The Future of Wireless BB in the Pacific Island Nations:

Introducing the New **Japan Pacific ICT Centre** at USP

(Japanese Govt. Grant Aid Project by JICA)

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Today's Contents

- Outline of The University of the South Pacific (USP)
- Services to Campuses in member countries by USP
  - The USPNet and its importance in the region
- The new 'Japan Pacific ICT Centre' at USP
  - (a Japanese Govt. Grant Aid Project)
- The possibilities with future Wireless Broadband deploying
  - Satellite (Ku Band)
  - Local wireless

To Reassure A Piece of Wisdom

The significant problems we face cannot be solved by the same level of thinking that created them.
--Albert Einstein

Why so persistently unsolvable?

1) **Non technical issues like economics, ownership, trust, and territorial issues exist**

2) **No pure technical solutions but require interdisciplinary investment and decision.**

3) **No one owns the problems**

In order to make any real progress on the problems, we have to consider deeply with social, territorial, economical, and trust issues with ownership

Generally Visible Status

Mobile Phones s

- **Considerable presence in Major Cities**
- **Only in few places competition exists**

Mobile Networks

- **Very limited**

The University of the South Pacific (USP) is the only entity that

- ➢is an academic non profit organization
- ➢has presence in12 countries
- ➢has access to a few others
- ➢has in house Telecom services

For more information on USP please visit http://www.usp.ac.fj/

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The University of the South Pacific （USP)

http://www.usp.ac.fj/

Offering:
- Preliminary studies
- Foundation studies
- Undergraduate Degree
- Post graduate Degree
- Diploma
- Continuing Education

