

Country Name	<b>ICT for Human Development and Human Security Project</b>
Republic of Fiji	

**I. Project Outline**

Background	<p>The University of the South Pacific (USP) has been a premier provider of tertiary education in the Pacific region since its establishment by the 12 member countries in 1968. USP not only accepts students from the member countries to the main campus in Suva, the capital of Fiji, but also provides distance education courses through its satellite communication system (USPNet) (Approximately 40% of the 20,000 students took distance education course, as of 2008). JICA assisted in facilitating the capacity development of USP in various ways. From 2002 to 2005, a technical cooperation project "Information and Communication Technologies Capacity Building at the University of the South Pacific" was implemented in order to assist the development of Computer Science (CS) and Information Systems (IS) education, Distance and Flexible Learning (DFL), and Information and Communication Technology (ICT) research and development. In 2010, the Japan-Pacific Information and Communication Technology Centre (ICTC), was constructed by a Japanese grant aid project, "the Project for Construction of Information and Communication Technology Center at the University of the South Pacific (Phase I) (2009-2010)", to improve the ICT-related facilities. Also, the multi-purpose lecture hall was upgraded by the Japanese grant aid project, "Project for Construction of Information and Communication Technology Center at the University of the South Pacific (Phase II)" (2010-2011).</p> <p>However, the increasing network traffic caused a problem of bandwidth capacity of USPNet which provides DFL services, and the measures to improve performance of USPNet were highly required. As only limited opportunities for face-to-face lectures were available at the USP regional campuses which are located in the member countries, it was necessary to develop learning support system for distance learning students, supported by mobile technology. While, the USP was required to provide more professional bachelor programs in CS/IS education and produce quality human resources anticipated by the industry in the region in response to the increasing demand for ICT human resources in the Pacific region.</p>												
Objectives of the Project	<p>Through provision of new internationally acceptable bachelor programs of Net-centric Computing (BNC) and / Software Engineering (BSE), improvement of service delivery via more efficient use of USPNet, delivery of distance learnings with new ICTs as well as establishment of operation policies for ICT Centre, the project aims at serving attractive CS/IS programme across the Pacific region and enhancing USP's capacity to deliver ICT service, thereby contributing to ICT human resources development in the region.</p> <ol style="list-style-type: none"> <li>Overall Goal: USP contributes to the ICT human resources development in the South Pacific region through its improved ICT environment.</li> <li>Project Purpose: 1) Attractive CS/IS programmes are delivered across the region. 2) USP's capacity to deliver ICT service is enhanced.</li> </ol>												
Activities of the project	<ol style="list-style-type: none"> <li>Project site: The University of the South Pacific (USP) main campus in Suva, Fiji</li> <li>Main activities: 1) Provision of advice on (a) curriculum design of the BNC/BSE degree programmes, (b) establishment of the USP Network Operation Centre (NOC), (c) development of mid-and-long term strategy for leveraging USPNet, (d) improving reliability and performance of Moodle delivery systems<sup>1</sup>; and (e) operation policy to leverage the ICT Centre, 2) Implementation of the BNC/BSE bachelor programmes and review the course curricula, 3) Provision of training for ITS related staff in USP, 4) Holding seminars/workshop on distance learning pedagogy, 5) Provision of business/research incubation functions in the ICT Centre</li> <li>Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Fiji Side</td> </tr> <tr> <td>1. Experts: 25 persons</td> <td>1. Counterpart personnel: 21 persons</td> </tr> <tr> <td>2. Trainees received: 10 persons</td> <td>2. Land and facilities: Project office</td> </tr> <tr> <td>3. Equipment: Satellite related and USPNet equipment including Ku-band, computers and other equipment for the ICT Centre</td> <td>3. Local cost: operation cost of ICT center, and satellite communications cost</td> </tr> </table> </li> </ol>					Japanese Side	Fiji Side	1. Experts: 25 persons	1. Counterpart personnel: 21 persons	2. Trainees received: 10 persons	2. Land and facilities: Project office	3. Equipment: Satellite related and USPNet equipment including Ku-band, computers and other equipment for the ICT Centre	3. Local cost: operation cost of ICT center, and satellite communications cost
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Ex-Ante Evaluation	2009	Project Period	February, 2010 - January, 2013	Project Cost	(Ex-ante) 260 million yen (Actual) 382million yen								
Implementing Agency	The University of the South Pacific (USP)												
Cooperation Agency or Contract Agency in Japan	Japan Computer Emergency Response Team/Coordination Center, Kumamoto University, PADECO												

<sup>1</sup> Moodle is an education support system providing online courses mainly for students on the regional campuses.

