SATELLITE DEVELOPMENT in TONGA

Issues and Challenges

TONGA Country Presentation

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PRESENTATION OVERVIEW

* About Tonga - Background
* Brief History of Satellite Communication in Tonga
* Satellite Milestones in Tonga
* Pre-Millennium Satellite Issues in Tonga (C&W era)
* Post-Millennium Satellite Issues in Tonga (Competition)
* Tonga-Fiji Connectivity (OF) Project 2013 - Impacts to date!
* What about Tongasat?
* Future of satellites and Challenges!
* Concluding Remarks
Tongan oral history dated +950AD
Constitutional monarchy since 1875
Population (2011): 105,323
Total number of islands: 176.
3 main groups of islands: Tongatapu, Vava’u, Ha’apai
Plus two Niuas in the north
Total land area: 750 sq.kms
Capital: Nuku’alofa.
Reigning King: Tupou VI.
Currency: Tongan Pa’anga.
History of Satellite Communication in Tonga (4th July 1978)

Tonga enters via INTELSAT IV series (POR)

* All International and Domestic Communications in Tonga via HF Radio UNTIL 4th July 1978 (King’s 60th Birthday)


* Started with 10 SCPC channels to NZ in 1978... and grow to Total 50+ Voice Circuits to NZ, Australia and USA in mid 1990s

* TYPICAL COST TO CALL NZ in 1980s – USD$5 per minute!

* Domestic Network by Telephone & Telegraph (T&T) Department (Gov’t) via HF Radio (1987 ..Tropo Scatter)

* Inter-Islands Satellite Communication launched in 1992

* TODAY, most International Traffic via OF Submarine Cable – Inter-islands Communications still on Satellite!
Satellite Milestones in Tonga

* 1964  INTELSAT Formed (Commercial satellite)
* JULY 1978  First Satellite Operation (C & W)
* JUNE 1988  First LIVE TV RECEPTION at Tonga
  Std. B earth station (Tyson Fight)
* JULY 1988  First Live Satellite TV Uplink to AUSSAT
  (Tonga hosts Pacific Forum Meeting)
  TONGASAT licensed by Gov’t of Tonga
* 1992  Inter-islands communication - Tropo to satellite on Telstra (DAMANET) system
* 1997  Digital Satellite TV Reception (DVB-S)
* 1999  First LIVE Terrestrial Broadcast TV by OBN (RWC 1999 via satellite/TVNZ)
* 2000  First VSAT system fully owned and operated within the Pacific (USPNet)
* 2001  First Ku band satellite coverage over the Pacific ocean from Intelsat 801
* 2002  First DTH satellite services by Canal Caledonie, PBS and Sky Pacific
* 2002  First Digital Terrestrial TV (TONFON)
* 2018  40th Anniversary of SATCOM in Tonga!
Pre-Millennium Satellite Issues in Tonga (Cable and Wireless Era)

Satellite in SPACE only effective, with People on the GROUND

* CABLE & WIRELESS – Initial License for 10 years from 1978 to 1988, as only International Carrier (Monopoly).

* C & W business very successful and asked Government to extend License. Government extend Franchise Agreement to 2000!

* Government prepares to introduce Telcos competition – First Duopoly in the Pacific

* 1988 - Government approved and formed Tongasat to file for orbital positions under ITU Regulations. Global awakening!
Post-Millennium Satellite Issues in Tonga (Let the game begins – Competition)

Satellite initiates ‘Telecom Game’ to flourish!

* 1st January 2000 – TONGA Celebrates as FIRST to greet the New Millennium (Global event Broadcast Live by BBC via satellite)

* CandW (International) merges with Tonga Telecom Commission (Domestic) to form Tonga Communications Corporation (TCC Today – 100% Government owned)

* TONFON (New Telecom Operator) introduced to compete with TCC since 2001 both National and International.

* Both TCC and TONFON were satellite-based for International and Inter-islands communications. Both offered Mobile Services, TCC with OF network while TONFON only Wireless-based in Tongatapu!

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<tr>
<th>Max Traffic BEFORE OF 2013</th>
<th>TCC</th>
<th>TONFON</th>
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<tr>
<td>International Capacity</td>
<td>5Mbps</td>
<td>15Mbps</td>
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<tr>
<td>Domestic Capacity</td>
<td>8Mbps</td>
<td>20Mbps</td>
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* 2009 TONFON bought by DIGICEL (now Digicel Tonga Ltd)
Tonga-Fiji OF Connectivity Project 2013 (Impacts on Satellite Communications)

Welcome to OF Cable and SPEED! Is this end of Satellite?

* TONGA connects to Southern Cross Fiber Network via FIJI in 2013. (Tonga Cable Ltd is formed)

* Traffic Comparison – Before and After Fiber!
  BEFORE 2013  2013 TO DATE
  (35 Years)  (3.5 Years)

  * International  20Mbps  1.2Gbps (60 fold)
  * Inter-islands  28Mbps (Satellite only)

* 2017 Government signed Agreement with both TCC and DIGICEL for Inter-islands OF Submarine Cable Project connecting Tongatapu – Ha’apai - Vava’u. Project to complete in 2018.

* THERE IS BANDWIDTH-HUNGER ON THE ISLANDS!
Tonga International Traffic Growth (BEFORE and AFTER Submarine (OF) Cable)

It's all about SPEED!

TONGA INTERNATIONAL TRAFFIC BY YEAR (Mbps)
SATELLITE ERA (1978 to 2013) vs SUBMARINE CABLE (OF)

2013 Tonga-Fiji Connectivity Project
(Optical Fiber Submarine Cable)
Satellite Max. Traffic = 20Mbps

1.2Gbps (Aug 2017)
60 Times in 3 years
What about TONGASAT?

Play the Game.. ONLY IF you KNOW the RULES!

* TONGASAT no longer has ‘Exclusive Agency Rights’ to act on behalf of the Government of Tonga for ITU Orbital Filings and Licensing

* The new Political atmosphere today supports reform, strong economic growth!

* Tonga still continue to race amongst global ‘big fellas’ leaders in satellite communication
FACT is: “ISLANDS can’t do much without SATELLITE”

- The challenges of OF Submarine Cables to COMPLEMENT satellite
- High Throughput Satellite (HTS) is on the pipeline (eg Kacific, O3B, OneWeb, etc)
- Need for Ongoing Training of local people
- Vulnerable nature of remote islands during Natural Disaster seasons
- The unique nature of satellite guarantee it’s CONTINUITY in the Game! More to come!
SATELLITE CHALLENGES

Players develop High Performance Skills – Games more Exciting!

- Broadcasting nature of satellite is vital for our remote islands!
- Satellite technology continue to develop (HTS) – we must adapt!
- Hybrid-solution is the key to optimize connectivity costs.
It comes down to TRAINING of PEOPLE

* Effects of Climate Change
* Government more alert!
* Satellite still vital during disaster periods
* Training of local people is our priority (HRD)
* New Satellite Projects..
* E-Government, e-Learning, e-Health etc.. Must connect!
* We continue to Adapt to Changes.. and play the Game
THANK YOU - MALO ‘AUPITO