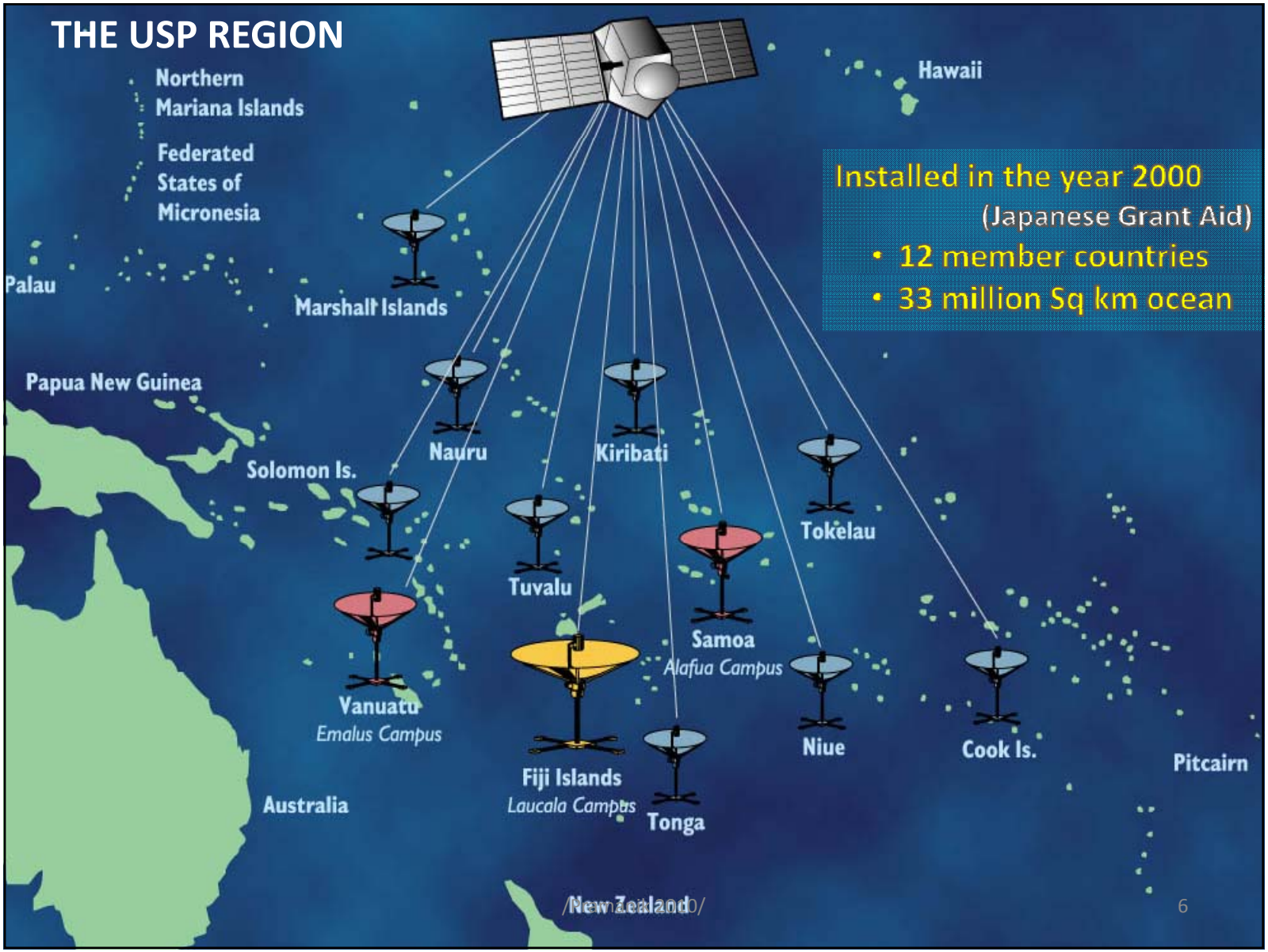
and many others

A Leading Institution on Distance Education, and Flexible Learning

- Established 1968
- 12 member countries
- Covering 33million Sq km ocean
- Multi ownership and multi funded
- 14 campuses around 12 countries
- 20,000 students
- 1,500 staff 580 are academic

USP runs its own Telecom services, Telecom links 'USPNET' via Satellite

Service expansion beyond its 12Member countries Possible


THE USP REGION
Northern Mariana Islands
Federated States of Micronesia
Hawaii
Palau
Marshall Islands
Papua New Guinea
Nauru
Kiribati
Solomon Is.
Tokelau
Tuvalu
Samoa
Alafua Campus
Vanuatu
Emalus Campus
Niue
Cook Is.
Pitcairn
Fiji Islands
Laucala Campus
Tonga
Australia
New Zealand
Installed in the year 2000
(Japanese Grant Aid)
• 12 member countries
• 33 million Sq km ocean

Technical Services & Support

- **USPNet currently provides the following technical support services to all remote campuses:**
  - **VSAT installation & support services.**
  - **IP Networking Infrastructure.**
  - **PC Laboratory installation and maintenance.**
  - **Licensed desktop application support.**
  - **Application development.**

VSAT Antenna

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USP E/S Equipment

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Japan Pacific ICT Centre

Developments in 2010

Japan Pacific ICT Centre completed with focus on

- **Major ICT developments for the region;**
- **Greater collaboration; new partners with industry and community**
- **USPNet upgrade**
- **Improved regional campuses infrastructure**

Strategic Operational and Business plan 2010 – 2012

Student numbers Increased in 2010 with greater growth in campuses

The Japan Pacific ICT Centre

The Vision of the Centre is
'The Regional Centre of Excellence for ICT'

Major Objectives

- Leading edge research related to ICT
- New learning technologies, development and leadership in ICT
- To ensure that the South Pacific can participate in the Global Information Society

Photo By Dr.Pramanik View From Japan Pacific ICT Centre at USP, Suva Fiji Islands May 2010

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The Japan Pacific ICT Centre

- One 4-Storied & one 3-Storied Building
- Floor Space 6,500 sq m
- Research and Development Centre
- Collaboration with regional partners
- Stand Alone Multi Purpose Lecture Theatre: 300 seating capacity, and Stage Production Facilities (phase-II under construction)

