Background Note

Affordable Access: Domestic and International Connectivity in the Pacific

1 Overview and Context

The Pacific Ocean Region covers one third of the globe consisting of thousands of islands scattered over approximately 54 million square kilometres of ocean. The region is characterised by small island landmasses, the vast distances between them, sparse populations, and the huge differences in terms of the telecommunication facilities between the smallest and the largest countries in the region. Due to the nature of their topographical structure, the islands are not well endowed with natural resources and most are very much dependent on foreign aid. These economies are still primarily based on subsistence agriculture and fishing. There are pockets of export potential in mining, deep-sea fishing, small scale manufacturing, tourism and some specialised agricultural products, but, for most of the smaller island countries, there are no natural resources to rely upon except the ocean surrounding them.

The Pacific has problems caused by large distances, small scale and scattered populations and markets, and a low level of investments in telecommunications and human resources. All these problems can be addressed and the development of ICTs accelerated, by selection of appropriate mechanisms for cooperation, market integration and provision of services on a regional basis.

Nevertheless, few inhabitants of the Pacific Island Countries are able to enjoy the benefits of access to telecommunications and the Internet. Those with access are faced with slower speeds and much higher costs than in the developed world. Most of the population in the Pacific Island Countries is living in rural areas, There is also inequality in ICT access, with women, youth and disadvantaged being amongst the most excluded groups. There is a real need to develop

infrastructure for rural access to ICTs for social and economic empowerment. In order to make good use of ICTs to foster education, health and good administration as well as improve communications, a rapid expansion of telecommunications and a reduction in their costs is urgently required throughout the Pacific.

In this context, Pacific Leaders have requested that a regional Digital Strategy be developed as an essential component of the Pacific Plan[1].

The objectives of the Digital Strategy are to:

a) Encourage policies and regulations that facilitate development of the sector and are appropriate to the people and the cultures of the Pacific

b) Encourage construction of domestic telecommunications and information infrastructure

c) Promote a competition-driven environment

d) Encourage business/private sector investment and participation

e) Intensify cooperation among member countries

f) Narrow the gap in information infrastructure between advanced and developing countries and urban and rural areas

g) Ensure easy access to information through ICTs that strengthens cooperation between stakeholders, fosters good governance, develops the private sector and improves service delivery.

h) Promote full and equal participation of women and other marginalized groups in ICTs through mainstreaming gender and equity perspectives into ICT policy and programmes.

i) Ensure open and non-discriminatory access to public networks for all information providers and users in accordance with domestic laws and regulations

j) Ensure universal access to public services in telecommunications

k) Promote creation of local content, which reflects the cultural and linguistic diversity of the region

l) Ensure the protection of privacy, data security and intellectual property rights including cultural property

m) Ensure ICTs will be used to inform and connect Pacific Island populations and that they will benefit from flexible and appropriate education and training

2 Studies and Reports

In the last several years, a number of studies on related-Pacific connectivity were undertaken by various organizations taking into account inputs from the Industry and regional organisations. Some of

[1] The Pacific Plan was endorsed by Forum Leaders at their Pacific Islands Forum Meeting in Port Moresby, October 2005. As a 'living document' it now forms the basis of ongoing strengthening of regional cooperation and integration efforts for the benefit of the people of the Pacific. At the regional level, implementation of the Pacific Plan is, in the first instance, the responsibility of the Pacific Islands Forum Secretariat. This is consistent with the 2004 decision by Leaders that the primary functions of the Secretariat are to provide policy advice, coordination and assistance in implementing their decisions. (for more information, visit http://www.forumsec.org.fj/pages.cfm/about-us/the-pacific-plan/)

the studies/reports are listed below with reference links to the full reports for readers' further information.

2.1 Regional Telecoms Backbone Network Assessment and Implementation Options Study

(Draft) report to The World Bank by Polyconseil, 8 October 2008, http://www.itu.int/ITU-D/asp/CMS/Events/2009/PacMinForum/PacMinForum.asp

The most recent study on Pacific Connectivity is done by Polyconseil contracted by the World Bank in 2008. The report (draft) has been circulated among Pacific Island Countries and other development agencies in late 2008. The report details a review of regional connectivity options with a view to implementing the recommended solution, mobilising the required financing, and developing a sustainable governance structure. It is an in-depth assessment of regional connectivity options engaging stakeholders in consultations on potential options and best practices elsewhere and preparing an implementation approach for the entire region, or sub-regions that could assist the region partners in identifying a future public-private partnership project (for implementation financing).

Polyconseil worked on 3 different workstreams aiming at a comprehensive overview of the possibilities for a regional telecoms backbone network or sub-regional networks:

- Workstream 1: Technical assessment and review of design options;
- Workstream 2: Economic/financial analysis and cost modelling;
- Workstream 3: Legal/institutional and enabling regulatory environment assessment.

