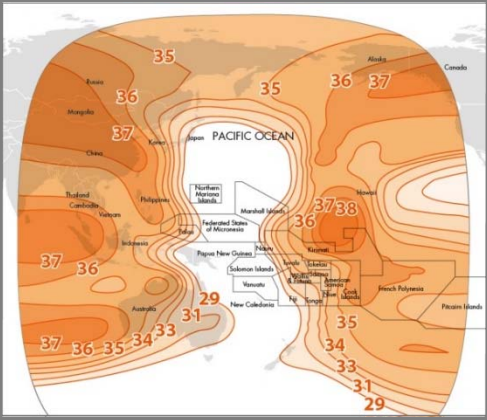
ABS Global Coverage



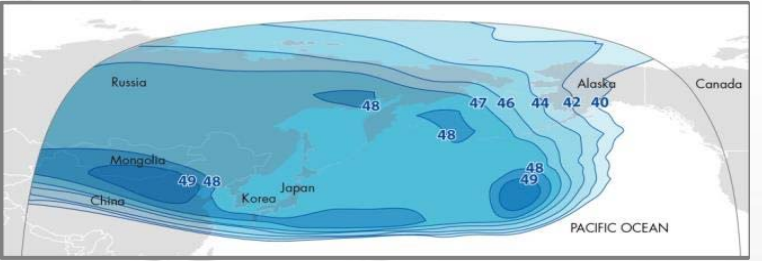
ABS-6 @ 159°E



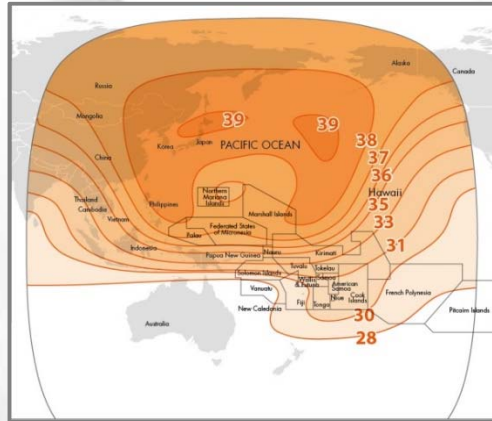
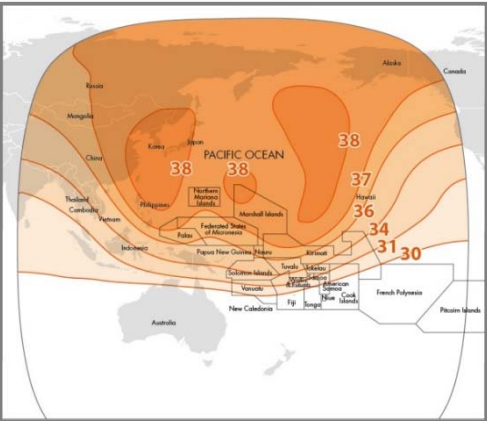
C – band | A Beams (Odd & Even Transponders)



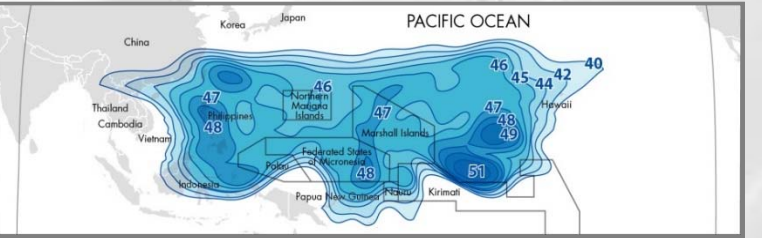
Ku – band | Northern Beam



C – band | B Beams (Odd & Even Transponders)



Ku – band | Southern Beam



Big Opportunities in the Digital Economies for the Pacific – Satellite and 5G



- 1 – What does 5G Promise?
 - Advertising that connection – are we honest?
 - What's really eating our bandwidth? Who steals it?
 - What is the requirements of the future
 - Are all bits equal?
 - TV – major consumer, getting smaller 1997 – 2017
 - The Rwanda Experience

- 2 – The Pacific Situation – Now and Next
 - Fibre limited and Satellite ubiquitous
 - The Pacific in a few years
 - Major islands connected, thousands of tiny remotes not

- 3 – What about the fibre? Back up planning of 10%
 - And when it fails?

