Radio Communication Experience

Telecom Fiji Ltd

Presented by Mesake Tuinabua(Manager Network Operation)21st September 2016

Presentation Content

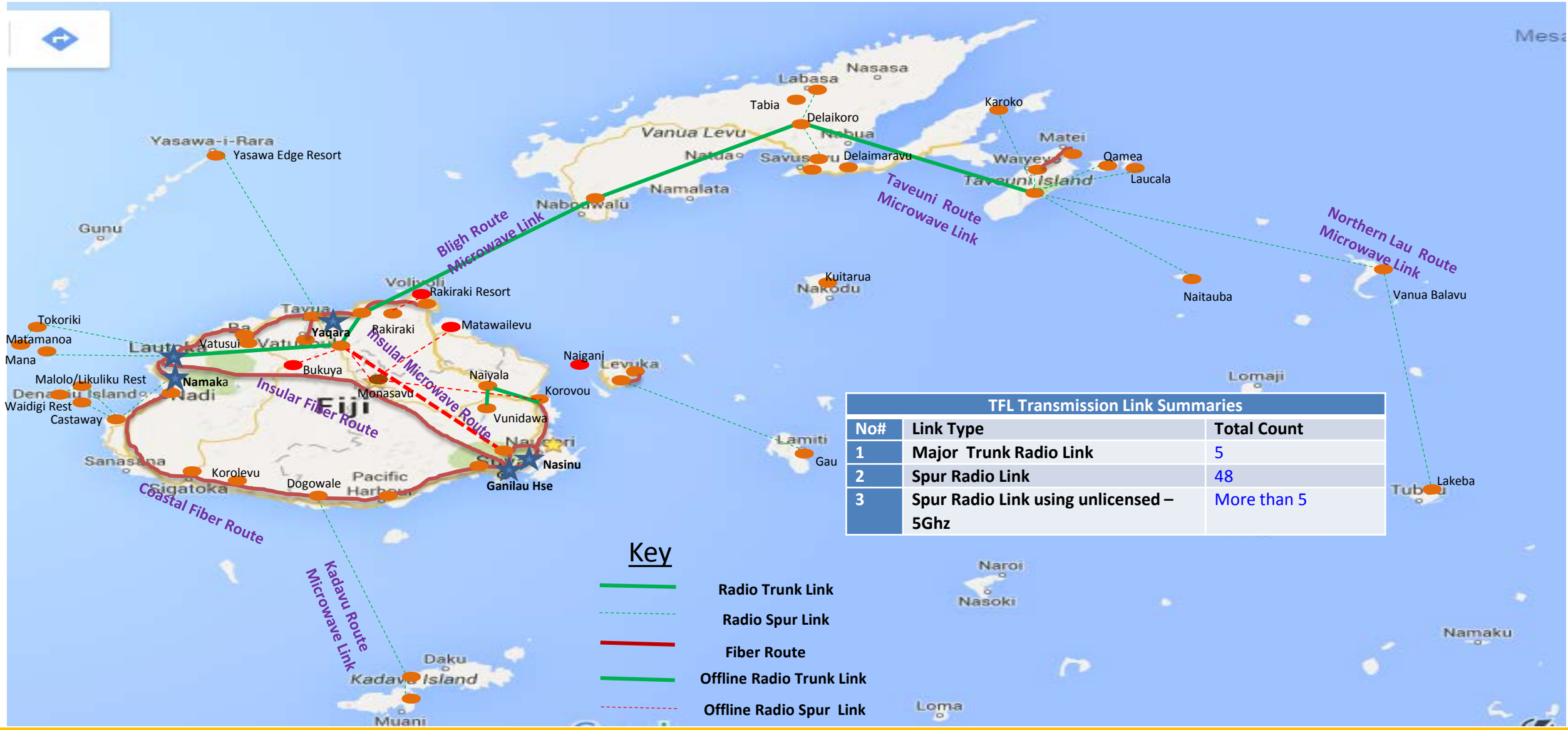
- TFL Spectrum Allocation
- Applications of TFL Spectrum
- Key Challengers
- Key Learnings
- Conclusion
- Thank You & Questions

