Real broadband innovation for the Pacific communities

Kacific Broadband Satellites

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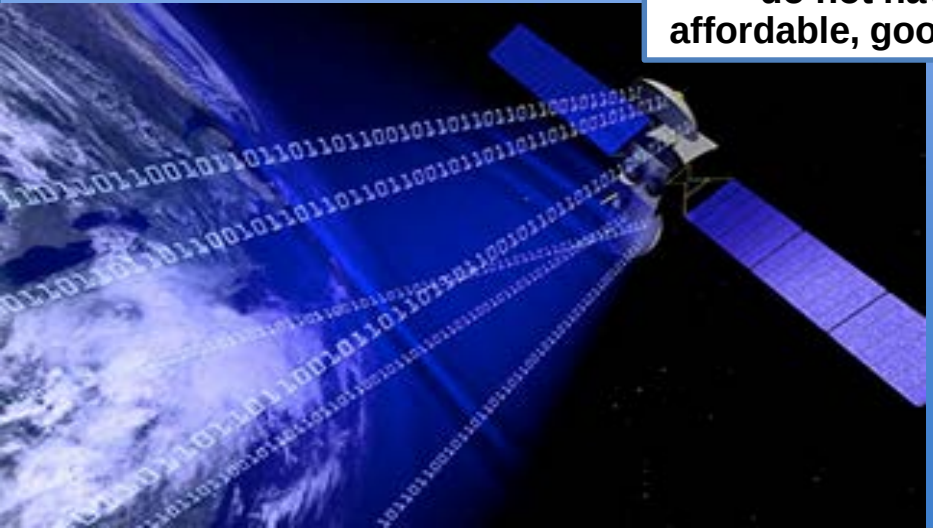
10 Million Pacific Islanders do not have access to affordable, good quality Internet



Connecting the dots

We started by looking at the needs of the people in the blue continent: the world's most-difficult-to-connect geography

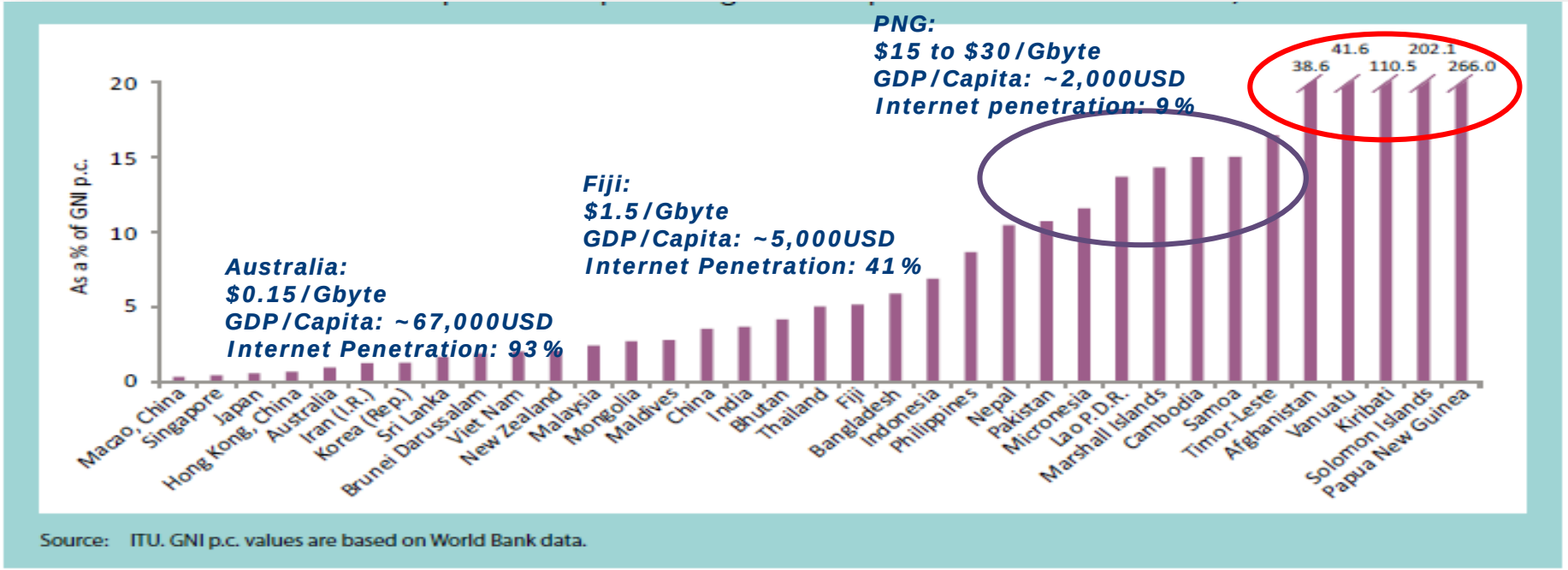
What they need: simply, affordable broadband access everywhere

