

SATELLITE DEVELOPMENT in TONGA



Issues and Challenges



TONGA Country Presentation

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PRESENTATION OVERVIEW



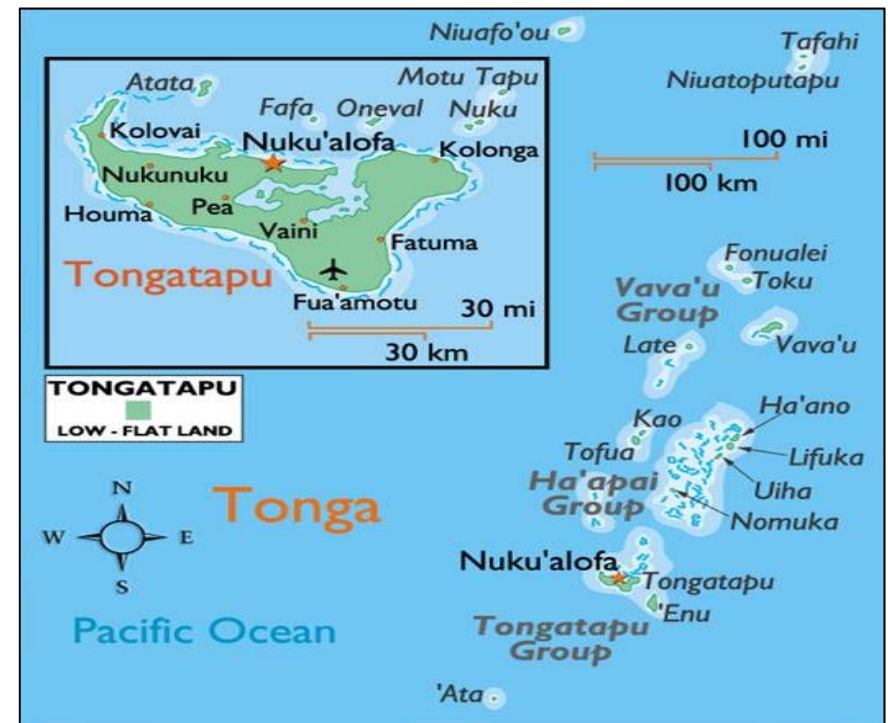
- * About Tonga - Background
- * Brief History of Satellite Communication in Tonga
- * Satellite Milestones in Tonga
- * Pre-Millennium Satellite Issues in Tonga (C&W era)
- * Post-Millennium Satellite Issues in Tonga (Competition)
- * Tonga-Fiji Connectivity (OF) Project 2013 - Impacts to date!
- * What about Tongasat?
- * Future of satellites and Challenges!
- * Concluding Remarks

ABOUT TONGA - Background



We are the last remaining smallest, oldest Polynesian island Kingdom in the World

- ✓ 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)**
- * CABLE and WIRELESS – sole Operator of International Communication for Tonga via Satellite (1978 – 2000)
- * 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!



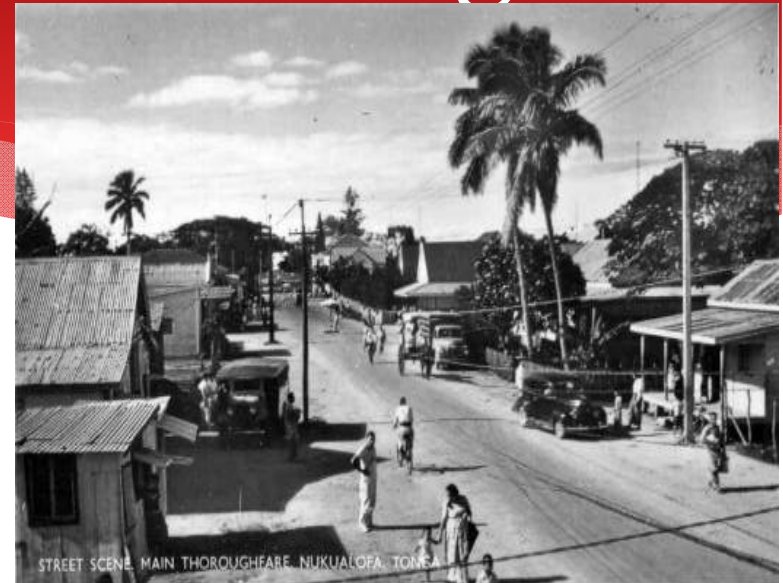
Satellite Milestones in Tonga



Street of Nuku'alofa 1956 and 2016

Satellite serves International and Domestic

- * 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!

