

QUESTION 17/1

*Satellite regulation in
developing countries*



ITU-D

STUDY GROUP I

RAPPORTEUR FOR QUESTION 17/1

*Report on
satellite regulation
in developing countries*



**International
Telecommunication
Union**

THE STUDY GROUPS OF ITU-D

The ITU-D Study Groups were set up in accordance with Resolutions 2 of the World Telecommunication Development Conference (WTDC) held in Buenos Aires, Argentina, in 1994). For the period 2002-2006, Study Group 1 is entrusted with the study of seven Questions in the field of telecommunication development strategies and policies. Study Group 2 is entrusted with the study of eleven Questions in the field of development and management of telecommunication services and networks. For this period, in order to respond as quickly as possible to the concerns of developing countries, instead of being approved during the WTDC, the output of each Question is published as and when it is ready.

For further information

Please contact:

Ms Alessandra PILERI
Telecommunication Development Bureau (BDT)
ITU
Place des Nations
CH-1211 GENEVA 20
Switzerland
Telephone: +41 22 730 6698
Fax: +41 22 730 5484
E-mail: alessandra.pileri@itu.int

Placing orders for ITU publications

Please note that orders cannot be taken over the telephone. They should be sent by fax or e-mail.

ITU
Sales Service
Place des Nations
CH-1211 GENEVA 20
Switzerland
Fax: +41 22 730 5194
E-mail: sales@itu.int

The Electronic Bookshop of ITU: www.itu.int/publications

© ITU 2004

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

Question 17/1
Report on satellite regulation in
developing countries

ITU-D Study Group 1
3rd Study Period
(2002-2006)

DISCLAIMER

This report has been prepared by many volunteers from different Administrations and companies. The mention of specific companies or products does not imply any endorsement or recommendation by ITU.

TABLE OF CONTENTS

	Page
1	Introduction: Moving Beyond Monopolies..... 1
1.1	Overview: Satellite Regulation in “Developing” Countries 2
1.2	Objectives: <i>ITU-D Question 17/1</i> 8
1.3	Methodology: Survey, Report, Database 10
2	Satellite Regulation Today 11
2.1	Global Regulatory and Policy Trends..... 12
2.1.1	WTO: The Satellite Commitments 13
2.1.2	GMPCS-MoU: Its Application and Uses..... 22
2.1.3	ITU Radio Regulations in the Satellite Context 23
2.1.4	Tampere Convention: Satellite for Disaster Relief and Mitigation 24
2.2	Regulatory and Policy Initiatives at a Regional Level..... 25
2.2.1	CEPT/EU: Harmonization of Satellite Regulation in Europe..... 26
2.2.2	CITEL: Regulations for Provision of Satellite Services in the Americas..... 32
2.2.3	Africa: Subregion by Subregion 33
2.2.4	The Asia-Pacific Opportunity 37
2.3	Effective Harmonization Practices: Common Problems, Common Solutions..... 38
2.3.1	Type Approval and Equipment Registration in the Regional Context 39
2.3.2	Satellite Licensing 41
2.3.3	Spectrum 49
2.4	National Regulation and Policy 50
2.4.1	Strategic Liberalization/Competition..... 50
2.4.2	National-Level Licensing 52
2.4.3	Spectrum 63
2.4.4	Transparency 63
2.4.5	Type Approvals 63
2.4.6	Gender Programmes 64
3	Implications for the Future 65
3.1	Liberalization/Competition 65
3.2	Licensing..... 66
3.3	Spectrum 68
3.4	Type Approvals..... 69
3.5	Regulating Forms of Service 69
3.6	Enforcement..... 69
3.7	Gender-Aware Guidelines 70
4	Suggested Next Steps for Consideration by Study Group 1 71
5	Conclusions..... 72

	Page
6	References 73
[1]	Laws and Regulations Applicable to Satellite Communications 73
[2]	The R&TTE Directive 73
[3]	CITEL Recommendations 73
[4]	Satellite News Gathering..... 74
[5]	GMPCS-MoU Implementation 74
[6]	ITU-R Technical References..... 74
[7]	VSAT Licensing Case Study – The Netherlands 74
	Annex 1 – Memorandum of Understanding on Asia-Pacific Satellite Communications Regulatory and Trade Issues 75
	Annex 2 – GVF Model VSAT Licence Application Template 78

TABLE OF CHARTS

	Page
Chart 1:	Global Satellite Industry Revenues, 1996-2003 4
Chart 2:	MSS Terminal Cost Trend 5
Chart 3:	VSAT Terminal Cost Trend (TDMA, USD 000)..... 6
Chart 4:	Distribution of Installed VSAT Base (%) 7
Charts 5-13:	Satellite Liberalization Worldwide 14
Chart 14:	GMPCS-MoU Implementation 22
Chart 15:	Number of New OSS Accounts 28
Chart 16:	First-Year VSAT Licensing Fees, 2000 42
Chart 17:	Implementation of Satellite/All Decisions (%), 2002 43
Chart 18:	VSAT Licensing Fees, 2002 (Bandwidth 150kHz)..... 43
Charts 19-27:	Services Subject to Licensing (Per Service)..... 44
Charts 28-32:	Services Subject to Licensing (Per Region)..... 47
Chart 33:	Indian VSAT Regulatory-Reform Assessment 52
Charts 34-37:	Satellite Terminals – Blanket Licensing 54
Chart 38:	Independent Regulators by Region, 2004 56

1 Introduction: Moving Beyond Monopolies

“Things always change and things never change.” The paradox which captures the story in these pages. This is a story which tracks momentous changes in technology and regulatory environments and yet, for all the advances, the challenges facing the satellite industry are as demanding now as they were ten years ago. Different perhaps, but every bit as potent.

The story that unfolds through the data in this report is one that could not have been contemplated without enormous changes in thought and the acknowledgement, at a global level, that the capitalist ethic – maximizing one’s own gains – for all its drawbacks, is the only known viable model for macro-economic growth and ultimately for social development.

Things were easier for regulators in the days when telecommunications were exclusively in the hands of state-owned monopolies. Fundamentally, regulation was a matter of taxing super-normal profits and imposing universal service obligations.

This Report charts the encouraging trends in liberalization globally and the increasing growth of competition in satellite services and applications, first in developed countries and then maybe in developing countries in all regions.

It is important to credit those first pioneers who liberalized their industries and introduced competition into their markets. This was a brave thing to do. After all, until regulatory and legislative changes were introduced, Governments had only economic theory to go on.

This is why it has been encouraging to see competition spread into regions like Asia, Latin America, Africa, and elsewhere. It is resource efficient when Administrations are able to design competitive frameworks drawing on existing models. Most efficient of all, however, are the gains that come from sharing experiences – successes and failures – and learning from each other. This Report is a tool to that end.

One Size Does Not Fit All

As we said at the beginning, the satellite industry today faces many difficulties. The introduction of competition has led to far more varieties in the way services are regulated right through from monopolies to full-blown competition with no unnecessary regulatory impediments to new market entrants.

Almost all countries are somewhere between but – and here’s the rub – no two are the same. The problem for operators offering satellite services is that, with some obvious exceptions, it is not a viable economic proposition to serve only one or two countries. The costs associated with the deployment and utilization of satellites can only be drawn back by optimizing coverage of the area of the Earth reached by satellites – referred to as the “footprint” – and serving the largest possible number of customers. In practice, satellite footprints with a single, wide beam can cover dozens of sovereign States simultaneously. For the satellite network operator or service provider this usually entails seeking authorizations from a multitude of regulators – in some cases more than one licensing agency per jurisdiction and satisfying sets of licence requirements and conditions that vary considerably.

Even in cases where fees are relatively low, the cost of obtaining all the disparate information necessary and of going through all the authorization application procedures is very costly and time consuming. Also, there are the levels of risk to consider. From a technical point of view, deploying satellites is a risky business, and it is no surprise that insurance premiums helped that risk. An obvious risk is associated with attracting investment into satellite projects where there is a prospect that licences will not be granted in due course, or at all. No venture capital – no venture.

Who cares? Obviously, Governments want to see successful businesses; they are the stuff economies are made of. Further, there is now almost universal recognition that Information and Communication Technologies (ICTs) contribute massively to the prospects of those operators – or have that potential. Social inclusion ranks at the top of Governments’ agendas, particularly at a time when Heads of State are gathering for the World Summit on the Information Society (WSIS), which runs until 2005.

The facts are that satellites, by their nature, can do things that other technologies cannot. In their ability to provide ubiquitous service to remote and rural areas they are unique in telecommunications – including broadcasting. They are unrivalled, also, in their potential to provide mobile services across vast regions including tens of thousands of cities and towns where terrestrial fixed and/or mobile operators cannot offer an economic service. This amounts to a huge opportunity to contribute to addressing the “Digital Divide” and to improving people’s lives.

The biggest criticism levelled against satellites, especially for the delivery of Internet services, is the cost. Realistically, there is no prospect of immediate drastic reduction on the costs of designing, launching and deploying satellites. That lies outside our grasp. However, certain basic mathematics can be applied here: Reducing the costs that arise specifically as a result of national regulation is within our reach. Lower regulatory costs will, in turn, make satellite-based solutions even more affordable and will increase sales. Increased user volumes will result in greater economies of scale and further cost reductions. And so on. The regulatory difference could make a big difference.

The initiatives described in this report were designed with one underlying concept in mind: Reducing regulatory burdens so that satellite businesses could have a realistic prospect of seizing commercial opportunities and provide valuable services to potential customers – including those marginalized by circumstances who it is so important that we reach.

1.1 Overview: Satellite Regulation in “Developing” Countries

Despite the fact that the title of the Question is “*Satellite regulation in developing countries*”, it is apparent that satellite regulation is an ongoing challenge for all countries. The participants of the Question, and indeed, several Administrations that responded to the accompanying *ITU Satellite Regulatory Survey* noted that any practical analysis of the latest satellite regulatory approaches must by necessity consider *all* countries, regardless of whether they are developed or developing.

Why? Because economic distinctions, while important, form only part of the picture. The cultural, social, geographical, political and – as a consequence – *policy* contexts within which satellite regulation is applied today are as diverse as the nations of the world are numerous. Accordingly, satellite regulations invariably differ from one Administration to the next. The ways that satellite regulations are applied are constantly in flux. And yes, the extent to which satellite regulations are effective in facilitating the provision of telecommunications from country to country varies tremendously, too... often despite Gross Domestic Product.

So the net was thrown widely. Every Administration in the world was invited to share its experience with satellite regulation, and inter-governmental organizations representing every major region were also included. Global initiatives were examined. Expert views were also considered from the private sector: The legal community, consultants, non-governmental organizations (NGOs), manufacturers, licencees, bandwidth providers, value-added resellers, and others.

Not surprisingly, innumerable differences in satellite regulatory approaches were revealed, as well as the impact they were having on access to telecommunications – both positive and negative. But what also became apparent was that, while the formulation of satellite regulatory approaches continues to be guided by recognition of unique national contexts, Administrations are increasingly making decisions that are also informed by the experiences of their counterparts in other countries.

This cross-pollination, it should be noted, takes place despite the economic categorizations that are sometimes applied to notions of what regulatory approaches are deemed appropriate for a given nation. In other words, the way that “developed” countries effectively regulate satellite communications is increasingly considered to be immediately relevant to “developing” countries – and visa versa, taking into consideration that all of them are parties to the ITU Radio Regulations.

Such a trend flies in the face of assertions that satellite regulatory approaches applied in, say, Western Europe will not be applicable in a region such as, for example, Africa. Or Asia. Or Latin America. Or the Arab region. News of this trend may be welcome to regulators who were advised that, before taking advantage of the most progressive regulatory reforms, their Administration would have to struggle through the same, slow, difficult evolutionary process as the Europeans. Or the North Americans.

They don't. Struggle, certainly, but struggle to build upon internationally accepted principles, to gain from lessons learned by other regulators and to take advantage of regulatory approaches that have already been proven elsewhere. This is not to say that one Administration is simply copying another. On the contrary, the survey conducted for this Report reveals examples of how Administrations – as well as global, regional and subregional groups of Administrations – are drawing upon successful approaches applied elsewhere and tailoring them to suit local contexts, and again, regardless of their position on any economic scale.

