Transborder Communication : Patterns, Policies And Regulation

By

Philip A Varilla

TRANSBORDER COMMUNICATION: PATTERNS, POLICIES AND REGULATION

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Mr. Philip A. Varilla
Department of Transportation and Communications
Philippines

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Introduction

The telecommunications industry, which used to be a simple business and usually state-owned, has been undergoing several changes to respond to the fast changing world of telecom environment. Driven by technological and market forces which have assumed global dimensions, regulatory bodies worldwide are initiating steps for a much needed change on the infrastructure required for the socio-economic development of the country.

National telecommunications carriers, which were formerly government owned or controlled entities, are being privatized. National Governments would not worry whether to keep a majority stake or completely privatize their telecommunications carriers as long as they control the licensing of competing networks. Competition is being introduced to facilitate the immediate installation of infrastructures that would carry basic and advanced telecommunications service.

Telecommunications service providers, sometimes classified as telecommunications carriers and often with infusions of foreign capital, intend to capture bigger market share in the competition for the provision of telecommunications services. These efforts are geared or focused on leading-edge services ranging from the new generation of wireless telephones to high speed communication links that can carry video, voice and data communications. It is believed by many that all these new services will be consolidated in the near future through the Information Highway of the Broadband Integrated Services Digital Network (ISDN).

Many countries in Asia are redoubling their efforts to get more telephones into more people's hand more quickly. Countries which have lagged behind in the provision of basic and advanced telecommunication services maybe somewhat fortunate, because rapid technological developments in digital telecommunications means that latecomers can jump or "leap-frog" to advanced services which even richer countries would only dreamed of even five years ago.

The scramble for the installation of basic and advanced telecommunications services also

necessitates the review of all telecommunications policies. Some countries would like to erase the legal barriers between local and long distance franchises and between television and telephone networks. Some predicts that within ten to fifteen years, there will be free and open competition across ones telecommunications market.

This paper seeks to identify issues affecting international and transborder communications and the development of several strategies by telecommunications carriers, telecommunication regulatory bodies and other concerned parties.

Transborder Communications

I. Definition

Transborder communications, as the name implies, would mean the transfer of any form of messages and/or information over telecommunications channels from one country to another country. The term "border" would mean the boundary between two countries. Transborder communication usually takes place between two countries separated by land just like between the United States of America and Canada. In South East Asian Region, since the countries are separated by water, transborder communication can mean regional communication or just simply international communications. Regional Communication system has the capability to provide domestic communications services and communication services of neighboring countries. Transborder Communications can utilize different kinds of telecommunications technology, namely: radio-based (terrestrial) communication, optical fiber cable system including submarine cable or satellite communications.

For countries separated by land, they usually use high capacity radio, in-land optical fiber system or international satellite communications. Countries separated by water utilize either submarine cable technology or satellite communications technology.

II. Satellite Organizations for International Communications Services

A. INTELSAT

The International Satellite Organization (INTELSAT) is established in 1964 by 11 member countries. These member countries signed an agreement to provide an interim arrangements for the creation and initial operations. INTELSAT grew and completed its global network of satellites in 1969. INTELSAT I or the "Early Bird" was launched in 1965 to cover the Atlantic Ocean. Intelsat IIA or the "Lani Bird" was launched in 1966 to offer satellite communications service over the Pacific. In July 1969, another Intelsat Satellite was put to service to cover the Indian Ocean to finally complete the global network.

In 1973, INTELSAT made the transition from an interim consortium to a permanent organization with treaty status.

INTELSAT which has over 120 member countries owns and operates the satellite communications system used by most of the countries around the world for high quality, reliable international, telecommunications services. INTELSAT also provides domestic domestic communication to a large number of these countries and is also capable of providing Regional satellite communication.

INTELSAT satellites are being operated on the Geosynchronous orbit, around 36,000 km from the equator to provide international public telecommunications services and "live" television coverage to over 180 countries, and throughout the world.

Member countries, represented by the national government which is called the party, sign the Intelsat agreement. The parties were given limited responsibilities and were to meet every two years. Member country assigns a "signatory" to take the operational and financial responsibility for the organization. The signatures were to provide the capital to buy satellite and funds for the expenses of the secretariat staff for the organization which is called the "Intelsat Management". This capital is called "Investment Shares". Investment Shares is based on the amount of traffic that the signatories route into the system. The minimum investment share is set at 0.5 percent, no matter how little traffic is placed on the system, a limited amount of "excess" investment shares has traditionally been permitted. This allowed some signatories to drop some financial responsibilities when capital were made and others, for whatever reasons, gain additional shares above their traffic levels. These signatories forms the Board of Governors, composed of the largest investors of the systems, to provide the overall management of the organizations. Other member countries, or signatories, were permitted to form of group to gain one of the 27 seats of the Board. A meeting of signatories such as setting capital ceilings. Its existence insured that every signatory had at least some say in the organization.