	Max Traffic BEFORE OF 2013)	TCC	TONFON
* International Capacity		5Mbps	15Mbps
Domestic Capacity		8Mbps	20Mbps

- * 2009 TONFON bought by DIGICEL (now Digicel Tonga Ltd)



Digicel Teleport – Matakieu, Tongatapu

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 (35 Years)	2013 TO DATE (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!

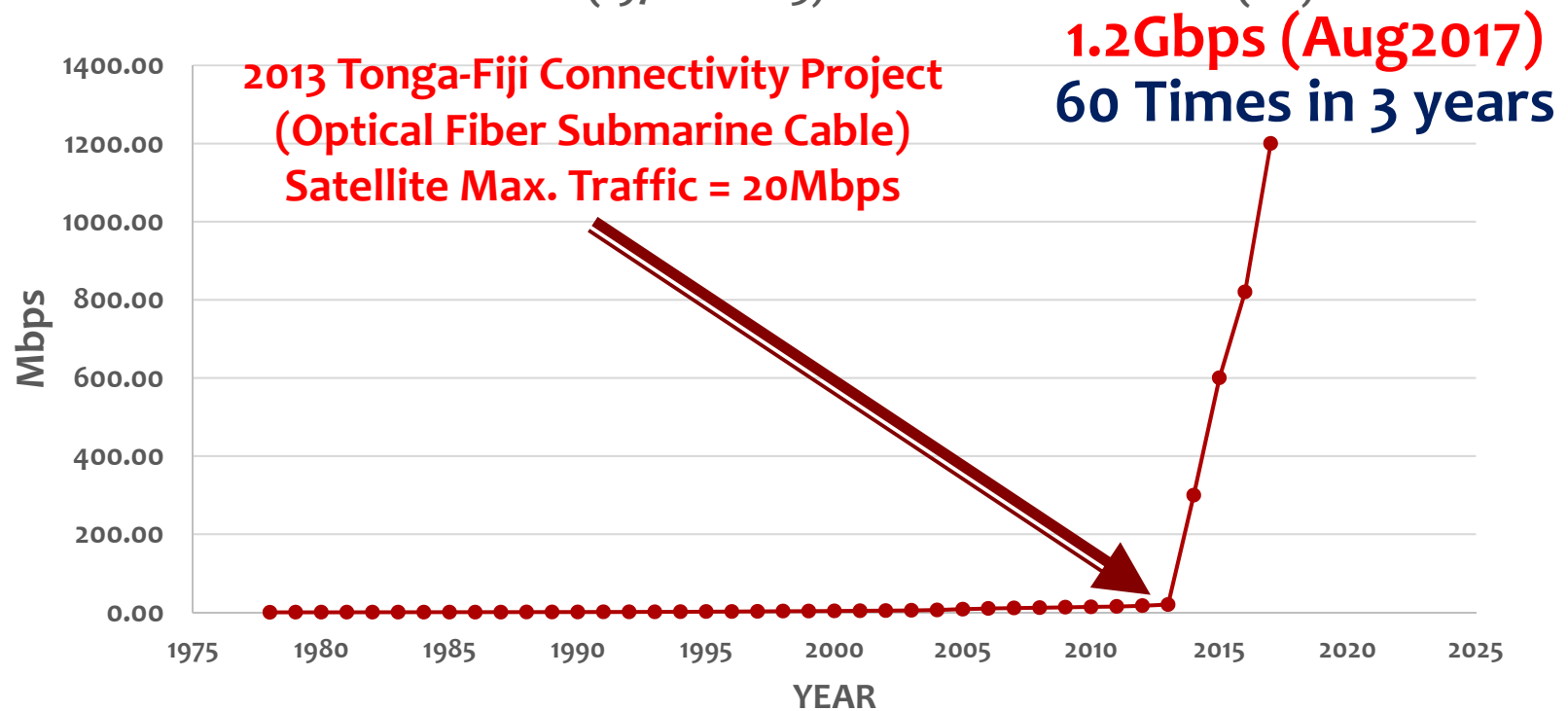


Tonga International Traffic Growth (BEFORE and AFTER Submarine (OF) Cable)



It's all about SPEED!