Less than two decades ago, the World Trade Organization (WTO) principles were nothing more than a glimmer in the visionaries' eyes, and the developed countries remained guardedly non-committal regarding concepts that are now taken as read by the developing countries. In matters relating to progressive regulatory and policy reform – satellite communications not excepted – this Report can confirm that Administrations throughout the world are participating now in what can appropriately be described as a leapfrog effect.

Regulation and Industry

Regulators are both driving and being driven by commercial and technological advances in satellite communications. While this has been true for decades, the relevance of the trend has never been more pronounced than at present.

Throughout the world today, there are more than 60 million entities paying for advanced digital satellite-based solutions – from corporate enterprises to consumers to government agencies – and there are many millions of others directly benefiting from these telecommunications and broadcasting services. Satellites are being used to provide fixed and mobile voice, video and data communications nearly everywhere: From villages to hospitals, from onboard ships and trains to airplanes, from stock exchanges to retail chains, from schools to disaster-relief agencies, from Internet service providers (ISPs) to oil and gas operations, and from living rooms to home offices... more than 10% of all IP-based broadband traffic in the world is now provided via satellite.¹

This trend is thanks in large part to Administrations' demonstrated commitment to expanding access to satellite-based services through regulatory reform which, in turn, has encouraged essential private-sector investment in research and development of higher-performance technologies, and has contributed to the emergence of a satellite communications sector that is better equipped to provide solutions than at any other time in history.

Example: An international telecom carrier² reported that its satellite-broadband revenues increased by 50 per cent in 2002, a growth rate that was *sustained* in 2003. (This stands in stark contrast to other broadband sectors, where earnings losses have in recent years become *de rigueur*.)

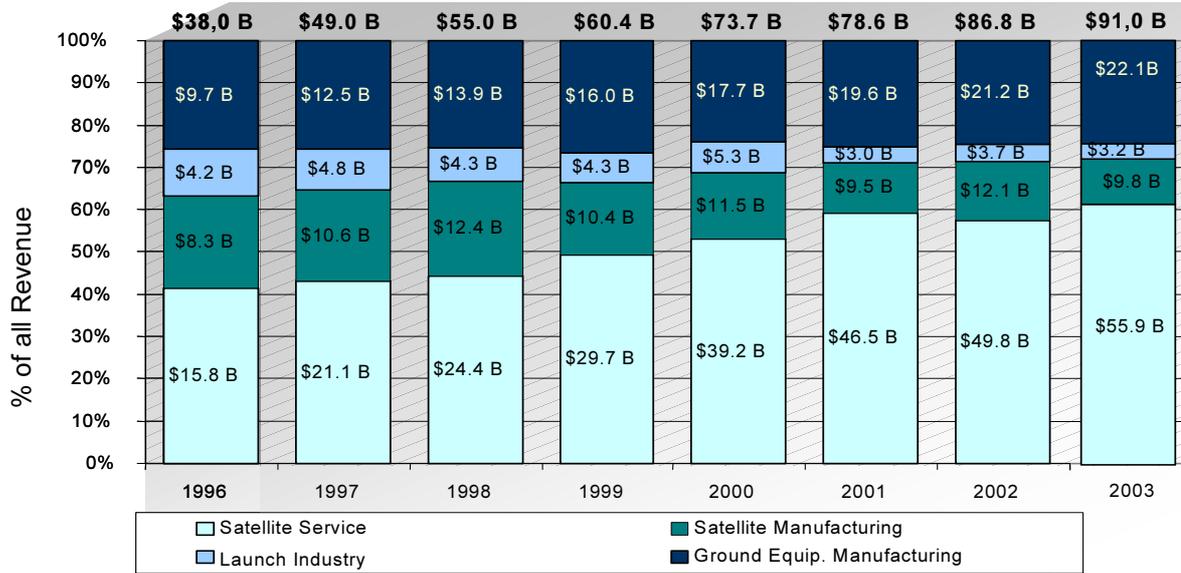
Such strength is neither the exception nor is it a recent aberration. Revenues from satellite manufacturing, services, launch and ground equipment have grown consistently over the past six years, as shown in Chart 1. These revenues, which are estimated to have reached USD 91 billion in 2003³, are growing faster than most other industry sectors, even more than many elements of the communications sector as a whole, and it is in the area of satellite *services* that the greatest growth has been seen. The latest figures project global revenues of the satellite industry to exceed USD94.7 billion in 2004 and expand by 2010 to as much as USD 127.2 billion.

¹ Based on research conducted by Northern Sky Research, a U.S.-based consultancy that specialises in satellite communications. <http://www.northernskyresearch.com>

² Revenue figures provided by Cable and Wireless.

³ Figures in this section are derived from materials supplied by Futron Corp., a U.S.-based consultancy firm specializing in telecommunications markets, services and regulation (<http://www.futron.com>). The survey from which Chart 1 was derived was conducted by this consultancy firm, together with the Satellite Industry Association, the non-profit association of the U.S. satellite industry (<http://www.sia.org>) and GVF, the non-profit association of the global satellite industry (<http://www.gvf.org>).

Chart 1: Global Satellite Industry Revenues, 1996-2003



Source: Futron Corp., SIA, GVF.

These revenues directly contribute to access to telecommunications throughout the world. Direct-to-Home (DTH) satellite services have competed successfully with cable and other terrestrial infrastructure in urban and suburban markets for more than a decade, as well as providing services to rural areas. In 2002, there were some 55 million DTH subscribers worldwide, representing 13% of the total pay-TV market. Terminals in some markets are provided for free as part of annual programming subscriptions. Subscribership, meanwhile, is projected to exceed 100 million by the end of this decade. This growth reflects the continuing advantages that satellites offer in terms of subscriber reach and capacity for carrying large numbers of channels.

The satellite industry also is a pioneer in delivery of voice and data services. More than one million one- and two-way Very Small Aperture Terminals (VSATs) currently serve businesses in both developed and developing nations.⁴ The satellite capacity used for these networks is anticipated to continue showing strong growth as corporations and government agencies continue to rely on satellites to connect multiple locations.

A particularly important aspect of this growth is for the development of rural telephony and e-government programs, which are expected to have a compound annual growth rate of some 18% over the next 10 years.⁵ Governmental institutions have supported the satellite industry and recognized its contributions.

⁴ GVF is the non-profit and non-partisan association of the global satellite sector. The organization, which is an ITU-D Sector Member, serves as the consensus-based voice of the industry in satellite policy and regulatory dialogues and strives to heighten awareness of the political, social and economic advantages provided by satellite-based communications. (See also <http://www.gvf.org>)

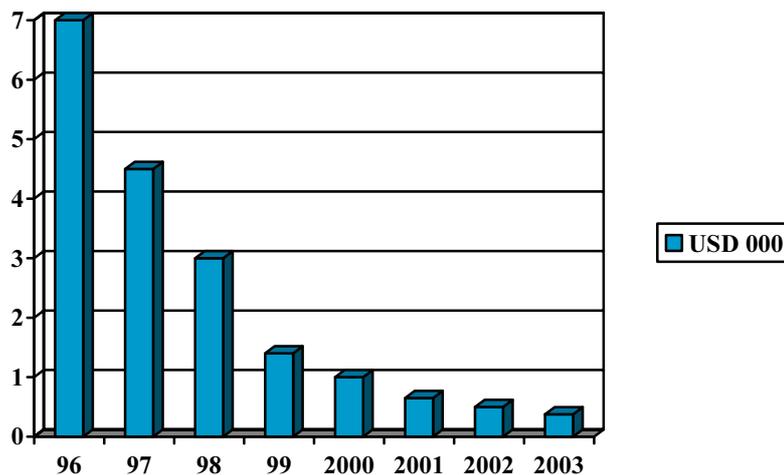
⁵ Futron Corp.

Truly global mobile telecommunications are also increasingly being seized upon, with nearly one million mobile satellite service (MSS) handheld terminals currently in use worldwide for corporate and governmental applications, as well as for rural telephony.⁶

In the increasing provision of all such services, the influence of satellite-industry privatization also should be recognized. In recent years, a significant change has occurred in the structure of the industry, which no longer is dominated by intergovernmental organizations. Instead, major satellite operators have restructured and are in the process of privatization, with private financial institutions and other businesses investing in their growth. In addition, global alliances amongst operators have provided major opportunities for industry in every region. Moreover, future opportunities should expand, given appropriate regulatory structures and emphasis on new satellite projects.

There have been other positive knock-on effects of regulatory reform. Practically speaking, the higher levels of deployment afforded by market access means that economies of scale are now being realized that enable substantial hardware cost reductions (see Charts 2 and 3) and the effective use of such systems and services for an even broader range of domestic and international telecommunications applications.

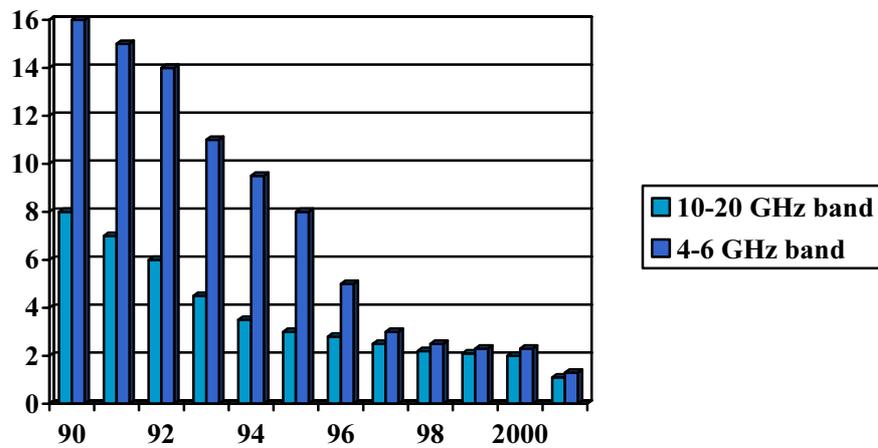
Chart 2: MSS Terminal Cost Trend⁷



⁶ Estimates are provided by the Mobile Satellite Users Association, a non-profit international association that represents the mobile satellite sector. (See also <http://www.msua.org/default.asp>)

⁷ Prices indicated in Chart 3 are for lowest industry terminal price in each respective year. Chart provided by Inmarsat Ltd., a U.K.-based provider of mobile satellite services.

Chart 3: VSAT Terminal Cost Trend (TDMA, USD 000)⁸



A snap-shot of typical applications now being provided via satellite includes:

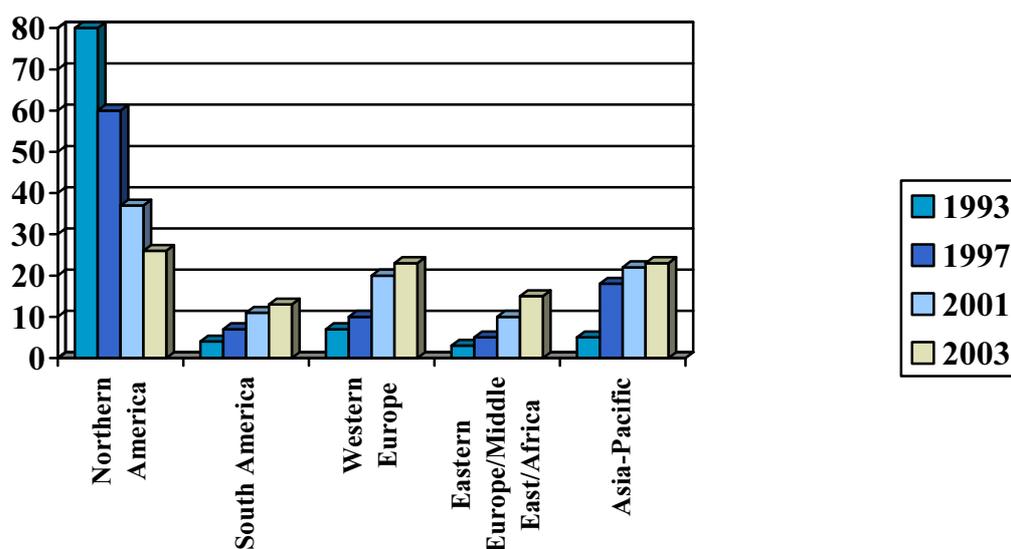
- Internet Via Satellite
- Distance Learning
- Rural Telecommunications
- E-health
- Disaster Relief
- Aeronautical Links
- Land Mobile Communications
- Maritime Services
- Government Closed User Groups
- National and Multi-national Networks
- Broadband Data Communications
- Multicast VSAT Services
- Intergovernmental and Corporate Applications
- PSTN Infrastructure Extension
- News Distribution

As costs have declined and the range of applications served has risen, satellite-based solutions are increasingly being applied across the map. For example, whereas a decade ago most VSATs were installed in one region – North America – recent years have borne witness to a growing percentage of deployment in other regions (see Chart 4), where narrow- and broadband solutions have begun to be used to elevate economic, educational, and health standards.