Campus From 1st Floor

From 3rd floor

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Japan Pacific ICT Centre Facilities

USP Radio Transmitter

- Video conference Facilities
- USP Regional Radio Station
- 20 High-end Servers
- 4 Undergraduate and Postgraduate Computer Laboratories

A Section of a Computer Lab

Operation & Monitoring

Video Conf. Facilities

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Japan Pacific ICT Centre Residents

- Information Technology Services (USP- ITS)
- School of Computing, Information and Mathematical Sciences (SCIMS)
- Engineering Communications lab
- Research Laboratories and Incubator Offices
- Pacific Computer Emergency Response Team (**PacCERT**)
- Pacific Islands Telecommunications Association (**PITA**)

C-band Earth Station (since 2000)

USP E/S Equipment

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JICA ICT Project on
Human Development and Human Security 2010 - 2012

- **Project goals**
  - **Promising CS/IS and other ICT related courses across the region**
  - **ICT related facilities in the USP are enhanced**
- **Project Outputs**
  - **New CS/IS major (Net Centric Computing)**
  - **USPNet enhancement**
  - **New ICT Technologies (Distance learning)**
  - **Japan Pacific ICT Centre operational**

1. Japan Pacific ICT Centre

- State of the art technology centre and has the facilities and infrastructure for the Resources Centre
- Centre houses PACCERT, PITA as well as industry; plan to have ITU and offer made
- Autonomous
- Advisory committee
- Advisory services to regulators accessing legal academics.

2. Knowledge base and experience

- Have access to skilled and knowledgeable staff in academia and industry in the USP
- Access to ITS staff and social scientists and legal advisors and establish ICT database
- Experienced pool of people in telecommunications and can draw on internationally

3. Information exchange and dissemination between regulators in the region

- Develop website for regulators and communications system
- Develop websites for information exchange etc.
- USP has experience with PACLII and PRIDE serving AGs and CEOs Education respectively

4. Link with ITU, PITA, PacCERT & others

- As these organizations will be based in the Centre it is an ideal location
- Economies of scale beneficial to skilled people and provide solutions

