

# USING A SATELLITE FOR SOCIAL SERVICES

## THE CASE OF PEACESAT IN THE PACIFIC ISLANDS

by Patrick Casserly

In his Encyclical *Sollicitudo rei socialis* (1988), Pope John Paul II says that the availability of the many real benefits provided in recent times by science and technology, unless it is directed towards the true good of the human race, it can itself become oppressive<sup>(1)</sup>. According to the Pope, true development implies the need to respect the right of every individual to the full use of the benefits offered by science and technology<sup>(2)</sup>, though he recognises that the transfer of technology to developing countries constitutes a major problem<sup>(3)</sup>. John Paul II believes that the developing countries must take initiatives among themselves, based on the right of all citizens to access to a wider culture and a free flow of information<sup>(4)</sup>. The Encyclical states that developing countries belonging to one geographical area should embark on regional projects of cooperation to provide services which each one separately is incapable of providing, and should favour interdependence among themselves as an alternative to excessive dependence on richer or more powerful nations<sup>(5)</sup>.

The Encyclical thus points to the importance of communication, understood as the sharing of information, and of communication technology, in the process of development. A particularly successful example of the use of communications technology for development has been the Peacesat Project, a system of communication by satellite which for 25 years has been serving the people of the Pacific Islands region, which comprises some twenty countries at various states of economic development.

The Peacesat project was not simply concerned with solving practical problems of communication. It also sought to explore the connections between communications technology - and in particular, satellite communication technology - and development, and focused on the support which satellite communication could offer to a wide range of development activities. The Peacesat project was also interested in defining a specially protected status for development-related communication in the international world of satellite telecommunications, with implications for the regulatory and tariff-setting aspects of the sector.

The use of satellite communications in the Pacific as a "services support application" may be a model for other parts of the world. Though the Pacific system, known as Peacesat, is accessible to Church organisations engaged in social service, they barely use it.

For the Pacific Ocean region, a vast area of water, with scattered islands and small populations, the "satellite solution" for telecommunications has long been recognised as indispensable. The Intelsat system was extended to the Pacific in 1968, but then required 30 metre antenna and sophisticated terminal equipment cost upwards of \$4 million (U.S.). At that time, very few Pacific Island countries could contemplate a connection. More recently, as smaller and less costly Intelsat ground terminals have become available, most Pacific Island countries have been connected to the system. Nevertheless, the region remains relatively underserved with telecommunication services, particularly to rural and remote areas, and still needs to make use of the special satellite communications system known as Peacesat.

The Peacesat project was the brainchild of the late Professor John Bystrom of the University of Hawaii. Professor Bystrom had had a long interest in and connection with educational broadcasting. His insight into the possible usefulness of a communications satellite as an educational tool for the Pacific led to the first concrete steps to establish a satellite network for this purpose, as described by Bystrom himself in a paper read in 1975 to the Royal Society in London, England.

"A proposal for the interconnection of Pacific universities and education institutions was first made to N.A.S.A. by the University of Hawaii in early 1969

<sup>(1)</sup> John Paul II, *Sollicitudo rei socialis*. Vatican City (1988) n.28  
<sup>(2)</sup> *ibid.*, n. 33  
<sup>(3)</sup> *ibid.*, n. 43  
<sup>(4)</sup> *ibid.*, n. 44  
<sup>(5)</sup> *ibid.*, n. 45

Rarely used by the Church

<sup>(6)</sup> This quotation and the others which follow are from Professor Bystrom's address, "*The application of satellites to international interactive service support communication*" printed in the Proceedings of the Royal Society, London, A. 345, 493-510 (1975).

requesting use of (the satellite) ATS-1. Two terminals were constructed... and placed on separated islands in Hawaii. With N.A.S.A.'s approval, operation was initiated April 1971. The world's first credit course to be taught by satellite followed shortly"<sup>(6)</sup>.

Almost twenty years later, Professor Bystrom's address to the Royal Society is still of the greatest interest on account of its presentation of the Peacesat project as representing a totally new class of application in satellite communications with special relevance to the developing world and as a prototype for the application of a specific communications technology to the task of human development.