⁸ In the time elapsed since 2002, VSAT terminal prices have continued to decline, with terminals used in the 10-20 GHz and 4-6 GHz bands now available for USD 1,200 and USD 1,700, respectively. Chart provided by COMSYS, a U.K.-based consultancy specializing in satellite communications (<http://www.comsys.co.uk>).

Similar patterns of expanded access to satellite services have been recorded by the MSS and Broadcast Satellite Service (BSS) sectors and, indeed, this was predicted at least as far back as 1996, when the BDT Group of Experts at the ITU World Telecommunication Policy Forum noted that, “Satellite technology, with its instant ubiquitous coverage, may offer cost-effective solutions for developing countries.” In turn, higher economic and social standards are helping to attract foreign investment, which is creating employment opportunities, which is leading to increased exports, which is yielding stronger hard-currency earnings.

Chart 4: Distribution of Installed VSAT Base (%)⁹



Finally, Administrations' vital role in facilitating satellite service provision through regulatory reform has set the stage for the development of a truly international operating environment that embraces satellites' inherent ability to provide end users with an inexpensive, single communications platform capable of serving an entire region or the world. Unlike any terrestrial network, satellites can provide coverage nearly everywhere: Urban and rural, congested or sparsely populated, central or peripheral. Also, a satellite's coverage can provide important benefits to countries, including some of the traditional goals of regional cohesion and the newest goals of e-commerce.

But these goals have yet to be fully realized. This is primarily because one of the greatest strengths of satellite networks also, nonetheless, creates the greatest regulatory challenge. Satellite operators depend on harmonized regulatory approaches, because of their wide coverage. The services that the operator provides, often on a pan-regional scale, depend on authorizations and spectrum allocations in each country in its coverage zone. If those authorizations are difficult to obtain, then realizing the advantages of satellite services can be delayed.

In the satellite area, frequency use, network operations, service provision and the use of radio terminals can be considered as the main elements which have been the target of a number of regulatory measures (e.g. licensing conditions and procedures) normally meant to help the development of satellite telecommunications and facilitate market access to satellite providers, but which may also act as market barriers.

⁹ Data provided by Megatech Resources, a U.S.-based communications consultancy. See also <http://www.megatech.com/index.php>

These are not the only challenges. From among the aforementioned technological innovations have arisen systems and services – most notably IP-based satellite communications – that require a rethink of traditional regulatory approaches. Domestic vs. international, telecommunications vs. broadcasting, voice vs. data... all such distinctions have now been superseded by the advance of IP-based satellite, which effectively renders all services into one form: data.

At the same time, the industry's competitive structure has also changed at the level of national and international markets: Many Post, Telegraph and Telephone organizations (PTTs) have been privatized as well as intergovernmental satellite operators. This concurrent evolution of satellite operators, service providers, and applications – as well as their corresponding regulatory treatment – highlights the importance of ensuring transparent and non-discriminatory market access conditions as the best means of promoting an individual country's development. Like never before, and as stated in the definition of *ITU-D Question 17/1*, "Administrations must ensure that their regulatory treatment provides a level playing field for both existing and emerging satellite operators, service providers and satellite-based applications."

Such treatment may be facilitated at various levels: Globally through the ITU; regionally through groups like the Asia Pacific Telecommunity (APT), African Telecommunications Union (ATU), European Conference of Postal and Telecommunications Administrations (CEPT), European Commission (EC), Inter-American Telecommunication Commission (CITEL); and subregionally through groups like the East Africa Regulatory Post and Telecommunication Organization (EARPTO), the Telecommunications Regulatory Association of Southern Africa (TRASA), West Africa Telecommunications Regulators Association (WATRA) and others.

However, while these organizations are one of the ideal types of forum through which to pursue harmonization, *implementation* of regulatory reform is largely being driven by initiatives taken at the national level and confirmed at the international level. The survey conducted for this Report shows that, at the national level, Regulators around the world share certain fundamental goals regarding satellite regulatory policies. These can be summarized as follows:

- Enforce radio frequency allocation policies as set by ITU-R;
- Ensure that licencees are protected against harmful interference;
- Encourage uses that advance the public interest, economy, and social welfare of the country.

Yet, despite the almost universal presence of these goals on regulators' and policy-makers' agendas, the private sector encounters varying regimes in different and sometimes in the same nations, many of which do not effectively facilitate the provision of vital satellite services.

Partly as a result, some countries are progressing quickly, while other countries have not begun to realize their full potential, because regulations inhibit or prevent deployment of satellite solutions. It is vital that the relevant authorities adapt satellite regulation so that national interests can be advanced.

To that end, this Report is meant to serve as a guide, a living document. And what it reveals is twofold:

- 1) That a major goal of Administrations is the elimination of barriers that may inhibit the use of satellite services to provide telecommunications on an open and competitive basis to government, business and consumers throughout the world;
- 2) How the Administrations are achieving that goal.

To take advantage of this resource, it is proposed that Regulators and satellite service providers work together to promote the ideals of: expanded access to services, competition and lower prices, technology innovations, fairness, consistency, timeliness and transparency all within the satellite telecommunications market. Through simplified regulation and processes, this Report reflects that this is a feasible goal with reciprocal rewards.

1.2 Objectives: *ITU-D Question 17/1*

The World Telecommunication Development Conference (Istanbul, 2002) adopted *ITU-D Question 17/1* to explore the various regulatory approaches that Administrations take towards satellite providers, operators and end-users, and to identify recommended approaches.

The *Question* called for a study that examines satellite regulatory data and develops conclusions and recommended practices based on its findings. In particular, the study aims to benefit regulators worldwide (see Table 1) by enhancing their ability to manage the components of a dynamic, competitive industry.

Clearly, regulatory solutions need to take account of all relevant local factors, including most obviously the position of the existing market players and the needs of consumers but, importantly, taking into account cultural and economic and political differences. Therefore, this Report sets out to identify a number of successful-practice elements that can be packaged in different ways to serve individual national requirements.

To do that, the study reviewed regulators' experiences concerning access conditions for satellite operators and service providers, as well as their applications, in participants' respective markets. Private-sector perspectives on satellite regulation were also considered. Finally, the study examined successful practices that will promote business assistance programmes to assist women entrepreneurs.

Table 1: Target Audience

	Developed countries	Developing Countries	LDCs
Telecom policy-makers	*	*	*
Telecom regulators	*	*	*
Service providers/operators	*	*	*
Manufacturers			

The analysis and conclusions of that study are embodied in this Report, where information is provided in the following areas:

- Conditions for authorization and licensing of end-users of satellite services as well as of network operators and service providers/resellers;
- Ability of network operators to enter a market directly, through a distributor, or through resellers;
- Regulatory requirements for, and ability of, end-users and/or resellers to access different satellite operators;
- Licensing categories in existence;
- Legislation, in the field of telecommunications and, when differentiated, in the field of satellite communications.

The information gathered during the study will be entered into an online database and, together with the Report, will be made available to ITU-D members. The *ITU-D Question 17/1* participants envision that access to the data should be provided freely to all ITU-D members.

The Report and database will be considered also as a possible part of an ITU-D programme that is being undertaken during the study period, 2002-2006.

1.3 Methodology: Survey, Report, Database

To carry out the study for the Report, a global survey was undertaken, drawing upon two primary sources of information:

- 1) **Administrations:** The participants of *ITU-D Question 17/1* developed 33 questions on satellite regulations; these were distributed by BDT to the 189 Member States in a questionnaire, to which they were encouraged to respond. Upon receiving the responses, BDT compiled and sorted them for analysis, which was conducted by the BDT Regulatory Reform Unit and the *ITU-D Question 17/1* Group, the members of which were participant volunteers.
- 2) **Related Organizations:** Investigations revealed valuable supplementary information on current satellite regulatory approaches from global and regional inter-governmental organizations; non-governmental organizations (NGOs); associations; consultants; etc.

Survey Results

Table 2 provides a view of the number of responses to the *ITU-D Satellite Regulatory Survey*, which was sent out to the 189 Administrations on 5 March 2003:

Table 2: Overall Response Rate

Number of Member States	189
Number of Responses	63
Rate of response	33%

Table 3: Response Rate Relative to Each Region

Region	Responses
Africa	15
Americas	11
Arab States	9
Asia-Pacific	9
Europe	19
Total	63

Awareness, Outreach, Access

During the first meeting of the Rapporteur's Group for *ITU-D Question 17/1* – held in Atlanta, Georgia, U.S.A., on 1-2 August 2002 – it had been decided that it was essential to heighten awareness of the *ITU-D Question 17/1* programme among Administrations and private-sector organizations and that one way to achieve this would be to hold information meetings in conjunction with major ITU events.

Two *ITU-D Question 17/1* Information Meetings were held, one in Marrakesh, Morocco, 25 September 2002, in conjunction with the ITU Plenipotentiary Conference, and another in Hong Kong S.A.R., People's Republic of China, 6 December 2002, in conjunction with ITU TELECOM ASIA 2002 and the ITU Global Regulators' Symposium.

The Information Meeting objectives were twofold: Provide a progress report on *ITU-D Question 17/1*; and advise parties interested in participating on how to become involved. In attendance at the Information Meetings were approximately 50 public- and private-sector delegates from throughout the world. After the meetings, the delegates were included as *ITU-D Question 17/1* participants.

During the Rapporteur Group's first meeting, it had also been agreed that inputs from and participation by international organizations involved with satellite regulation should be sought. The Rapporteur's Group identified a wide range of these organizations, including national government agencies, regional and global inter-governmental groups, as well as non-profit associations representing various satellite-industry sectors. Identification criteria included, most notably, the organizations' degree of involvement with satellite regulation and the extent to which the organization's involvement was recently undertaken. While limitations of time and resources prevented an exhaustive effort in this regard, contact was made by the Rapporteur with groups from every major region of the world, including:

- **Africa:** The African Telecommunications Union (ATU), Telecommunication Regulators Association of Southern Africa (TRASA), West African Telecommunications Regulators Association (WATRA) and the East Africa Community (EAC);
- **Americas:** The Inter-American Telecommunication Commission (CITEL) and Asociación Hispanoamericana de Centros de Investigación y Empresas de Telecomunicaciones (AHCIET), the Mobile Satellite Users Association (MSUA) and Satellite Industry Association (SIA);
- **Asia:** The Asia Pacific Satellite Communications Council (APSCC), Asia Pacific Telecommunity (APT), Cable and Satellite Broadcasting Association of Asia (CASBAA), the Indonesian Satellite Association (ASSI), and the VSAT Services Association of India (VSAI);
- **Arab Region:** The Arab Spectrum Management Group;
- **Europe:** The European Commission (EC), European Conference of Postal and Telecommunications Administrations (CEPT) and Satellite Action Plan Regulatory Working Group (SAP REG).

