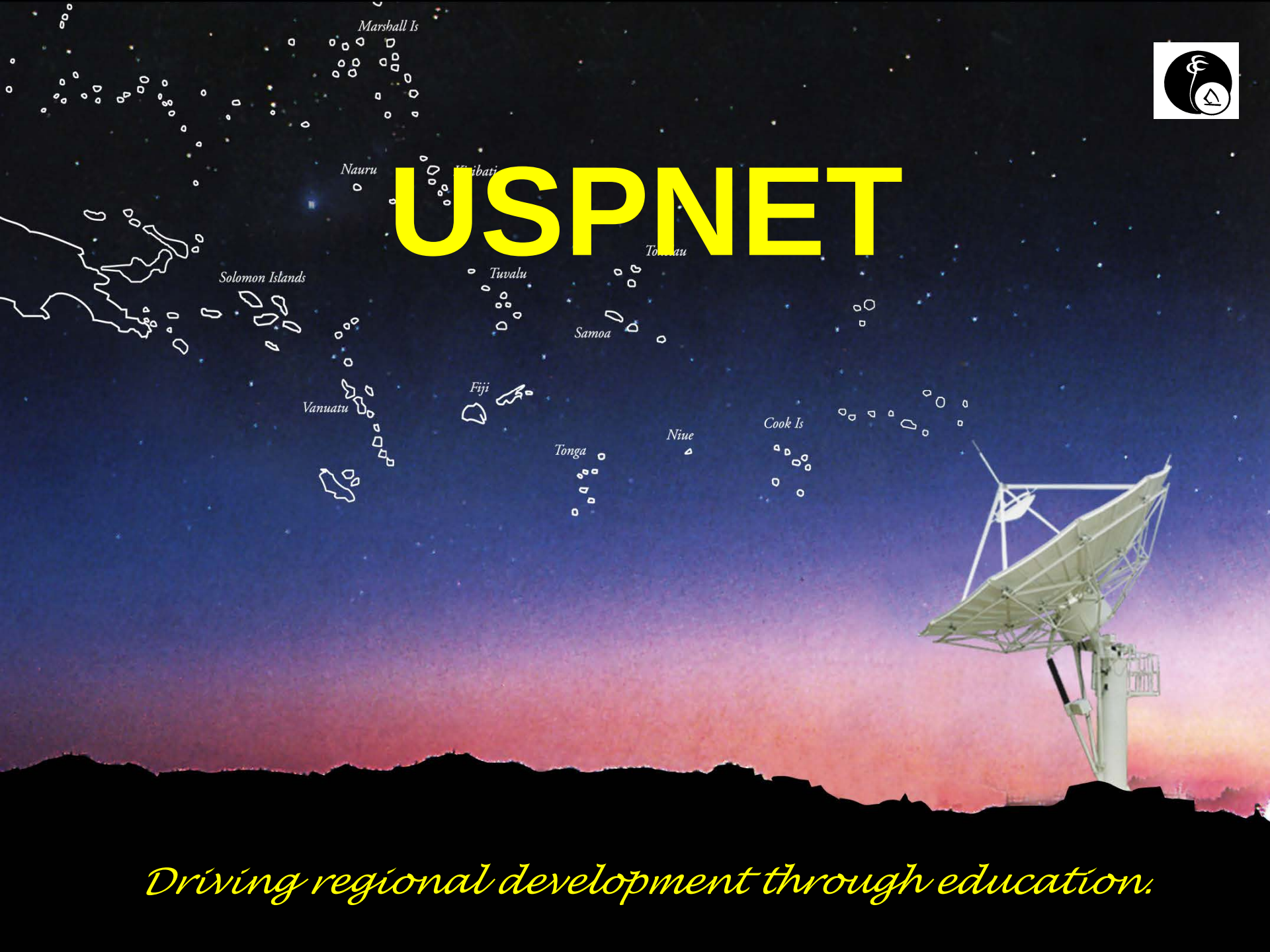
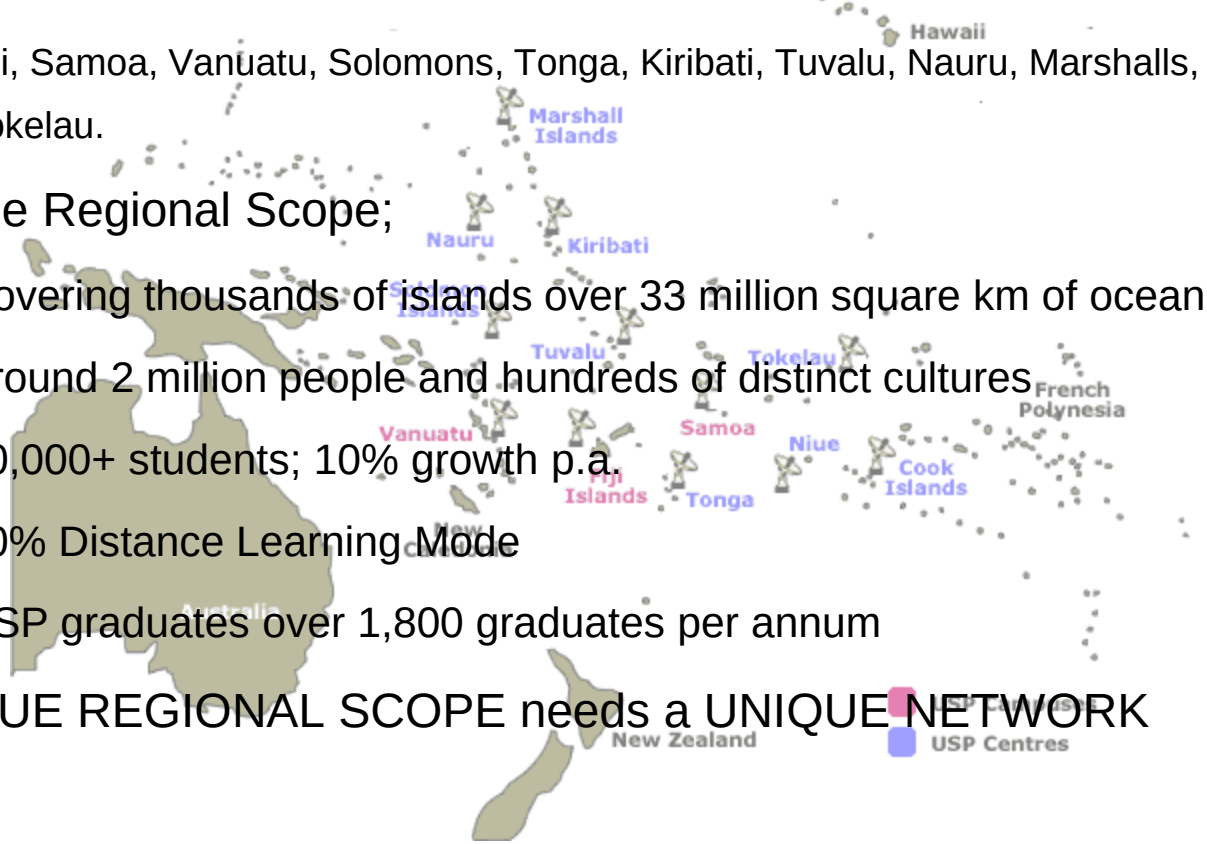


USPNET

Driving regional development through education.

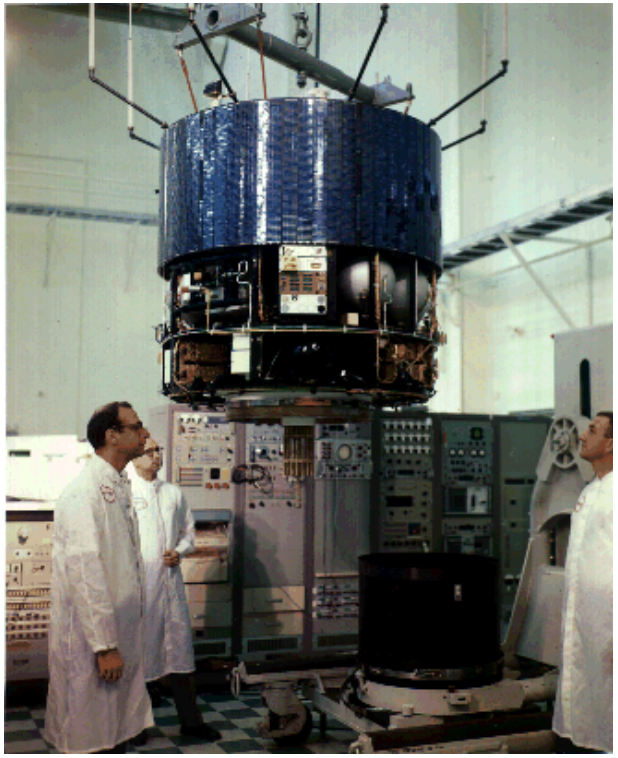
Unique Scope

- USP established 1968 to serve 12 member countries.
  - Fiji, Samoa, Vanuatu, Solomons, Tonga, Kiribati, Tuvalu, Nauru, Marshalls, Niue, Cooks, Tokelau.
- Unique Regional Scope;
  - Covering thousands of islands over 33 million square km of ocean
  - Around 2 million people and hundreds of distinct cultures
  - 20,000+ students; 10% growth p.a.
  - 50% Distance Learning Mode
  - USP graduates over 1,800 graduates per annum
- UNIQUE REGIONAL SCOPE needs a UNIQUE NETWORK



The Early Years…

- 1972 – Peacesat Network;
  - Between Tonga & Suva.
  - Single Telephone Channel.
- 1974 – NASA;
  - NASA's ATS-1 Satellite.
  - Telephony links to 5 campuses.
- 1989 - Intelsat POR/SCPC via Telco leased lines.
  - 64kbps voice links.
  - Network management issues.
- 1997 USPNet Upgrade:
  - To deliver data 64kbps to selected campuses;
  - Internet Services
- USPNet 2000 - SCPC
  - Audio Video and Data services
  - ALL 12 USP countries
- 2008 – IP VSAT Upgrade
  - iDirect Platform
  - Hybrid C/Ku-Band
  - 25 Sites / 45Mbps