## II. Result of the Evaluation

### 1 Relevance

<Consistency with the Development Policy of Fiji at the time of ex-ante evaluation and project completion>

The project was consistent with Fiji's development policy of "A Regional University of Excellence: Weaving Past and Present for the Future, A Vision to the Year 2020" and "A Draft Strategic Plan for 2013-2018" which aimed at prioritizing ICT development and ICT education as central areas of the development policy.

<Consistency with the Development Needs of Fiji at the time of ex-ante evaluation and project completion >

The project was consistent with Fiji's development needs to develop learning support system for distance learning students and to improve performance of USPNet providing DFL under the situation of increasing network traffic.

<Consistency with Japan's ODA Policy at the time of ex-ante evaluation>

The project was consistent with the Japan's economic cooperation policy to Fiji and the Pacific region (2009), "the Action Plan of the Leader's Declaration" adopted by the Fifth Pacific Island Leaders Meeting (PALM) including the importance of promoting sustainable development and human security by delivering social services including health and education with a view to achieving the Millennium Development Goals.

<Evaluation Result>

In light of the above, the relevance of the project is high.

### 2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>

By the project completion, both of the Project Purpose 1 (delivery of attractive CS/IS programmes across the region) and the Project Purpose 2 (enhancement of USP's capacity to deliver ICT Service) were achieved. The BNC/BSE bachelor programmes were provisionally accredited to the Australian Computer Society (ACS) in 2012 (Indicator 1-1). Also, 80% of the students were satisfied with the courses offered by the bachelor programmes of BNC/BSE (Indicator 1-2). Although the end-line survey was not conducted by this project, according to the follow-up survey conducted at the time of the detailed design study for the Phase II of this project in 2014, 78% of the USP students in the main and regional campuses reported that they were satisfied with ICT delivery of learning and teaching services environment at USP (Indicator 2-1). In addition, all of the stakeholders and users, such as the Faculty of Science, the Technology and Environment (FSTE), the Pacific Islands Telecommunication Association (PITA) and the Pacific Computer Emergency Response Team (PacCERT), interviewed by the follow up survey verbally expressed their satisfaction with the ICT center (Indicator 2-2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been continued since the project completion. The BNC/BSE bachelor programmes successfully received full Professional Accreditation by the Australian Computer Society in January of 2016. According to the results of the questionnaire surveys for the ex-post evaluation, 88% of the students were satisfied with the BNC/BSE bachelor programmes. 83% of the students and 81% of the stakeholders and users, who responded the questionnaire survey for the ex-post evaluation, were satisfied with the facilities and services provided by the ICT Centre.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved by the time of ex-post evaluation. Improvement of ICT environment at USP and contribution of USP to the ICT human resource development in the Pacific Region were verified by achievement of each indicator for the Overall Goal. 80% of the employers were satisfied with the quality of USP graduates and some of them noted that the quality of USP graduates has been improving slowly (Indicator 1). 80% of the graduates surveyed for the ex-post evaluation were satisfied with the BNC/BSE bachelor degree programmes offered by USP (Indicator 2). The BNC/BSE bachelor programmes successfully received full Professional Accreditation by the ACS in January of 2016 as mentioned above (Indicator 3). The total enrolment in CS/IS programmes increased from 1,311 in 2010 to 1,460 in 2015 and was projected to be 1,435 in 2016. The student/computer ratio in USP (Indicator 5)<sup>2</sup> improved from 13.32 in 2013 to 11.91 in 2015, and might have increased to 12.94 in 2016 because of the increase in the number of student against the unchanged number of PCs. The number of students at regional campuses (Indicator 6) increased from 9,355 in 2010 to 13,491 in 2015 and was projected to be 14,542 in 2016. Based on the results of the questionnaire survey for in the ex-post evaluation, 95% of the students surveyed were satisfied with the overall delivery of learning and teaching services at USP.