The report proposes answers to the following questions:

i) How to increase connectivity to Pacific Islands at a reasonable price?

ii) In order to do so, what could be various technical design options?

iii) How to prove the financial viability of such operations by economic/financial analysis and cost modelling?

iv) What should be legal/institutional and enabling regulatory environment?

v) What projects should be financed, and by whom?

2.2 Enhancing Pacific Connectivity

Report by United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), 2008, http://www.unescap.org/icstd/research/ap-connectivity.asp

In response to interest expressed in improved information and communication services by Pacific Leaders at the Pacific Leaders UNESCAP Special Session (PLUS) at the sixty-second session of the Commission, in 2006, the secretariat of ESCAP conducted a study of the Pacific Connectivity situation, and on opportunities for enhanced benefits to Pacific States from improved connectivity infrastructure, products and services.

The study was supported by the United Nations Office of the High Representative for Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States; the UNDP Special Unit for South-South Cooperation; and the Government of Turkey. Peer review was provided by several staff members in ESCAP, and through official submissions of manuscripts to governments in the Pacific and to developmental partners, including the Pacific Island Forum Secretariat (PIFS), the Secretariat of the South Pacific, the Pacific Islands Telecommunications Association (PITA), the International Telecommunication Union (ITU), and the World Bank.

The final report details technical, economic and commercial viability as well as institutional and associated financial considerations per the following outline:

- Stocktaking of the current situation, including a socio-economic analysis
- Assessment of the potential for cable, satellite, and terrestrial wireless to connect and serve small Pacific economies
- Assessment of the economic viability of service for the Pacific
- Institutional arrangements that could help Pacific States enhance their telecoms

2.3 Satellite Services in the Pacific

Report by Network Strategies, 5 June 2007
http://www.dbcde.gov.au/communications_for_business/international/report_on_satellite_networks_in_the_asia_pacific_region

In 2007, the Department of Broadband Communication and the Digital Economy[2] (DBCDE), Australian Government, commissioned Network Strategies to examine the use and application of satellite networks in the Pacific region. The final report is published on the DBCDE's web site.

The report focuses on countries in the Pacific including Australia, Cook Islands, Federated States of Micronesia (FSM), Fiji, Kiribati, Nauru, New Zealand, Niue, Palau, Papua New Guinea (PNG), Repulbic of the Marshall Islands (RMI), Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

The report examines issues, challenges, problems and concerns experienced by Pacific Island Countries (PICs) regarding the provision of satellite services. The report includes:

- A discussion of key issues raised by a variety of representatives from the telecommunications industry in the PICs. Key demand inhibitors are also identified.
- An assessment of potential levels of demand should those inhibitors be eased
- An overview of industry outcomes, including scenario analysis on key issues
- Final conclusions

[2] Formerly Department of Communications, and Information Technology and the Arts (DCITA)

2.4 Regional Strategies for Contingency Planning in Satellite Communications

Study by International Telecommunication Union (ITU), 2006
http://www.itu.int/ITU-D/asp/CMS/Events/2009/PacMinForum/PacMinForum.asp

In 2005, the International Telecommunication Union (ITU) conducted a study on satellite communications in the Pacific as part of its project proposal for Regional Strategies for contingency planning in satellite communications. The goal of the proposal is to assist the Pacific Island Countries (PIC) to develop contingency plans to cope with emergencies should a catastrophic satellite failure in the region occur.

The study addresses the constraints of satellite communication environment in the Pacific region and suggests ways to ensure reliable and uninterrupted communication infrastructure with adequate contingency measures.

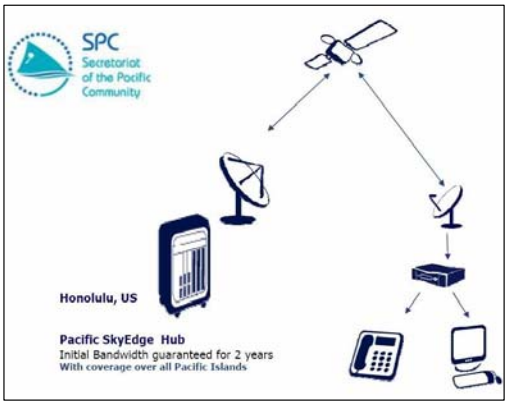
The study includes the following aspects:

- Analysis of the network infrastructure in 13 Pacific Island Countries namely: Cook Islands, Federated States of Micronesia (FSM), Fiji, Kiribati, Marshall Islands, Niue, Norfolk Islands, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu
- Identifying problem areas in infrastructure as well as policy areas with the current system
- Consolidation of traffic and long-term commitments
- Identifying appropriate solutions for the design of a system (satellite/cable) which will complement and alleviate the problems identified
- Development of policy options, procurement, installation and training during the implementation

3 On-going Efforts

3.1 Pacific Rural Internet Connectivity System (PACRICS)

Under the Pacific Plan digital strategy, SPC (Secretariat of the Pacific Community) and PIFS (Pacific Island Forum Secretariat) worked together on developing a project which could provide cheap, fast, and reliable internet connectivity to any rural and remote area in the Pacific region and securing funding.