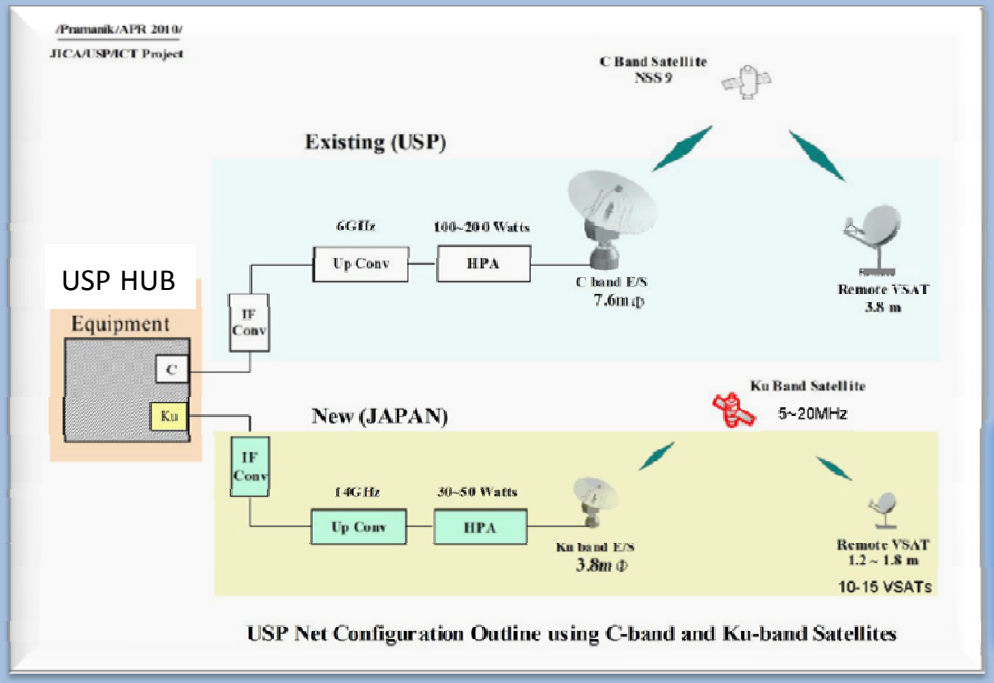
5. Complementing industry

- USP already has close links with the industry
- Incubator project industry lead
- Researches available

6. Conferences, workshops, meetings, publications

- Centre can accommodate these activities
- Information dissemination to all or selectively responding to information

Regional ICT Connectivity



USP Net Configuration Outline using C-band and Ku-band Satellites

Ku band Antenna (future)

Why Ku-band ?
USP developed/ developing New USP Centers where small capacity circuits needed.

- **Current Point of Presence (PoP) in 12 regional countries – to be extended to any South Pacific nation within commercial satellite footprints.**
- **Ku-band options for cost-effective VSAT deployments.**
- **Virtual Network Operator (VNO) capability – provides essentially a partitioned network for exclusive use.**

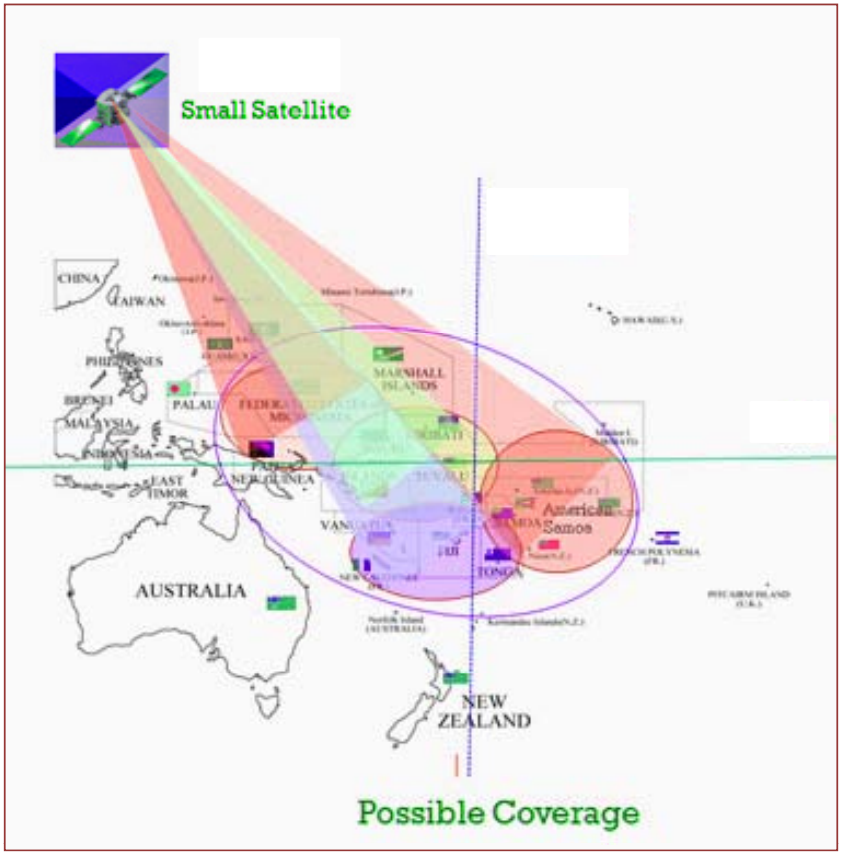
Promoting successful ICT services in the pacific