<Other Impacts at the time of Ex-post Evaluation>

No positive and negative impact was confirmed at the time of the ex-post evaluation.

<Evaluation Result>

In light of the above, the project achieved the Project Purpose 1 the Project Purpose 2 as well as Overall Goal. Therefore, the effectiveness/impact of the project is high.

#### Achievement of project purpose and overall goal

Aim	Indicators	Results
(Project Purpose 1) Attractive CS/IS programmes are delivered across the region.	(Indicator 1-1) The fact that the BNC/BSE bachelor programmes are provisionally accredited by an international accreditation body.	<u>Status of achievement: Achieved</u> (Project Completion) <ul style="list-style-type: none"> <li>The BNC and BSE bachelor programmes were provisionally accredited to the ACS in 2012.</li> </ul> (Ex-post Evaluation) Continued <ul style="list-style-type: none"> <li>The BNC and BSE bachelor programmes received full Professional Accreditation by the ACS in January of 2016.</li> </ul>
	(Indicator 1-2) More than 80% of students are satisfied with course of the	<u>Status of the achievement: Achieved</u> (Project Completion) <ul style="list-style-type: none"> <li>80.2% of the students (81 respondents out of the 383 students) were satisfied with</li> </ul>

<sup>2</sup> According to the terminal evaluation report, achievement of this indicator cannot be directly attributed to the achievement of the Project Purpose but USP considered it as an important Key Performance Indicators (KPI) for USP and an indirect impact of the project.