The signatories are actually telecommunications companies which are authorized to establish, construct, install and operate infrastructures and facilities for international satellite communications. Ground facilities to connect the satellite system and also to the national network is usually established for this purpose. These signatories are the so called carriers' carrier who provides telecommunications services not directly to the public but to telecommunications carriers. In other words, telecommunications carriers, or the carriers, uses the facility of signatory to access the Intelsat to provide telecommunication services to its end-users.

B. INMARSAT

The International Maritime Satellite Organization (INMARSAT) became operational in 1980, focusing first to serve ships and ocean platforms, such as oil drilling rigs. After

some amendments to its founding Agreement, INMARSAT expanded its services to include mobile data and voice communications for airplanes and land-based terminals. INMARSAT now has around 70 member-countries and like INTELSAT have designated signatories. INMARSAT is based in London, closed to the Maritime Organization (IMO), from which it was chartered. Again, like INTELSAT, member country or the "party" sign an Agreement before an Operating Agreement is signed by the signatory. INMARSAT's Board of Directors is called the INMARSAT Council. Moreover, signatories are responsible for capital investments, national operations, marketing of INMARSAT services, and commissioning new mobile terminals to access the system. The Operations Control Center (OCC) at the INMARSAT's headquarters is connected directly by leased lines to the satellite control centers of the organizations from which satellite capacity is currently being leased. The OCC also arrange the commissioning of ship terminals upon application by the shipowner.

In the INMARSAT system, users of the mobile terminals are generally connected to the Public Switched Telephone Network (PSTN) and the Public Switched Data Network (PSDN) through gateway earth segment called Land Earth Station which is the same as the so called Coast Earth Station. Because these land earth station are expensive, there are only few, around 40, which were built all over the world. The result of which is that mobile terminals on board ships can contact one country without this land earth station through established and operational land earth stations. Of course, there will be a choice between the closest from the ship or the closest from the designation of the call. This call will then be routed by the land earth station operator through the PSTN to the telecommunication carrier in the country of destination with which they, the land earth station operator and/or telecommunications carrier engaged in international gateway facility operation, have a routing agreement.

III. ISSUES AFFECTING SATELLITE COMMUNICATIONS

A. Satellite News Gathering

One of the new applications of satellite communications technology has been for satellite newsgathering (SNG). The most notable recent example that was apparent to the global public were reports from Baghdad during the Persian Gulf war as televised by CNN. A CNN Reporter used a small INMARSAT Terminal to transmit still photographs and audio reports from the embattled city. Television news organizations use these SNG terminals to access fixed satellite for international services. It means access to INTELSAT to transmit and receive updated communication reports especially in areas where other communications links are not available or other technologies are inappropriate.

SNG terminals are either truck-mounted, which are fixed in a vehicle, or the so called "fly-aways", which can be disassembled and carried in a few large trunks. These

terminals typically operate in the C Band - 6 Mhz upstream signal to satellite and 4 Mhz downstream signal to earth station, and the Ku Band - 14/11 Mhz upstream/downstream signals. Some reporters are also equipped with briefcase-sized INMARSAT Standard C which can provide electronic mail or data communication and INMARSAT M terminal M which can provide voice communications.

Television news has traditionally been based on two types of events: the planned event, such as major sporting competition or summit conference; and the unplanned events, such as natural disasters, accidents, or speeches from a public official. For pre-planned events like the international summit conferences, the local telecommunications carrier can install a temporary communication link from the site of the conference or contest to their telecom network. Especially now that high capacity microwave radio and optical fiber systems are available, video channels can be transmitted over the public switched telecommunications network. However, in areas where it is cost-effective to use satellite communications, SNG terminals are being utilized. Unlike in the past when the traditional way of gathering news reports is to tape first the event, SNG terminals can provide real time transmission and reception of video signals. Events are no longer taped, sent through air courier to another country and delivered to the news center in several days, but because of SNG terminals reporters an deliver news at the place of incident and at the time of the occurrence.

Telecommunication regulatory bodies usually perform type-approval activities or individually certifying transmission characteristics of the terminals to ensure that they will not cause electromagnetic interference. INTELSAT had also came-up with a handbook that will guide SNG operators in establishing link and the procedure for registering and certifying SNG terminals.

