INTRODUCTION

The Republic of the Marshall Islands (RMI) lies north of the equator, southwest of Hawaii. It consists of a double chain of coral atolls and over 800 reefs spread over 2 million square kilometres of sea. The atolls have a total land area of 181 square kilometres. Of the 34 atolls, 25 are inhabited with a total population of 56,000 (2002 figures) who are primarily Marshallese. The official languages are Marshallese and English. The main atoll is Majuro, one of the two main population centres, and the main commercial centre, with seaports, airports and government services headquarters. The other main atoll with a population concentration is Ebeye.
Politically, RMI is associated with the USA through a compact of free association. There is a legislative assembly of 33 members, elected every four years. The elected president is the head of state and leads a cabinet of appointed state ministers.

The country produces fish, trochus shell, oysters, black pearl and clam, as well as some copra. Marshall Islands is one of the 12 member countries of the University of the South Pacific (USP) and therefore has access to the facilities of that institution including the USP Centre in RMI and through it, the USPNet satellite system.

National policies, strategies and programmes

The RMI has recently endorsed a national strategic plan, Vision 2018, to guide the development of the country for the next 16 years. The plan strongly emphasises the need to develop its human resource potential through improved education and specific human resource development initiatives. The report proposes to “establish a knowledge-based economy by equipping Marshallese citizens with internationally competitive skills, qualities and positive attitudes to work and society.” The resulting resource development plan is broad and recognises the wide range of development required but does not specifically detail an approach to the co-ordination of information and communication technology (ICT) and ICT programmes.

A report of the National Training Council, Labor Market Report, produced in October 2002, discusses ICT issues. It indicates that ICT skills:

- database development;
- network design;
- systems analysis;
- technical support;
- web development.

The report indicated a need to produce about 50 new ICT graduates per annum for the foreseeable future. This target has not yet been met nor has the labor market expanded sufficiently to create the full demand. It is expected, however, that the demand will eventually develop.

Current level of ICT access and use

The RMI has 78 public schools and 25 private schools spread over 25 atolls. Only five of the atolls have regular power, although some have access to solar power for radio and lighting. As a result only a small number of sites have the infrastructure to allow the use of ICT.

Elementary Education

The major population centres of Majuro and Ebeye have some computers available. Most computers in RMI schools are in Majuro. The eight public elementary schools have computer laboratories that are networked (tenuously) to printers within the laboratory. The majority of the computers have been supplied under the After School Care programme and are intended for student use to build language, math and computing skills after school hours, but they are available for school use during the day.

A plan to link these schools to the Ministry of Education office in a wide area network using wireless links is under investigation and a donor for the service is being sought.

Secondary Education

The high school in Majuro has a computer laboratory, which is used to teach general computing skills. Very little use is made of it as a medium for teaching the broader curriculum.

The high schools in Jaluit and Wotje both have computer laboratories. Satellite links to these two atolls allow Internet connections for these high schools.

Post-secondary Education

College of Marshall Islands. The College of the Marshall Islands (CMI) has the largest education-related computer...
facility. It serves three purposes at the moment and a fourth is in development.

The first and major purpose is to provide computing services to college staff. Regular turnover of key staff has meant that the network processes have been extremely limited and used mainly for print services. Using Peacesat for linking to the Internet has been irregular and thus the use of services external to the RMI has been very low.

The second purpose is to provide access to students both for studying and writing. For business studies students, it becomes the vehicle for development of ICT skills. The level of ICT skills being targeted is at the lower end of the employment market. High-level networking and software development are not regularly taught, although an adjunct programme in basic networking has begun in conjunction with the Bank of the Marshall Islands.

Students are also able to use the college intranet where they can access notes posted by faculty and submit assignments. Essentially it is application of distance education processes on the college intranet that allows staff to observe project development and provide more intervention opportunities before projects are completed.

A third purpose is hosting a satellite service linked to the Peacesat, which provides a teleconferencing connection to any outside link. Connection is made mainly to Hawaii, Guam and other Micronesian islands. The satellite station is linked by landline to a second satellite managed for the Emergency Services Center. Together these two satellites have the potential to provide teleconferencing, Internet access and 10 voice links channels. The Emergency Services satellite has emergency service as its first priority, so the network is secondary.

A network of landlines connects the college, the Emergency Center, the Ministry of Health, the Majuro Hospital and the Pacific Regional Education Laboratory (PREL) Office in the Ministry of Education. The teleconferencing service is used regularly by PREL for staff training. It is being further developed at the hospital for use in telemedicine to enable remote medical consultations.

A consortium of local agencies (college, hospital, Ministries of Education and Health) has been established in partnership with the Telecommunications and Information Policy Group (TIPG) at the University of Hawaii to manage the Peacesat connections to ensure there is an appropriate management process for the RMI Peacesat arrangements.

A gateway to the Internet has been provided for education purposes. While it is only a 64K link it provides the college and health services with an alternative link to the current Internet service being provided by the National Telecommunications Authority (NTA), the national telephone carrier. These current services are provided through a rather narrow bandwidth and at a high price of US$ 3.60 per hour or US$ 2,000 per month for a 128K 24/7 link – although the NTA has waived fees for official educational Internet use.