NASA Engineers with ATS-2 prior to it's launch in 1967

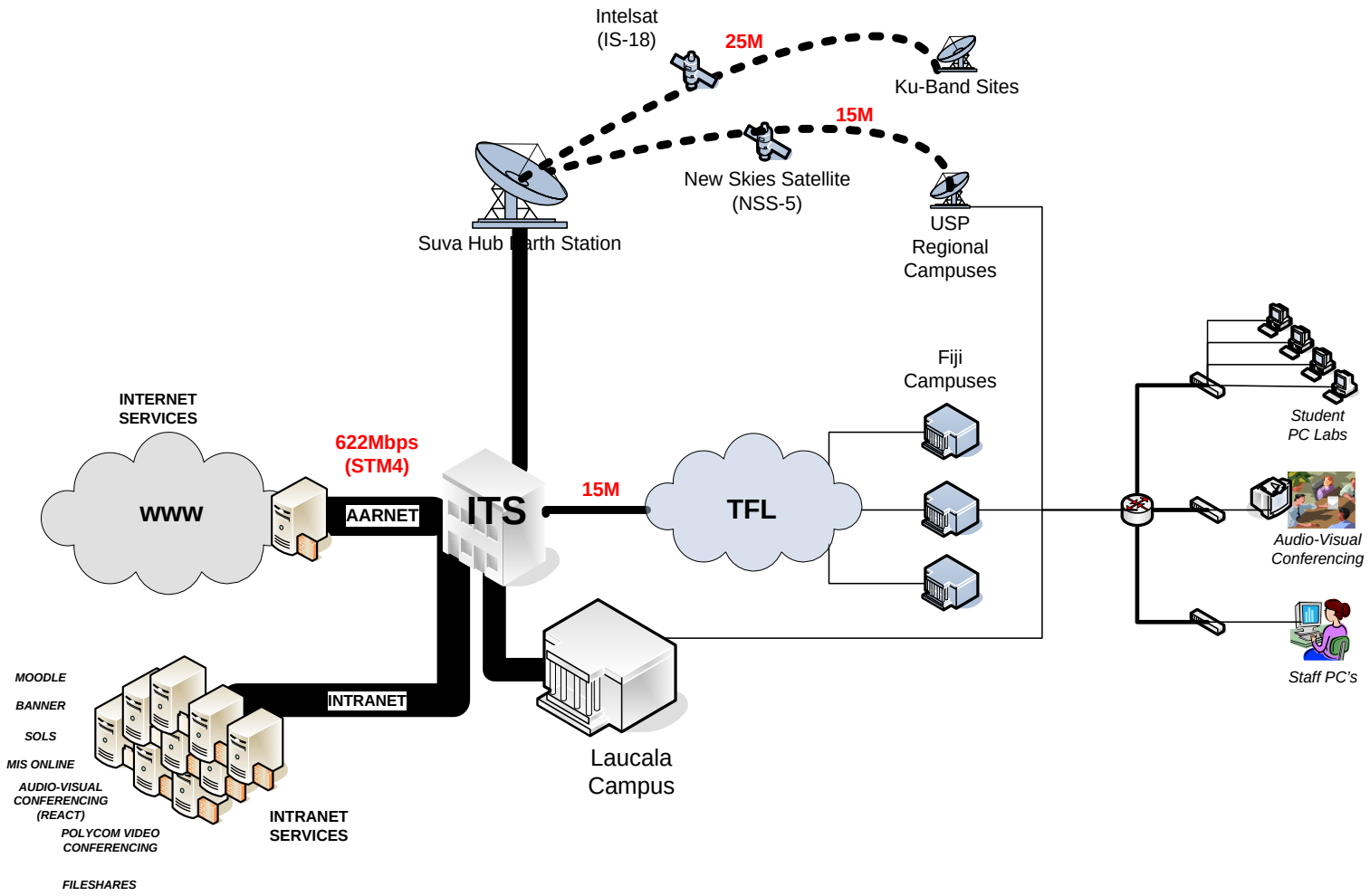
Key ICT Statistics

THE UNIVERSITY OF THE SOUTH PACIFIC

	TOTALS	Fiji - Laucala	Solomons - Honiara	Vanuatu - Emalus	Fiji - Lautoka	Tonga - Atele	Kiribati	Fiji - Labasa	Samoa - Alafua	Cook	Marshall Islands	Tuvalu	Nauru	Tokelau	Niue	Vanuatum - Santo	Fiji - Savusavu	Vanuatu - Malampa	Tonga - Ha'apai	Tonga - Vavau	Solomons - Lata	Solomons - Mokolo	Samoa - Savaii
No. Students (Head Count)	23975	12104	3099	2899	1377	1020	1005	952	463	244	242	289	154	73	54								
No. Students (EFTS)	11561	7422	1044	991	499	387	404	300	226	61	73	81	17	41	15								
No. PC Labs	82	38	5	5	3	3	2	4	5	1	3	2	1	1	1	1	1	1	1	1	1	1	1
Gen Student Access PC's	1806	1120	124	130	65	50	40	68	80	35	41	28	10	5	10	15	21	5	11	10	5	5	5
Student/PC Ratio (Full Head Count)	13	10.81	24.99	22.3	21.18	20.4	25.13	14	5.79	6.97	5.9	10.32	15.4	14.6	5.4								
Student/PC Ratio (EFTS)	6	6.63	8.42	7.62	7.68	7.74	10.1	4.41	2.83	1.74	1.78	2.89	1.7	8.2	1.5								
Wifi Coverage		80%	100%	90%	100%	80%	100%		100%	50%													

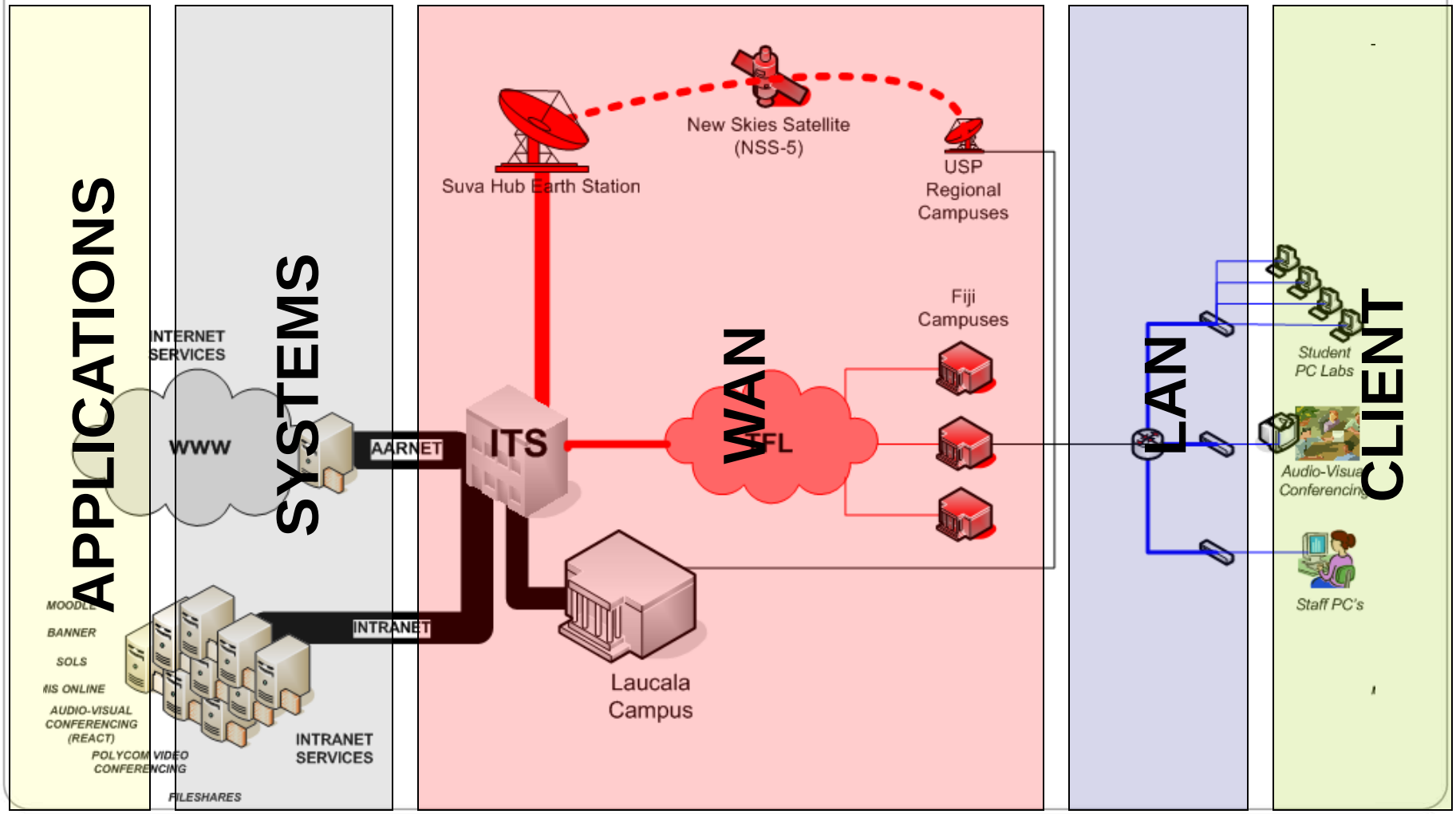
- 22 Campuses spread across 12 Countries;
- 20,000+ Students / 11,500+ EFTS;
- 2500+ PC's / 33% Wireless Coverage;
- 300+ Servers / IBM, Dell, OS – Windows + Linux.
- 200+ Network Devices / 90% CISCO
- Hybrid WAN connectivity; VSAT, Terrestrial, Submarine Fibre-Optic (New)

Infrastructure Introduction

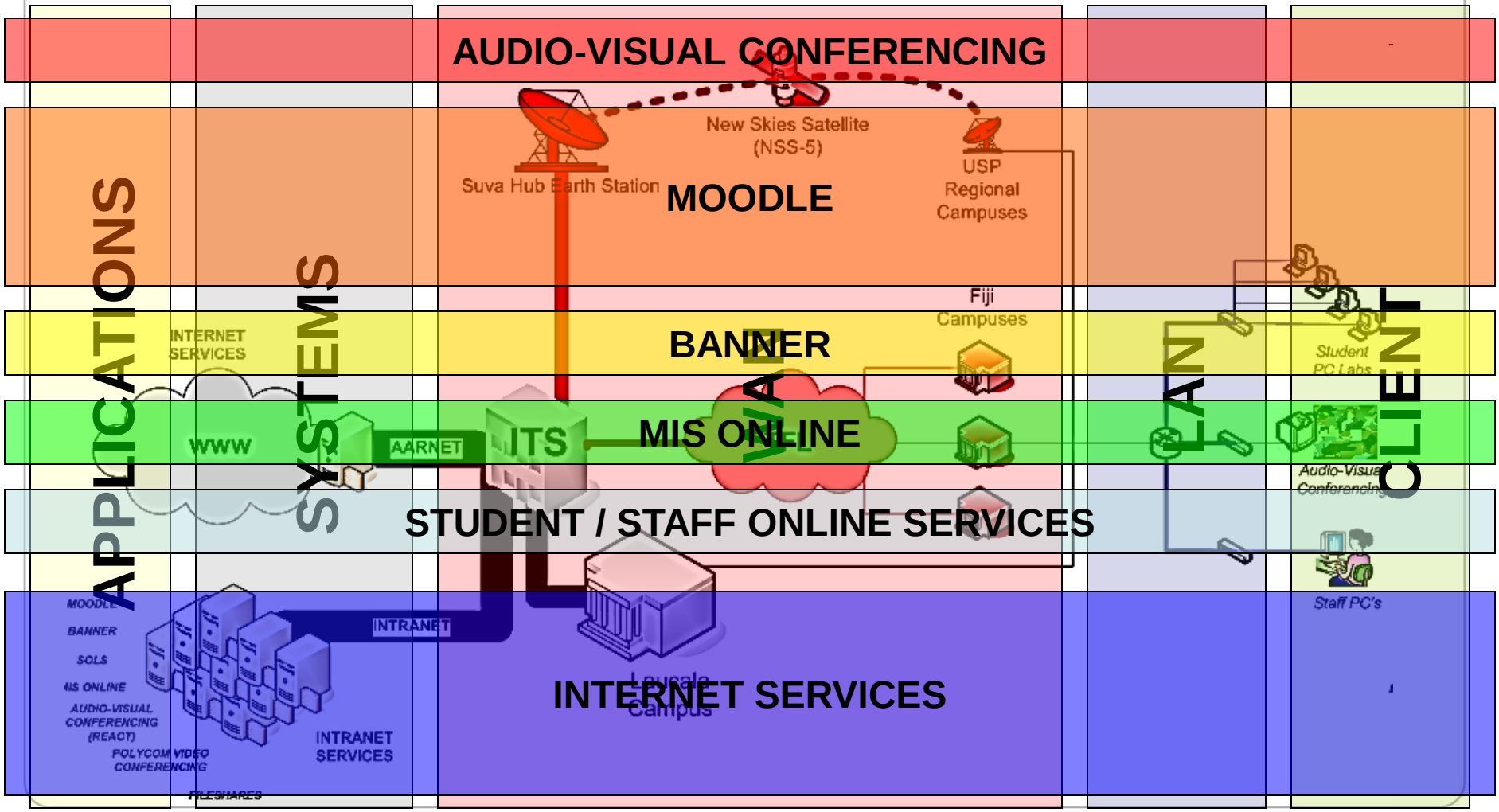


ICT Infrastructure Model

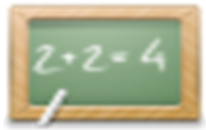
THE UNIVERSITY OF THE SOUTH PACIFIC



ICT Services Overlay Model



ICT Services Catalogue


Academics Support


Accounts


Email


Finance


Hardware Software


Instructional Support


Web Infrastructure


Security


Training


Audio/Video Conferencing (REACT)

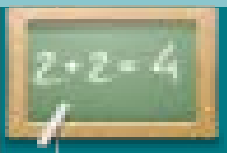

Telephony


Internet

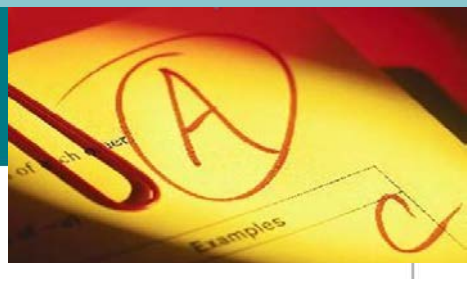

Printing Photocopying Scanning


Research Support

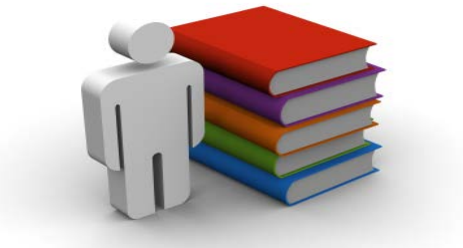
ICT Services



Academics & Students

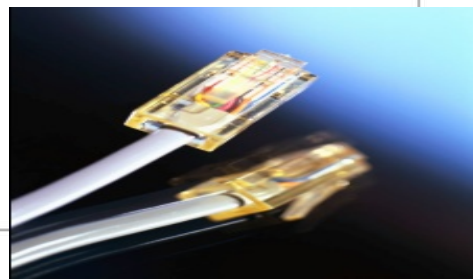


- **Computer Labs**
  - Computer Labs & PC Bookings **(24Hrs)**
  - Desktop Hardware Purchase & Support
  - USP Standard and Instructional Software
  - AV Support
  - Internet & Printing



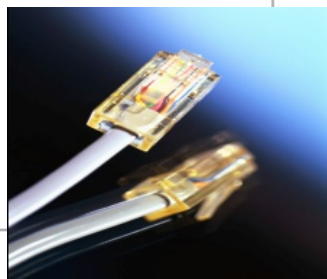
- **Lecture Theatres**
  - AV Support
  - Desktop Hardware & Software support

- **Distance Lectures & Tutorials**
  - REACT Venues
  - Video Conferencing
- **AV Equipment Reservation**