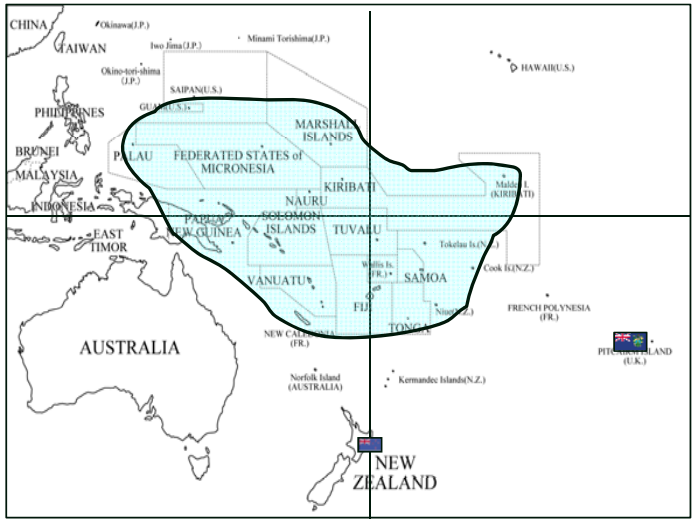
To lead the ICT center activities a success and to achieve the goals, countries in the region must come together to work out a programme for ICT in the South Pacific.

- **Major challenges are to materialize firm ICT network**
- **Since it covers a wide area in the ocean, only satellite network is possible**
- **Ku band frequency is more favorable than C-band: smaller antenna, lower cost, easy installation**
- **A dedicated satellite will be more useful than the existing commercial ones.**
- **The satellite shall constitute the contour like ..(next)**

One Small Satellite Can Cover the South Pacific

Pramanik Recommendation





New Satellite Contour (Suggested by Pramanik)

Band: Ku
No of Transponders: <12
Expected Investment:
Satellite: ~ US$120 m
Earth stations: US$30 m
Plus: OPEX

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Investment Justification ?

The South Pacific	15 countries *
Total Land Area (sq.km)	56,145
Total Inhabitants	79,2761

	US$	
Satellite Cost (life 15 yrs)	150,000,000	
Amount/inhabitant / 15Yrs	189.2	
Amount / inhabitant /1Yr	12.6	1.05 /month
Amount/sq.km area /15Yrs	178.1	

*

American Samoa, Cook Islands, Kiribati, Marshal Islands, Micronesia (FSM), Nauru, New Caledonia, Niue, Palau, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu

(without: PNG, Guam, CNMI)

What We Need to Proceed With ?

What the Governments & Agencies to do ?

1. Participation of Governments in the Region
2. Cooperation from the Telecom Operators
3. Cooperation from Broadcasting entities.
4. Data & Information from External Agencies
   (Satellite Operators, Broadcast Program Delivery business)
5. Consensus from the region and its Nearby Countries

What Need to Do ?

- Necessary Surveys within a short period
- Preparation of Action Plan (National & Regional)
- Project Formation (different categories)

Develop Medium Term Programme

Form a Consulting Project to get Output on the following:

- Studies to introduce Area Wide Networks and Broadcasting Services
- National & Regional Operation Plan (Confirm and Add)
- Information on Integrating with existing National Plans
- Work out Funding Possibility from Donors (Grant , Aid)

Finally

Finally Present the Results and Recommendations to the Leaders in the Summit of Island Nations in 2012 and seek their opinion to continue .