TFL Spectrum Allocation

No#	Frequency (UL) MHz	Frequency (DL) MHz	Bandwidth (MHz)	Band Type	Purposes	Services
1	718 -733	773 - 788	15	Licensed	4G Fixed Data Services	Data Only
2	1765 - 1780	1860 - 1875	15	Licensed	Reserve for CA with the current APT700	Data Only
3	825 - 835	870 - 880	2.5	Licensed	CDMA Mobile Services	Voice and Data
4	14268.200 – 11274.20	11459 .504 – 11468.089	15.2	Licensed	VTSAT Services	Voice , Data and Backhaul
5	6920	7080	40 MHz	Licensed	Main Microwave Link	Main Transmission Link

No#	Frequency (UL)	Frequency (DL)	Bandwidth (MHz)	Band Type	Purposes	Services
6	7100 - 7425 [V-Band]@ 161 MHz TX & RX Separation		Range from 7Mhz , 14Mhz to 28Mhz	Licensed	Point to Point and Point to Multi Point Spur Link	Last Mile Transmission Link
7	2401	2495	20	Unlicensed	Hotspots	Internet Access
8	5170	5825	20	Unlicensed	Hotspots Point to Point or Point to Multi-point link	Internet Access and Last Mile Transmission Link

TFL Transmission Layout



Key

- Radio Trunk Link
- Radio Spur Link
- Fiber Route
- Offline Radio Trunk Link
- Offline Radio Spur Link

TFL Transmission Link Summaries		
No#	Link Type	Total Count
1	Major Trunk Radio Link	5
2	Spur Radio Link	48
3	Spur Radio Link using unlicensed – 5Ghz	More than 5