ICT Services

Accounts



USP Account

- **Private & Secure Access**
- **Password Management**
  - Change Your Password
  - Password Security
  - Reset Forgotten Passwords

Use

- **Email applications**
- **Personal File Share**
- **SOLS**
- **MIS Online**
- **Banner**

ICT Services

USP Email Services

Student

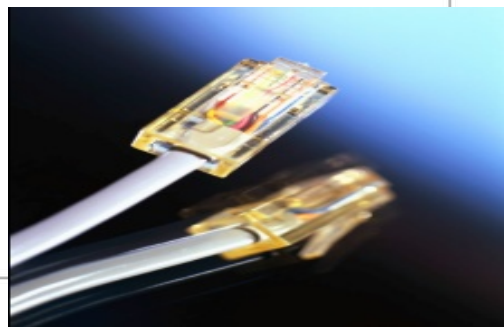
Google Apps @ USP

Staff

Microsoft Outlook

ICT Services

Hardware & Software Support

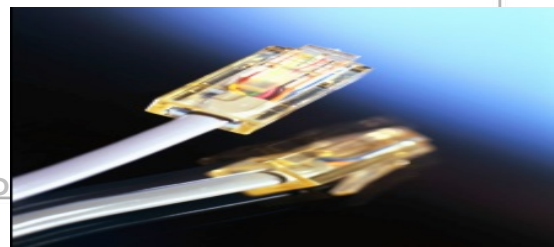


- **USP Desktop/Laptop/Tablet Support Management**
  - Standard Operating Environment
    - Hardware & Software
  - Network connectivity
  - Applications & OS Patch Management
  - Assist on Data Storage & Backup
  - Security
  - Replacement Scheme
  - SOE Training
  - USP Bookshop Partnership
  - Desktop Support - Support Response & Escalation Paths

ICT Services

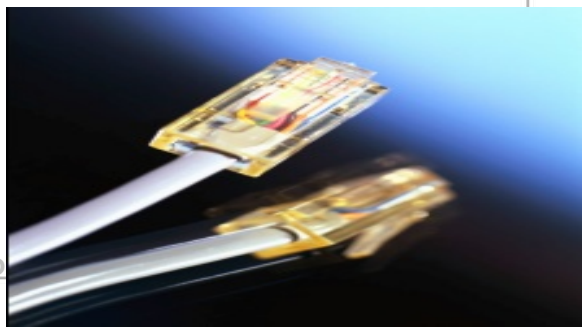
Instructional Support

- Audio Visual Consultation & Design
- Support for Lecture Theatre & Tutorial Technologies
- Facilitating Video Conferences
- Facilitating REACT Tutorials
- Audio Visual Equipment Reservation & Use
- AV Support



ICT Services

Security



- **Anti-Virus Support – McAfee**
  - Desktops
  - Laptops
  - Macs
- **Computer Security**
  - PC Hardware Security
  - Password Management
  - Email Scams
  - SPAM
  - Spyware removal
  - Windows Updates
- **IT Firewall Management – Border Protection**

ICT Services

IT Training

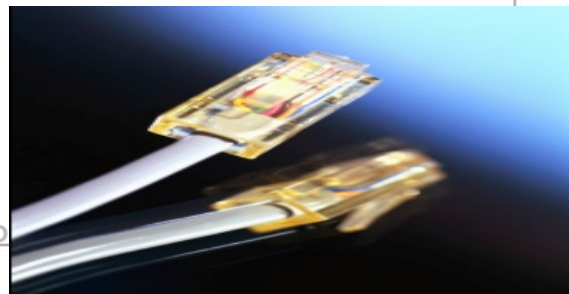
In-House Training

- SOE Training
  - Beginners, Intermediate & Advanced Training

    MS Office Suite 2010, File Management

Professional Trainings

- Regional Cisco Academy
- IT Essentials Academy.
- RedHat Academy



ICT Services

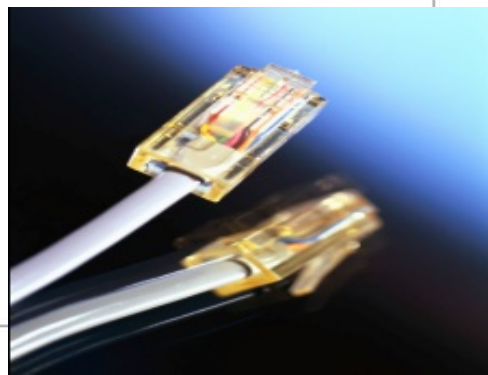
Telephony

- **Telephone Services**
  - New Extension
  - New Voice Mail Box
  - Pin Number
  - Changes, Move…
  - Forms - http://www.usp.ac.fj/its
- **Telephony Support**
  - Support Personnel & Training
  - USP Blackberry Configuration

ICT Services

Printing, Photocopying, Scanning

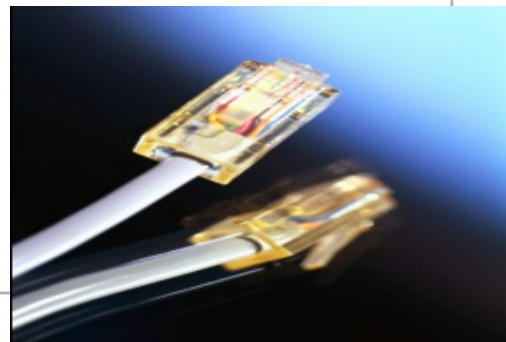
- User Support for MFD use
  - Driver Installation and incident support
- USP ID Card Encoding Support
- Quota Support
- Vendor Incident Reporting - **Xerox**



ICT Services

Research

- Data Support
- High Speed Internet
- M-Learning
- Tablet & Application Development Support
- Looking Ahead → High Performance Computing

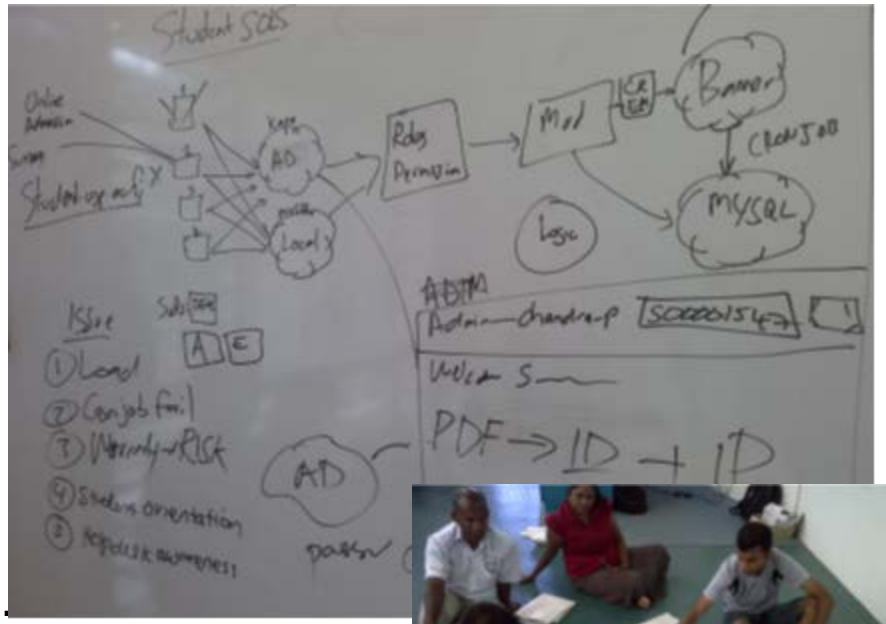


Challenges…

- Regional Connectivity.
  - Costly Satellite Capacity
  - Alternatives
- Changing Technology.
  - Wifi Explosion; Online Learning
- Security.
- User Perception of Service.
- Human Resources / Recruitment.
- Funding.
- Uniform ICT Technical Strategy.

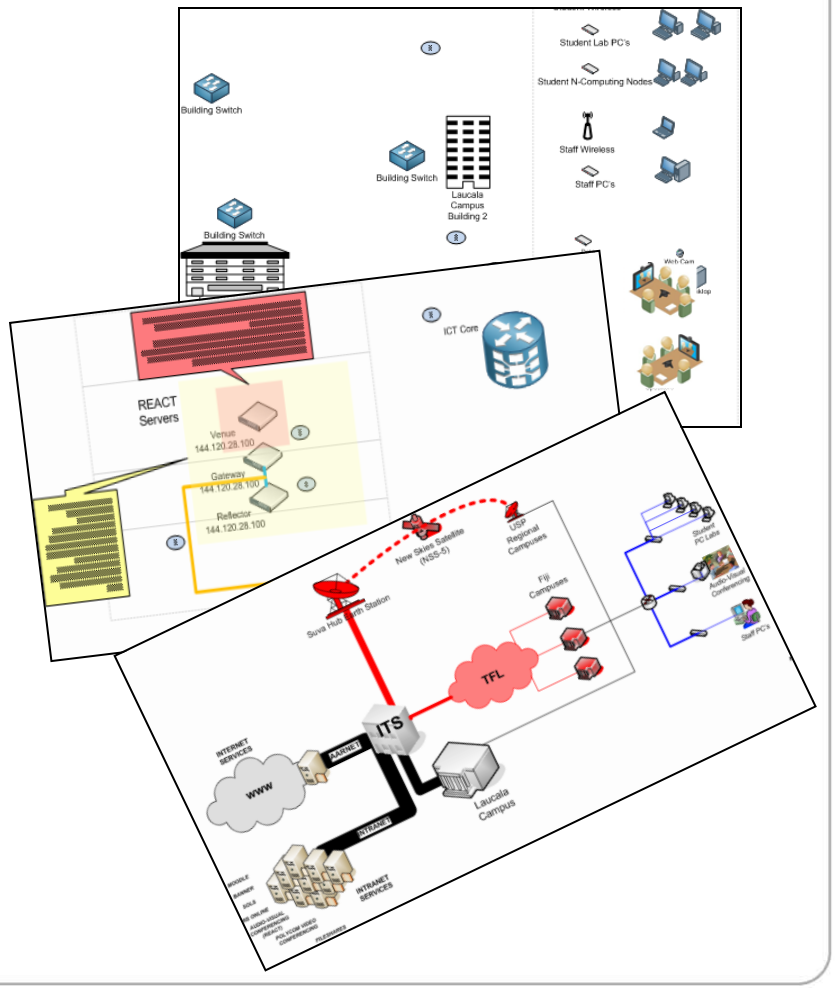
Back to the Drawing Board…

- Soul Searching Exercise:
  - Brainstorming
  - Mind Mapping
  - Workshop Type Environments
  - No Pre-concieved Outcomes
  - Involving Key Enablers
  - Stakeholder consultation
  - Free to Challenge
- Method to the Madness
  - Scribes to take formal minutes.
  - All brainstorming flipcharts & Whiteboards e-archived.
  - Service by service evaluation.



Outcomes…

- Comprehensive database of service design documentation:
  - Low level detail
  - Descriptive illustrations.
- Group analysis of key issues facing service.
  - Wide Stakeholder Involvement.
  - Lateral Thinking Techniques.
  - Dr Dilawar's Direction.
  - Synthesis of possible solutions.
- Consolidation/Prioritization of Key Technical Strategy
  - Short Term: Semester 1 2013
  - Medium Term
  - Long Term



Outcomes…

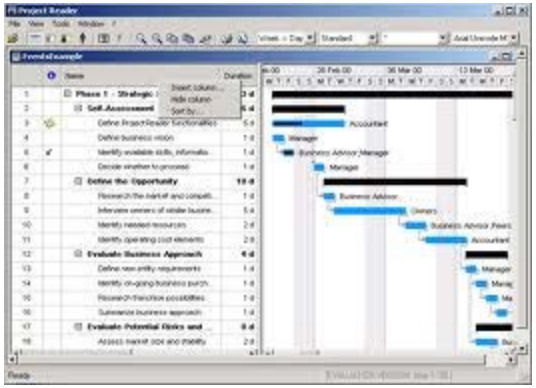
- Overall ICT Technology Strategy Presentation:
  - Full Implementation Plans.
  - Estimated Costs & Resources Required
  - Presented to SMT
  - Consultations with key regional ICT specialists e.g. Dr Lassener, CIO of UH.
- Focus on Phase 1 – Short Term initiatives in advance of Semester 1, 2013.
  - Standard Project Management Methodology adopted.
    - Project Implementation Schedules
    - Communication Plans
- Implementation endorsed by Vice-Chancellor in mid-Dec, 2012.

USP ICT SERVICES INFRASTRUCTURE & SERVICES REVIEW – 2012.