A design process commissioned by the Australian Agency for International Development (AusAID) validated the concept. A management contract was established with a private Australian-based company, Pacific Teleports Pty Ltd (PacTel). The Australian government provided AU$2 million to

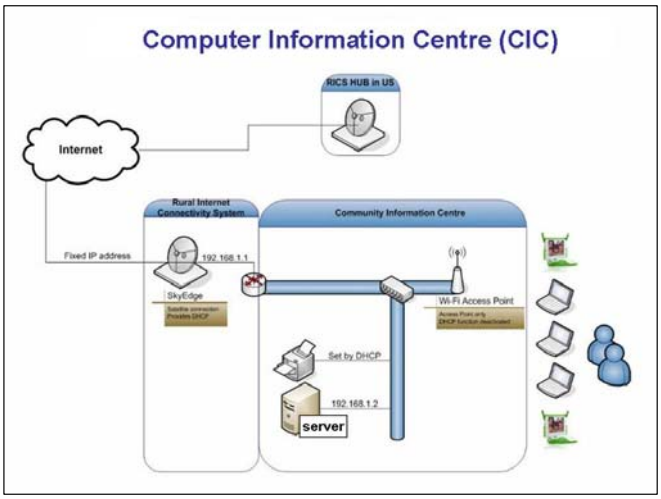
set up the system. The funds have paid for a dedicated 'Pacific hub' in the AMC-23 satellite for the lifetime of the satellite and two years of bandwidth initially.

The satellite coverage includes American Samoa, Cook Islands, Federated States of Micronesia, Fiji Islands, French Polynesia, Guam, Kiribati, Nauru, New Caledonia, Niue, Northern Mariana Islands, Marshall Islands, Palau, Papua New Guinea, Pitcairn, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna.

The system was officially launched during the 38th PIF meeting (15-17 October, 2007) in Nuku'alofa, Tonga

PACRICS initiative aims to provide local communities in remote areas and/or outer islands in the Pacific with Internet connectivity which is affordable, sustainable, reliable, always-on, low-powered and therefore can use solar power source, low maintenance work, and with the possibility for remote programming and/or support so that highly trained technicians need not be stationed at remote community sites.

So far, the SPC has set up 15 pilot sites of which 10 sites have been activated while 8 sites are carrying traffic. In December 2008, a total of 7 public good sites[3] (2 sites in PNG, 4 sites in Kiribati, 1 site in Tuvalu) are operational and free bandwidth is available for a total of 80 sites in 2009. In addition, 30 commercial sites[4] have been ordered (according to PacTel's report).



Each site so-called Community Information Centre (CIC) is equipped with a basic set of equipment consisting of one set of VSAT, modem, one computer server, one wireless access point, one switch/hub, one printer, one UPS and network cables. The number of computers varies from site to site.

Comment [r1]: link

[3] A Public good site receives free bandwidth for the first year. It should conform to at least one of the following requirements, noting the overall principles of PACRICS that it must be in a rural or remote location and should not compete with an existing Internet service.

- Provide an Internet connection for a school, medical centre or other public service office
- Provide access to a CIC or Telecenter, run by a Not for Profit or community based organisation.
- If operated by a commercial service provider the rates charged for use of the Internet must be demonstrated to be significantly less than similar commercial services
- Provide Internet connection for an OLPC project.

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[4] RICS commercial sites are independant sites with their own bandwith but using the SPC Hub in Hawai. The customer negotiates directly with Pacific Teleports (Pactel) and sign the commercial agreements as per current pricing plan outlined below. Pactel sells and ship the commercial site equipment to end customer. Pactel commissions the site with the customer and informs SPC of final site commissioning.
When the site is active Pactel reimburses SPC/RICS Account 10% of monthly service fees.

3.2 ITU/Andorra Partnership Project for Rural/Outer Island Communications in the Pacific (with support from the Australian Government)

Under the DOHA Action Plan and within the framework of ITU Programme for Small Islands Developing States, Tonga, Marshall Islands, Papua New Guinea and Nauru are receiving concentrated assistance from ITU from 2007 to 2009. In June 2008, ITU signed a Voluntary Contribution Agreement with the Servei de Telecommunicacions d Ándorra to implement a project for rural/outer island communications in the Pacific targeting the four countries[5].