Impact of Cyclone Winston

Damaged Southridge 85 m Tower - > 50 yrs old

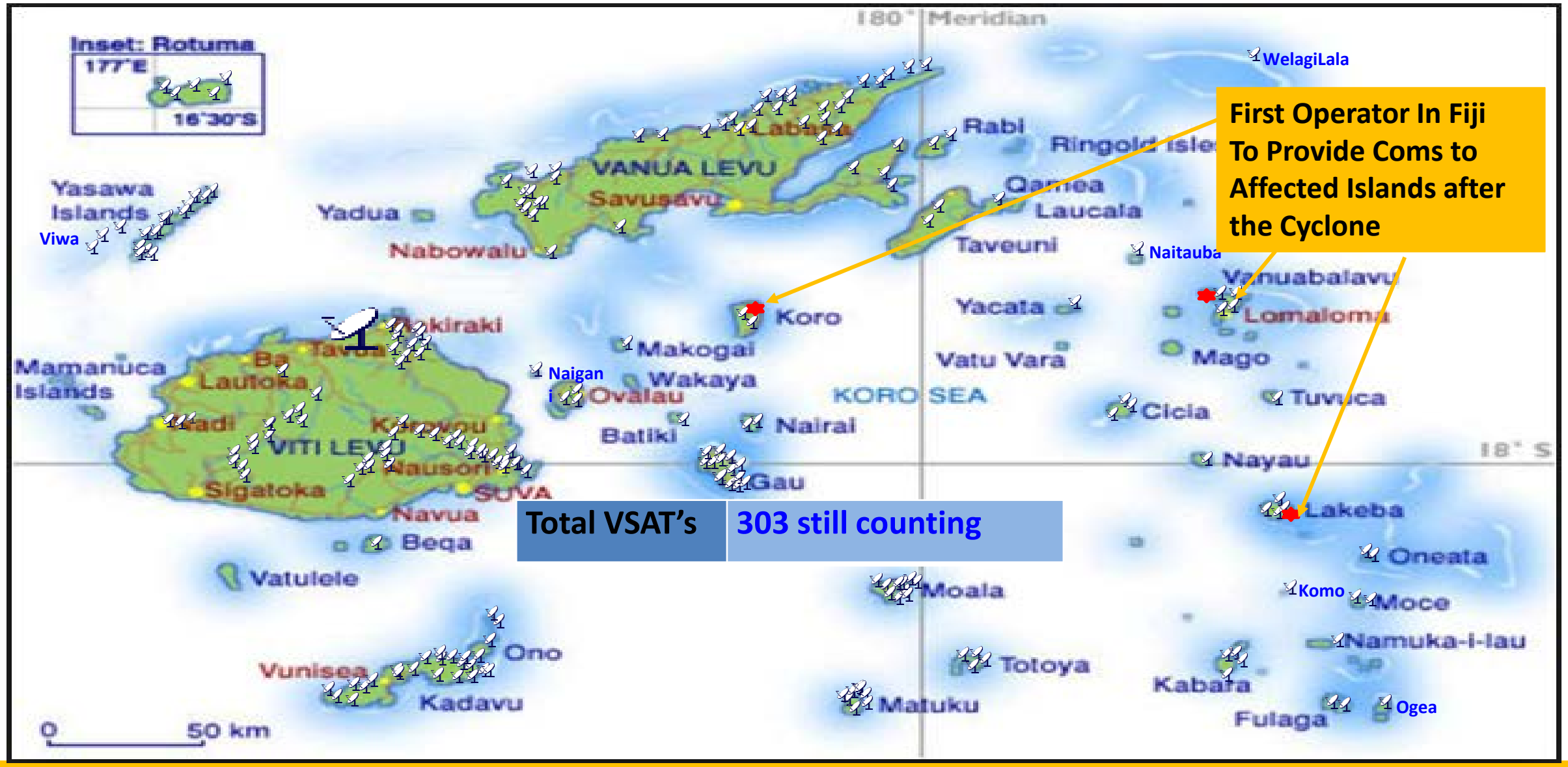
AFFECTED SERVICES

- DIVERSITY ROUTE
  - 7+ 1 DMR
- FIJI TV
  - OFF AIR
- VODAFONE
- ISLAND RESORTS
- AIRPORT FIJI LIMITED

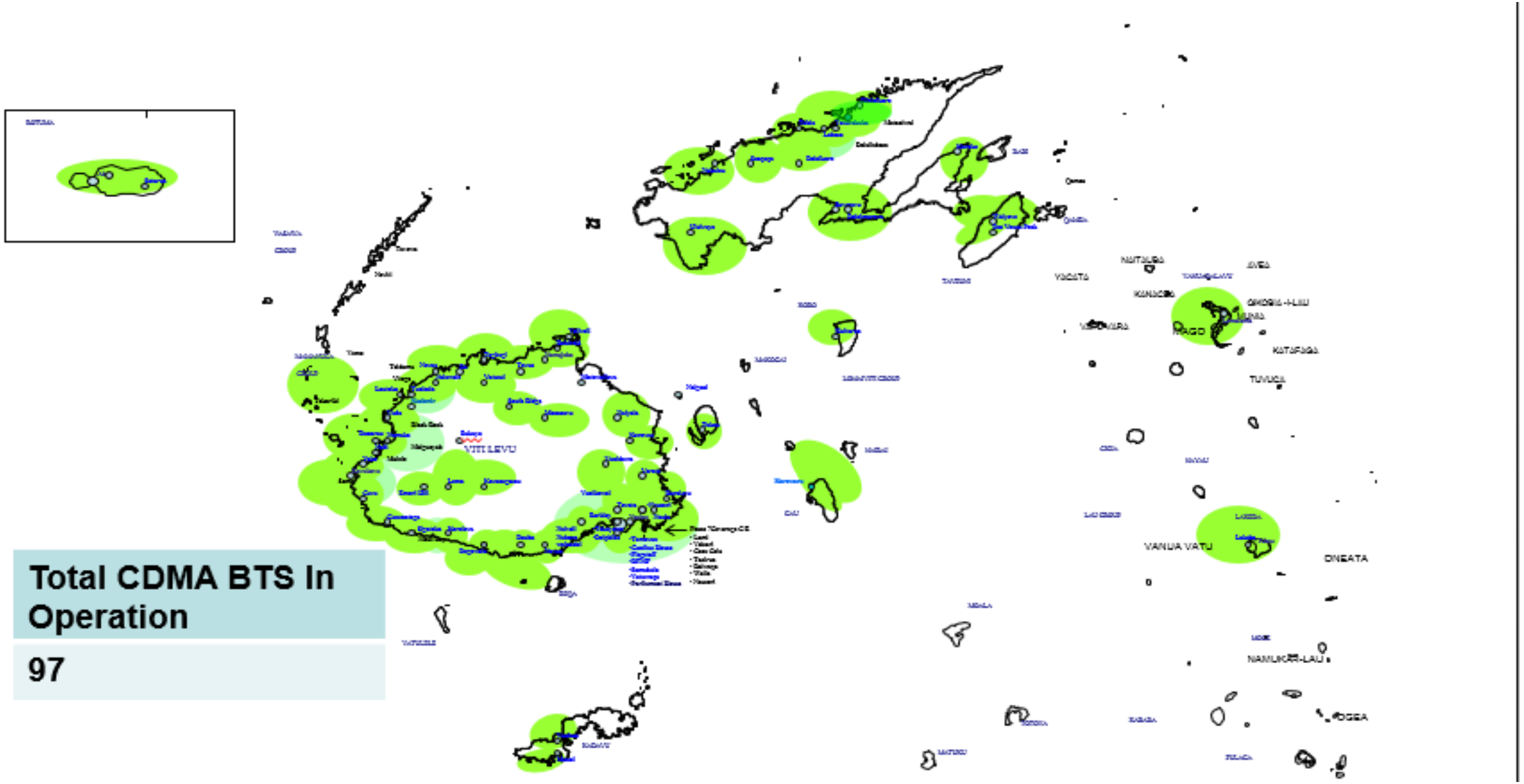
North View

South View

Access Node - VTSAT Network



Access Node – CDMA2000 Network



Total CDMA BTS In Operation

97

Access Nodes – Wi-Fi

- **Hotspots present on all the major towns and popular public gathering area i.e.. park and picnic areas in Fiji.**

- **170 AP's already online and still counting**

Access Node - LTE

- **Recently launch on 16th Sept-2016 covering all the major towns and residential areas in Fiji.**
- **39 eNodeBs already online and still counting**

Key Challengers

- **Bandwidth Limitation**
  - ❑ Due to more demand in customer bandwidth resulted in the exhausted in our frequency band especially for our spur links. Thus the need to relocate to another free band i.e. from V to U without interfering to existing services .This will required additional investment on new RF system (ODU) and spectrum licensing.
- **Unlicensed Frequency - New Reservation**
  - ❑Our local regulator just provide a notice recently to all operators in Fiji for the band (5.60GHz – 5.65GHz)to be reserve for Metrology services although its part of the unlicensed 5Ghz band initially.

Key Challengers

- **Adapting to the ITU Standards By Equipment Vendors**

❑Have some experienced with vendors that do not follow the ITU standards on the use of licensed and unlicensed equipment Example : Antenna ODU which have overlapping bands and for unlicensed equipment's in mitigating some level of interference in polluted environments.

- **Proper RF Planning and Administration**

❑Give the full responsibility to an in-house Radio & Transmission expertise to do an overall RF planning and its administration for TFL and at same time maintain good communication with our local regulator

Key Challengers