- 4 – What about the Gap? The have and have not's?
 - Universal Service – Will it be recognized

- 5 – What are the real needs? The Nature of Finance in Remote Villages
 - Follow the money – Local “Mobile” ATM's
 - Bringing “Black” economies into the financial world

- 6 – What else could we be doing?
 - M2M – Fishing monitoring and licensing.



1 – What does 5G Promise?



1 – What does 5G Promise?

**Up to 1000 times increase in bandwidth,
per unit area**

Up to 100 times more connected devices

**Up to 10Gbps connection rates to mobile devices
in the field**

A perceived network availability of 99.999%

A perceived 100% network coverage

Maximum of 1ms end-to-end round trip delay (latency)

Up to 90% reduction in network energy utilization

Does this sound like the Pacific?

1 – What does 5G Promise? Advertising that connection – are we honest?



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PEOPLE ON TOP OF
THEIR GAME >

THE AUSTRALIAN BUSINESS REVIEW

EXPLORE OUR
CORPORATE
SUBSCRIPTIONS >

NEWS OPINION **BUSINESS REVIEW** NATIONAL AFFAIRS SPORT LIFE TECH ARTS TRAVEL HIGHER ED MEDIA PROPERTY

S&P ASX 200
+0.19% 5725.30

AUD/USD
+0.03% 0.79

S&P 500
+0.57% 2471.65

NIKKEI 225
+0.38% 19720.98

FTSE 100
+0.89% 7430.62

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TECHNOLOGY

ACCC to scrutinise telcos' deceptive NBN advertising

“ Australian’s innovation engine is not firing on full cylinders just yet but the outlook is encouraging. | [More >](#)”



Perhaps we need to start being honest about “Speed” and Contention”

1 – What does 5G Promise?



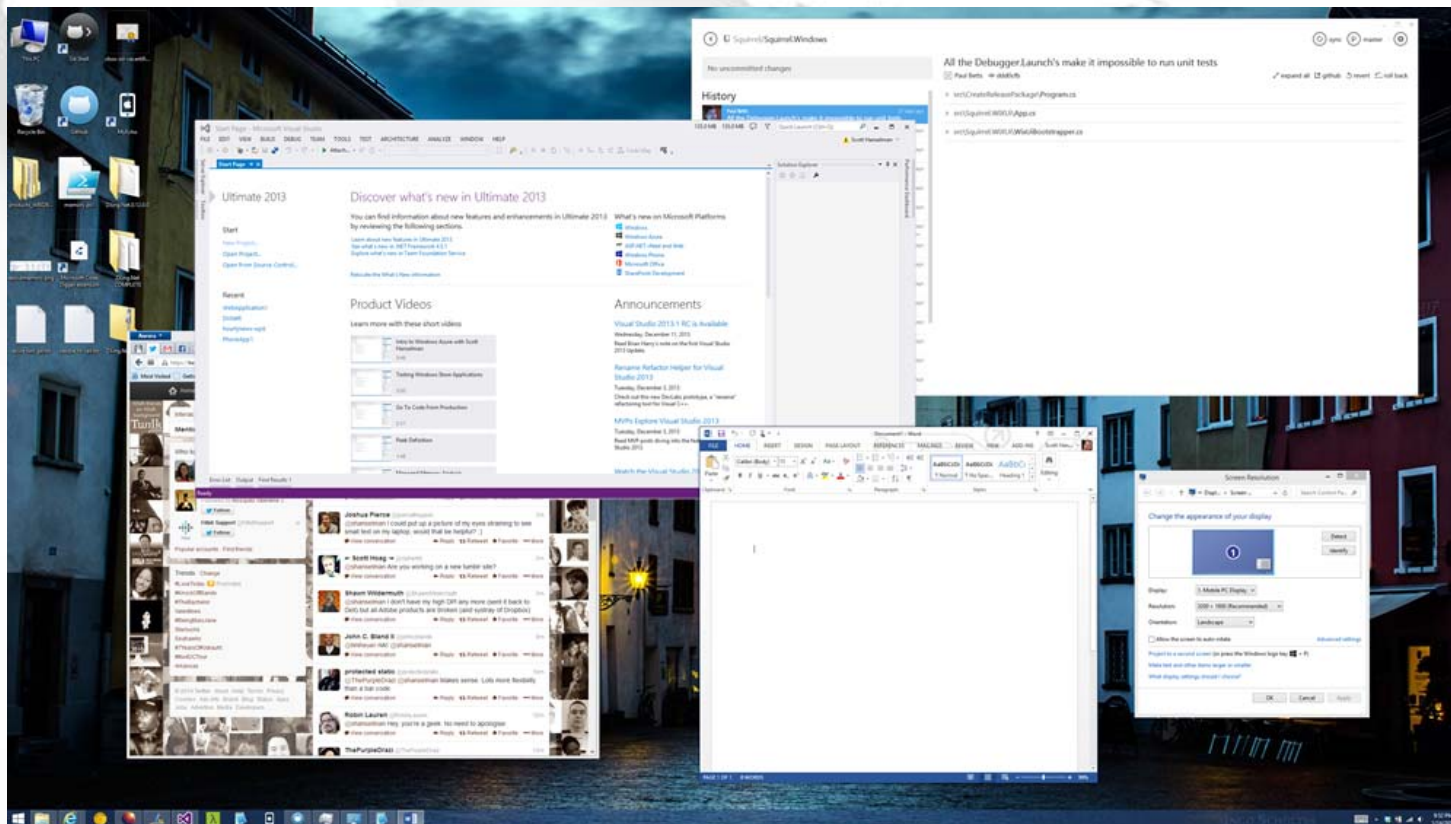
Video in 1997 – 7MHz (Assume 7mbps today)
gave you this