The project, partly funded by the Australian Government through the Department of Broadband, Communications and the Digital Economy (DBCDE), aims to develop rural infrastructure and to implement community Multipurpose Telecommunity Centres (MTCs) in Papua New Guinea, Marshall Islands, Tonga, and Nauru. These MTCs are operational centres which consist of a computer network with printing, WIFI wireless and access devices where remote community users send and receive data, share information and knowledge, and run 'end-to-end network applications using the Internet.

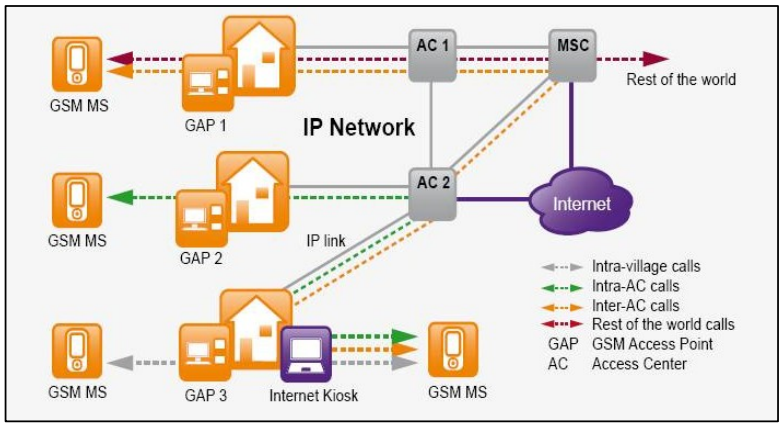
ITU has implemented the project in cooperation with the SPC under its PACRICS initiatives and has established 2 MTCs in Papua New Guinea, 1 MTC in Marshall Islands, 1 Cyber Café in Tonga, while this year will see 2 more telecentres in Papua New Guinea, 1 more in Marshall Islands and 2 more in Tonga. Nauru has also benefited from the project for its policy and regulatory reform as well as assistance in improving communication infrastructure.

3.3 Connecting Villages

ITU is launching a new flagship initiative called Connecting Villages to help expand access to affordable connectivity in rural and remote areas. The ITU/Nokia Siemens Networks Village Connection Initiative is the first project being planned.

ITU/Nokia Siemens Networks Village Connection Initiative

The Village Connection Solution addresses three key areas: an innovative solution technologies to deliver low-cost services, a new business models for rural areas and the synthesis of a new value network to make the solution feasible. The novel Nokia Siemens Networks Village Connection network architecture enables the transfer of village communications responsibility to the local community, building cost-effective connectivity village by village. Established operators may opt to employ local villagers to host access within



[5] See ITU Press Release: http://www.itu.int/newsroom/press_releases/2008/NP06.html

each village, or utilise the Village Connection as a low-cost solution to extend their reach to the market. Whichever option is chosen, capital costs are slashed and operating costs are reduced compared with conventional network roll-outs.

Within the framework of this partnership, 3 - 6 sites in the Pacific will be identified and implemented for the Proof of Concept of the Village Connection. Certain selection criteria will be applied, with a primary focus on providing coverage to areas previously considered not economically viable, having no transmission availability nor access to power.

The Technology

Each site will comprise a **GSM Access Point (GAP)** located on the premises of the village Access Point host (local entrepreneur) with the antenna on the roof of the building. A GSM Access Point bundles a radio base station, an omni or directional GSM antenna, IT components, power and PC with access point software. The Access Point is comprised of the base station and a personal computer, making it simple and very fast to install as no heavy civil works, such as site construction for high towers, are required.

Calls between neighboring villages are connected via the GSM Access Point (GAP) to an **Access Center (AC)** – another PC based interface. The Access Centre provides standard GSM connectivity towards the operators existing core network's Mobile Switching Centre (MSC), connecting to the existing GSM network and other telephone networks (e.g. PSTN, PLMN) .In each participating country, an Access Center will reside in or near a partnering operator's MSC.

Access Points are typically within a 20-30 km range from the regional Access Center. However, in the case of satellite connections e.g. through Pacific Rural Internet Connectivity System (PACRICS) the distance is virtually unlimited and the option therefore exists to service the pacific through a centralised switch. The bigger picture view for providing voice and SMS services to the Pacific is therefore comprised of 3 major components:

1) The Village Connection, providing the mobile access
2) A centralised Mobile switching centre, providing the core functionality and the public network interconnection.
3) An IP based satellite services e.g. through Pacific Rural Internet Connectivity System (PACRICS).