A liaison, meanwhile, with ITU-R Working Party 4B was established, and this facilitated the identification of successful approaches relating to the regulation of satellite news gathering (SNG), which are noted in Section 2.4.2.8 of this Report and in [4]. In addition, the Group received a Liaison Statement from Working Party 8D through Working Party 4B. This Liaison drew attention to technical requirements that have been established in Recommendations prepared by ITU-R Working Party 8D and which relate to mobile earth stations. For more information refer to Section 2.1.2. Further, a liaison with ITU-R Study Groups 1, 4, 6 and 8 was established; ITU-R Working Party 6S responded by providing references related to satellite-based technologies suited to all stages of development. These are noted in [6] and, on matters related to SNG, in Section 2.4.2.8 of this Report.

And finally, constant access to the documents generated and considered by the *ITU-D Question 17/1* participants was provided via the ITU website. To view *ITU-D Question 17/1* documents, existing and potential participants were – and continue to be – referred to the following URL: <http://www.itu.int/md/meetingdoc.asp?lang=e&type=sfolders&parent=D02-RGQ17.1-C>

The information from the survey responses and from all other sources was evaluated and the Report was drafted accordingly.

2 Satellite Regulation Today

Satellite regulatory reform is increasingly being applied at every level – globally, regionally and nationally – and the way in which these new approaches are being formulated is driven almost exclusively by Administrations' single-minded pursuit of the same objective: Fulfilling public-policy objectives through expanded access to telecommunications. Whether it's facilitating the provision of telecommunication applications for health, safety and educational purposes or catalysing economic growth, a growing number of national regulatory agencies are engaging in every stage of dialogue to ensure that their interests are realized.

The *ITU-D Satellite Regulatory Survey* confirms this, revealing not only that numerous administrations have endorsed WTO GATS and the GMPCS-MoU – 146 and 68 administrations have formalized their support for these global policy instruments, respectively – but that they have also begun *acting* upon their principles, moving toward policies that embrace a host of regulatory approaches designed to enhance competitiveness: “Open Skies” or less exorbitant conditions for authorizing the landing of foreign satellite services; liberalization of satellite-based service provision domestically, with possible extension to the international arena; circulation of mobile satellite terminals; relaxation of the requirement to provide local satellite infrastructure (*i.e.*, establishment of a hub or teleport as a licensing condition for networks); and harmonizing satellite regulations within regional and subregional groups.

In general, the *ITU-D Satellite Regulatory Survey* reveals an increasing recognition by national regulatory agencies that “less is more”. In other words, many policy-makers and regulators now recognize that imposing *less* regulatory requirements results in *more* access to essential telecommunications as a crucial approach for favouring competitiveness.

This Survey also reveals that minimal approaches to satellite regulation are not only possible, but they are being developed in a way that assures that the systems and services do not cause harmful interference and take into consideration public health standards. This is especially true for networks based on the use of VSATs, both in receive-only and interactive modes, as well as mobile satellite service (MSS) and broadcast satellite service (BSS) systems.

2.1 Global Regulatory and Policy Trends

Global trends in the regulatory and policy arena continue to move in the direction of increased transparency, accountability and towards promoting active competition in all sectors of the telecommunications marketplace. This section examines key trends in a number of areas, including the WTO GATT and GATS, the ITU GMPCS-MoU and Radio Regulations, and the UN Tampere Convention.

The first prerequisite for an open, competitive national market is a legal and regulatory structure that does not discriminate in favour of existing service providers, or otherwise limit the number of independent service providers that are permitted to provide satellite and telecommunications services to consumers. Vigorous competition between a large number of service providers encourages investment in infrastructure, provision of new services, improvements in quality and availability of lower prices.

The World Trade Organization (WTO) is dedicated to lowering or removing trade barriers in order to provide the open and competitive markets that the global economy requires if it is to successfully meet the needs of its six billion inhabitants. The General Agreement on Tariffs and Trade (GATT) is the foundation of WTO. Key GATT issues for the satellite industry include non-discriminatory market access, open borders for competitive access, the implementation of an “Open Skies” policy, and the need for countries to employ transparency in telecommunications regulation.

Indeed, there are a number of important areas of regulatory policy for satellite operators, but few more important than licensing. The ITU-D has called attention to the impact of the licensing process on the larger regulatory environment and the market as a whole, noting, “The licensing process can be one of the most important regulatory processes related to reform of the telecommunication sector. Licensing policy and its implementation determine the structure of markets, the number and types of operators, the degree of competition among them, the revenues earned by governments in opening markets, and, ultimately, the efficiency of the supply of the services to the market.”¹⁰

The Global Mobile Personal Communications by Satellite Memorandum of Understanding (GMPCS-MoU) allows satellite operators to provide truly global service. GMPCS is officially defined as a personal communication system providing trans-national, regional or global coverage from a single or a constellation of satellite(s) accessible with small terminals. The GMPCS-MoU facilitates arrangements for not only licensing but also type approval, marking, provision of traffic data, and customs recommendations related to the free circulation of GMPCS terminals.

¹⁰ ITU 2002 *Trends in Telecommunication Reform*, p. 55.

ITU Radio Regulations, meanwhile, govern the use of spectrum mainly on an international basis. Satellite operators are obliged to use the ITU coordination process to avoid technical problems such as interference.

The Tampere Convention enables the rapid use of telecommunications services for disaster-recovery situations, particularly with regard to regulatory treatment. It was unanimously adopted by the delegations of the 60 States participating in the Intergovernmental Conference on Emergency Telecommunications (ICET-98), hosted by the Government of Finland in Tampere, Finland, 16-18 June 1998 and has continued to gain in prominence ever since, although not yet enforced.

Each of these important frameworks is discussed in further detail in the subsections below.

2.1.1 WTO: The Satellite Commitments

Upon conclusion of the Uruguay Round of trade talks in 1994 and the execution of the General Agreement on Trade in Services¹¹ (“GATS”), participating States concluded that issues concerning *inter alia* liberalization in the telecommunications sector were too sector specific to be fully addressed by the general regulatory principles set forth in the GATS. Therefore, on February 15th 1997, negotiators representing 68 countries concluded an agreement on basic telecommunications (“BTA”) thus giving rise to the regulatory disciplines contained in the GATS and the Telecommunications Annex of the GATS applicable to all telecommunications services included in the WTO Member’s schedules, plus broad regulatory principles unique to the BTA, embodied in a document known as the “Reference Paper”.

On 5 February 1998, the results of the WTO negotiations on market access for basic telecommunications services formally entered into force. At close of the three-year negotiations, in February 1997, the commitments of 69 governments (contained in 55 schedules) were annexed to the Fourth Protocol of the GATS.¹² The world’s industrialized countries all participated in the deal. More than 40 developing countries large and small from virtually every region of the world also took part as did six of the Eastern and Central European economies in transition. The markets of the participants accounted for more than 91% of global telecommunications revenues. Moreover, since the negotiations, other participants in the Protocol improved their commitments and other WTO members who had not participated submitted commitments on basic telecommunications to the Council for Trade in Services.

For satellite-related communications, 39 schedules (53 governments) committed on some or all types of mobile satellite services, and 38 schedules (52 governments) committed on fixed satellite services. In addition, 10 governments scheduled commitments on value-added telecommunications services, which in some cases included satellite telecommunications.

The Administrations’ commitment to opening satellite-related telecommunications to competition was evident in the *ITU-D Satellite Regulatory Survey* responses on competition in selected satellite services, including BSS, FSS, MSS, GMPCS, Private VSAT Network, PSTN Connected VSAT Network, International and Domestic VSAT, SNG and AMSS (see charts 5-13).

Of the Survey responses, Europe consistently held the highest regional percentages of Administrations that permit competition across all satellite services, ranging from approximately 85% of the Administrations at the minimum for GMPCS service, up to 100% for BSS and International VSAT services.

Interestingly, Africa’s responses also showed a strong tendency toward open satellite-related telecommunication provision, with 100% of the responding Administrations permitting competition for Private VSAT Networks, AMSS and SNG, as well as 90% for GMPCS, 85% for BSS, 83% for PSTN Connected VSAT, 50% for International VSAT, 41% for MSS and FSS, and 19% for Domestic VSAT.

¹¹ The GATS was heralded as the first-ever set of multilateral, legally enforceable rules covering international trade in services. It consists of 29 articles (dealing with general principles and obligations such as “Most Favoured Nation” M.F.N. and National treatment); 8 Annexes (dealing with rules for specific sectors); and 130 (individual country’s specific commitments to provide access to their markets) schedules of commitments on specific service sectors.

¹² This summary derives from an informal background document provided by WTO.

The satellite applications most consistently open to competition across all regions are SNG and AMSS. For SNG, however, monopolies are still maintained in 30% of the Americas’ Administrations, 35% of the Arab States and 39% of the Asia-Pacific Administrations. For AMSS, monopolies are still maintained in 28% of the Americas’ Administrations and 20% of the Asia-Pacific.

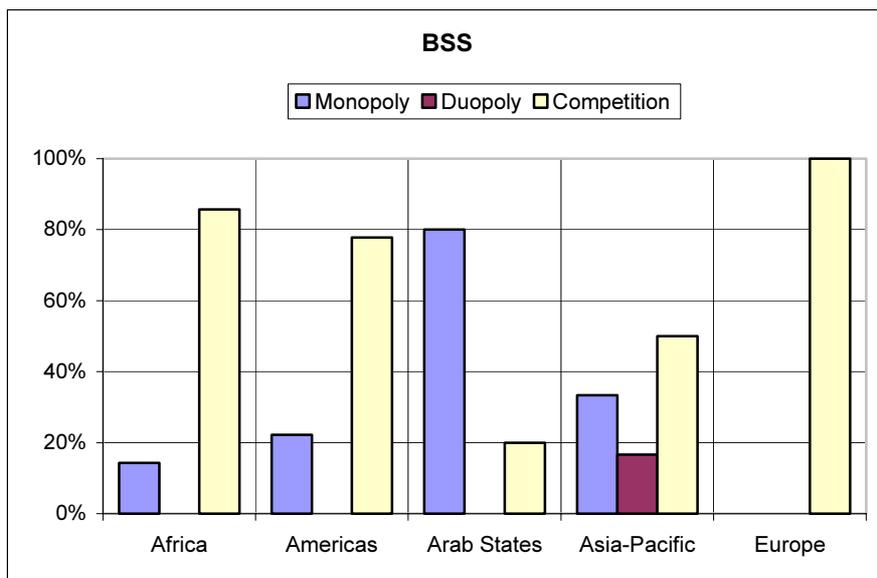
The region that consistently held the highest regional percentages of Administrations that have monopolies in place across the most satellite applications was the Arab States, ranging from, at the minimum, approximately 17% of the Administrations for GMPCS, to 80% at the maximum for BSS, MSS and PSTN Connected VSAT Networks.