Our vision: enable good quality broadband with a magnitude in price reduction

Insight: if the price is right then demand crystallizes

Digital divide is today's reality in Asia Pacific

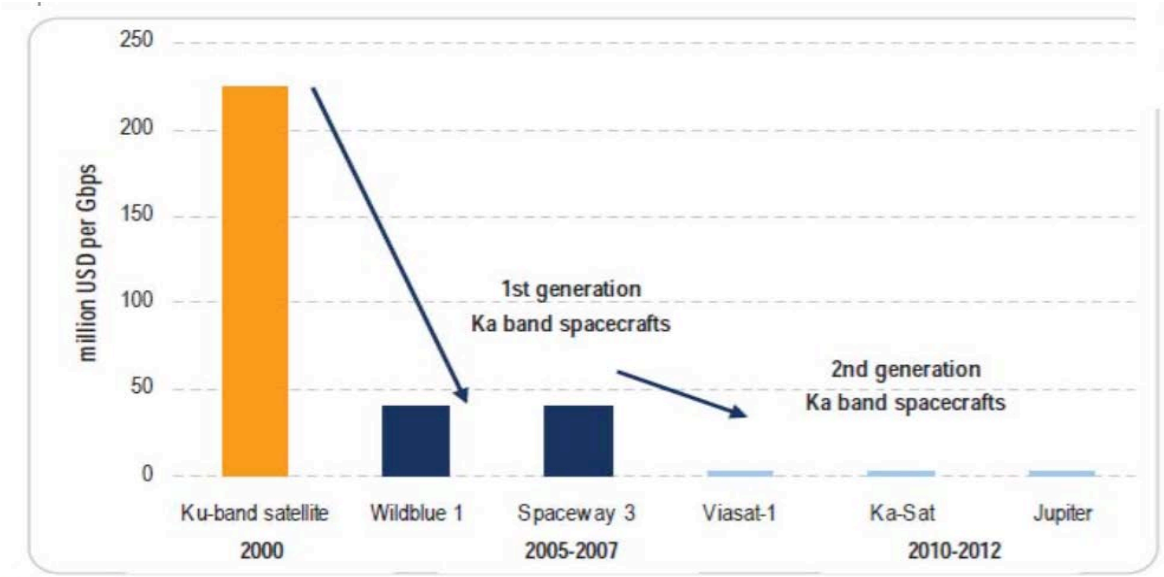
Fixed broadband prices in Asia and the Pacific as a percentage of GNI per capita 2008-2013



Source: ITU. GNI p.c. values are based on World Bank data.

A new cost paradigm for Satellite Connectivity

- Plummeting cost of GBps in space
- Cheaper bandwidth making it more affordable in a connectivity-hungry world
- New applications / new markets / new business models



Source: IDATE

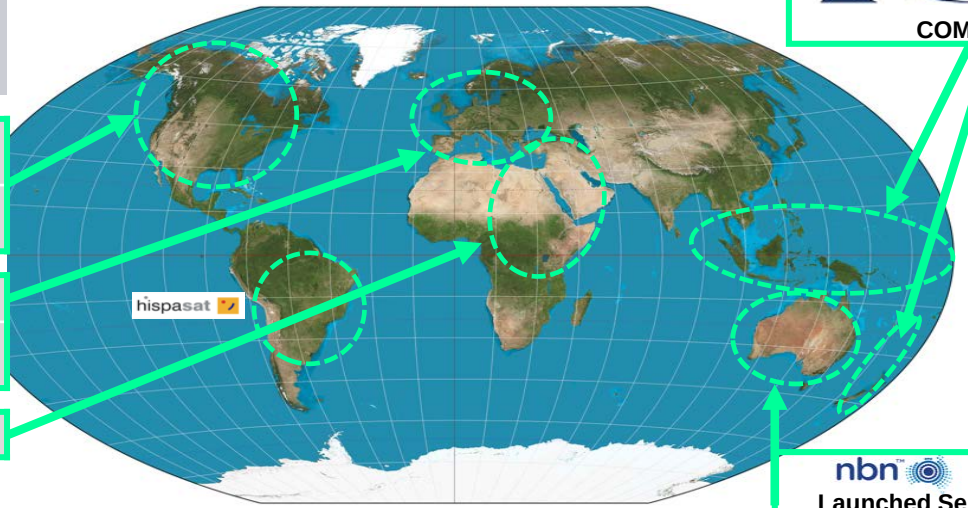
Enabling access to mass markets and reducing digital divide