Such a configuration takes the Village connection from a local to a Pacific wide solution for community services.

GSM Access Point (GAP): for personal mobile voice and SMS services, typically comprised of:

- A Standard Nokia Siemens Networks GSM base station 850/900/1800/1900 MHz
- Light 5 m site structure for the antenna
- 2-3 km coverage with omni or directional antenna
- 128 kbit Ethernet connectivity required (for 1 TRX)
- IP-based backhaul – direct or satellite
- No BSC, transcoder or MSC needed to complete a local call when operating Autonomously
- PC: 1 GHz Pentium processor with 512 Mbit RAM
- Graphical User Interface to add and remove users
- Database with call records
- 500 Watts of AC or DC power for the site

Access Center (AC): traffic aggregation, interfaces to other networks

- Up to 200 GAPs per Access Controller
- Ethernet Connectivity to the GAPs
- E1 connectivity to the Core MSC Network
- PC: 1 GHz Pentium processor, 512 Mbit RAM
- Access point monitoring

3.4 South Pacific Islands Network (SPIN)

SPIN (South Pacific Islands Network) is an initiative proposed by SPIN Ltd., a company based in Noumea, New Caledonia for its project for Trans-Pacific submarine cable. The project proposal came after the Office des Postes & Telecommunications (OPT) of New Caledonia had signed Euro 42 million contract with Alcatel-Lucent in October 2006 for its new GONDWANA-1 submarine cable network connecting Noumea and Sydney and after the Office des Postes & Telecommunications (OPT) of French Polynesia had awarded Euro 72.2 million contract to Alcatel-Lucent for a new, high speed submarine cable network (dubbed Honotua) linking Tahiti to Hawaii.

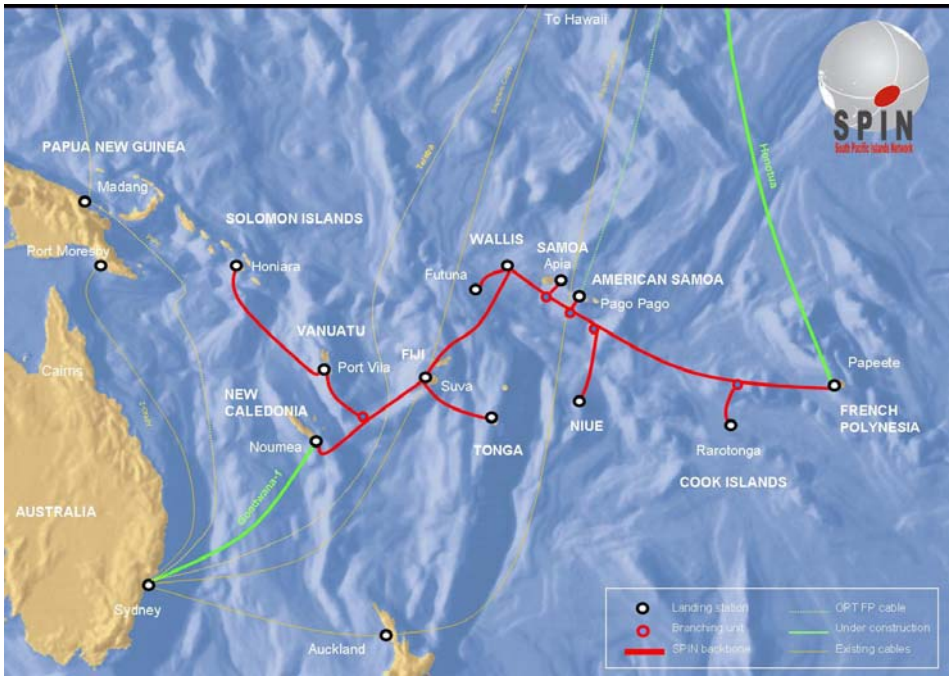
With completion scheduled in the first quarter of 2008, **GONDWANA-1** submarine cable network will offer high-speed connectivity linking Noumea, in New Caledonia, to Sydney, in Australia where it will interconnect with the international routes towards Europe and the U.S. An unrepeatered link will also connect Poindimie, on the New Caledonian East coast, to the Loyalty Islands.

Honotua, a new, high speed submarine cable network, will provide international and domestic connectivity to French Polynesia. It will deliver an ultimate capacity of 32x10Gbps and will comprise an international link between Tahiti and Hawaii (4,650 km) and a domestic connection (305 km) linking some of the islands in the French Polynesian archipelago. It is schedule to be completed in 2010.