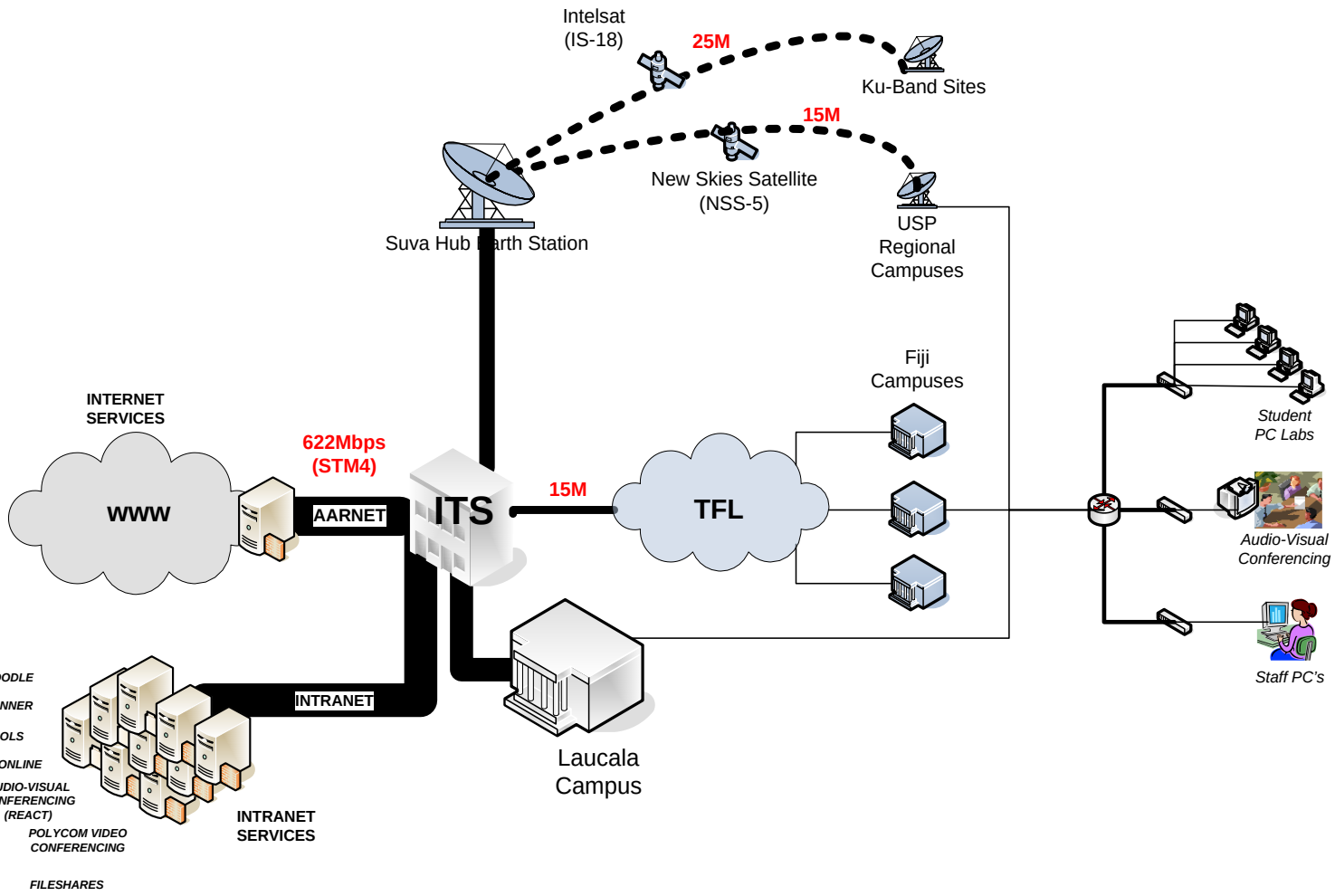
Incremental Budgetary Requirements

* All currency in Fiji Dollars (FJD)

						SHORT TERM	
REF	DESCRIPTION	Priority	Qty	Unit Cost	Unit	CAPEX	OPEX
A	Supplement key ICT Systems & Network Services Infrastructure to key regional campuses;						
A1	Regional WAN Bandwidth Capacity & Technology Upgrades:						
A1.1	Increase in iDirect C-Band Capacity from 9.6MHz to 18MHz:						
	SES New Skies Capacity	High	9	$ 9,500	/MHz/m		
A1.2	Deploy STAMPEDE WAN Optimization Technology						
	STAMPEDE Device H/W & Licensing Upgrade	High	1	$ 47,773	/2 x FX4000 Units & 6 x FX1000 Units	$ 47,772.87	
A1.3	Increase Fiji Terrestrial Links Capacity						
	Lautoka	Med	1	$ 2,000	(+ 6Mbps per month)		
	Labasa	Med	1	$ 2,000	(+ 2Mbps per month)		
	Savusavu	Med	1	$ 2,000	(+ 2Mbps per month)		
A2	Regional Systems & Networks Infrastructure Upgrade.						
A2.1	Tier 1 Campuses - Emalus, Solomons, Samoa, Tonga & Kiribati Campuses.						
	Upgrade Core Routers to provide multi-WAN link capability	High	5	$ 12,000	/Cisco2900 series Router	$ 60,000	
	Upgrade Server Systems	High	5	$ 60,000	/2 x HighSpec Servers		
	Installation Costs incuding Travel (For Server/Router/Firewall/Stampede installation)	High	5	$ 15,000	/2 x Man-Weeks		
	Develop NAC/BYOD Solution	High	5	$ 150,000	/HWAppliance+Server		
A2.2	Tier 2 Campuses - Tuvalu, Cooks, Marshalls, Niue, Tokelau, Nauru.						
	General LAN/WAN/Systems Upgrade	Med	8	$ 30,000	/Campus		



WAN - Regional Connectivity



iDirect Roadmap

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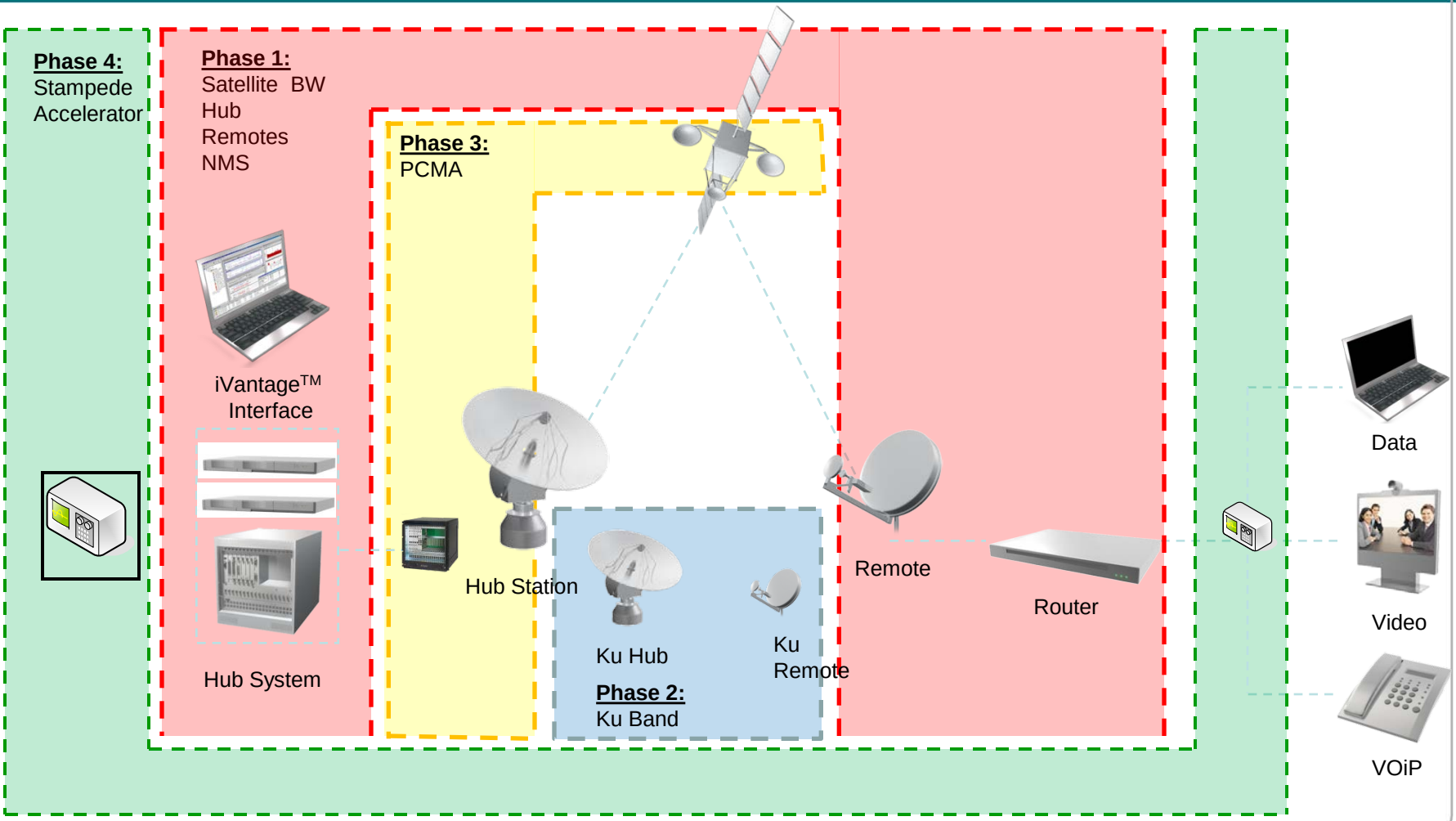
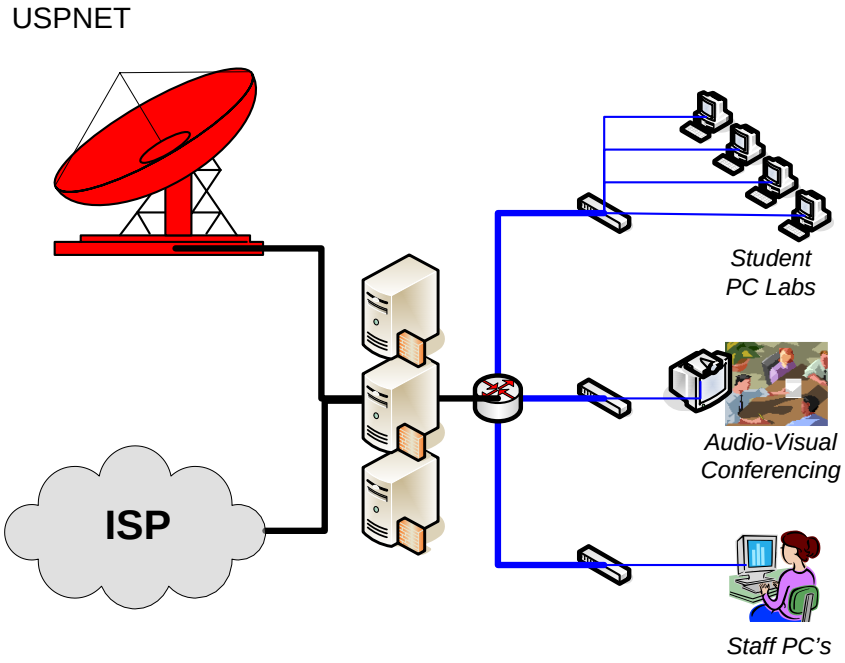


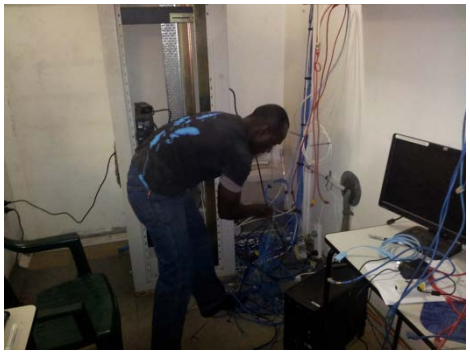
Localization of Services



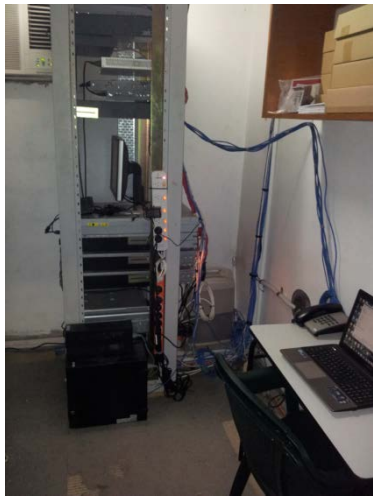
- **Benefits:**
  - Localization of chatty authentication traffic.
  - Local MS Exchange Email services.
  - Local Papercut Internet Quota Management System.
  - Local Proxy for Cache-ing
  - Higher Spec Networking Routers – facilitating an alternative Link via local ISP for redundancy and load sharing.
  - Improved Virtual Server Architecture for increased redundancy, uptime and availability.

Target Main Problematic Campuses in advance of Semester 1, 2013.

- Emalus, Honiara & Alafua Campuses
  - Chronic problems with MOODLE, Internet and general consistency in services.
  - Logical consolidation of all key technology improvements theorized was implementation.



- Upgrade of key campus ICT infrastructure and service design to effect improvements in services:
  - Installation of new servers to improve hardware concentration.
  - Upgrade regional network routers and firewall installation to improve capacity, stability & security of the network.
  - Reconfiguration of core service authentication, traffic routing and PC Management to improve user experience.



ICT Infrastructure Upgrade – Summary of Results.