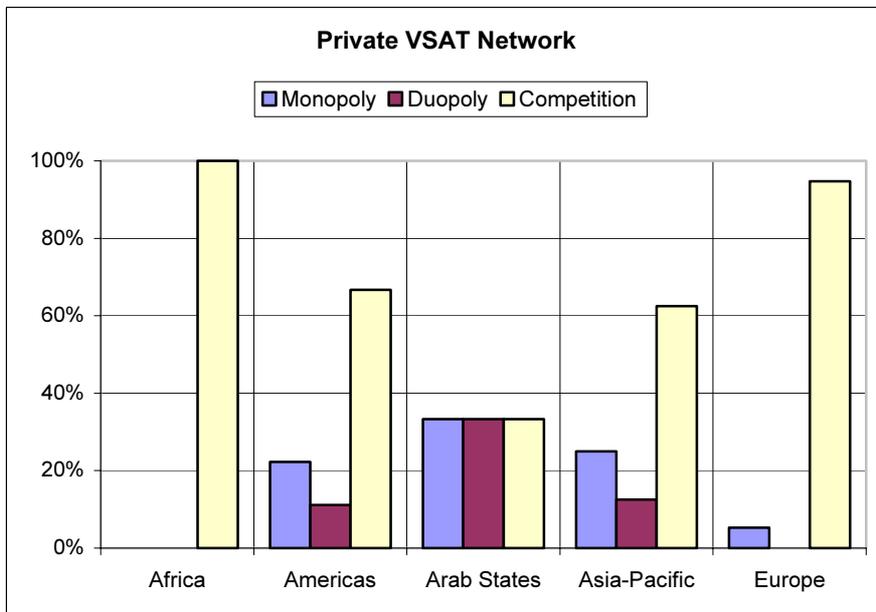
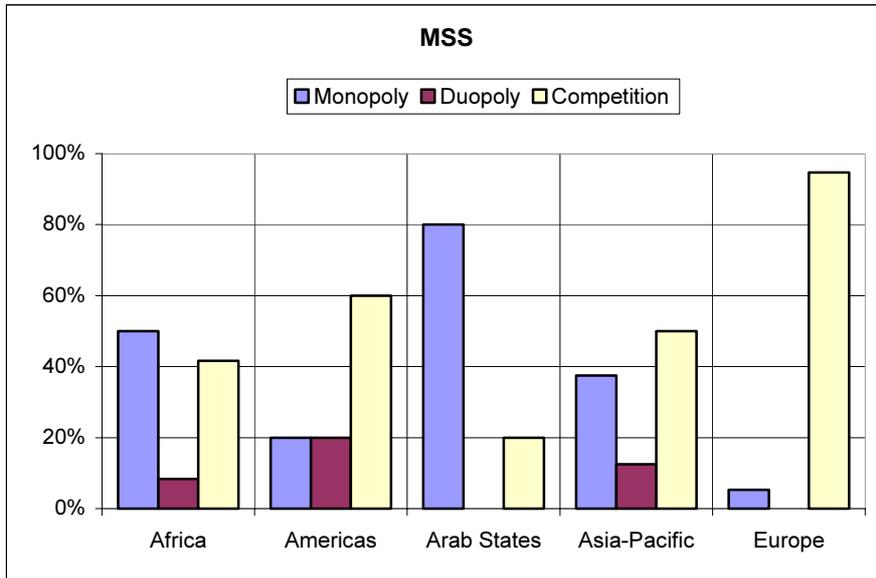
The following two satellite applications appear to be the most consistently subject to monopoly conditions throughout the world:

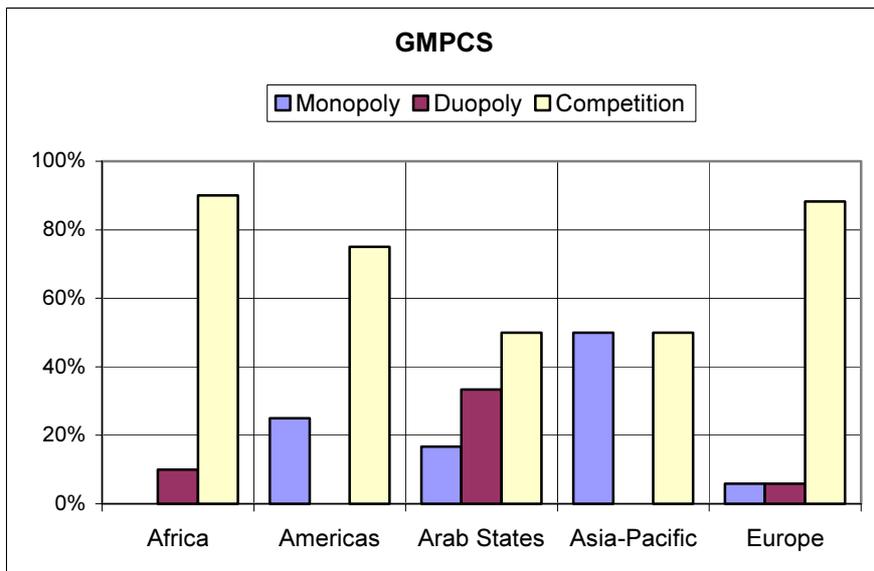
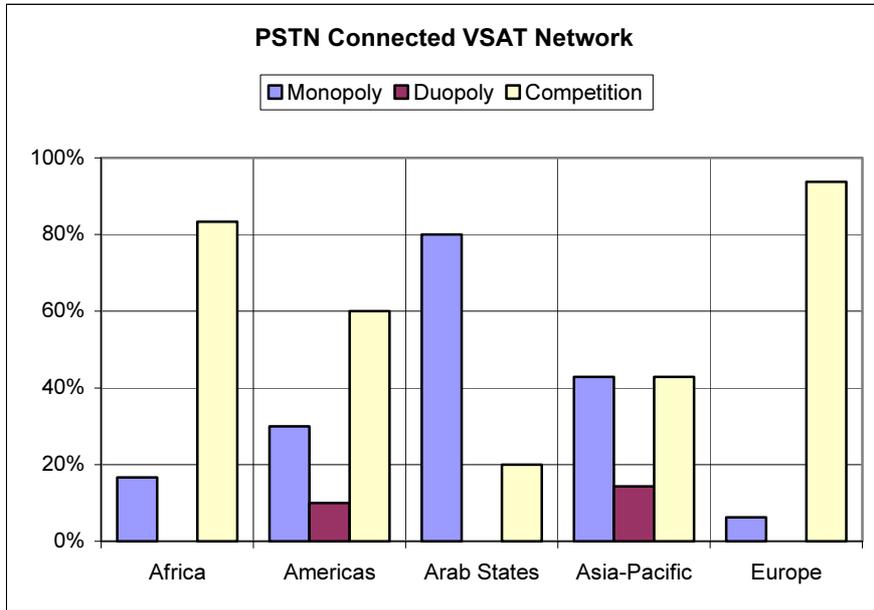
- 1) **PSTN Connected VSAT Networks**, which included approximately 5% in Europe, 18% in Africa, 30% in the Americas, 41% in Asia-Pacific, and 80% in the Arab States; and
- 2) **MSS**, which included approximately 5% in Europe, 20% in the Americas, 39% in Asia-Pacific, 50% in Africa and 80% in the Arab States.

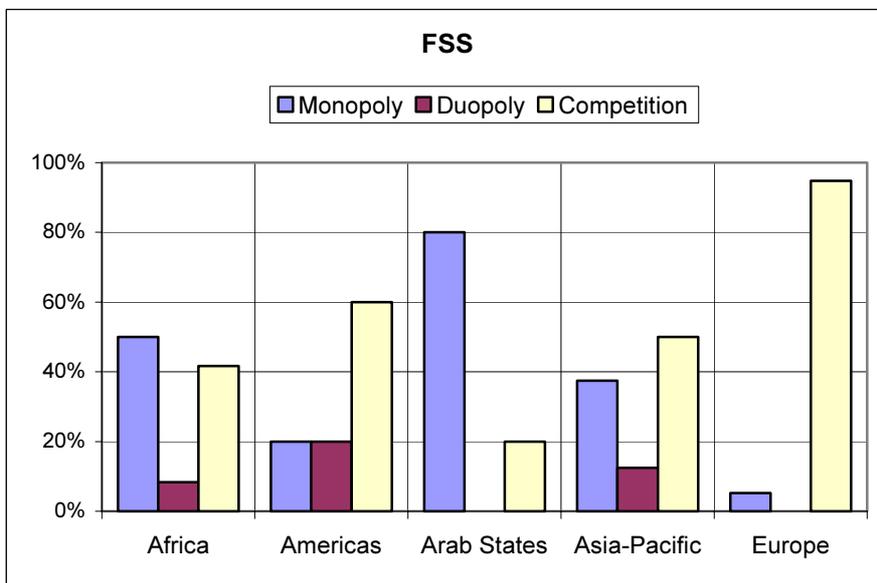
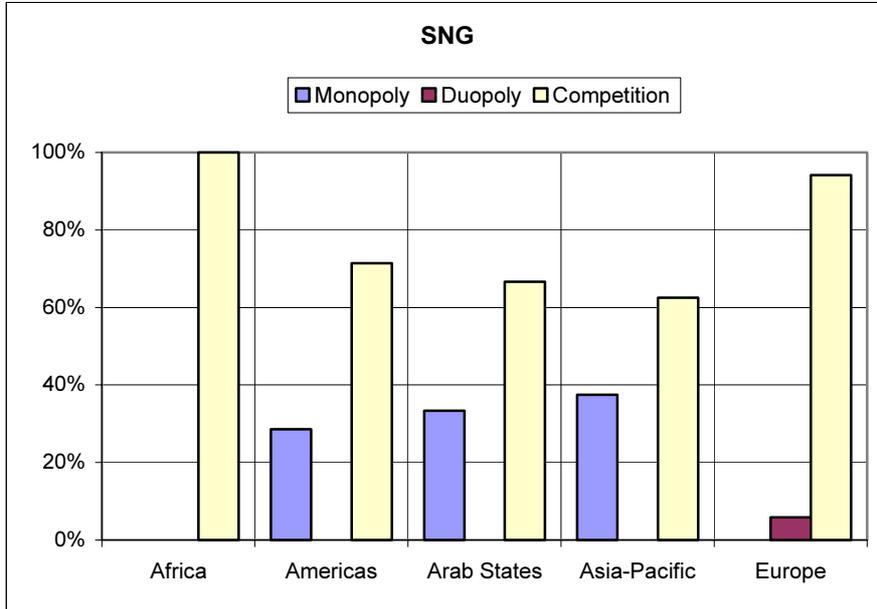
On the whole, the results show that Administrations have taken significant strides to liberalize satellite telecommunications – in both developed and emerging regions. And it should be noted that for most of the applications, there have been noticeable levels of activity in establishing duopolies, which is often a precursor to full competition. Having said that, there is much more to be done before competition is uniformly permitted across most regions and for most satellite applications.

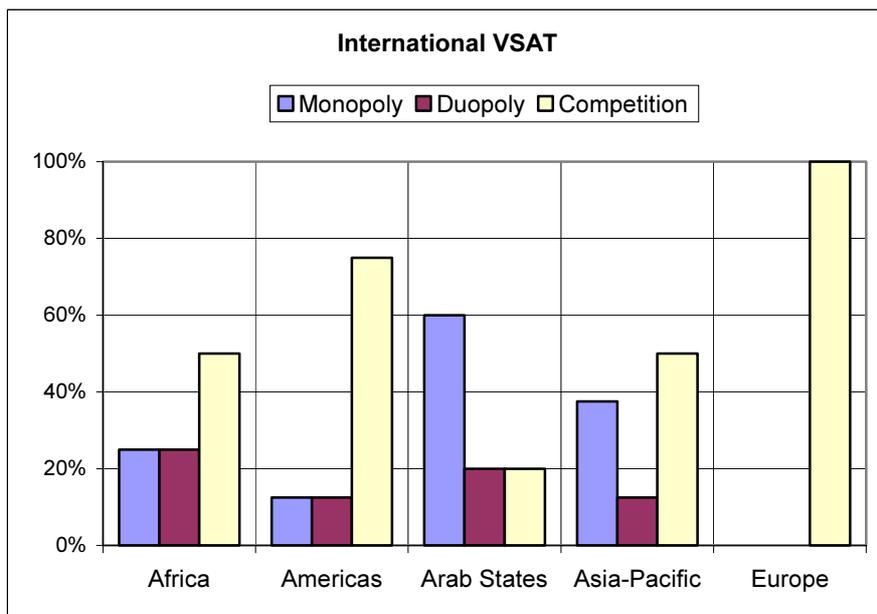
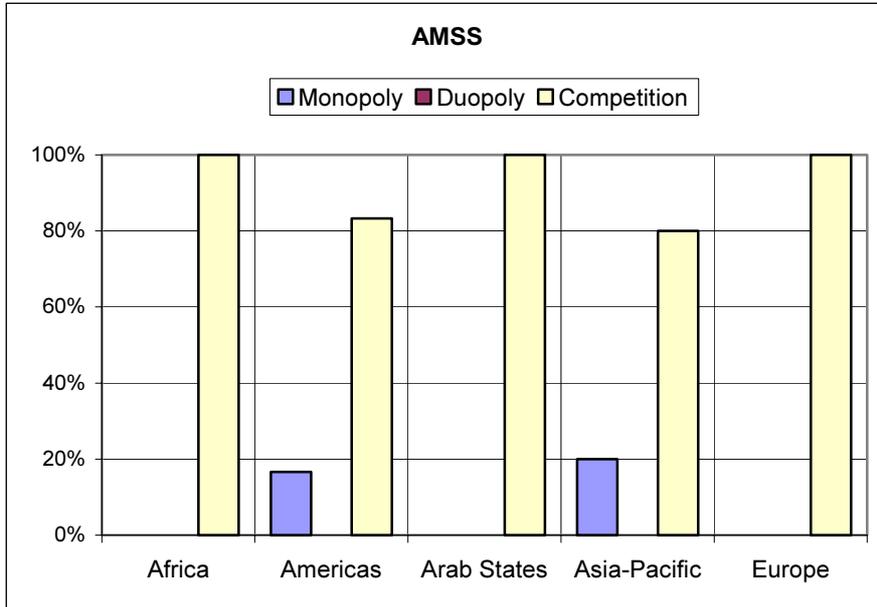
Charts 5-13: Satellite Liberalization Worldwide