	BNC/BSE bachelor programmes.	course of the BNC/BSE bachelor programme. (Ex-post Evaluation) Continued <ul style="list-style-type: none"> <li>88% of the students surveyed (60 respondents out of the 193 students enrolled) at ex-post evaluation were satisfied with the BNC/BSE bachelor programme.</li> </ul>																			
(Project Purpose 2) USP's capacity to deliver ICT Service is enhanced.	(Indicator 2-1) More than 70% of students in both main and regional campuses are satisfied with ICT delivery of learning and teaching services	<u>Status of achievement: Achieved</u> (Project Completion) <ul style="list-style-type: none"> <li>77.8% in both main and regional campuses (81 responses out of 383 students) were satisfied with ICT environment at USP</li> </ul> (Ex-Post Evaluation) Continued <ul style="list-style-type: none"> <li>83% of the students in both main and regional campuses (60 respondents out of 193 students enrolled) surveyed by the ex-post evaluation were satisfied with the overall ICT environment at USP.</li> </ul>																			
	(Indicator 2-2) More than 70% of stakeholders and users are satisfied with the facilities and the services provided by the ICT Centre.	<u>Status of achievement: Achieved</u> (Project Completion) <ul style="list-style-type: none"> <li>All of the stakeholders and users, such as FSTE, PITA and PacCERT, respondents to the follow up survey, verbally expressed their satisfaction with the ICT Centre.</li> </ul> (Ex-Post Evaluation) Continued <ul style="list-style-type: none"> <li>8 out of 10 respondents (FSTE, CFDL and graduates) were satisfied with the facilities and services provided by the ICT Centre.</li> </ul>																			
(Overall goal) USB contributes to the ICT human resources development in the South Pacific region through its improved ICT environment.	(Indicator 1) More than 70% of interviewed employers (private sector and government) are satisfied with the quality of the USP graduates and acknowledges the improvement of the skill level.	<u>Status of achievement: Achieved.</u> (Ex-post Evaluation) <ul style="list-style-type: none"> <li>80% of the employers surveyed (4 out of 5 organizations responded to the survey, such as government ministries and private telecommunications &amp; ICT companies) were satisfied with the quality of USP graduates.</li> <li>Some of the employers (including an Enterprise Software Design &amp; Development company as well as government departments) noted that the quality of USP graduates has been slowly improving.</li> </ul>																			
	(Indicator 2) More than 80% of interviewed graduates completed the BNC/BSE bachelor degree programmes are satisfied with the courses provided.	<u>Status of achievement: Achieved</u> (Ex-post Evaluation) <ul style="list-style-type: none"> <li>80% of the graduates surveyed by the ex-post evaluation (4 out of 5 respondents) were satisfied with the BNC/BSE bachelor degree programmes offered by USP.</li> </ul>																			
	(Indicator 3) The fact that the BNC/BSE bachelor programmes are internationally accredited.	<u>Status of achievement: Achieved</u> (Ex-post Evaluation) <ul style="list-style-type: none"> <li>The BNC/BSE bachelor programmes received full Professional Accreditation by Australian Computer Society from January 2016.</li> </ul>																			
	(Indicator 4) The enrolment in CS/IS programmes increased compared to 2010.	<u>Status of achievement: Achieved</u> (Ex-post Evaluation) <ul style="list-style-type: none"> <li>The total enrolment rate increased from 1,311 in 2010 to 1,460 in 2015.</li> </ul> [The total enrollment rate in CS/IS] <table border="1"> <thead> <tr> <th>2010</th> <th>2011</th> <th>2012</th> <th>2013</th> <th>2014</th> <th>2015</th> <th>2016*</th> </tr> </thead> <tbody> <tr> <td>10,731</td> <td>11,110</td> <td>12,017</td> <td>12,579</td> <td>13,285</td> <td>13,861</td> <td>15,170</td> </tr> </tbody> </table> *The figures for 2016 are provisional.	2010	2011	2012	2013	2014	2015	2016*	10,731	11,110	12,017	12,579	13,285	13,861	15,170					
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	(Indicator 5) Student/Computer Ratio	<u>Status of achievement: Achieved</u> (Ex-post Evaluation) [Student/Computer Ratio] <table border="1"> <thead> <tr> <th></th> <th>2013</th> <th>2014</th> <th>2015</th> <th>2016*</th> </tr> </thead> <tbody> <tr> <td>No. of total students in USP</td> <td>25,743</td> <td>26,736</td> <td>27,352</td> <td>29,712</td> </tr> <tr> <td>No. of PC in USP</td> <td>1,932</td> <td>2,236</td> <td>2,296</td> <td>2,296</td> </tr> <tr> <td>Student/Computer ratio</td> <td>13.32</td> <td>11.96</td> <td>11.91</td> <td>12.94</td> </tr> </tbody> </table> *The figures for 2016 are provisional.		2013	2014	2015	2016*	No. of total students in USP	25,743	26,736	27,352	29,712	No. of PC in USP	1,932	2,236	2,296	2,296	Student/Computer ratio	13.32	11.96	11.91
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(Indicator 7) Student Satisfaction Rate on delivery of learning and teaching services in both main and regional campuses reaches same or exceeds the rate measured in endline survey 2012	<u>Status of achievement: Achieved</u> (Ex-post Evaluation) <ul style="list-style-type: none"> <li>According to the results of the questionnaire survey for the ex-post evaluation, 95% of the students surveyed by the ex-post evaluation (60 respondents out of 193 enrolled) were satisfied with the overall delivery of learning and teaching services at USP.</li> </ul>																				

Source : Joint Terminal Evaluation Report, Detailed Design Study Report for the Phase II (2014) , USP Strategic Plan 2013-2018, Press Release of USP, Results of interviews and the survey for USP 60 students, 5 graduates and 5 employers at the time of ex-post evaluation.

### 3 Efficiency

Although the project period was as planned (ratio against the plan: 100%), the project cost exceeded the plan (ratio against the plan: 147%). The reason why the project cost significantly exceeded the plan was because the Japanese side did not specify the necessary and precise input for this project such as the number of short-term experts to be dispatched, the type and volume of equipment to be provided as well as the number of trainings to be conducted at the time of project planning. Therefore, efficiency of the project is fair.

### 4 Sustainability

#### <Policy Aspect>

The USP member countries are very supportive towards ICT human resources development in the Pacific region. According to the Council of Regional Organizations in the Pacific (CROP) ICT Working Group Secretariat, the Pacific Regional Digital Strategy was elaborated by the Forum in 2006 and was updated in 2013. and In 2015, the ICT Ministerial meeting approved the review of the ICT Framework and the Pacific Regional ICT Action Plan (PRISAP) which had been finalized by the CROP ICT Working Group in order to cover the period from 2016 to 2020. At the national level, 10<sup>3</sup> out of the 14 Pacific Island countries have developed national ICT policies that are closely aligned to the above regional level strategy and action plan.