A fourth purpose of ICT functions at the college is to provide a base for students to engage in distance education for the completion of four-year degrees and to provide an alternative source for any specialist subject for two-year degrees not covered by the college. An Internet cafe for distance education students is in development. Internet connections for this service are still under review. This arrangement will reduce training costs since students can remain on island and, in many cases, in their current place of employment.

**The USPNet.** A complimentary satellite service for distance education is provided through USP for its students. The USP Center in the Marshall Islands provides degrees, diplomas and vocational certificates through both distance education and on-site courses to all eligible students throughout the Marshall Islands. Distance education students have access in Majuro to lecturers and instructors through USPNet, the communications network of the university. This enables students to complete a large proportion of the coursework for university programmes without having to attend classes on other campuses.

**Institute of Vocational Education.** An Institute of Vocational Education is being developed by the RMI, supported by an Asian Development Bank loan, to cater for early school leavers. It will provide programmes to enhance general development skills and to provide initial vocational training. A computer laboratory has been provided as part of the plan, with a major part of the training provided through interactive use of computers, allowing an individualised training programme for each student. A search for appropriate interactive programmes is currently underway.

**In-house Education in the Ministry of Education**

The PREL office in the Ministry of Education is linked to the office in Hawaii through the Peacesat satellite network. This facility is used for teleconferences that involve RMI-based personnel in programmes conducted by PREL.

**Ministry of Education**

The RMI Ministry of Education has received computers from various donor grants but does not yet have an operational network linked to a server. The delay is due to a lack of personnel with technical knowledge. Currently, the Bank of the Marshall Islands is providing support service to complete the installation of the Ministry network and will then provide ongoing support to in-house staff once recruited.
Broadcast Technologies.

Radio and television have been operating for a while in both Marshallese and English. Majuro, that has about half the population, has access to television, one government AM radio station and three FM stations. Majuro also has a large number of video shops. Some of the atolls close to Majuro can also access the AM radio station. The main focus of government radio is music, news and reporting the proceedings of the Nitijela (the local parliament). The radio is not currently used for school or educational broadcasting. Television relays of a number of satellite stations (CNN, BBC, movies, etc.). There are slots for local events, but the media is not used for educational purposes.

Major initiatives

Major initiatives using ICTs have been previously described. Briefly, they are:

- Intranet for tuition use at the college;
- Satellite links through the USPNet;
- Internet cafe for off-island distance education;
- Wide area network for teleconferencing in health and education;
- Planned wide area network to link schools in Majuro, to provide links to the Internet and caching of popular websites;
- Vocational education using computer-assisted training to develop basic language and math skills as well as provide information about vocational options.

Examples of training

So far training has been limited to the CMI and USP. While large numbers have been enrolled in ICT training degrees, very few have graduated. The most qualified graduates are snatched up by the major ICT employer, the Bank of the Marshall Islands, which is building the best pool of ICT expertise in the country.

The Ministry of Education paid for a small number of intern staff (students who were assisting in the installation of network arrangements in the ministry office and schools) to attend network-training programmes in Hawaii, but due to an inability to promptly offer employment, the interns chose to work with the bank instead. This has, however, had a serendipitous benefit because the ministry has established a computer support arrangement with the bank.

The PREL office in Hawaii provides a regular series of ICT awareness and skills development programmes on island.

In summary, the long-term need for trained staff will not be met from current arrangements, particularly those relating to networking, systems administration and software development.

Constraints on the use of ICT

A major constraint is the lack of a focus for ICT development in the country. Each arm of government is developing its own vision with little or no co-ordination. The Ministry of Finance, because it needed to allow online access in major departments of government, has set up a wireless wide area network with US technical support.

General use of ICT outside of the four major centres in the country will be limited until sustainable power sources and innovative uses of technology can be explored. Designs for long-distance radio-supported low-band e-mail are under discussion.

ICT access for elementary students is limited to Majuro and Ebeye. This is exacerbating the disparate nature of educational offerings among children in the RMI. Technical support is very limited even on the sites with large numbers of computers.

Analysis

There is a need to provide a more co-ordinated and focused training initiative in order for the crucial aspects of ICT technical support to be available. Furthermore, follow-on employment opportunities at the Ministry of Education need to be created in order to maintain trained personnel so the expertise is more readily available for education initiatives.

Broadcast technologies appear to be underutilized for education and much potential exists with this medium, particularly given that the atolls are spread over such a wide expanse of water. For instance, the use of radio for delivery of educational programmes as in other Pacific islands could be considered, particularly for schools at the elementary level, while television could be utilized for delivery of distance education programmes. The constraint here is likely to be the cost.

Notes

1 This paper does not represent an authorized government view. The author, Leatuaolevao Ruby Vaa, co-ordinator of the Pacific reports, provided context and analysis (vaa_r@samoa.usp.ac.fj). Other views in this report are of Martin Caust (mkaust@fastmail.fm).