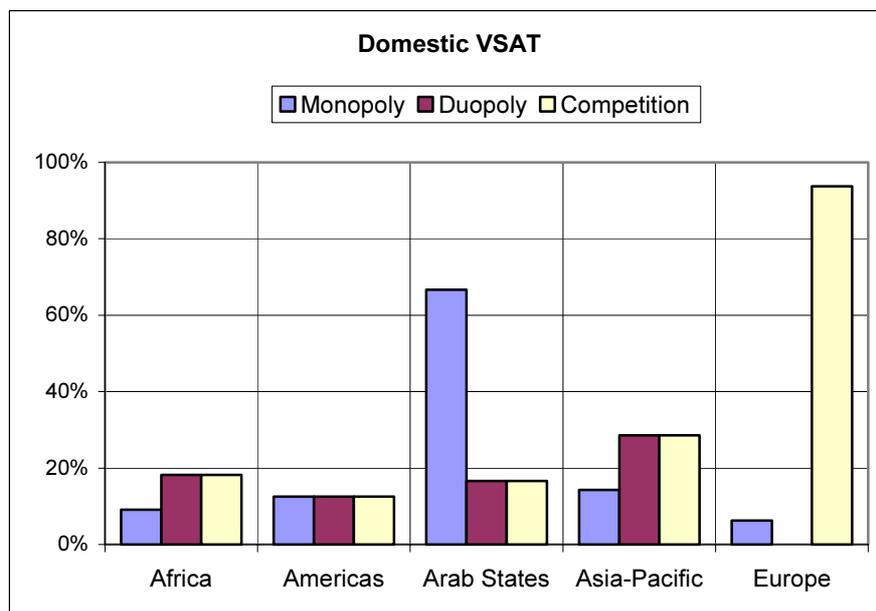












Source: ITU-D Satellite Regulatory Survey.

2.1.1.1 Non-Discriminatory Market Access

Many countries have already agreed to provide competitive market access for telecommunications services – including via satellite – as a part of their commitments in the WTO GATS and its Fourth Protocol on Basic Telecommunications Services. The WTO GATS requires member countries to refrain from imposing certain types of quantitative restrictions, economic needs tests, or local incorporation requirements. This means that a WTO Member may not maintain limits, such as a cap on the number of service suppliers or the corporate form in which a telecommunications service can be provided.

Those WTO Members that undertook market access commitments in basic telecommunications services also became subject to GATS requirements on domestic regulation of those services. For example, domestic regulation of telecommunications services must be administered in a reasonable, objective, and impartial manner. Many WTO member countries undertook additional specific commitments regarding pro-competitive regulatory principles. The Reference Paper on Pro-Competitive Regulatory Principles obligates signatory governments to adopt measures that prevent anti-competitive conduct, ensure fair, non-discriminatory and cost-oriented interconnection, and administer universal service obligations in a competitively neutral manner.

Despite these advances, some countries still restrict the number of licenced satellite networks that are permitted to provide services in a market, either because the government has a residual ownership interest in a monopoly or dominant carrier, or because policies remain in place that were developed before liberalization became a consideration and based upon the view that limiting the number of telecommunications carriers in a market can encourage those carriers to make capital investments in

improved infrastructure. It has been claimed by the satellite industry that continued maintenance of such anticompetitive restrictions serves only to harm domestic economic development and growth.¹³

Furthermore, whenever a country artificially limits competition through a restriction on the number of operators, a form of “black market” might develop in which non-mainstream businesses attempt to provide services and meet consumer demand in violation of the government’s licensing requirements. The prevalence of non-mainstream service providers often makes it more difficult for governments to ensure compliance and enforcement with their regulations and licensing conditions.

Many countries have traditionally restricted the number of authorized terrestrial and satellite-based telecommunications service providers that are permitted to serve a country in order to support an implicit program of Universal Access/Service for consumers. Competing international telecommunications service providers would be able to undercut the prices charged by the dominant operator for international telephony.

Countries throughout the world are of the opinion that the solution to the Universal Access/Service dilemma is not to restrict the number of independent service providers, but instead to require all telecommunications service providers to contribute to the cost of Universal Service. This may be done either by:

- a) Requiring all operators to pay a set percentage of their telecommunications service revenues into a Universal Access/Service fund;
- b) Requiring all operators to interconnect with the dominant operator at interconnection rates that reflect the Universal Access/Service subsidy and, as a result, compensate the dominant operator for the cost of providing Universal Access/Service; or
- c) Compensate the dominant operator for the cost of Universal Access/Service through appropriations from the government’s general budget.

Experience in other countries has demonstrated that each of these approaches can be used to successfully maintain an explicit program of Universal Access/Service, while permitting unlimited competition in the telecommunications marketplace.

2.1.1.2 Open Borders for Competitive Access

The second necessary measure for an open, competitive market is providing non-discriminatory market access for both domestic and non-domestic telecommunications service providers, including satellite telecommunication service providers. This is often referred to as an “Open Skies” policy, and it is a second area that was addressed by the WTO Fourth Protocol on Basic Telecommunications Services. The GATS requires WTO Members to provide all service suppliers of other WTO countries with National Treatment, which is a non-discrimination rule that requires a WTO Member to treat companies from other WTO Members the same as it treats its own companies. The WTO agreement also requires countries to provide companies from other WTO countries with Most Favoured Nation (“MFN”) treatment. Essentially, MFN is a non-discrimination rule that requires each WTO Member to treat all other WTO Members similarly.

It is also important for countries to adjust their regulations that, although not discriminatory, may have the unintended effect of preventing access by non-domestic service providers. For example, satellite service providers should not be required to have a corporate presence in a country in order to provide services in that country. Furthermore, if a satellite operator has already received a licence for its space segment from its home country and has coordinated the satellite through ITU and abides by all relevant resolutions in the ITU Radio Regulations, then no duplicate licensing requirement should be imposed on the use of that space segment to provide services in any country.

¹³ This contribution derives from “*Strengthening Access to Communications*”, Policy and Regulatory Guidelines for Satellite Services, a document issued on 30 May 2003 by the GVF Regulatory Working Group (RWG), which provides a unified voice for the global satellite industry. The GVF RWG brings together regulatory experts from across the globe to share first-hand experience with international satellite communications policy and regulation. On behalf of GVF, the RWG has analysed and compared a wide variety of policy and regulatory frameworks, legal structures and licensing procedures to arrive at recommendations of the most effective and proven approaches for the benefit of policy makers, regulatory administrations, industry and the end-user community.

In this regard, countries are encouraged to comply with the content of ITU's Memorandum of Understanding for Global Mobile Personal Communications By Satellite (GMPCS-MoU) and its Arrangements. The GMPCS-MoU encourages countries to permit holders of satellite terminals that are licensed by one country to freely carry and use those terminals in other countries without obtaining an additional licence or authorization. The 68 countries that have adopted the GMPCS-MoU have also agreed to provide for blanket or class licensing of satellite telecommunications terminals, mutual recognition of type approvals, and the elimination or reduction of customs requirements for satellite terminals. (See also subsection 2.1.2)

2.1.1.3 Landing Rights – The Case for “Open Skies” Policies

In the past, some governments have developed policies to protect their countries' satellite systems. These “Closed Skies” policies required service providers to use only locally-owned satellite capacity when providing satellite services. Also, originally satellite operators such as Intelsat, Eutelsat and Inmarsat were inter-governmental organizations and owned by the PTTs and telcos around the world. Consequently, space segment could only be bought via the incumbent PTT or telco.

But in the long run, governments are realizing that tremendous demand for Internet, data, voice, video and other essential services is best addressed by policies that permit open and direct access to all satellite communications resources assuming that they have been properly coordinated through the ITU. The footprint of a satellite does not match national borders, making it necessary to regulate this matter through the international agreements developed by ITU-R.

The *ITU-D Satellite Regulatory Survey* shows that this approach, which is referred to as “Open Skies”, is now being adopted by some Administrations. While the policies being implemented today are not completely open, they all involve permitting increased access to orbital resources, regardless of the satellite operators' country of origin.

The “Open Skies” policy will require satellite operators to compete for customers interested in obtaining capacity in the 4-6 GHz -band, 10-20 GHz-band and 20-30 GHz-band. It is expected that this competition can result in more options for local customers with a significant boost in quality and lower prices.

2.1.1.4 Transparency

An important principle included in the WTO agreement is the need for countries to employ transparency in telecommunications regulation. In compliance with the WTO Agreement, a significant number of regulators have undertaken the task of publishing regularly their laws and regulations on satellite licensing. Making this information readily available to the public is an extraordinary step in advancing the transparency of a country's policies.

Some countries have developed Internet sites, which they use to post their regulatory framework, the list of licensed providers, technical standards and even to facilitate on-line filing of satellite and/or earth station authorizations.

The advantages of making data readily accessible on the Internet are clear: Posting regulatory requirements is inexpensive, reduces the burden on Administrations (by reducing the need to respond to numerous individual inquiries), enables industry to more effectively provide services, and serves as an effective platform through which to promote regulatory reform.

Some countries, however, still seem reluctant to engage in transparency-related programmes, possibly because of financial difficulties or because their regulations still favour the incumbent or monopoly providers or for other reasons. This difficulty is so severe that in many cases an aspiring service provider has to devote tremendous amounts of time, money and effort in an attempt to determine what regulations apply to satellite systems and services. The lack of transparency in some countries constitutes a significant barrier to entry by new competitors, particularly since many service providers are forced to abandon plans to provide services in these countries rather than shoulder the significant expense of ascertaining the requirements for market entry.

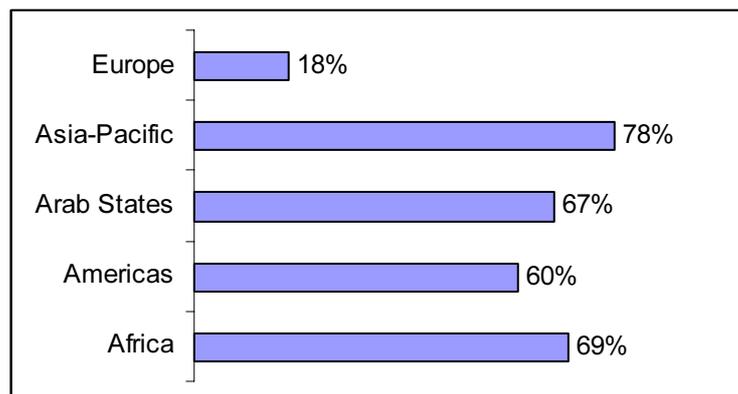
2.1.2 GMPCS-MoU: Its Application and Uses

GMPCS as an abbreviation stands for “global mobile personal communications by satellite”. The definition actually encompasses both mobile and fixed satellite systems, whether or not they are regional or global, planned or existing, narrow- or broadband, or rely upon geo-stationary or non-geo-stationary satellites.¹⁴ A GMPCS-based licensing framework can therefore be effectively applied to any satellite network that may be intending to provide service in any country.