1 – What does 5G Promise?



Video in 2017 – 7MHz (say 7mbps)
Can give you UHD - 1 MHz can give you HD



And many people can't tell difference between good HD or 4K (UHD) and 8K?



1 – What does 5G Promise?

**What's really eating our bandwidth?
Who steals it?**

**Video – The Bandwidth Hog – But the truth is Video
is getting smaller and smaller**

**Maybe it's all that “Data” about ourselves, the
constant monitoring or what you watch**



1 – What does 5G Promise?

Are all bits equal?

Net Neutrality tells us the ISP's and Telco's should treat all bit's equal, and I agree for large countries,

But in the Pacific? On a tiny island?

What is more important?

Disaster Warning? Education? Netflix?

1 – What does 5G Promise?



The Rwanda Experience – Price is everything

Rwanda took the opportunity to leapfrog into the future and embraced 4G before most countries had even heard of it.

2013 - Pre 4G sub 9% internet – Now 31%+

2016 Market	Penetration rate
Fixed-line telephony	0.1%
Fixed internet	29.3%
Mobile SIM (population)	79%

In the *'Affordability Report'*, countries are ranked according to various drivers such as effective broadband structures, enhanced competition, spectrum allocation, and infrastructure sharing models

It has “Most affordable” internet on African continent.

But “High cost of 4G network locks out most subscribers”



“Internet is still expensive,” said Emily Munvaneza, an Internet user. “They talk of affordability but it’s yet to be experienced.

Even with a total mobile subscriber base of 8,807,170 as of March, few people in Rwanda have smart devices and many others’ incomes do not allow them to afford the Internet.

Vision 2020 is bold, but it’s working. And many outside Africa — and inside — are marveling at how an economy long-dominated by subsistence farming is becoming a high-tech hub — and one of the 20 fastest-growing countries in the world.

Who in the Pacific will take up the challenge?