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Generally, a reporter, who would like to bring in SNG terminals in a country where an important event would happen, would desire for quicker methods in getting approval from the country's regulatory body and INTELSAT signatory, if the SNG terminal would access INTELSAT satellite, and the assistance in clearing with customs. As an option, SNG earth segment operator can be permitted ready access to a country if the news media organization desiring to bring the SNG terminal also provide the same treatment for the country's satellite newsgathering earth segment, as a policy of reciprocity. Other news media organizations who would not afford open entry to a country's news organizations may be allowed on a case to case basis.

Some other issues include the concern of SNG operators to encourage national telecommunications carriers to have a reasonable charging system especially for temporary licenses or permits. A related concern would be that some telecommunications carriers would require his representative or technical staff to "officially" operate the SNG.

B. ACCESS TO INTELSAT

After several years of virtual monopoly in the international satellite communications, INTELSAT began to experience limited competition from the Indonesian Palapa satellite. In the Intelsat Agreement, countries who wish to launch any type of communications satellite system are required to consult with the INTELSAT. For domestic satellite services, the required coordination is entirely technical. However, member countries wishing to provide international communication services in competition to INTELSAT, Article XIV (d) of the Intelsat Agreement requires member countries to technically and economically coordinate the use of fixed satellite systems providing international satellite services. Economic coordination activities are based on the obligation of countries not to cause "significant economic harm" to INTELSAT or harm the establishment of direct connections through the INTELSAT system among member countries.

After PALAPA was permitted to expand services to its ASEAN neighbors for both domestic and regional links, two other regional satellite communications systems appeared. These are the European Telecommunications Satellite Organization (EUTELSAT) and ARABSAT. Other regional satellites then emerged such as:

1. PanAmSat, which now operates communication satellite in the Atlantic Ocean Region and soon to launch satellites for Pacific and Indian Ocean Region;

2. AsiaSat, based in Hongkong, has one satellite covering Asia and soon to launch another one to expand service;

3. Asia Pacific Satellite (APSTAR), also based in Hongkong, planning to launch two satellites in Asia directly competing with AsiaSat;

4. Rimsat, based in the United States, arranged to use three (3) orbital slots registered ot the Kingdom of Tonga with the International Telecommunications Union (ITU); and

5. Thaicom, the first satellite was launched in December 1993 and another one to be launched this year to service Thailand and East Asia.

There are other satellite communications systems being planned like the MEASAT of Malaysia, PacStar of Papua New Guinea and UNICOM of the United States.

In November 1992, the Assembly of Parties, following some reviews of the number of switched traffic carried by a separate international satellite, raised the limit from 100 circuits per system to 1,250 circuits per satellite which they consider as not posing "significant harm". Moreover, the Assembly of Parties decided that no amount of non-switched traffic carried on a separate satellite system would be considered as posing the potential for significant economic harm. INTELSAT, then set an objective to eliminate

all such economic harm standards by 1996-1998.

An INTELSAT Working Group was created to study the issues mentioned above and other issues such as further liberalization of Article XIV restrictions to broader issues of reorganization and possible privatization of INTELSAT. The group would also study to get a uniform tariffs for the same service among thin and heavy routes, scope of services and intellectual property rights.

The Philippines is now drafting a policy on international satellite communications. It is the general policy of the government is to promote competition in the telecommunications sector so that services can be extended to the unserved and underserved areas of the country.

The remarkable reformations in the international satellite industry signalled the government to review the position of the country as regards the policies on the access of INTELSAT satellites and the operational or planned satellites systems for fixed satellite services.

The government is now considering the benefits that can be derived from the competition in the provision of international satellite communications services and facilities. Access to INTELSAT can be deregulated to allow international gateway facility operator or other carriers who have proper authorization and sufficient technical and commercial maturity in international telecommunications to take advantage of the benefits to be obtained from direct access to INTELSAT.

C. MOBILE SATELLITE COMMUNICATIONS

The competition, as the one being faced by INTELSAT in providing fixed satellite communications services, would not spare INMARSAT, INTELSAT's "younger brother".

INMARSAT, basically utilizes INTELSAT satellites or other satellites in the geo-stationary orbit. However, Communication Engineers say that the geostationary orbit has some disadvantages, especially for voice communications. Because of the great distance that the radio signal must travel back and forth between two earth stations and the satellite, there would be a significant delay. This delay can cause awkward telephone conversation and echo.