The GMPCS-MoU is a cooperative framework signed by Member States, GMPCS System Operators, GMPCS Terminal Manufacturers and Service Providers to memorialize the non-contractual and non-legally binding terms of their cooperation. As of June 15, 2003, there were 164 signatories to the GMPCS-MoU (see [5]).

The objective of the cooperation is to allow GMPCS subscribers to take their terminals anywhere and, more importantly, to use them in countries where they are licensed. The final text of the GMPCS-MoU was adopted on 18 February 1997. It contains six articles dealing with type approval of terminals, licensing of terminals, marking of terminals, customs arrangements, access to traffic data and review. Fittingly, perhaps, there was a strong response by Administrations to the GMPCS-MoU in the *ITU-D Satellite Regulatory Survey*; 55 of the 63 countries that responded addressed the question on the GMPCS-MoU and the implementation of its Arrangements. Chart 14 below indicates those that responded “yes”, by region, when asked whether they had implemented the GMPCS-MoU and its Arrangements.

Chart 14: GMPCS-MoU Implementation



Source: ITU-D Satellite Regulatory Survey.

¹⁴ See the revised Report by the Secretary-General, “*Policy and Regulatory Issues Raised by Global Mobile Personal Communications by Satellite (GMPCS)*,” Part I, para. 9. World Telecommunication Policy Forum, 21-23 October 1996. Printed by the International Telecommunication Union.

- (a) existing and planned global and regional satellite systems providing mobile personal communications voice and low-speed data services and operating in the geostationary orbit (GEO MSS);
- (b) existing and planned satellite systems operating in non-geostationary orbits and providing mobile narrowband services, excluding voice, on a global or regional basis (i.e. “Little LEOs” or “Little” N GEO MSS);
- (c) satellite systems planned to come into operation in the next two to five years in order to offer narrowband mobile services, including voice and relatively low-speed data, on a global or regional basis and to operate in non-geostationary orbits – including Low Earth Orbits (LEOs), Medium Earth Orbits (MEOs), and Highly Inclined Elliptical Orbits (HEOs);
- (d) satellite systems planned to come into operation in the next five to ten years in order to offer fixed and transportable, multimedia broadband services on a global or regulatory basis and to operate either in geostationary or non-geostationary orbits (GEO and N GEO FSS).

This finding calls attention to a significant opportunity for all Administrations. GMPCS systems promise to extend the benefits of such systems to every country as part of an overall objective of achieving sustainable global development. Due to their global or regional coverage, GMPCS systems are capable of providing services in urban areas as well as in remote areas of the world. Consequently, advanced telecommunication services may become available in these areas for the benefit of all countries. The possibility of being able to operate GMPCS terminals without geographical constraint is one of the most attractive features for potential users.

This has important implications not only for MSS systems – for which the benefits of unconstrained use across vast areas is readily apparent – but also for FSS systems which, while roaming is generally of less relevance, would nonetheless be much more accessible to users if Regulators were to base licensing regimes for FSS systems on the GMPCS-MoU's provisions for blanket licensing, mutual recognition of type approvals for terminals, and elimination or reduction of customs duties.

To complement the GMPCS-MoU, which provides only a framework and guiding principles, the GMPCS-MoU Group, in cooperation with the ITU Secretary General, have drafted and approved the GMPCS-MoU Arrangements. These detail the means by which Administrations could use the GMPCS-MoU to grant mutual recognition of type approval of terminals and of licensing, recognize the marking of terminals and permit terminals to be placed on the market.¹⁵ The MoU Arrangements and their Implementation also make clear the broad application intended for the GMPCS-MoU, so Administrations should facilitate private-sector participation in the programme, regardless of whether they are providing an MSS or FSS system.¹⁶

As a further complement to the GMPCS-MoU, related technical requirements have been established in Recommendation M.1480 of the ITU-R that was prepared by ITU-R Working Party 8D, with which Question 17/1 established a liaison. The Recommendation addresses essential technical requirements of mobile earth stations of geostationary mobile-satellite systems that are implementing the GMPCS-MoU Arrangements in parts of the 1-3 GHz frequency band.¹⁷

2.1.3 ITU Radio Regulations in the Satellite Context

The prime significance of the ITU Radio Regulations in the satellite context is as the means by which different Administrations are able to coordinate satellite networks in order to avoid harmful interference and to allow for maximum efficient utilization of the orbital resources and frequency spectrum, whether geostationary or non-geostationary in nature. As such, they are of critical importance to the spread of satellite technology and maximization of the benefits available from that technology.

The spectrum used via a satellite by those countries using this technology was historically distributed between the incumbent, military and related public service providers (police and emergency). As countries were able to access foreign satellites (implementing “Open Skies”), licensing of spectrum became an issue nationally, to ensure that no interference could occur and that the overall public interest would best be served.

Today, the ITU coordination process serves to avoid technical problems with space segment such as interference among international operators. Bands are often allocated for FSS, BSS and MSS services with other services and spectrum sub-segments are assigned to different operators through coordination. Once satellite inter-system coordination is accomplished at the ITU level, it is proposed that there is no further need to license spectrum use by networks operating in these bands.

¹⁵ GMPCS Memorandum of Understanding, 1997.

¹⁶ To see the GMPCS-MoU documents, please refer to the ITU website:
http://www.itu.int/gmpcs/doc.asp?sel_obj=GMPCS-MoU_Arrangements

¹⁷ Two further Recommendations also have been established by ITU-R Working Party 8D that relate to mobile satellite services in the 1-3 GHz frequency range: M.1091 addresses off-axis radiation patterns for mobile earth station antennas operating in the land mobile-satellite service; and M.1343 addresses technical requirements of mobile earth stations for global non-geostationary mobile-satellite service systems. To see these ITU-R Recommendations – as well as Recommendation M.1480 – please refer to <http://www.itu.int/rec/recommendation.asp?type=products&lang=e&parent=R-REC-M>

Within a particular country, the preferred means for spectrum allocation among national satellite operators directly licensed by that country's regulatory authorities should generally be at the discretion of that Administration, so long as such procedures satisfy minimum requirements for transparency and non-discrimination and do not interfere with other Administrations.

It is important, however, that any such procedures do not have the effect or intent to discriminate against foreign satellite operators in ways that would restrict market access or the ability of licensed earth stations (receive-only or two-way) to access the foreign space segment. National policies that potentially impact spectrum-licensing practices of other countries may serve to undermine the benefits otherwise accruing from an "Open Skies" environment.

The ITU Radio Regulations apparatus presently serves as the optimum means for efficiently and fairly discharging such intersystem coordination activities, as well as for ensuring individual Administrations (especially as an ITU member) that the assignment and registration of frequencies and orbital position to foreign satellite systems will respect the rights of that Administration's national satellite system(s).

A copy of the ITU coordination filings, as well as of the company's incorporation status with a contact name, may be considered sufficient information by Administrations for granting landing rights to foreign satellites, in order to avoid any duplication of these procedures causing delays and increasing the costs of the foreign satellite operators.

Provision of space segment should solely be governed by the ITU inter-system coordination through the Radio Regulations. As regards earth stations, there is a need for coordination within a country where the band is a shared band and requires coordination with other services sharing the band. To see the ITU Radio Regulations, go to <http://www.itu.int/ITU-R/publications/rr/index.asp>

2.1.4 Tampere Convention¹⁸: Satellite for Disaster Relief and Mitigation

Satellite capabilities have long been recognized as very suitable for use in aspects of telecommunications for disaster relief and mitigation (TDR). The increasing versatility of satellite terminals and capabilities has made this technology very attractive as a means of providing communications for TDR situations. However, in the recent past it has been noted that whilst the physical logistics of deploying satellite technology have been improved and minimized, regulatory barriers have not been as easy to overcome or mitigate.

The development of the Tampere Convention has been beneficial in identifying the scope of the problem and in proposing ways and means by which these might be overcome. The Tampere Convention effectively explores the overall concepts of the provision of additional telecommunication infrastructure to a disaster area. Whilst emphasizing the rights of national Authorities to control their own telecommunications environment, it suggests ways and means by which the provision of additional equipment might be facilitated.

In any disaster situation, it would therefore be beneficial to consider invoking the Tampere Agreement to facilitate and expedite the provision of satellite and other telecommunications services in support of disaster relief and mitigation efforts.

Key elements of the Tampere Convention

- The Convention is designed to expedite and facilitate the use of emergency telecommunications within the framework of international humanitarian assistance. Such telecommunication assistance can be provided as direct assistance, provided to national institutions and/or a location or region affected by a disaster, and/or as part or in support of other disaster mitigation and relief activities.
- The Convention defines the status of the personnel of the various partners in international humanitarian assistance, including that of government entities, international organizations, non-governmental organizations and other non-state entities, and defines their privileges and immunities.

¹⁸ The Tampere Convention is not yet in force, pending a few more ratifications by a limited number of Member States.

- The Convention fully protects the interests of the States requesting and receiving assistance. The host government retains the right to supervise the assistance.
- The Convention foresees the establishment of bilateral agreements between the provider(s) of assistance and the State requesting/receiving such assistance.

A State may express its consent to be bound by the convention by any of the following means:

- a) By definitive signature;
- b) By signature subject to ratification, acceptance or approval followed by deposit of an instrument of ratification, acceptance or approval;
- c) By deposit of an instrument of accession.

The period for signature subject to ratification, acceptance or approval (only) ended on 21 June 2003, by when 60 States had used this possibility either during the conference (ICET-98), which adopted the Convention in 1998 or during the past five years. Twenty-three States have during this period already deposited the instrument of ratification, accession or acceptance. There is no time limit for ratification, accession or acceptance with or without previous (provisional) signature, and it can be expected that the additional seven parties needed for its formal entry into force will join the Convention in the near future.

Among the States presently completing the respective national process are many Member States of the European Union, for which a special formula was required to prevent any conflict between their obligations under the laws of the European Community and those resulting from being party to the Tampere Convention. The recent successful completion of the respective negotiations allowed several EU Member States (among them the U.K. and Denmark) to join the Convention during June 2003, and others are now completing the formalities.

While the Convention is already widely applied and provides the framework for agreement on satellite and other telecommunication matters in most operations of international humanitarian operations, it is of course very desirable that the number of 30 parties to the Convention be reached as soon as possible.

The United Nations Secretary-General is the Depository of the Convention. The Office of Legal Affairs, Treaty Section, United Nations Headquarters, is in charge of the relevant procedures and information on depository matters (signature, ratification, acceptance, approval or accession). The United Nations Emergency Relief Coordinator and Under-Secretary-General for Humanitarian Affairs is the Operational Coordinator for the application of the Convention. The United Nations Office for the Coordination of Humanitarian Affairs (OCHA), Geneva Office, is in charge of the implementation and execution of the respective functions and works closely with ITU. For general information on the Tampere Convention, refer to <http://www.reliefweb.int/telecoms> (menu item "Tampere Convention"), or <http://untreaty.un.org> Parties who wish to discuss the Convention are invited to contact Hans Zimmermann at zimmermann@un.org

2.2 Regulatory and Policy Initiatives at a Regional Level

Through close collaboration between government Administrations and the satellite industry, effective national deregulatory approaches are now being discussed – and in many cases implemented – in an increasingly harmonized regional context through organizations such as the Inter-American Telecommunication Commission (CITEL) in the Americas, the Asia Pacific Economic Cooperation group (APEC) in Asia, the European Conference of Postal and Telecommunications Administrations (CEPT) and the European Union (EU) in Europe and, on a subregional level, through groups like the Telecommunications Regulators Association of Southern Africa (TRASASA), the West Africa Telecommunications Regulators Association (WATRA), the East Africa Community, and others.

The following subsections explore in detail how some of those inter-governmental organizations are improving the regulatory environment for satellite-based solutions in their respective regions.