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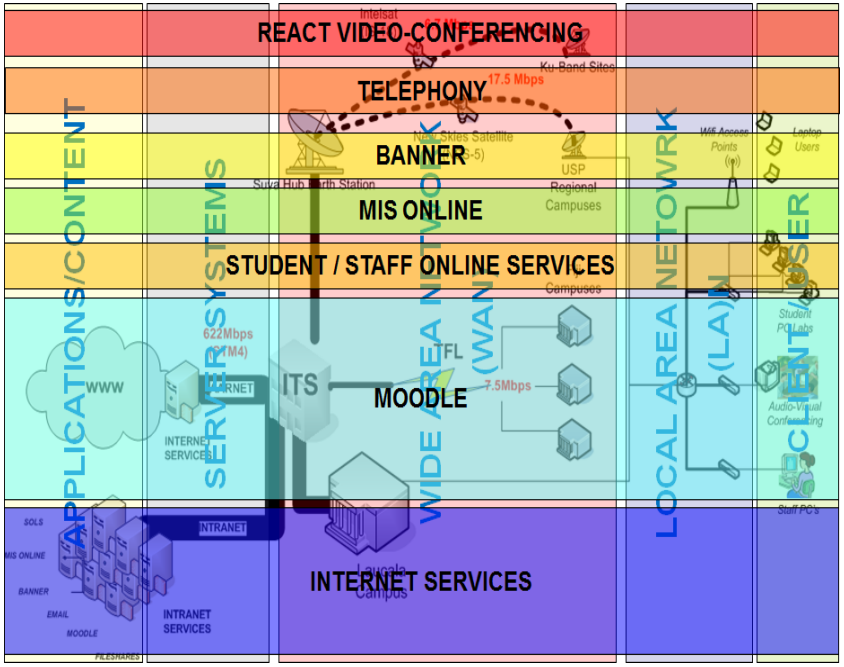
USP ICT SERVICES INFRASTRUCTURE & SERVICES REVIEW – 2012.

Results of Regional Campus Infrastructure Upgrades

Performance Objective	Emalus Campus	Honiara Campus	Alafua Campus	Comments
Network Ping Latency	-57%	-30%	-33%	Significantly Decreased Latency Times
Services to Hardware Ratio	+50%	+50%	+50%	Server resources doubled per service
Service Uptime & Availability	10%	10%	10%	Uptime improved
Moodle Basic Access & Browsing	-47%	-41%	-41%	MOODLE access improved
Moodle Downloads	-9%	-4%	-18%	MOODLE downloads improved
Moodle Uploads	100%	100%	100%	MOODLE uploads were a problem due to Application Version Issue.
Banner - Access & Browsing	-60%	-40%	-53%	Vastly improved Banner Access Times
Banner - Basic Functionality	-50%	-50%	-41%	Vastly improved Functional Times
Internet - Access & Browsing	-50%	-97%	-14%	Vastly improved Internet Access Times
Internet - Downloads	-100%	-100%	-100%	Vastly improved Internet Download Times
Telephony	100%	Improved Quality	Improved Quality	Telephony Quality Improved - Emalus Significantly
REACT AV Service	Increased capacity for quality conferences.	Increased capacity for quality conferences.	Increased capacity for quality conferences.	REACT quality and stability improved

Increasing Online Delivery



- Since 2009, a 127% increase in the number of courses with an online component.
  - Increased requirement for Student PC Lab resources (+40% Growth)
  - Development of MOODLE and increasing usage of MOODLE.
  - Increased usage of REACT as a supplementary tool.
  - Increased requirement for WAN capacity (+approx. 8MBps)

LAN Devices – Wifi Explosion

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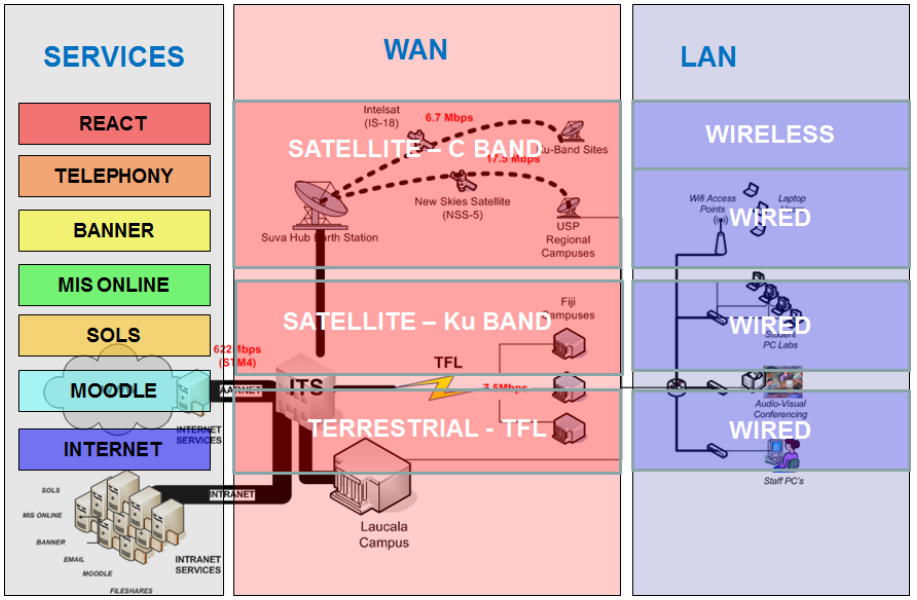
USP Wifi Strategy

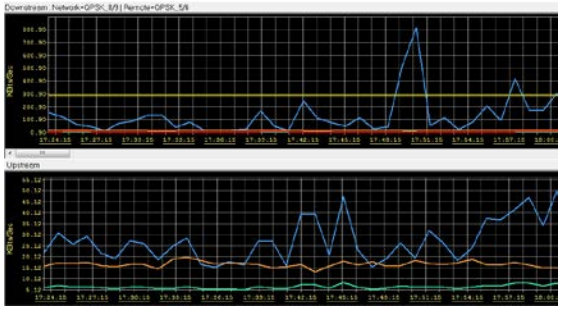
- Cost-effective network coverage expansion
- Since 2009, Wifi deployed to 5 main campuses:
  - 56 New Access Points
  - Approx 600 New Users
  - Approx additional 10Mbps WAN Bandwidth required.
- Security & Virus Considerations:
  - 2 significant outages at Main Campuses.
  - Firewall Hardware & Network Access Control Systems Planned.



USP Wifi Expansion Strategy – will need to be accompanied by WAN capacity upgrade & additional security infrastructure.

WAN Technology Enhancements

- USPNet Wide Area Network:
  - Bottleneck - At peak periods <10% of requested capacity was provisioned.
  - Effecting improvement in USPNET would have the widest impact on regional users.
- USPNET Bandwidth Capacity Upgrade:
  - Recommendations for Upgrade in Satellite Capacity for 2013 – effective doubling of current capacity to main regional campuses.
  - Subsequent planning cycles to include new technology options e.g. Cable, O3B etc.
- iDirect QoS “Tweaking” to better suit traffic patterns and USP priorities.



Wide Area Network (WAN) Strategy

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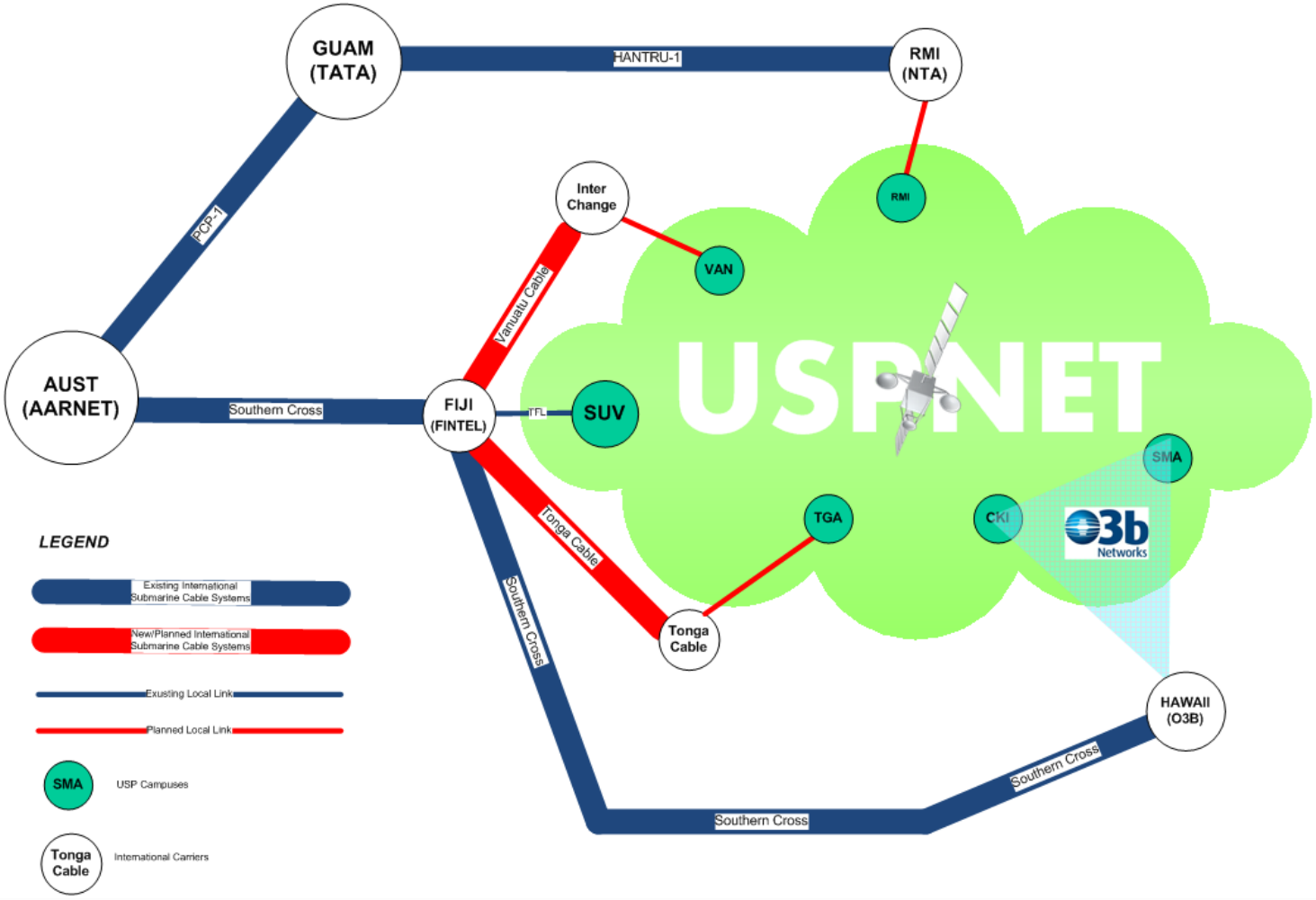
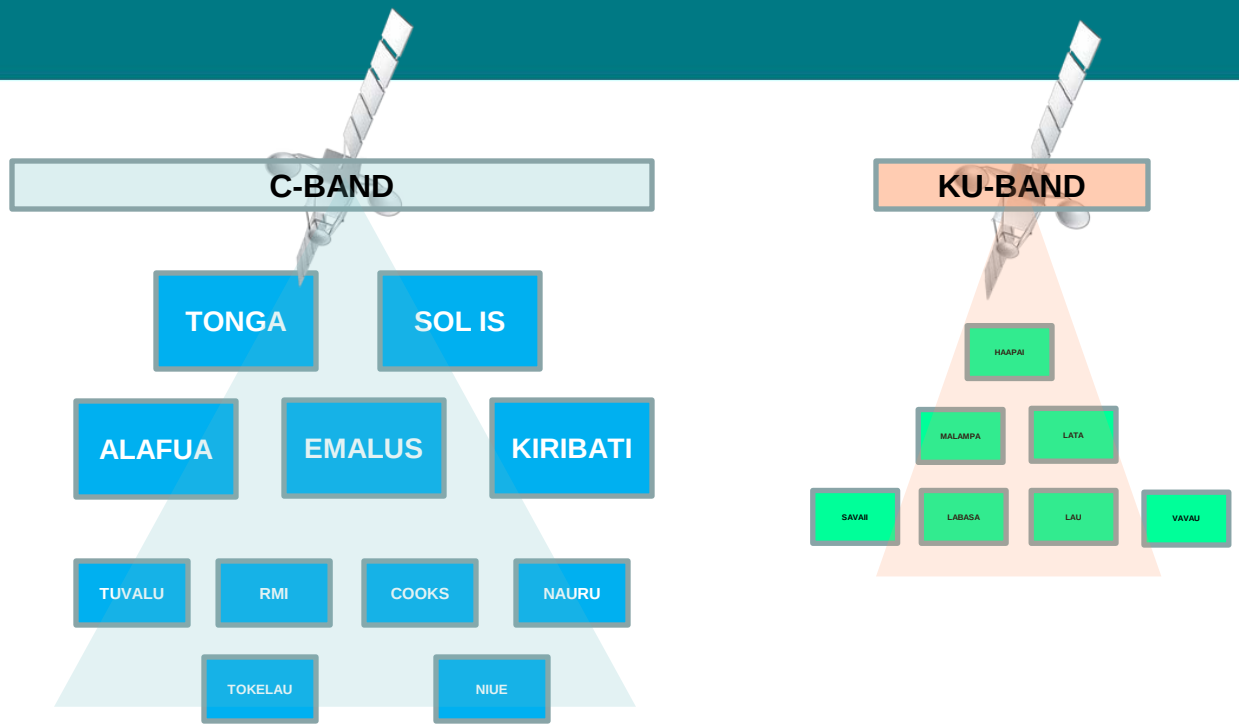