In June 1990, Motorola revealed their plan of using 77 satellites, which was later reduced to 66, in low circular orbits over the poles to provide worldwide coverage of mobile communications services. Other companies also filed their applications to the U.S. telecommunications reulatory body, the Federal Communication Commission (FCC), for similar projects or systems. They were Loral Qualcomm, for a GlobalStar system; TRW

for the system called Odyssey; Ellipsat for the Ellipso System and Constellation Communications for the Aries system. These constellations of satellite would operate in the low earth orbits (LEO), generally 300-800 miles above the earth.

In the February/March 1992 World Administrative Radio Conference (WARC-92) allocated the bands of 137-138 Mhz, 148 -150.05 hz and 400.15-401 Mhz for little LEO services on a worldwide shared primary basis.The WARC also approved a primary worldwide allocation of the frequencies at 1610-1626.5 Mhz (earth-to-space) and 2483.5-2400 Mhz (space-tot-earth) for the big LEO voice services.

The use of mobile satellite terminals as being offered by INMARSAT and these satellite communications operators applying for LEO services may receive negative reaction from the telecommunication carriers and/or national telecommunication regulatory bodies. The reason for this is that INMARSAT system and the upcoming LEO systems present a threat of bypass to the local PSTN that would lead to financial losses to the local telecommunication carriers. Moreover, these systems also pose a security concern.

The issue on bypass, as the mobile satellite communication operators claim, is not as big as the PSTN operator says. The amount of traffic through the INMARSAT terminals of LEO handsets will be realtively small compared with the total network traffic. Moreover, Big LEO operators are planning to work with local cellular operators and make the local cellular the first choice from their "dual-choice" handsets. (The Iridium handsets are to be designed so that they can manually switched by the user from conventional cellular to Iridium communications. The handset therefore has two telephone numbers, one for the local cellular operator and one for the Iridium system.) A Big LEO customer, for example, has to decide whether to switch his handset to satellite-based service and is unlikely that he will often use it because the cost per minute of satellite-based call would be about ten times higher than that of a local cellular call. Loss of revenue through bypass could be improved through imposition of relatively reasonable licensing fees for the terminals or in the appointment of revenue from calls made by local handsets used outside of the country, which could be shared by PSTN carriers.

The use of satellite-based mobile communication services is not really a security concern. The process of orginating and terminating call would be the same as terrestrially-based telephone call and is likely no greater than with the conventional digital cellular systems.

V. ISSUES ON INTERNATIONAL GATEWAY OPERATION

The global telecommunications network also include the connection of different countries through their international gateway facility operators. Harmonized standards and fully functional international gateways will be crucial in providing end-to-end network and service connectivity. A changing business and trade environment has resulted in the emergence of multi-national cooperations (MNCs) which move information and resources

across national boundaries. This is true in the establishment of submarine cable facility connecting two countries. International gateway facility operators of several neighboring countries has the option to pool their resources to establish a submarine cable facility to carry their international traffic.

The global telecommunication network can composed of three sub-networks; the originating national network, the terminating national network and the international network interconnecting these two sub-networks. The environment, policies and requirements of various countries and regions are different. The international gateway in the originating network will route the messages to the appropriate country's gateways and they in turn will route the messages to the right national network and nodes. Concern about security is another reason for deploying gateways. With the increasing use of common channel signalling, the entire telecommunications network can be disrupted by malicious or inadvertent calls or access. Gateways can provide screening functions to protect against such incidents.

The partnership between international gateway facility operators would create global alliances. In 1993, AT&T and British Telecom (BT) made an announcement that both companies are to form global alliances with major regional carriers. The issue here is the race to develop a new generation of supercarriers with global reach to provide managed network services that will meet communication requirements of multinational corporations. AT&T, in partnership with KDD of Japan and Singapore Telecom, launched the WorldPartners Association, to provide its WorldSource business communications services to its customers in the US and the Asia Pacific Regions. BT, on the other hand, agreed to create a joint venture with the US based MCI to provide international enhanced voice and data communication services to multinational customers over an advanced network.

Conclusion

In any issues concerning communications, the government, through the telecommunication regulatory bodies, would continue to be responsive to the challenges of the industry and would therefore remain flexible in developing new policies for the implementaion of different kinds of telecommunication services. The continuing changes in the global telecommunications market should be constantly monitored so that decisions can be made concerning how much services and technologies can be implemented.

Moreover, each Government's telecommunications regulatory body would continue to tap the participation of private telecommunications sector in the growth and developmnet of the telecommunications environment, with healthier competition and widespread access to basic and advaced telecommunications services.