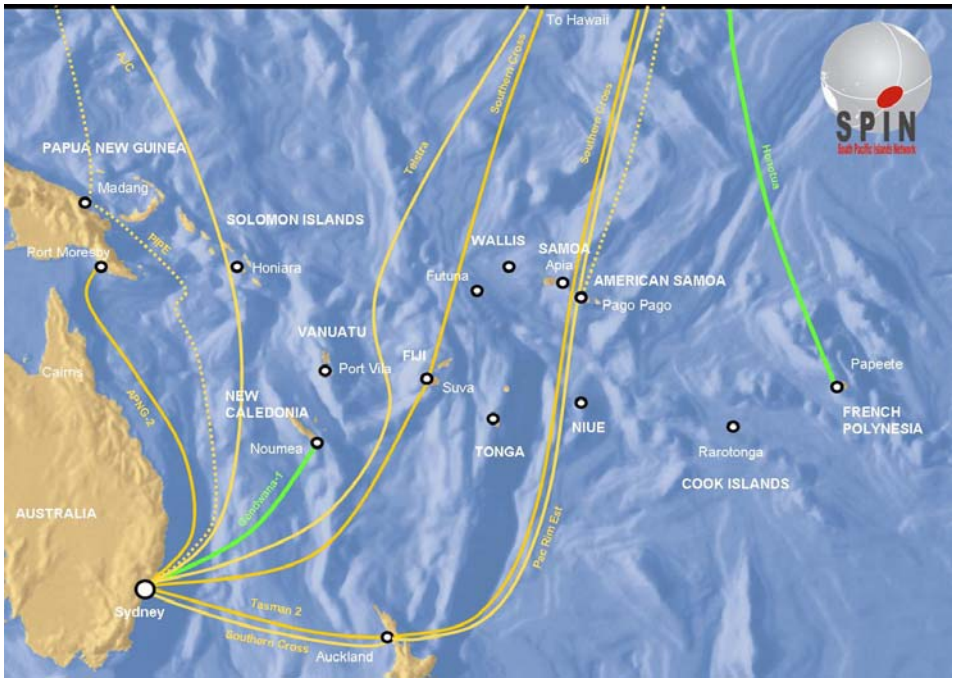
Objectives of the SPIN project are:

- Propose an international optical access to Pacific Islands countries and territories
- Secure international traffic of French Territories
- Propose a new trans-pacific route Sydney – Hawaii together with OPTs' cables

SPIN aims to take advantage of high international capacity of the two new submarine cable networks (GONDWANA-1 and Honotua) to be laid out in the South Pacific by supplementing to the networks a link between Noumea (New Caledonia) and Tahiti (French Polynesia) thereby connecting South Pacific Island Countries and their territories (*i.e. New Caledonia, Solomon Islands, Vanuatu, Fiji, Tonga, Samoa, American Samoa, Niue, Cook Islands, French Polynesia*) en route between Sydney and Hawaii.



SPIN Network



Existing Cables in the South Pacific

Existing cables in the South Pacific region

- APNG-2: cable between Sydney and PNG (Port Moresby). It is actually a second hand cable (formerly Pac Rim West). System capacity is 1 Gbps.
- Pipe project: approx 6,900 km fibre cable connecting Sydney to Guam with PNG en route. System capacity is 1.92 Tbps. Scheduled to be completed in Q2 2009
- AJC: Australia – Japan cable (with a landing point in Guam). Installed in 2001. System capacity : 320 Gbits.
- Telstra: cable between Sydney and Hawaii. 9,000 km, 2 pair of fibre. Initial capacity of 64 Gbps. Implementation shall be completed by Q4 2008.
- Gondwana-1: cable between Sydney and Noumea. 2,150 km, 1 pair of fibre. Initial capacity of 20 Gbps. Implementation completed in Q1 2008.
- Southern Cross: loop between Sydney – Fiji – Hawaii and Auckland. System capacity : 680 Gbps. Implemented in 1999.
- Tasman-2: cable installed in 1992. Link between Sydney and Auckland. System capacity : 1 Gbps
- Honotua: cable between French Polynesia (Tahiti) and Hawaii. Distance: 4,650 km. Contract signed in Jan.08. Project shall be completed in Q1 2010.

3.5 O3B Networks: *"Cellular Backhaul and Mobile IP trunking over a Satellite Network"*

O3b Networks was founded in 2007 to help make the Internet accessible and affordable for billions of persons in both emerging and developed markets. O3b Networks is backed by financial and operational support from Google Inc., Liberty Global, Inc. and HSBC Principal Investments. O3b Networks' telecommunications services will be marketed by the Company's network of distribution partners, which is now being developed. The distributors will provide telcos and ISPs with desperately needed domestic and international bandwidth on which to expand their infrastructures. O3b Networks' global headquarters is located in St. John, Jersey, Channel Islands. Ground systems and technical development are managed through its wholly owned subsidiary in Englewood, Colorado.