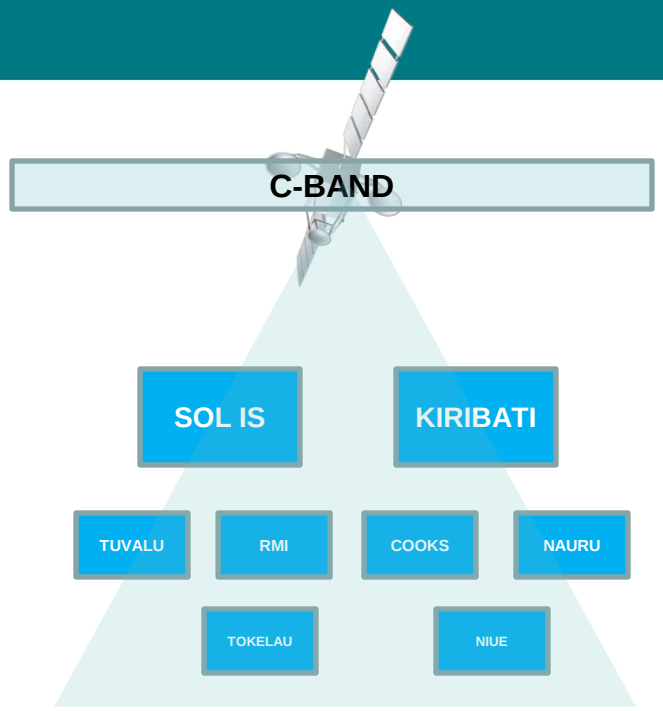
USPNET Bandwidth Expansion

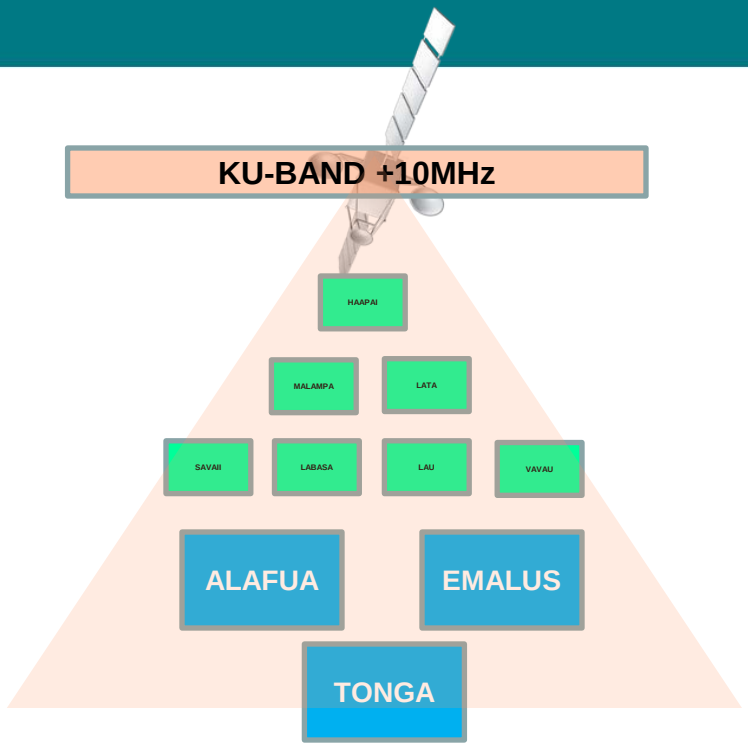


- 10MHz NSS-9
- Main USP Campuses

- 5MHz – IS18
- Small Sub-Campuses

USPNET Bandwidth Expansion





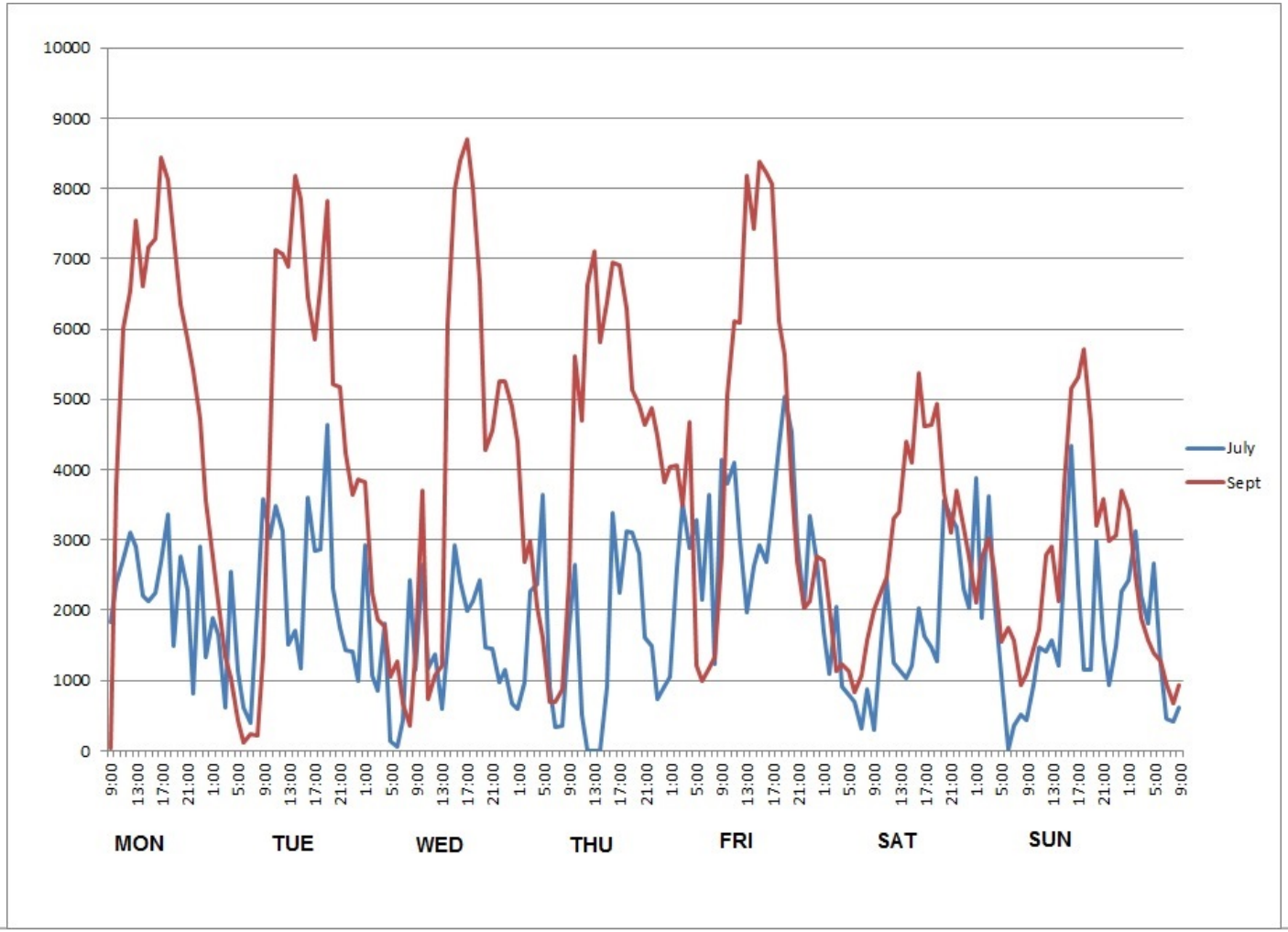
- 10MHz NSS-9
- Fewer Main USP Campuses

- 15MHz – IS18
- Small Sub-Campuses + Main Campuses

- Overall reduced contention for bandwidth; reduced congestion; service improvements.
- Valuable redundancy across both systems.

Results – Emalus Campus

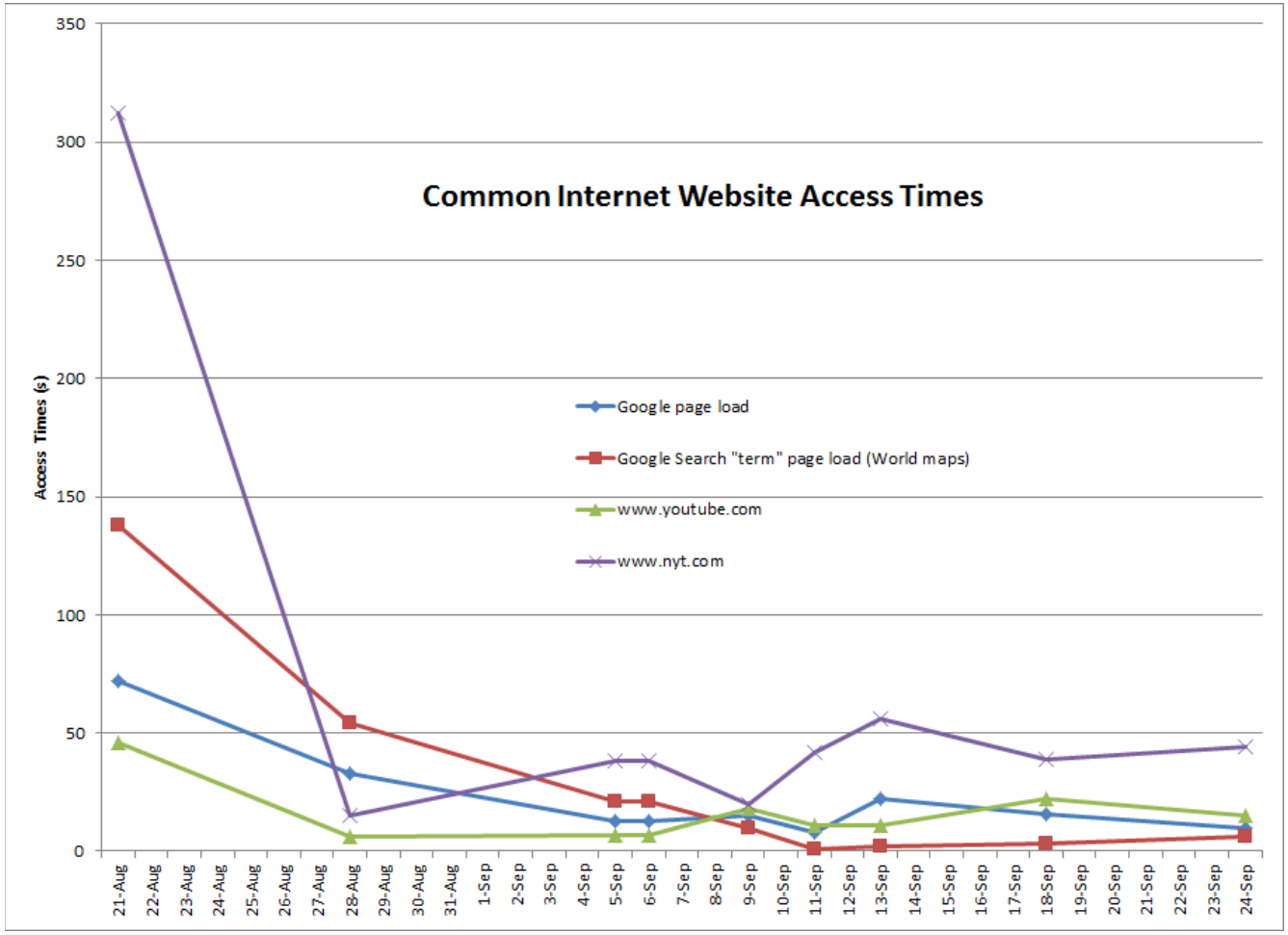
Internet Traffic – Weekly Traffic Profile Comparison