#### <Institutional Aspect>

##### [USP]

Sufficiency of the number of staffs differ by unit in charge of CS/IS education service and ICT services in USP. On the other hand, USP has identified that the numbers of regional staff need to be increased to cope with the increasing ICT nature of teaching and learning delivery and the increase in complexity of services on the ground which has evolved from the early days of USPNet. The difficulty in standardizing staff remuneration across the different regional USP campuses in the Pacific region give rise to increased staff turnover and unsuccessful recruitment attempts.

##### [FSTE and School of Computing, Information and Mathematical Sciences (SCIMS)]

FSTE/SCIMS is responsible for providing more professional bachelor programmes in CS/IS education including the BNC/BSE bachelor programmes. FSTE/SCIMS has 26 academic staffs, including 11 senior academic staffs in CS/IS education, 1 user consultant, 17 teaching assistants, 2 office assistants, 1 technical assistant and 1 cleaner. According to FSTE, the current number of staffs deployed for FSTE/SCIMS is determined by USP's Internal Funding Model and it is sufficient to provide the BNC/BSE bachelor programmes introduced by the project. At the time of ex-post evaluation, one professor in Computing Science has been appointed and appointments of three more senior academic staffs were underway.

##### [Centre for Flexible and Distance Learning (CFDL)]

CFDL takes responsibilities for developing and applying Moodle and m-Learning<sup>4</sup> to delivery of distance learning to make the delivery more efficient and effective. CFDL has 36 staffs. According to the CFDL staffs, the number is sufficient to continuously holding the responsibilities.

##### [IT Service (ITS) of USPNet]

ITS is in charge of operating and maintaining USPNet, Ku-Band and Nagios, promoting the role of Information Technology Infrastructure Library (ITIL) and delivering other ICT's services. ITS has 110 staffs but the number is not sufficient to undertake their activities because of the difficulties to recruit regional staffs and the increasing staff turnover. In addition, only one full-time staff is deployed for operation and maintenance of satellite related equipment of USPNet including Ku-Band and computer servers, but it is not sufficient since they need at least one more full time staff to take responsibility for the satellite related equipment provided by the project.

##### [ICT Centre]

ICT Centre is responsible for holding regional and international ICT events as well as providing incubation space for new tenants and office spaces for regional ICT organizations. While ICT centre has 2 staffs for the operation of USPNet and 2 staffs for maintenance of audiovisual (AV) equipment, they need at least 4 full time staff for AV equipment including equipment provided by the project since the scope of works has been increasing and needs of daily AV requirements in both Laucala and regional campus has been evolving.

#### <Technical Aspect>

##### [SCIMS of FSTE]

Although SCIMS stopped providing trainings to new staffs on provision of the BNC/BSE bachelor programmes after project completion, the staffs have still sustained their knowledge and skills by attending summer schools overseas for their areas of interests and participating in international conferences/symposiums about the recent trends in IT. Also, it is confirmed that a few CS/IS staffs took a postgraduate course on teaching skills and received post graduate certificates in teacher training.

##### [CFDL]

CFDL staffs continue to maintain the knowledge gained from the project experts, through on the job training, especially in the areas of Multi-media and Instructional design. Equipment provided by the project has been still used in the core functions of some of the services that CFDL offers such as Moodle platform.

##### [ITS]

ITS have extended trainings on Ku-Band and Nagios to a wider number of staffs, which results in inventing a knowledge base critical technology. The transfer of knowledge and skills regarding the provision of ICT Services from the Network Operations Centre using the Nagios Platform has been facilitated first amongst a core systems team for the development of Nagios and also the wider USP ICT technical support teams who have been trained on interpreting alarms and auctioning resolution efforts accordingly. OJT and regional staff training programmes are conducted during the semester breaks.