Ka-band HTS* satellite broadband technology is a global revolution in progress, offering fast user speeds at competitive pricing

CURRENT HIGH-THROUGHPUT SATELLITE (HTS) OPERATORS

Operator	*Monthly consumer fee*	*Download Speed†*	*Subscribers end 2013*
ViaSat	$50 - $130	17 Mbps	**600,000**
HughesNet	$50 - $130	9 Mbps	**1,000,000**
ASTRA	20€ - 60€	17Mbps	**50,000**
tooway	20€ -100€	18.8 Mbps	**150,000**
yahsat	$53 - $178	4Mbps	**30,000**

† Upload speed generally slower, depending on configuration



KACIFIC BROADBAND SATELLITE
COMING 2019

nbn
Launched Sept 2015

- *Now over 2.3 million subscribers worldwide…. and counting*

HTS should target **US$1 to $2/Gbyte <u>at retail level</u>** to prevail in rural and remote areas and allow populations to meaningfully participate to today's digital economy

What can a user do with a few Gbytes?

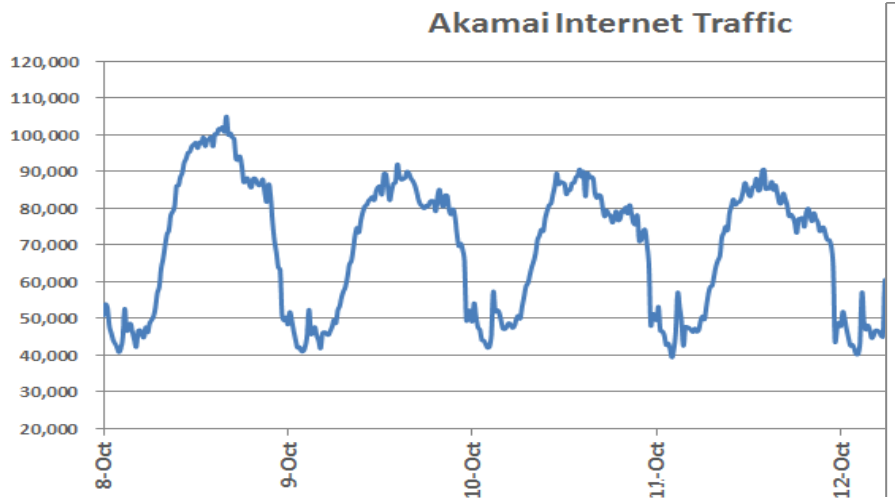
HTS → US$4 4 GB → Wholesale Buyer → US$8 4 GByte → End User

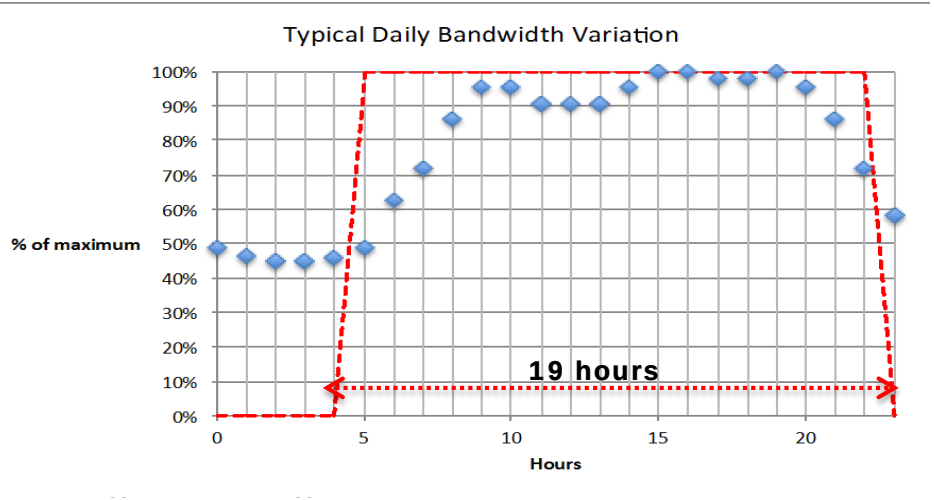
2,460 webpages browsed

26h youtube video streaming
1,066 downloaded songs

17h skype video calls
237h skype voice calls

How many Gbyte can an HTS transfer per Mbps? At what price?