Approx. Doubling in Internet Capacity

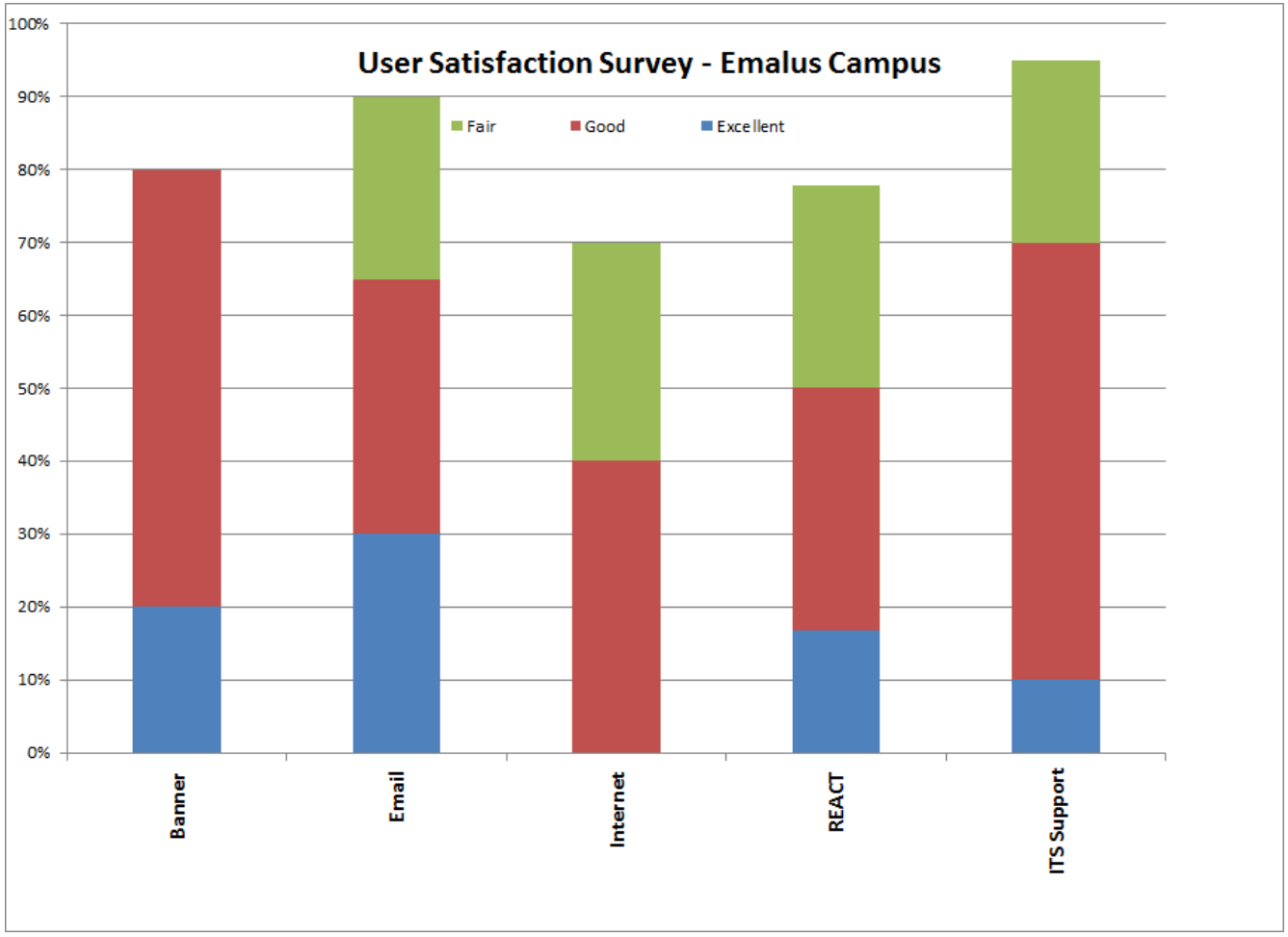
Results – Emalus Campus

Internet Traffic – Student Labs Access



Results – Emalus Campus

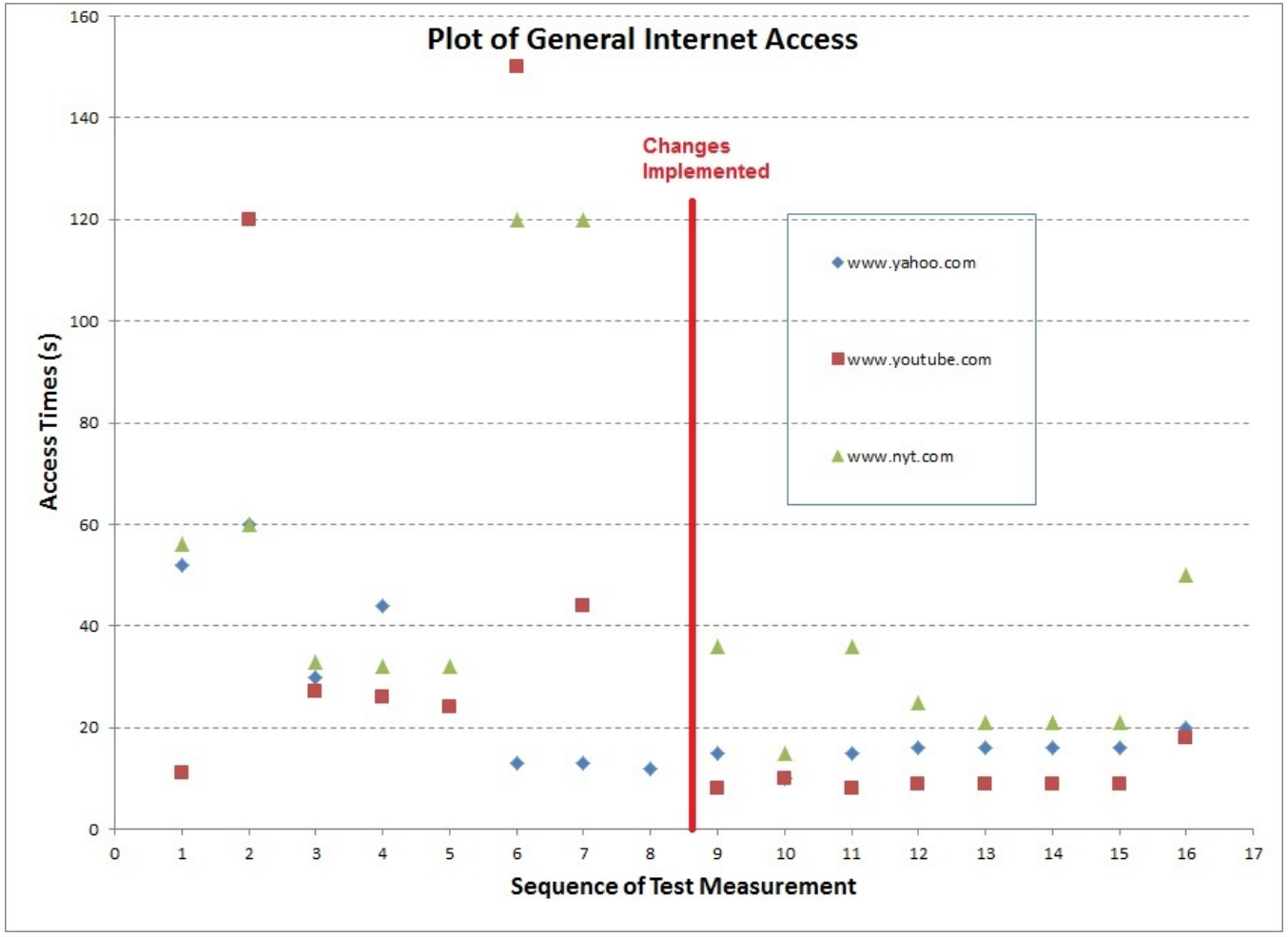
User Survey- Staff & Students



Approx. 80% User Satisfaction

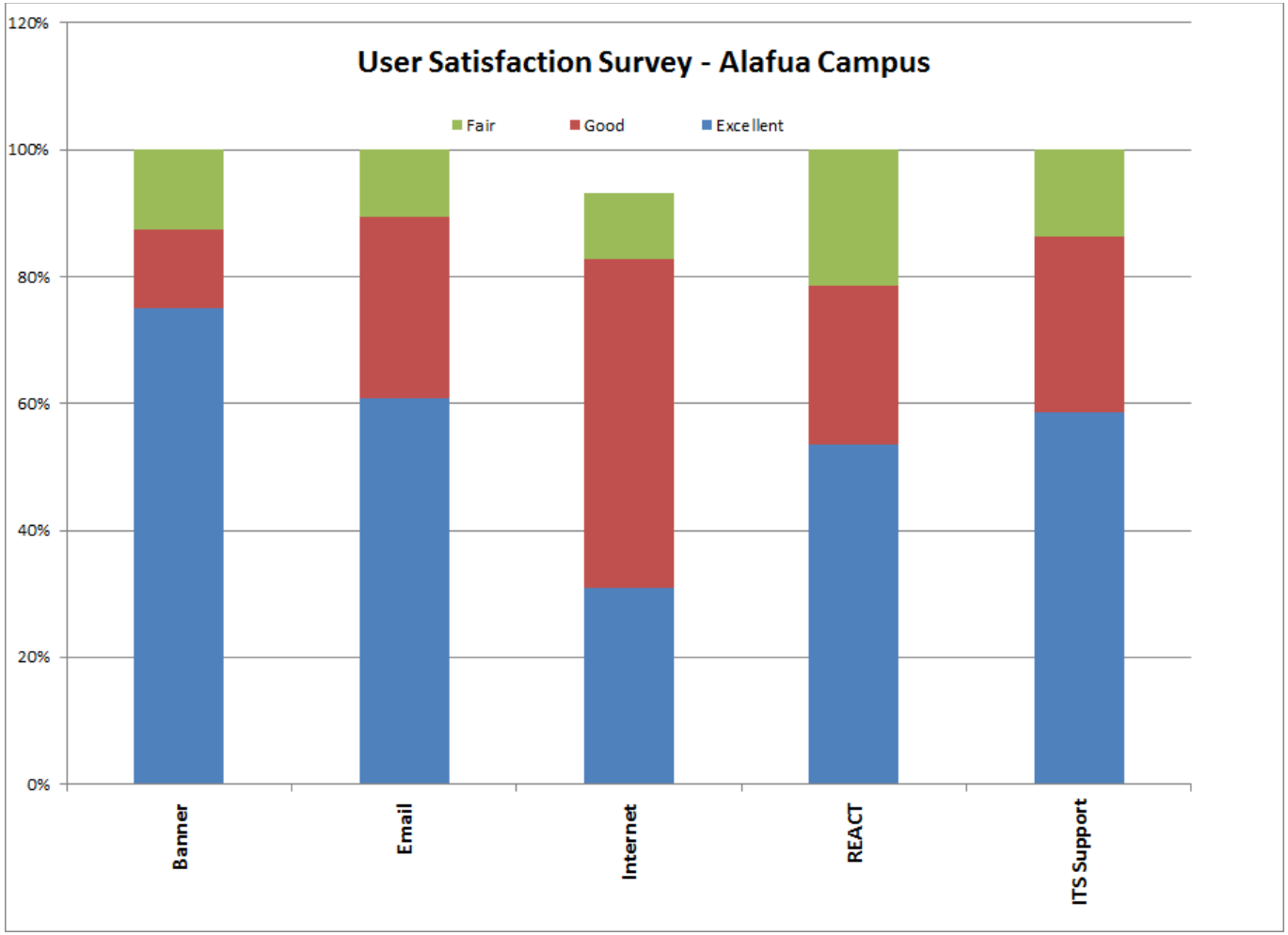
Results – Alafua Campus

Internet Traffic – Student Labs Access



Results – Alafua Campus

User Survey – Staff & Students



Approx 95% Overall User Satisfaction

Results – Overall

OVERALL;

- Successful Increase in Connectivity Capacity to Regional Campuses
- Significant (70-80%) improvement in access to Online resources:
- Stability of services due to reduced contention and congestion.
- Most users satisfied with changes.
- Continuing Testing & Users Surveys as project progresses.

HOWEVER;

- Proxy Server Issues (New Squid Version & Improved HW Efficiency)
- Emalus Campus – Spurious Traffic Constraints (BYOD/NAC)
- Alafua Campus – VSAT Availability Lower (C-Band Contingency)