In late 2010, O3b will launch the first eight satellites in their Medium Earth Orbit[6] (MEO) constellation. Each satellite will be equipped with twelve beams. In an equatorial orbit, these MEO satellites will cover $\pm 40^{o}$ above and below the equator, with each beam having a footprint of 500km.

Each beam on each satellite is designed to be moveable. This will allow O3b to deliver service wherever it is requested in the coverage area. The two dedicated teleport beams will provide constant connectivity to an O3b teleport location on the global fiber network. The remaining ten beams will be

[6] The medium earth orbit has been used for global positioning system satellites. Located a fraction of the distance from earth (8,000km), a MEO based satellite network provides a far lower latency (travel delay) versus a GEO based network.

pointed and interconnected according to customer requirements. Various configurations will allow O3b to provide IP trunking service directly to the global fiber infrastructure, backhaul to a customer teleport location, or backhaul services within a customer's service area. The three common configurations of the O3b satellite are as a loopback beam, a cross strapped beam, or IP trunking beam. Each configuration consists of: a modem and dual self-pointing antenna at the tower or hub location, and redundant modems and antennas at the MSC or O3b teleport location.

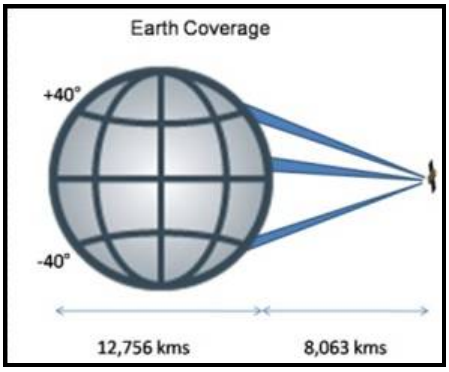
On each satellite, two transponders are directed to O3b teleport locations on the global fiber infrastructure. This provides operators affordable access to the worldwide web. The implementation is like a cross strapped beam service including the high capacity teleport beams. IP trunking allows a customer to take traffic from a location on any beam and have it delivered directly to O3b's teleport on the global internet.

The two major product offerings of O3b Networks are:

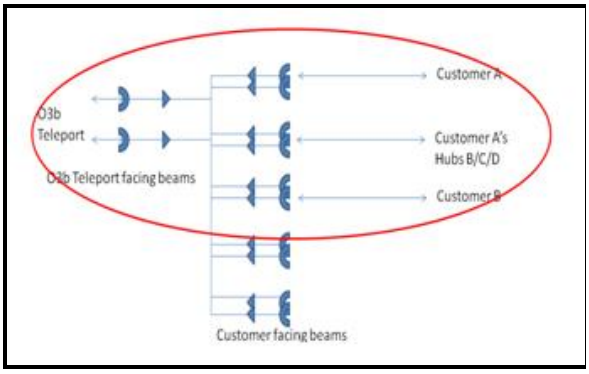
1) Internet trunking to the core network of telcos and ISPs for terrestrial distribution via DSL, cable modem or other means, and;

2) Wireless backhaul direct to the 1.3m 3G cellular and WiMAX towers in emerging markets.

O3b Networks will provide services for Internet trunking by connecting remote locations directly to the global fiber network. The company claims that with virtually no capital expenditure, telcos and ISPs will have an un-contended direct connection to the Internet. The networks service will enable a complete change in the economics of international bandwidth infrastructure, where trunking services can be delivered anywhere at a fraction of the current cost without limitation in capacity and without significant latency.



O3b Networks' earth coverage



IP Trunking

3.6 Asian Development Bank (ADB)

The Asian Development Bank (ADB) recognises the importance of ICT to fight poverty and foster development in Asia and the Pacific region in its policy paper: *Toward E-development in Asia and the Pacific: A Strategic Approach for ICT*. In this paper, three strategic thrusts were proposed:

(i) to create an enabling environment by fostering the development of innovative sector policies, strengthening public institutions and promoting the development of ICT facilities and related infrastructure and networks;

(ii) to build human resources; and,

(iii) to develop ICT applications and information contents.

Since 1971, ADB assistance in the telecommunications and ICT sectors has reached $1.80 billion—$1.73 billion for loans, $58.7 million for technical assistance (TA), and $12.6 million for grants. It represents 1.5% of ADB total assistance. Telecommunications sector received 86% of the total assistance ($1.54 billion—$1.53 billion for loans and $14.2 million for TAs) from 1970s to mid-1990s, while ICT applications received 14% since 2000 ($264.8 million—$207.7 million for loans, $44.5 million for TAs, and $12.6 million for grants).