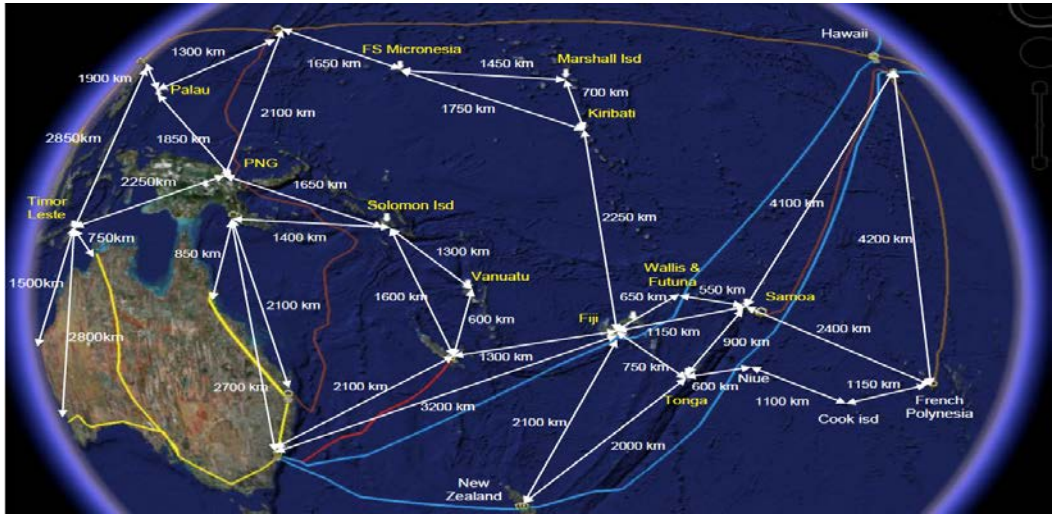




- Internet traffic is effectively active an equivalent of about 19hours per day
- Hence, 1Mbps of continuous core traffic can expect to transfer to end users:
  1Mbps / 8 bit / Byte x 30 days / month x 19 hours/ day x 3,600 sec/hour = 256 Gbyte / month
- >> Targeting $1/Gbyte, the HTS bandwidth price at wholesale should be around