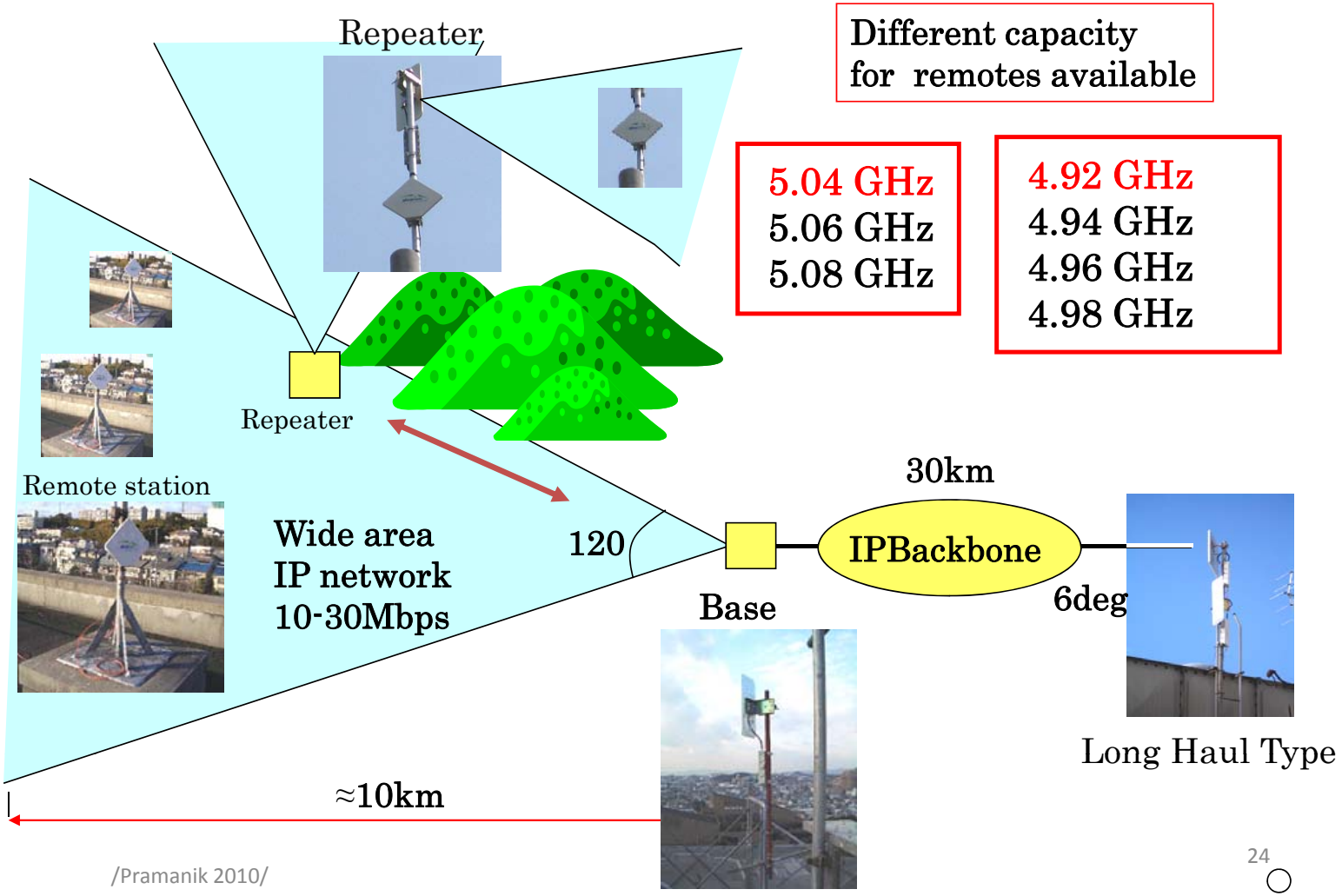
BB to the Home: BTH (not FTTH)

Low Cost Wireless BB Using :
IEEE 802.11j (5GHz)

- **Point to Point**
- **Point to Multipoint**
- **Flexible Expansion**
- **Affordable Cost**
- **Easy deployment**

Possible (Actual)Network Configuration

出典:(株)理経
Source: Rikei co. Ltd



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What is 5GHz BB Wireless LAN（IEEE802.11j）？