2 – The Pacific Situation – Now and Next

Fibre limited and Satellite ubiquitous

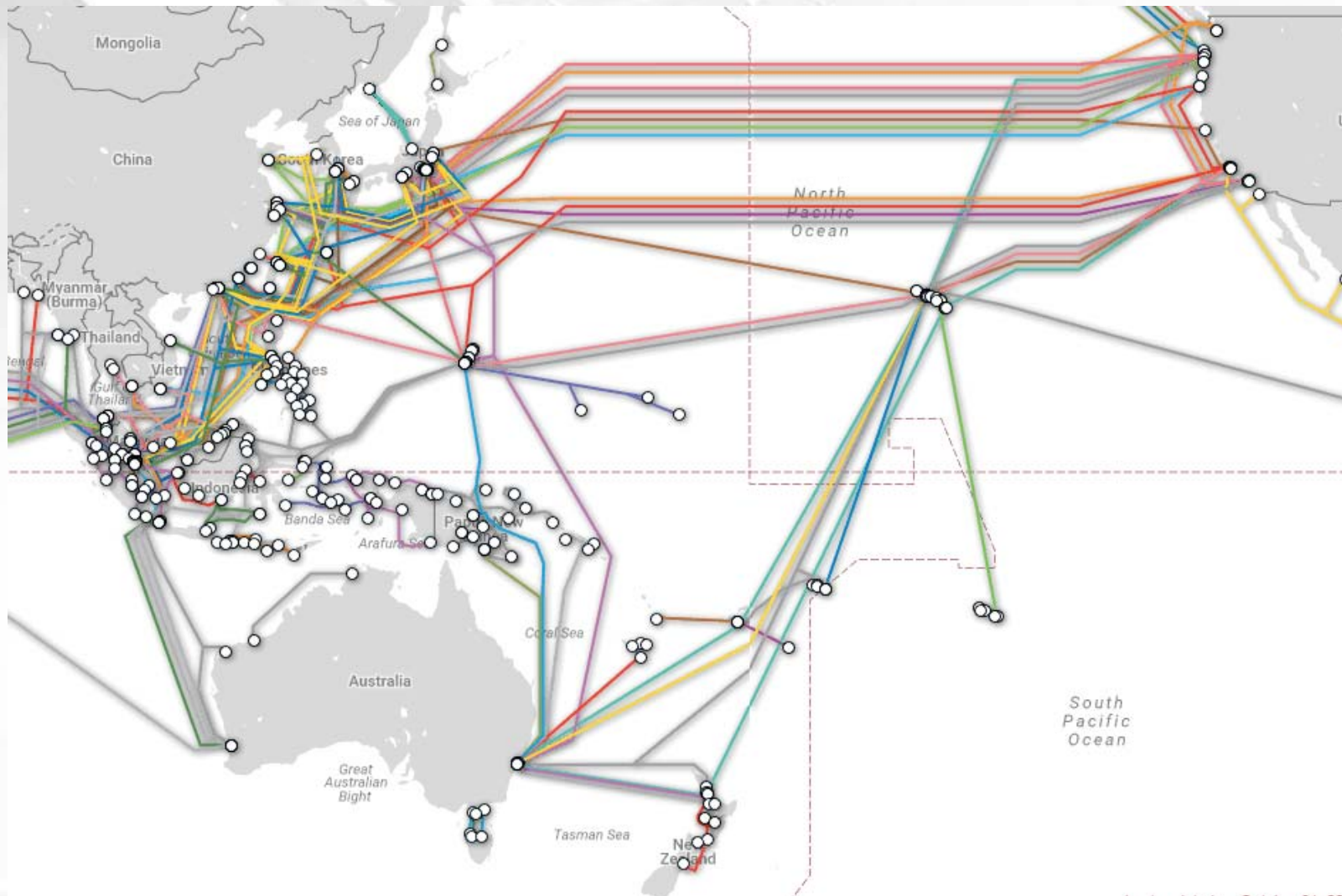
The Pacific in a few years

**Major islands connected, thousands of
tiny remotes not**

**You need fibre for 5G – Gigabyte
connectivity**

Moving Forward – Pan Pacific Support

There are many cables and new ones coming





TODAY

With

FSM – Pohnpei Only – Satellite for main islands and Remote

Guam – Fibre but Saipan Connecting now

PNG – Some fibre but heavy Satellite

Fiji – Fibre – outer islands need satellite

Samoa – Old fibre needs large satellite capacity

Tonga – New Fibre

Vanuatu – Satellite for remotes

WITHOUT

Palau (Coming this month)