US$250/Mbps/Month to US$260/Mbps/Month

Geographic dispersion:
A barrier to broadband connectivity



Pervasive hurdles for the deployment of high-bandwidth solutions

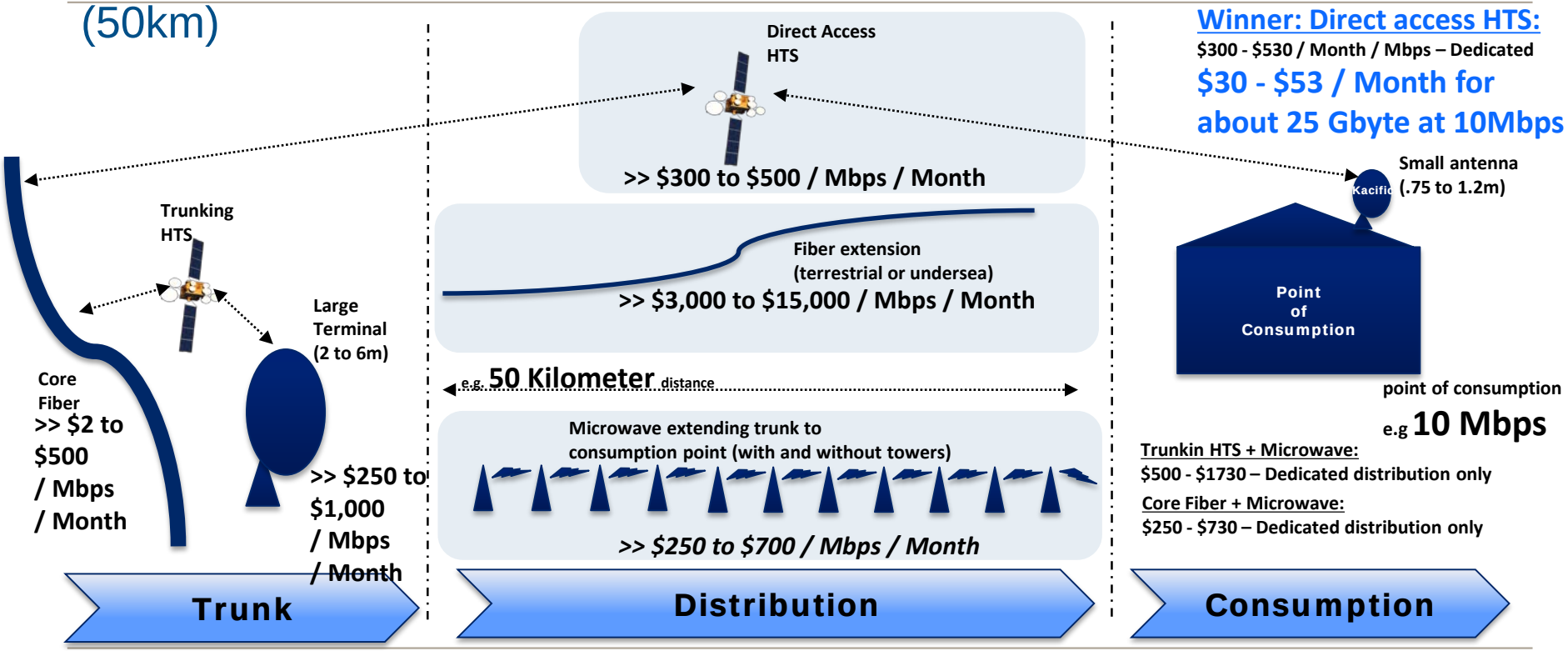
- Small size of Islands,
- Relatively low inhabitant count
- Huge distances between islands

Only the following cities/islands have a fiber connection landing in their shores, offering good connectivity in a 10-15 km radius of landing point

- *Noumea / New Caledonia*
- *Suva / Fiji*
- *Papeete / Franch Polynesia*
- *Most cities and islands of New Zealand*
- *Majuro / Marshal Islands*
- *Pohnpei / Micronesia*
- *Port Moresby / PNG*
- *Guam / Guam*
- *Saipan / Northern Mariana*
- *Pago Pago / American Samoa*
- *Apia / Western Samoa*
- *Nuku'Alofa / Tonga*
- *Port Vila / Vanuatu*

Internet access for the rest of the landmass of these countries, including the 20,000 inhabited islands, is served with dial-up grade access and prohibitive prices

Kacific – Economics of Bandwidth Distribution for Rural Consumption (50km)



Test your underlying assumptions: Vanuatu

A country with a cable (Port-Vila) and LTE

Yet many schools and public institutions (hospitals..) dispersed in the outer islands remain unconnected

Only one affordable solution to connect them all at once

First deployment in Vanuatu

- Working together with TRR (regulator) and Telsat (local service provider)
- Kacific has connected 8 communities in different islands of Vanuatu with broadband at 17Mbps
- Remote villages, schools and clinics are now connected for the first time to Port-Vila and beyond

Vanuatu: Kacific contribution to making a change

- First human capital dividend of Kacific vision
  - Three remote clinics enabled with good quality broadband internet
  - Two critical medical cases solved thanks to an online consultation with a remote doctor
- Not a social service – A Public service
  - Affordable broadband can be sustainably and profitably enabled for remote communities by satellite

Asia Pacific Report
Edited by AUT's Pacific Media Centre

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Life of expectant mother saved by Vanuatu's telemedicine network

By PMC Editor - July 27, 2016

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Dr Basil Leodoro speaks with Nurse Leo Steven at Naviso on his cell phone using the telemedicine network. Image: Alexis Lexy Cullen / Vanuatu Daily Post

Vanuatu: What we learned

Thirst for Internet in Pacific communities

1 school = 1TByte per month

Enabling critical services

Saving lives, empowering schools with access to updated material and mentoring

Video and mobile rule

Tablets and smartphones precede internet access

Multimedia content (including video-calls) dominates traffic

Vanuatu: What we learned

Communities as actors of their Internet

Creating, not just consuming

Whole villages online

Bonding with extended families in Port-Vila and abroad

E-commerce initiative (green gold- medicinal plants)