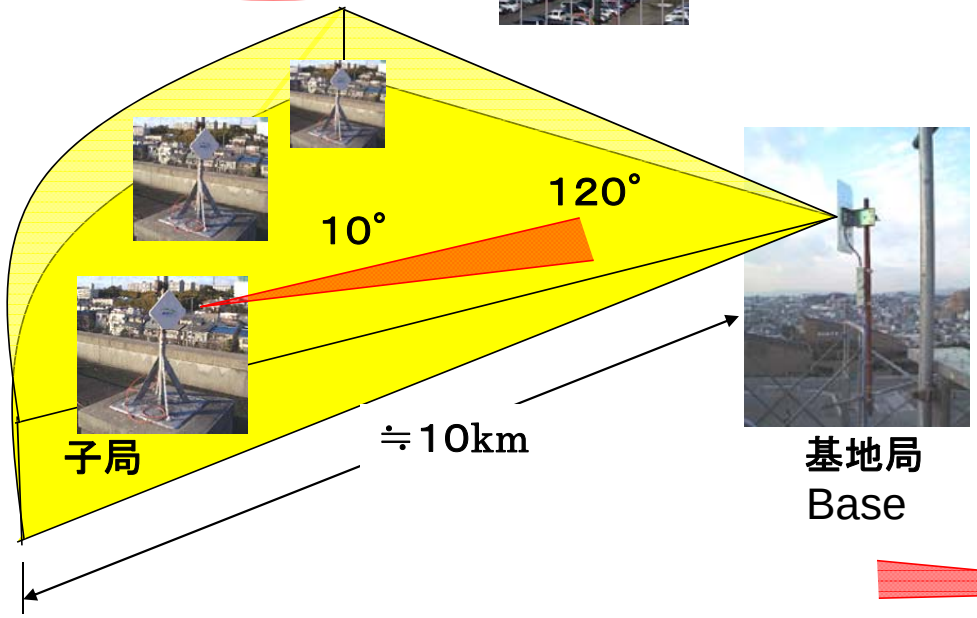
出典：（株）理経
Source: Rikei co. Ltd

Only 3 Types of equipment

- 120° ・・Base
- 10° ・・・Remote
- 6° ・・Long Haul

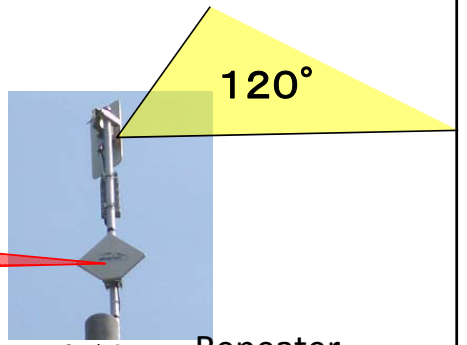
6度

30km



基地局
Base

10度



中継局 Repeater

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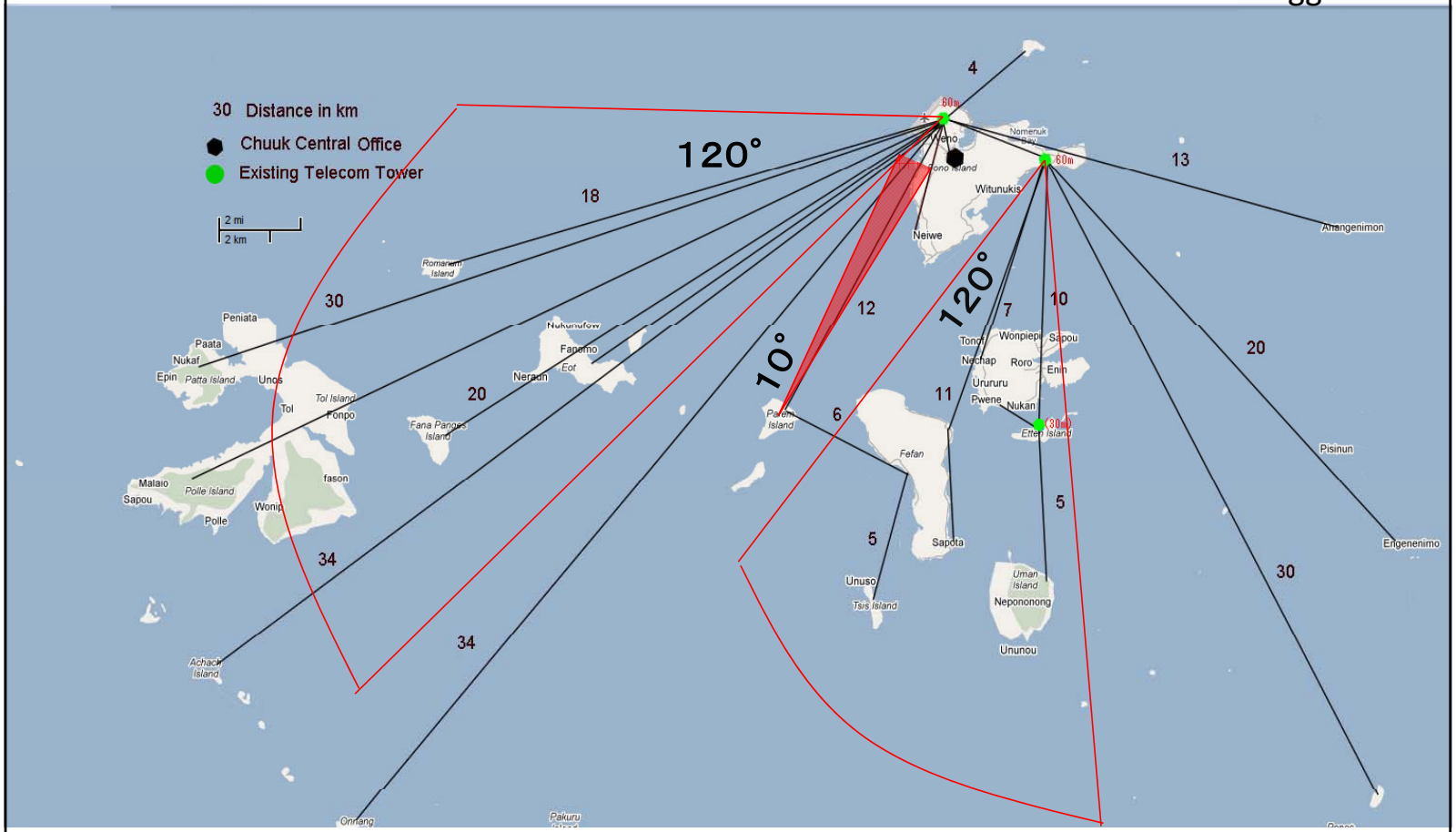
A Network with IEEE802.11J for Chuuk, FSM

Pramanik Suggestion



Why We Do That ?

Regional Private Satellite Backbone
and the Wireless Network

- **E-Mail : To communicate with children/grand children away from home (small islands)**
- **E-Learning : Individual & group learning**
- **E-Diplomacy : TV conf. between Governments/ leaders**
- **E Government : Public affairs and Govt. formalities**
- **E-medicine : Prescription and medicament advice (Pharmacists)**
- **E-Healthcare : sickness & expert advice (medical Practitioners)**
- **E-Environment : Seabirds sea animals, fish and ocean pollution**
- **E-Disaster Prevention/Mitigation : Information collection, dissemination, mass communication, PA system, mini FM**
- **National & Regional Satellite TV Broadcast**

When We Succeed to Implement, Then

Education, Medicament, Transportation, Logistics, Disaster prevention, Disaster Recovery Assistance, and other ICT Services will boost up leading to considerably improved

'Human Development and Human Security' in the Pacific Region

To achieve and enhance these networks and services Governments and Private sectors has to work together seamlessly where APT will play a very important role.

Suva, Fiji Islands

Thank you

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