Submarine Fibre-Optic & O3B

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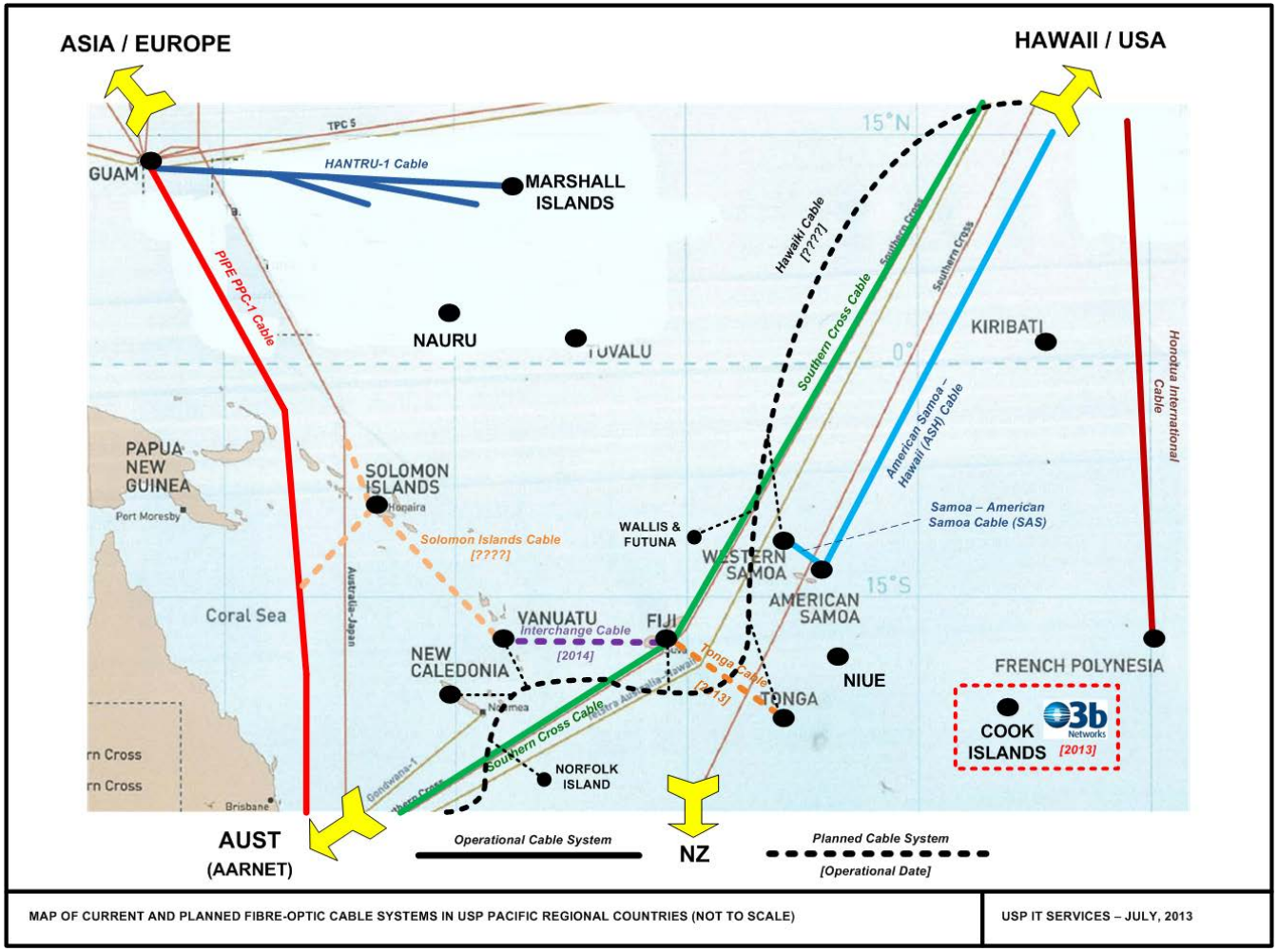
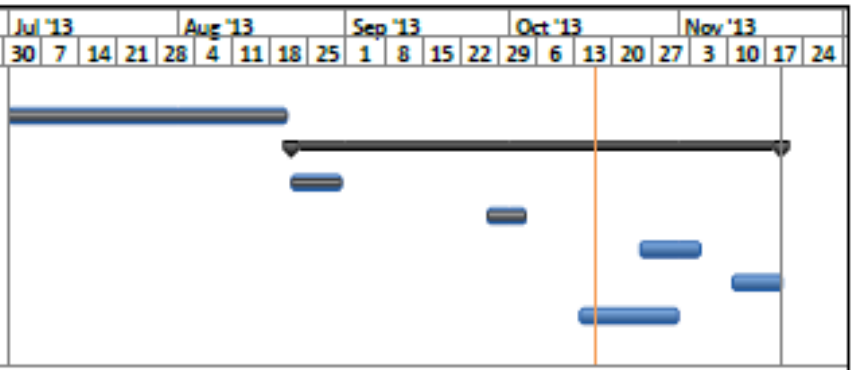


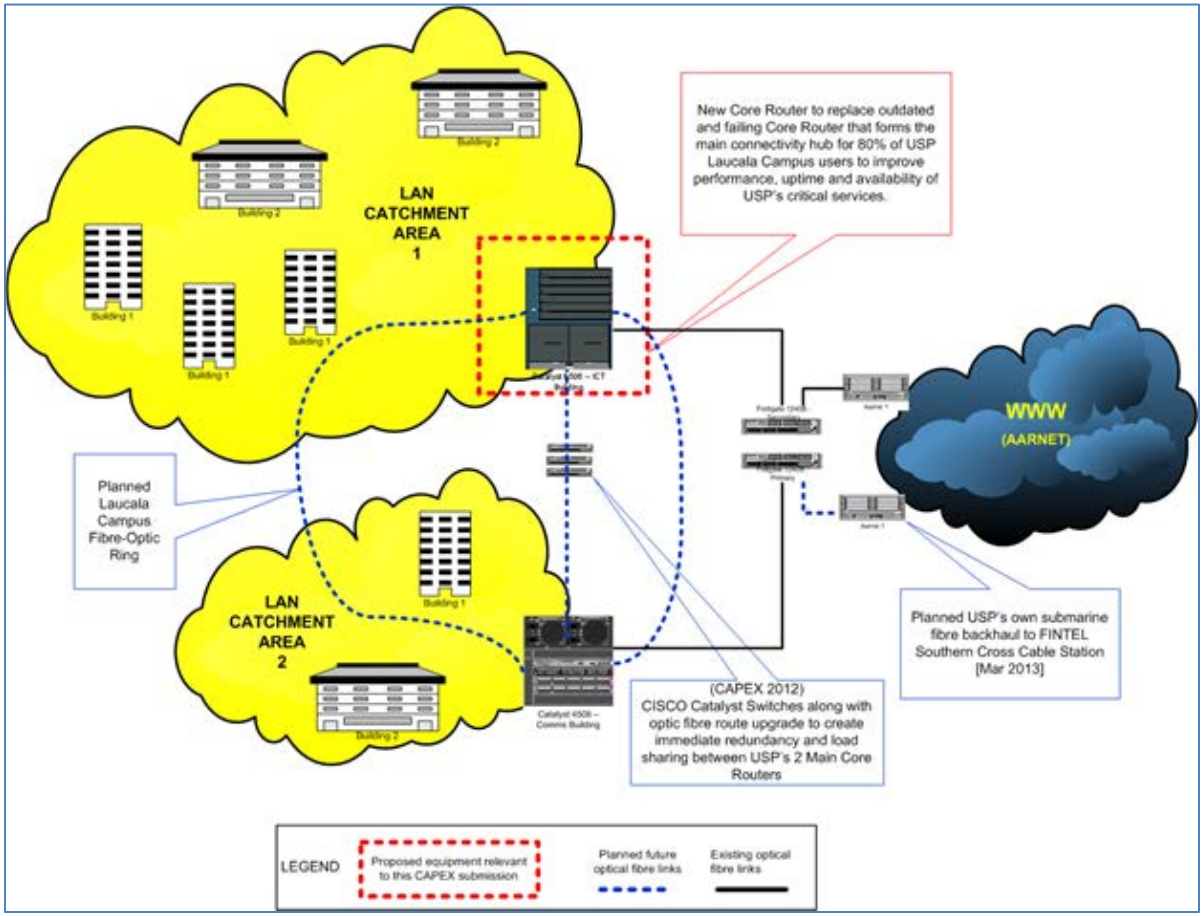
Implementation

ID	Task Name	Duration
1	USPNET BANDWIDTH EXPANSION - 2013	
2	Intelsat Capacity Increase	37 days
3	Ku-Band Migration	64 days
4	Emalus	7 days
5	Alafua	5 days
6	Tonga	7 days
7	Niue	7 days
8	C-Band Capacity Redistribution	14 days
9		



- 18-Aug: Additional 10MHz capacity acquired from Intelsat [Completed]
- 24-Aug: Emalus Campus Migrated onto New Capacity [Completed]
- 27-Sep: Alafua Campus Migrated onto New Capacity [Completed]
- 14-Oct: Redistribution of C-Band Capacity [In Progress]
- 26-Oct: Tonga Campus Fibre Capacity Trials [Planned]
- 15-Nov: Niue Campus [Planned]

USP Laucala Core Network



- New Core & AARNET Router Installed.
- Switching Infrastructure Upgrade.
- 10G Fibre Optic Ring – in progress.
- AARNET Backhaul Redundancy [Nov-Dec]

Supplementary Directions.

- IP Space Resign:
- AD/LDAP/Authentication Restructure:
- New Banner Infrastructure & Process Automation
- Network Access Control – Wireless
- Digital Library / Knowledge Hub.
- Pacific Regional Outreach:
  - Pacific Research & Education Network:
    - Pacific Forum Secretariat, SPREP, FFA.
  - Upstream Connectivity to AARNET Global Research & Education Networks.

Information Technology Infrastructure Library

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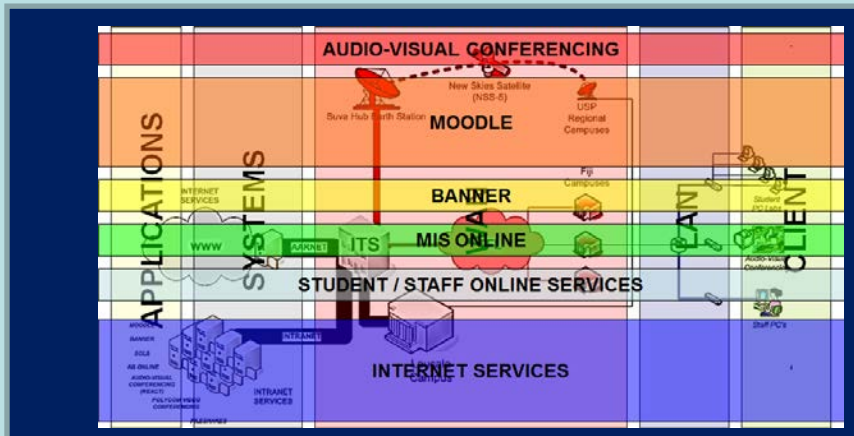
USP Corporate Strategy



ITIL

Summary

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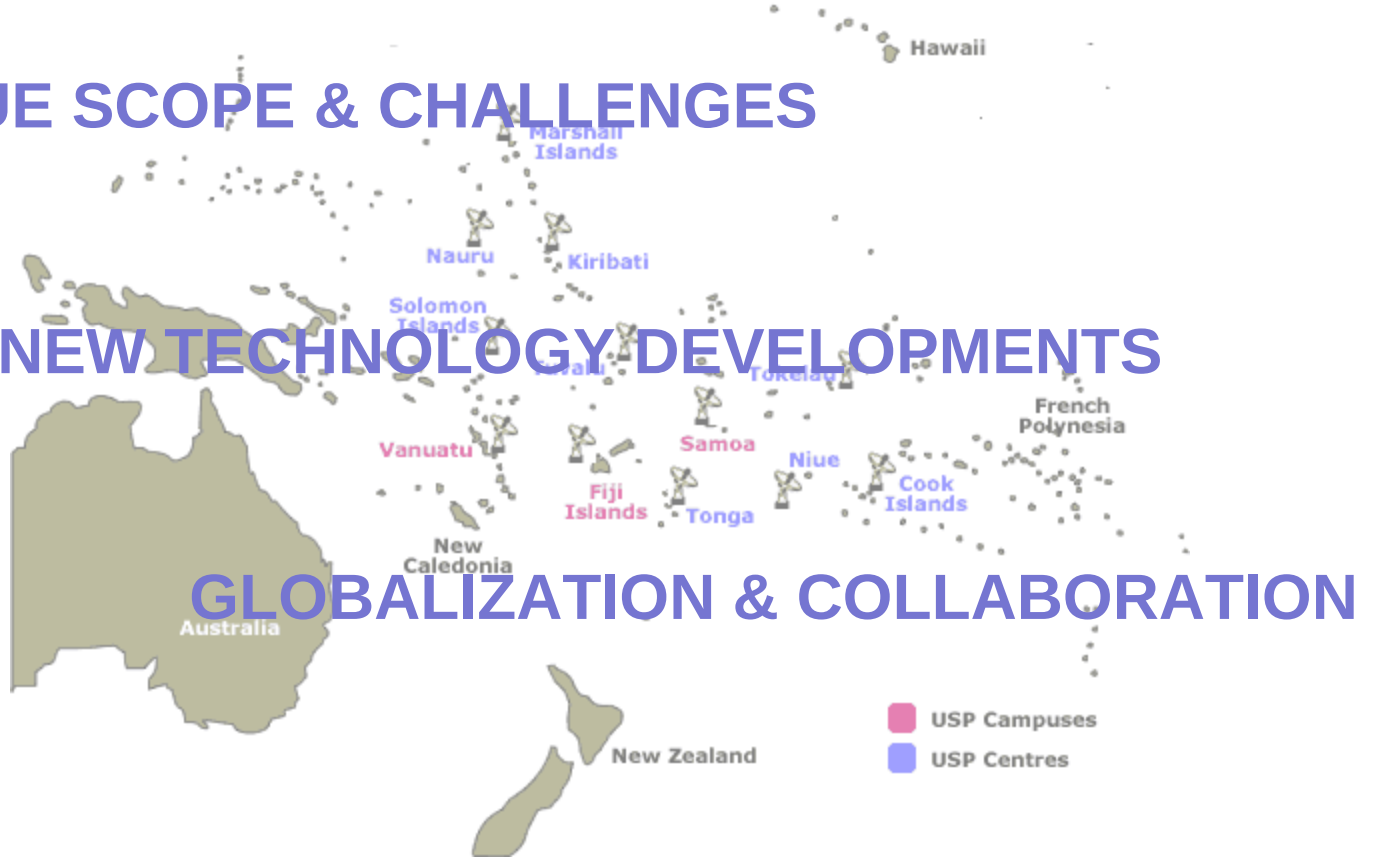
UNIQUE SCOPE & CHALLENGES

NEW TECHNOLOGY DEVELOPMENTS

GLOBALIZATION & COLLABORATION



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THANK YOU