In terms of operations and maintenance (O&M) staff, the knowledge and technical skills are appropriate. Every 3 years, the Technical Operations and Maintenance (TOM) trainings are conducted. This capacity building initiative creates awareness and engages all technical staff from every campus and centre to learn and get hands on experience from their counterparts in IT Services at Laucala Campus. The transfer of knowledge and skills regarding the O&M of equipment for the Ku-Band network provided by the project was facilitated through on-the-job training on VSAT (Very Small Aperture Terminal)<sup>5</sup> installations, operations and maintenance – both for the project deployment

<sup>3</sup> Cook Island, Fiji, Federal States of Micronesia, Kiribati, Marshall Islands, Palau, Papua New Guinea, Samoa, Tonga and Vanuatu.

<sup>4</sup> m-Learning is a learning support system using a mobile technology.

<sup>5</sup> VSAT is one of the two way communication systems via communication satellite.

teams and also for regional support staff tasked with O&M tasks onsite.

#### <Financial Aspect>

[USP]

USP's financial condition seems to have been continuously healthy to cover the actual expenditure by their revenue after the project completion. In 2015, while the total revenue of USP is 188 million FJD (Fiji dollars), the total expenditure is 179.6 million FJD. The main sources of revenue of USP are the student tuition fees (53.9 million FJD), donors' fund (50.4 million FJD) and the government contributions (49.5 million FJD). USP headquarters has allocated sufficient budgets to each department/section taking any responsibility for sustaining the activities introduced by the project.

While the revenue of USP increased, the budget allocation to FSTE, ITS and CFDL have also expanded for the period from 2013 to 2016: for FSTE, 12.3 million FJD to 15.2 million FJD; for ITS, 7.3 million FJD to 11.4 million FJD; for CFDL, 2.2 million FJD to 2.4 million FJD. For ICT Centre, the budget decreased from 1.0 million FJD to 0.8 million FJD for the same period. However, they reported the budget had been adequately allocated to them in order to undertake their activities introduced by the project. For the O&M for the entire university including USPNet and equipment provided by the project, the budget also increased from 41.9 million FJD in 2013 to 49.6 million FJD in 2016 and the amount of budget has been sufficient for proper O&M.

#### <Evaluation Result>

In light of the above, some problems have been observed in the institutional aspect. Therefore, the sustainability of the effectiveness through the project is fair.

#### 5 Summary of the Evaluation

The project achieved the Project Purpose 1 for delivery of CS/IS programmes across the Pacific region and the Project Purpose 2 for improvement of USP's capacity to deliver ICT Services. The Overall Goal has also been achieved since USP has been contributing to the ICT human resources development in the pacific region through its improved ICT environment. As for sustainability, although there are difficulties in deploying the sufficient number of staffs, in particular for the regional campuses, in order to cope with the progressing ITC services, USP has continuously allocated necessary budgets for the delivery of the CS/IS programs as well as the IT services and the USP staffs have sustained necessary skills and knowledge. As for efficiency, the project cost exceeded the plan due to the unspecified inputs by the Japanese side at the time of project planning.

In the light of above, this project is evaluated to be satisfactory.

### III. Recommendations & Lessons Learned

#### Recommendations for Implementing Agency.

- It is noted that the BNC/BSE programmes have been internationally accredited which is an important achievement for the project, however, it is recommended that efforts must be made to continuously maintain the high standards of the programmes and ensure that it remains relevant, particularly in a highly dynamic industry such as ICT.
- It is recommended that a separate computer lab be allocated exclusively for BNC/BSE students within the ICT Centre as the lack of computers for programming or practical exercises, seems to be a common issue identified in the questionnaire responses.
- Although efforts have been made to improve communications in remote regional centres, issues still remain with regards to the lack of qualified, experienced staff available on the ground to address technical issues. It is therefore recommended that the Technical Operations and Maintenance trainings usually held in the main USP Laucala campus, every 3 years, be rotated amongst the regional centres/campuses so that regional administrative staff are equipped to address minor technical issues by themselves on the ground, with guidance from the ITS staff at Laucala.

#### Lessons learned for JICA:

- Accurate cost estimation for the project input should be undertaken during the project design and formulation stage; otherwise, the actual project cost will possibly exceed the planned cost as this project.
- Given the geographical characteristics of countries in the Pacific region, it is important that ICT-related projects provide sustainable ICT solutions that take these geographical challenges into account and are able to adapt accordingly. The installation of Ku-band in regional centres under this project provides a good example.



BNC/BSE 300 Level Laboratory Class



USP IT staff inspecting the computer server