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

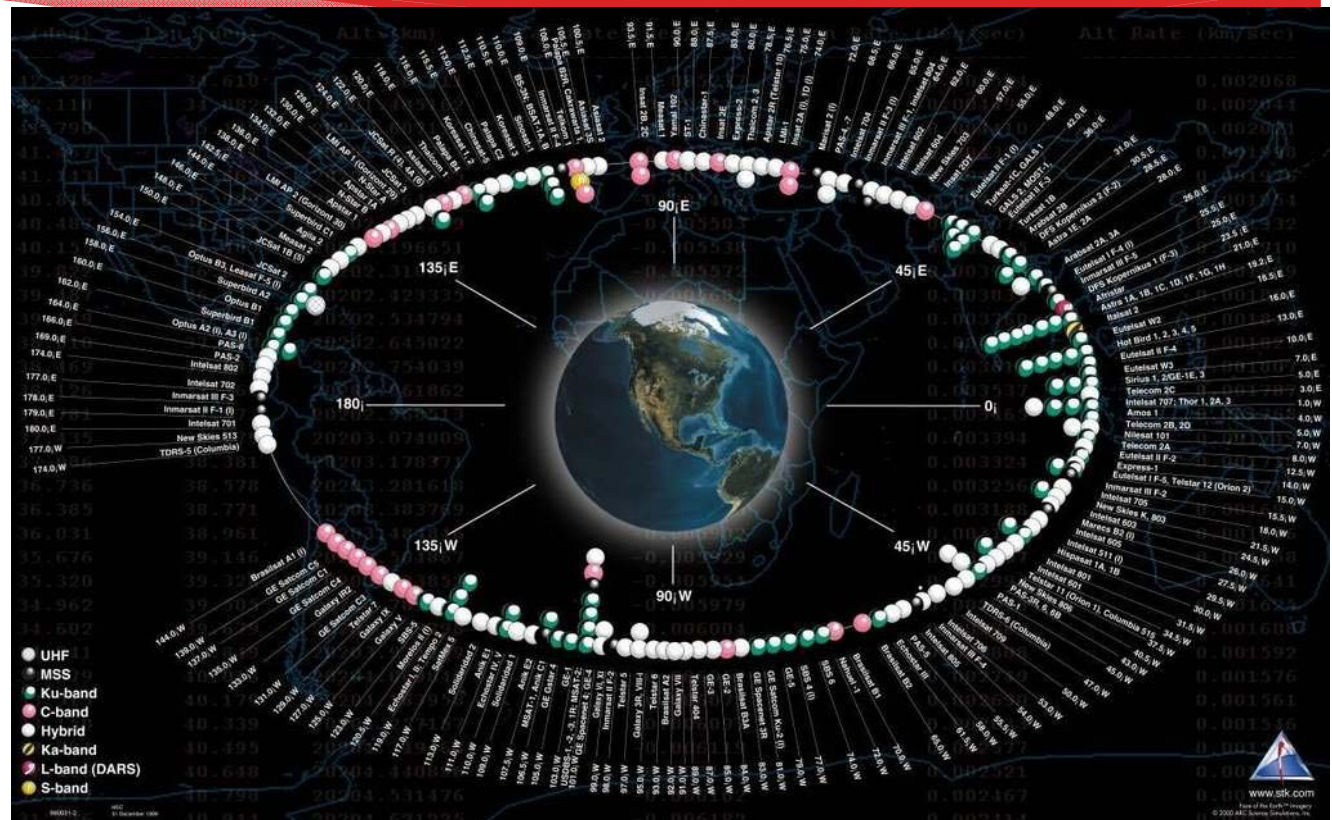


What about TONGASAT?

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



SATELLITE ISSUES and CHALLENGES



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.**



CONCLUDING REMARKS



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