Unprecedented fill rate achieved pre-launch for a Ka-band satellite


Phillippines


Kiribati


Tuvalu


Tokelau


Solomon


Fiji


Indonesia


Vanuatu


New Zealand


French Polynesia


PNG

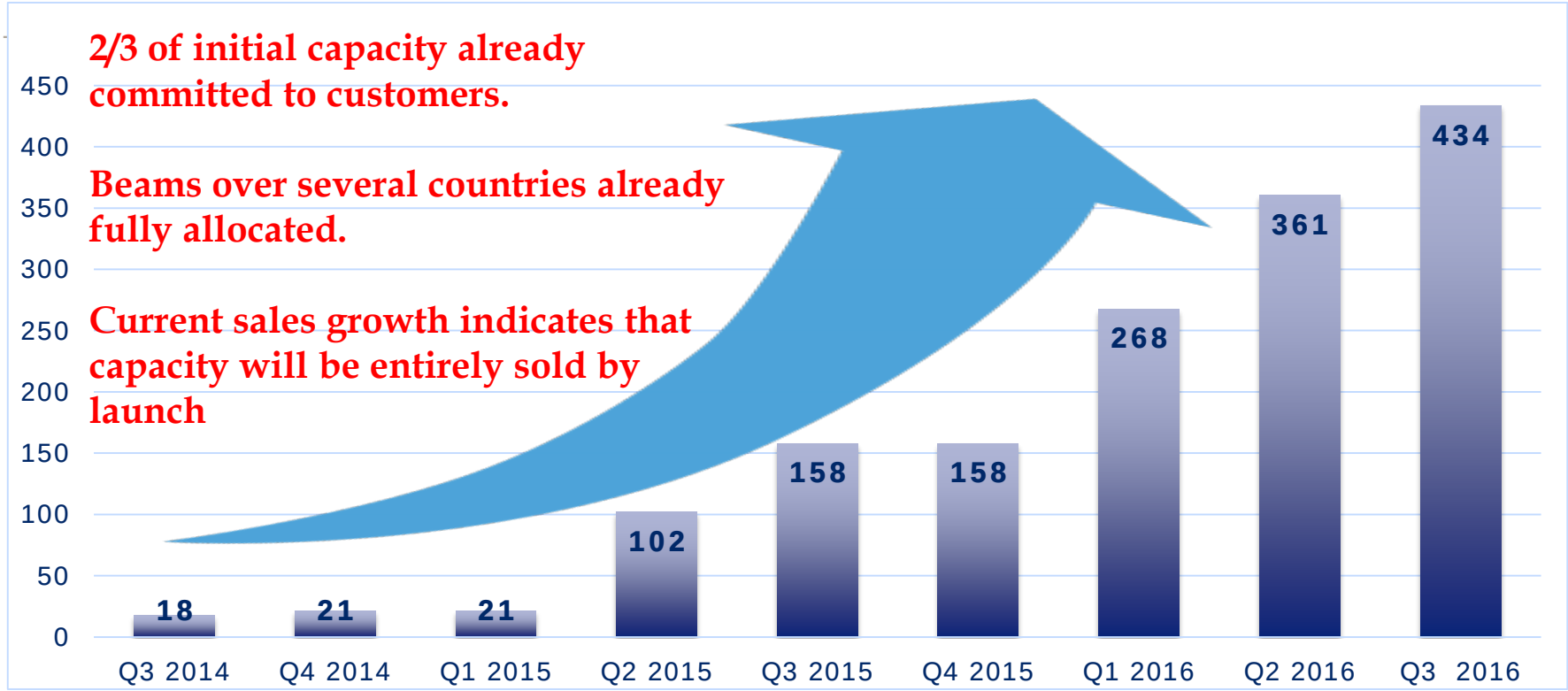

East Timor


Niue

US$430m+ of firm pre-launch contracts in 13 Asian and Pacific countries

Partnership with the ITU to connect telecenters in the Pacific

Kacific pre-sales growth over last two years (in M US$)



The opportunity for satellite broadband for the Pacific

- Community-based broadband access is the way to go in the Pacific
- Internet consumption by Pacific islanders, whether personal or for community services, is driven by multimedia and much larger than our industry think
- Ka-band is a paramount for affordable, ubiquitous, community broadband access in the Pacific (and remote communities at large) and should be protected by national regulators

With roots in the Pacific, connecting the world's remote communities