From the start, the project had the specific aim of evaluating the usefulness of satellite communication technology for developmental purposes. According to Bystrom, the Peacesat project (Pan Pacific Education and Communication Experiments by Satellite) was "designed to determine the value of the communication satellite when applied to the needs of less developed areas of the world". Bystrom believed that satellite technology, if properly adapted to economic, political, and geographic conditions, could open new opportunities for solving problems through organised effort.

In proposing a special status for the Peacesat Project as the prototype member of a separate sector in international communications, Bystrom presented a three-fold classification of the application of satellite technology for international communication, each with different purposes, system design and impact.

The first, for international common carrier interconnection, was represented by the Intelsat system, already well established by 1975. Intelsat however, was characterised by high technology and high costs, and while eminently suitable for high capacity routes, was then economically beyond the reach of most Pacific Islands countries.

The second application, for international satellite communications, "more threat than reality" in 1975, was the use of the space vehicles for direct television broadcasting to ground receivers.

The third application, according to Bystrom, was still very little known, and was "represented by the Peacesat project (which was) designed to support educational and social services. In it the satellite becomes a central relay point between small terminals located at points dictated by objectives and operations of the social services involved".

This was the novel ideal which already for the previous four years had been actualised in the Pacific region, using the experimental ATS-1 satellite which had sufficiently high power to permit low cost ground terminals to be installed on a number of sites belonging to educational and developmental - defined as social service - agencies in the islands, and accessible to other organisations with similar aims.

The "service support application", according to Bystrom, "has great potential for international communication. It can provide immediate assistance to the less developed areas of the world, at the same time it can contribute worldwide to the advancement of science, the increased flow of information, and more effective health, education, and community services".

The Peacesat project emphasised wide area coverage, two-way communication, the use of small, low cost, low capacity ground terminals, and participation principally from remote, less industrial areas with limited resources and special terrain problems. Its concern was with geographical areas where telecommunication was retarded and where information transfer in social areas would produce the greatest benefits. The principal benefit was the provision of facilities for regional cooperation at low cost, and the functioning of cooperative networks between existing organisations, institutions and interest groups.

The original Peacesat ground terminal was simple and effective, and the total cost of each unit, including antenna, ranged from US\$2500 to US\$7500 <sup>(7)</sup>.

#### Satellite as central relay point

<sup>(7)</sup> The Peacesat project in terms of system ownership was and still is rather similar to the Internet, with Peacesat's core facility (the satellite) being provided from public (U.S. government) funds, and the ground station equipment belonging to participating institutes and organisations.

Extensive use was made of the system by Pacific Island institutions and organisations, among them the University of the South Pacific, which developed an important distance learning programme with student centres in 10 countries, and the Catholic Bishops' Conference of the Pacific (CEPAC) which began using the system in 1982 for regular teleconferencing among its communications personnel and occasionally for the coordination of the pastoral training of students of the Pacific Regional Seminary.

The original Peacesat project remained active until August 1985 when the ATS-1 satellite drifted uncontrollably out of its orbital location and had to be retired. The University of Hawaii was able to secure federal government funding to re-establish PEACESAT in 1988, with the U.S. National Telecommunications and Information Administration (N.T.I.A.) as the administering agency<sup>(9)</sup>.

The re-establishment of Peacesat using the GOES 3 satellite necessitated new and more sophisticated earth stations, costing about US\$27,000 and began in December 1989. The footprint of GOES 3 covers the entire Pacific Basin and many of the Pacific Rim countries. N.T.I.A. has guaranteed satellite access until the end of the 1990s. There are no air-time costs or other recurrent costs, apart from occasional maintenance.

By mid-1993 there were 29 sites in 16 Pacific Island countries with new Peacesat terminals. In addition, there were single sites in New Zealand, Australia, Zealand and three in the United States of America.

During the first stage of its existence, the Peacesat Project was administered in a collaborative fashion mainly through teleconferences between the representatives of all the participating organisations. This collaborative pattern of administration has been largely followed during the present stage of the project.

The communication that is possible with Peacesat is of two kinds: voice and data.

For voice communication, any site can talk to any other site for point-to-point meetings. Multiple site teleconferences are possible, and form the bulk of the programming. In addition, it is possible to patch the satellite into the local telephone system so that remote sites can participate in point-to-point meetings and teleconferences. A loudspeaker can be attached to the terminal, as can remote microphones, in the situation where a studio has been built to accommodate groups.