FSM – Yap Kosrei Chuuk fibre coming now

Kiribati - Coming

Solomons

Cook

Tuvalu

Tokalau

Nauru

Niui

Wallis Fortuna

Next few years, or months, or days

WITH

FSM – Pohnpei Only – Satellite for main islands and Remote

Guam – Fibre but Saipan Connecting now

PNG – Some fibre but heavy Satellite

Fiji – Fibre

Samoa – Old fibre needs large satellite capacity

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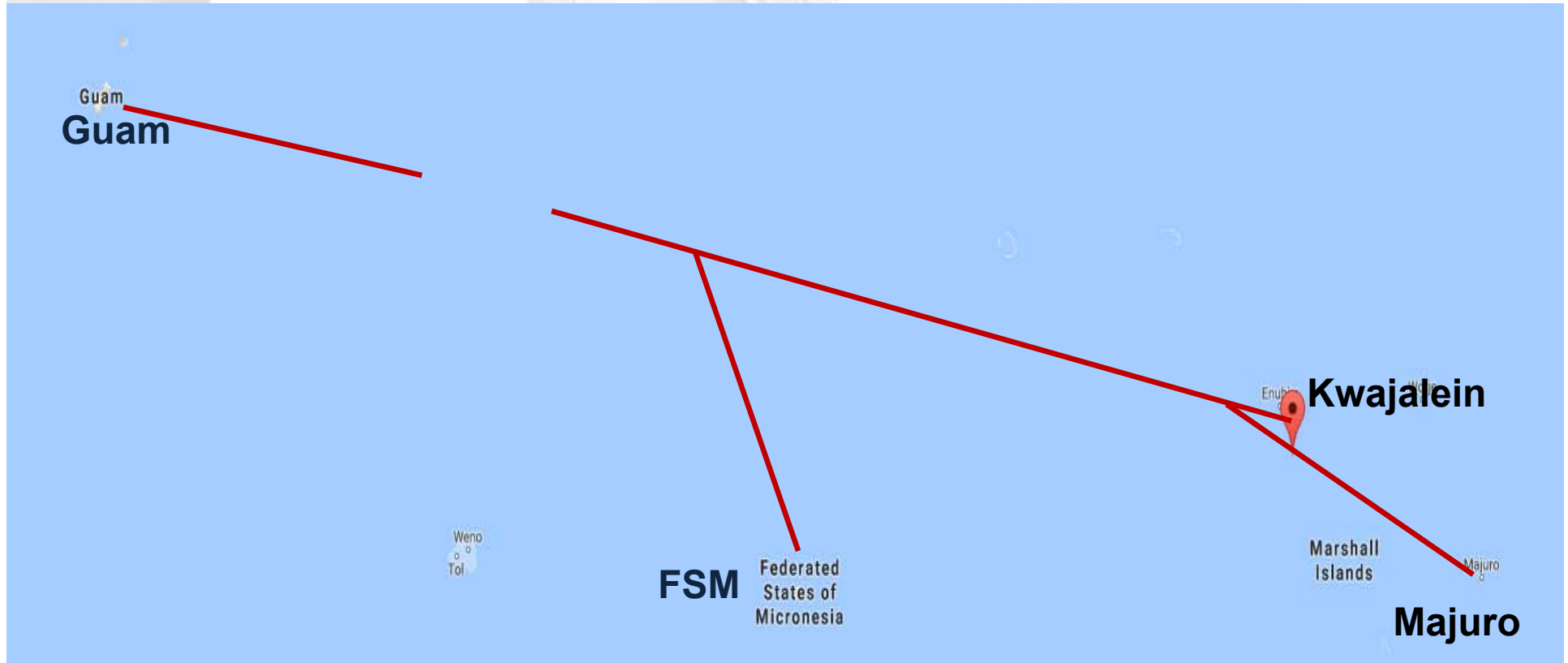
WITHOUT

Only the very small populations, 10,000 or less.

3 – What about the fibre?



Plan for that fibre cut!





3 – What about the fibre?

Pacific lucky with fibre outages.

Tahiti (Wall to protect fibre fell on fibre)

Hantru FSM (Planned cut)

PNG – unplanned

Long wait for planning permission



4 – What about the Gap? The have and have not's?

Universal Service – Not Pan Pacific

Universal Service – Expensive!

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5 – What are the real needs?

The Nature of Finance in Remote Villages

Follow the money – Local “Mobile” ATM’s

Bringing “Black” economies into the financial world

What to do with Village WiFi



- ❑ 15 years ago first VSAT enabled VillageWiFi in Thailand
 - ❑ 1mbps x 256kbps
 - ❑ Again you need a local sponsor – the “Enablers”
 - ❑ Community Liaison is very important
 - ❑ Identifying which villages will work fast and which will not
 - ❑ Let them own and profit!

- ❑ Let “Them” be creative – what “They “ do will amaze you!

- ❑ First E Government

- ❑ E-Learning

- ❑ If we could do that with 1x.256
 - ❑ What about 5G?



6 – It's NOT about the speed.



Don't be “Vendor” driven!

It's about access and smart planning

**Do your plans enable “Local” growth – or
International companies to grow?**

What else could we be doing?

M2M – Fishing monitoring and licensing.