ADB's Pacific Strategy 2005-2009, which covers ADB's 14 Development Member Countries (DMCs), identified ICT infrastructure and human resource development as important elements of private sector driven socio-economic growth in the Pacific Region. Following this strategy, ADB has proposed to provide technical assistance, grant and investment lending, up to $30m for the next 5 years. To date, ADB has agreed to finance ICT-based education projects such as Pacific e-learning network with the University of the South Pacific; Samoa's school-net and distance learning program; and Papua New Guinea's e-government program. In this connection, the Pacific Department of ADB aims to work with the Pacific Development Member Countries (PDMCs) and its partners to introduce new ICT projects in the region between 2009 and 2013.

For instance, ADB aims to examine if SPIN/RICS are the most feasible ICT infrastructure projects in the region. It proposed a Project Preparatory Technical Assistance (PPAT) project in 2009-2010 aiming to assist DMC governments in formulating a sound grant/loan project suitable for ADB financing, preferably adopting a public-private partnership (PPP) structure. To the end, the technical assistance (TA) will carry out the feasibility for the identified project components, determine investment requirements, identify the policy and regulatory conditions required to enhance the project viability, and examine the compliance with ADB's safeguard policies and requirements for possible loan financing.

The proposed PPTA and the ensuing loan/grant project is expected to significantly expand the supply of high quality reliable broadband capacity, to encourage open access to international backbone infrastructure, and to promote more participation of the private sector in ICT infrastructure and services in the region.

In addition to the ICT infrastructure projects, ADB has received support to the extent of US$1 million from the Government of India (GOI) to provide assistance to PDMCs in the fields of information and communication technology (ICT) and education.

ADB has subsequently identified the University of the South Pacific (USP) as the possible implementing partner to drive an extended ICT program. The students of the USP are spread over 14 satellite campuses in the Pacific region, at least one in each island nation. To deliver education and training to the Pacific, USP uses various modes of delivery supported by postal mail and technology. Over 50% of USP students continue their higher education through Distance and Flexible Learning (DFL). Meanwhile, DFL requires a systems and contents upgrade and new infrastructure to provide more effective DFL programs. Currently, over 80% of the students that opt for DFL are using postal services whereas the remaining 20% continue their education with on-line and/or disc-based materials. USP aims to increase the number of students using on-line/disc-based DFL through enhancing its ICT capacity and developing more attractive education materials

In line with the GOI's financial commitment, ADB and USP have agreed to promote a broader partnership for ICT-based education in the region. Based on its extensive links between the Pacific Island Countries, USP has the potential to serve as the Gateway of the Pacific Information Super Highway, which will potentially enhance human resource capacity as well as the regional economy. The Conceptual Design Meeting was organized by the Pacific Department (PARD) of ADB in 11 July

2008 and 11 ADB staff from 4 departments expressed their full support for the proposed Technical Assistance. USP has also officially requested ADB to start the project as early as January 2009. USP wishes to achieve tangible results so that this TA can lead to the next phase with possible grant and loan arrangement.

4 Way Forward

According to the Pacific Plan Annual Progress Report 2008, the assessment provided by the Council of Regional Organisations in the Pacific[7] (CROP) would suggest that submarine cables offer a cheaper, more robust technology not prone to damage from natural disasters and avoids many of the problems with latency inherent in satellite technology; while satellite technology, offers the only flexible low cost solution for connecting remote and/or isolated areas. However while some opinions remains divided on suitable technologies for the Pacific, delays and obstacles to improving connectivity will continue to disadvantage the Pacific's growth and access to global opportunities. Therefore, given that a number of reports and studies were undertaken so far, there should be a (common) determination to move ahead towards ICT infrastructure project implementation with necessary funding support from international community.

In view of the Pacific domestic connectivity, considerable effort is required at national levels to ensure national RICS ownership and that its operations are sustained. Other low-cost and innovative solutions, including terrestrial transmission technologies, for connecting rural and/or underserved areas should be pursued and considered.

As the Pacific Plan aims at strengthening regional cooperation and integration, the ITU Pacific ICT Ministerial Forum provides a great opportunity for stakeholders including governments, Industry, and regional and international organizations to exchange views for future coordination and collaboration thereby making things happen while avoiding duplications. Hence organizing a regional forum as such is encouraged on a regular basis.

[7] CROP is an ad-hoc committee composed of the heads of the following Pacific Island intergovernmental organisations, and permanently chaired by the Forum Secretariat. Its purpose, according to its charter, is to discuss and coordinate the work-programmes and policies of the different regional agencies to avoid either duplication or gaps in the provision of services to member countries.