For data communication, there is normally one channel available, and each site is encouraged to dedicate one computer to the terminal. Data transmissions take several forms: file transfer, database access, bulletin boards and e-mail. All sites are able to access an Internet node hosted by Peacesat.

The revived Peacesat project formulates the principal aim of the system as follows:

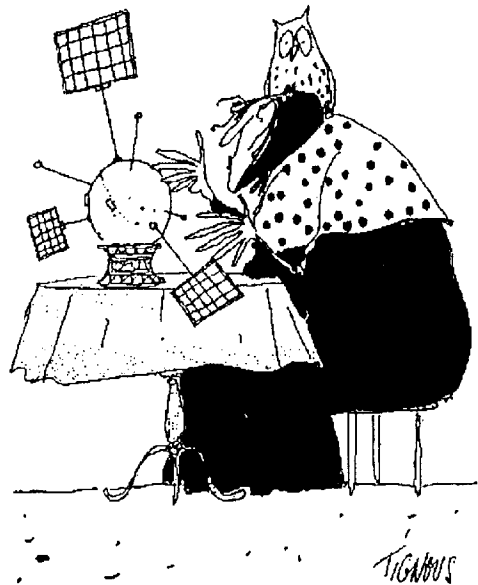
"to provide and support policies and programmes to develop, implement, and maintain telecommunications, computer and information systems for international communication and information exchange for charitable, scientific and educational purposes".

The current uses of the system still more or less fall into the seven categories as originally described by Professor Bystrom:

*Decision-maker conferences* which involve specialists and administrators at several locations discussing topics in relation to the solution of problems and the implementation of programmes. Participants have included municipal government representatives, agricultural specialists, health directors, newspaper editors, librarians and educational administrators.

<sup>(9)</sup> Information on the second phase of the Peacesat project is from Peter Walton's paper "PEACESAT: a communications network for the Pacific Islands", presented at the Regional Seminar on Computer-Based Electronic Network Management, Royal Institute of Technology, Melbourne, Australia, April 5-8, 1993, and from the writer's personal visits to Peacesat sites in Fiji and elsewhere in the Pacific Islands.

#### Voice and data communication



## Training and consultation

*Professional and in-service training* which was expected to be a major use of the system because of the wide differences in educational resources among metropolitan centres and less populated areas. The system has been used effectively in training of nurses, librarians, dental assistants, agricultural extension agents, teachers and others.

*Classroom instruction* which includes enrichment activities and complete courses.

*Community development seminars* which involve associations or organised groups seeking to improve the social environment. Groups have been engaged in drug abuse control, land use, and environmental issues, and native minority questions.

*Information transfer* can be improved by simple applications of the satellite system to existing library and data stores. The first known library network by satellite was in operation in the first months of system use.

*Professional consultation* is a high benefit application. Medical personnel value this very fundamental application of the system.

*Public information* exchanges providing a two-way system for international interconnection of national news and broadcast services.

Church organisations in the Pacific are not yet making use of the revived Peacesat project, though most would still wish to endorse Professor Bystrom's pioneering vision:

"The open channels of a service support system provide one way of extending the benefits of science of education and of reinforcing the great investments being made in training and in organised efforts to improve man's condition".

The Peacesat project, which has served the Pacific region well for nearly twenty-five years, remains a worthwhile example of the use of advanced yet relatively low cost communications technology for developmental purposes, with considerable relevance for other areas of the world with similar needs.

Given the emphasis in recent papal teaching on the importance of closing the gap between developed and developing countries in the areas of information and technology<sup>(9)</sup>, and the practicality of a system such as the Peacesat project, the time would seem ripe for Catholic organisations involved in development to examine seriously the opportunities which satellite communications technology can offer, when it is applied in a way that promotes participation, dialogue and collaboration. There is a need to maintain and further expand the small but significant sector of international satellite communications that is dedicated to the special needs of developing countries. ■

<sup>(9)</sup> Cited in the opening paragraphs of this article.

Pat Casserly, a Marist priest, is official of the Pontifical Council for Social Communication, Rome. From 1980 to 1992, he was the Media Consultant of the Catholic Bishops' Conference of the Pacific (CEPAC)