- **Opening up of Microwave Frequency Band to any Operator in Fiji instead of per Operator Lot allocation which we think will cause more problem at a later stage if not manage properly by the local regulator.**
- **High Operation Cost in terms of leasing Satellite Bandwidth and maintaining the Teleport and remote VSAT's.**
- **Limited range of VSAT for quick deployment on any post cyclone situation.**

Key Learnings

- **Assisting other Operators during the Emergency.**

❑ Providing IP bandwidth from Vanua Levu to Viti Levu to other local operators during the post cyclone.

❑Co-Sharing in term of tower space , power supplies and even sharing of spares.

- **Maintaining good relationship and partnership with Radio Vendors for reliable backup support at all times.**

  i.e. Valid MSA

Key Learnings

- **Availabilities of multiple Access Nodes in the Network to complement and backup each other in terms of need depending on its viability to allow service continuity**
- **Unifi Concept –**

❑ Using one username with single Data Bucket to connect on any Fixed or Wireless access technology within TFL

❑ Removing barriers or restriction to allow mobility on available Technologies within TFL or any Operator in Fiji.

Key Learnings

- **Advantage of Upper 6Ghz Frequency Band on our main microwave**

❑ Link stability over sea path on long hops with respect to the tropical environmental conditions in Fiji.

- **Advantage of APT700 Band on our LTE Network**

❑Good indoor and outdoor penetration that best suit Fiji challenging terrestrial environment hence lower the CAPEX.

Conclusion

Radio Communication are here to stay and to complement our daily customer needs

- ❖ Rise in number of cable damaged we need ra communication as the form of backup to provide services continuity and safeguard revenue
- ❖ Quick Service Deployment especially critical times such as disaster.
- ❖ Quick solution to places where deployment of Cable network is not viable hence reduction in CAPEX cost.

Thank You – Vinaka Vakalevu

https://www.tfl.com.fj

QUESTIONS ?