2.2.1 CEPT/EU: Harmonization of Satellite Regulation in Europe¹⁹

The history of “harmonization” of regulation for satellite services in Europe has been primarily the combination of advances in two distinct “bodies” and perhaps the best that has been achieved has resulted from effective communication and cooperation between the two. The first, the European Union, is underpinned by Treaty²⁰ and issues measures that may be binding on Member States. The measures, which are drafted by the European Commission in consultation with Member States and come into force once endorsed by the European Parliament and the Council of Ministers, are in furtherance of single market aims. Since the aim of the Community is to weld separate Sovereign States voluntarily into a cohesive single market where undertakings are on a level playing field, you will appreciate that “harmonization” is at the heart of Community thinking. It shares that place with the centrepiece of the Treaty: competition law.

However, Sovereignty remains a sensitive issue in Europe. It is sometimes helpful to have a more flexible approach in certain areas, regulation of ICTs being one, where greater reliance is placed on voluntary measures. This is where the second body, the CEPT has played an important role. CEPT²¹ Administrations cooperate, in close consultation with their industries, to produce regulatory frameworks that are conducive to the promotion of the European communication industries while giving a fair deal to consumers.

The binding nature of European Community Regulations and Directives makes the drafting of such measures a relatively slow, painstaking business. In contrast, the Decisions and Recommendations of the CEPT can be developed more quickly, not because less care is taken, but because Administrations that have no intention of “volunteering” to implement them need not go to great lengths to block their adoption. In practice, we have found it to be the case that *some* Administrations do not adopt CEPT measures formally, but in point of fact do allow their implementation in their jurisdictions, and are comfortable with that arrangement.

2.2.1.1 European Community Initiatives and Measures

It is important to appreciate that not all Community measures are binding and, indeed, many of the communications from the European Commission are more in keeping with the spirit of the Treaty of Rome than designed to add to the law. The Satellite Action Plan published in 1997 set out the Community’s road map to improve the prospects of the satellite telecommunications and space industries and annexed 16 specific actions ranging from the restructuring of the international satellite organizations (ISOs)²² to encouraging cooperation between the European Commission, the CEPT and the European Space Agency.

Three themes: liberalization, competition and harmonization weaved throughout the Plan as they have done in all the Community measures aimed in the direction of all telecommunication services. Throughout the 1980s and 1990s we saw a plethora of telecommunications and measures emerge, with our whole-hearted involvement, which established pro-competitive frameworks and established rules on interconnection, interoperability, and trans-border facilitation of the use of equipment and services. One example, the R&TTE Directive, did away with national regulations for equipment type approved to the EU standard²³. In effect, this was a voluntary harmonized standard covering essential requirements.

The most far reaching of the European Community harmonization measures on telecommunications have been the recent “Framework Directive” and “Authorization Directive”. These do away with individual licensing in favour of general authorizations with the granting of individual rights strictly in cases where general authorizations alone would be inappropriate – in the areas of numbering and radio regulation. Member States are in the process of modifying their licensing procedures in order to comply with the Directives this year.

¹⁹ This case study was provided by Michael Leach, Manager, International Satellite Policy and Regulation, U.K. Department of Trade and Industry, who also led the CEPT working group responsible for establishing the “COM”, Europe’s reduced and harmonised set of satellite service licensing authorization conditions.

²⁰ The Treaty of Rome.

²¹ Non-Treaty Intergovernmental Organization comprising the post and telecommunications Ministries of 45 European States.

²² Intelsat, Inmarsat and Eutelsat.

²³ Carrying the CE mark.

The Authorization Directive says in Article 1 under “Objective and Scope”:

“1. The aim of this Directive is to implement an internal market in electronic communications networks and services through the harmonization and simplification of authorization rules and conditions in order to facilitate their provision throughout the Community.”

This constitutes a very important step for the European Community and contains quite a subtle formula. Namely, licensing remains a sovereign matter – authority has not been ceded to a central licensing body – and yet there is agreement that applicants should be treated in the same way irrespective of the countries in which they are applying for authorizations. Further, there is an acknowledgement that it makes good sense to reduce hurdles for businesses. The benefits are obvious. In an already high-risk business environment, if unnecessary bureaucratic risks can be reduced then entrepreneurs are encouraged and potential investors are more likely to be attracted.

Some of the Community measures have included specific mandates awarded to the CEPT in recognition of the greater technical expertise available in the CEPT and – with 46 Member States – its broader coverage and outreach. One such measure was the Satellite Personal Communication Systems (SPCS) Decision of 1997 (710/97/EEC).

2.2.1.2 Harmonization Efforts in the CEPT

The SPCS Decision was the culmination of a huge consultation process in Europe involving representatives from the European Commission, from the CEPT Administrations and from the industry – satellite network operators, service providers, manufacturers and consultants. It addressed itself to the perceived problem of a possible lack of spectrum available to accommodate a range of SPCS providers²⁴. The Decision gave rise to two major harmonization initiatives that deserve further elaboration.

a) Milestone Review Procedures

The first initiative related to setting up a due diligence process whereby Administrations could evaluate the progress of companies which had notified to the ITU orbital slots and frequencies for satellites for the provision of SPCS services. The problem of “paper filings” was thereby addressed. It worked in the following way: Administrations undertook not to grant licences until applicants had met a number of “milestones” by way of evidence that real satellites were being designed, built, launched and brought into service over Europe. Applicants needed to satisfy the Committee constituted for the purpose, the “Milestone Review Committee” (MRC) with documentary evidence that they had met each milestone in succession.

Once they had met the requisite milestones, the MRC would issue a CEPT-wide Recommendation to that effect. As it turned out, the spectrum shortage did not materialise. Operators, however, found that it was useful to have the endorsement of the MRC when approaching Administrations for licences. So much so, in fact, that operators established outside Europe with no need to submit to the procedure, did so voluntarily. The interesting point to note here was the solidarity amongst Administrations and an example of additional red tape – designed with the full and willing participation of the industry – that worked for the greater good.

b) One Stop Shop (OSS) Arrangements

The second initiative in the SPCS Decision related to the setting up of an OSS procedure for satellite licences and authorizations. To summarize, the European Commission mandated the CEPT to come up with workable OSS arrangements and agreed to fund the project. A database was designed and built, now housed and operated in the European Radiocommunications Office (ERO) in Copenhagen, with full Internet capability. The OSS – which is located in the “OSS Satellite” section of <http://www.eto.dk> – has two main elements:

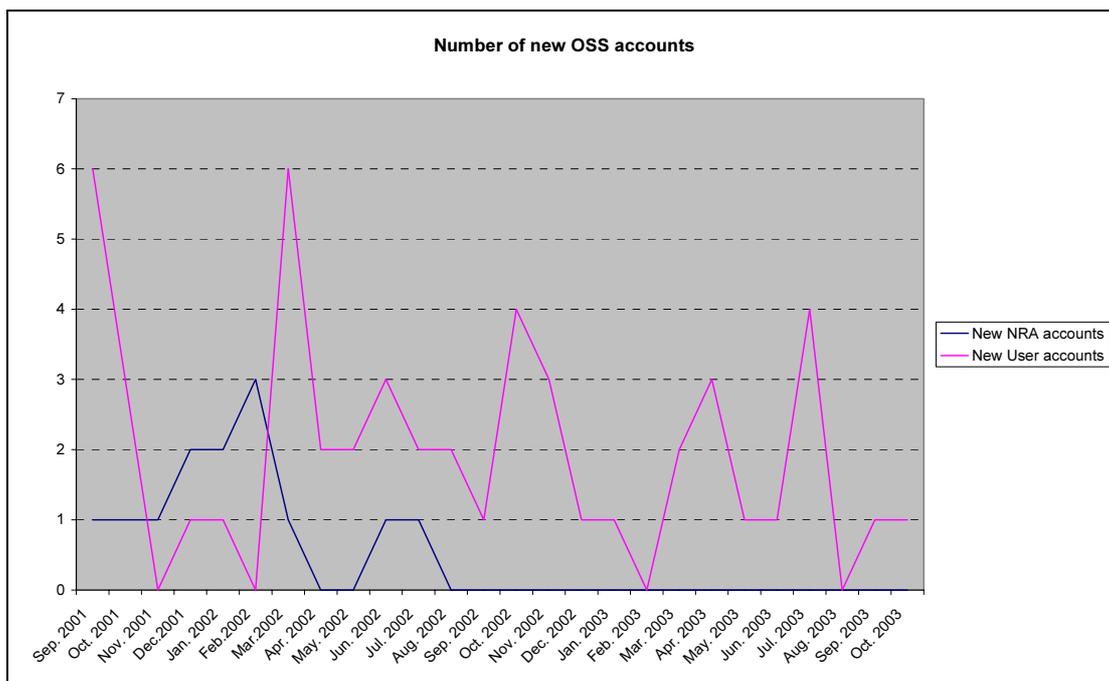
Element 1: A database of information about authorization/ licensing requirements and procedures in (participating) CEPT countries;

²⁴ Providers of voice and data services to GSM-type telephones or small laptops by satellite (sometimes with terrestrial) means. SPCS equates to the ITU definition of GMPCS.

Element 2: An electronic “Combined Application Form (CAF)” containing all the questions asked by (participating) CEPT Administrations pursuant to granting licences. In fact, this software has very sophisticated filtering capabilities. As a result, an applicant applying for licences in, say, five European countries can call up the CAF on the Web, **select the countries** concerned and the **type of licences required** (e.g. for hub station and to provide service to mobile terminals) and the software would sift through the questions and present only the relevant ones to the applicant. He/she completes the form and presses send. “The Shop” (ERO’s licensing expert) checks the form and forwards it to the countries concerned. The really clever part is that the receiving licensor sees only the questions and answers that are relevant in that country.

This compares with the traditional approach whereby the applicant fills in the different forms of each different country, all asking different things in different ways and spending ages trying to find out what is required in each jurisdiction. So far, 16 countries have implemented the arrangements. However, to date very few applications have actually been filed. ERO believes that the lack of use of the OSS lately may be due to the fact that users know that the information has not been updated while the EU-package implementation is still underway. After the new regulatory situation is reflected in the OSS database, one would expect use to increase.

Chart 15: Number of New OSS Accounts*



* **Account** – An account is created by a user to access the OSS CAF under an individual and secure ID and password.

Source: ERO.

c) The Common Application Form (COM)

The CAF, mentioned in Element 2 above, was always seen as just a stepping-stone in the harmonization process. Before the paint was dry the CEPT was looking for something simpler and more effective, a truly common application form. A CEPT Project Team set about examining carefully all the questions in the CAF to see if it was possible to condense them into a single form that could be acceptable to all. It was. The number of questions dropped from around 130 to around 30. This exercise enabled CEPT to realize one of its key “harmonization” objectives in the satellite sector.

Meanwhile, the ERO continues to collect the national regulatory information (which is part of the existing OSS/CAF) in order to keep the regulatory database up to date. Given the decline in the use of the CAF on the OSS, it was agreed by the ECC that no further efforts would be made on the development of software specifications for the COM.

2.2.1.3 Exemption from Licensing of Satellite Terminals and Free Circulation Decisions

From the beginning of the 1990s, the CEPT was working on measures designed to simplify procedures for moving satellite terminals across country borders and using them without the need for individual licences.

The CEPT developed a policy for licence exemption for terminals that were type approved to a certain standard and operating within identified frequency bands. In parallel, a series of “Free Circulation” decisions for terminals permit the “temporary import” and use of identified terminals. This is an example of the double benefit of reducing burdens on industry – and doing the same thing for customers!

2.2.1.4 Lessons Learned

The lessons we have learnt in Europe were expensive lessons perhaps, but they were worth it. Perhaps the most important piece of information that we have gathered is that being too touchy about sovereignty and unwilling to enter compacts built on trust, ultimately, makes everyone the loser.

By contrast, reaching out to our neighbours and working together by pooling our knowledge has helped to produce a **marketplace** in which goods and services can be bought and sold efficiently and, just as importantly, an **environment** in which cultural understanding has grown.

It would be naïve to hope that affordable access to ICTs could solve the world’s problems, but it would be a disgrace to squander the opportunities that ICTs do bring. Telecommunication satellites have such an obvious role to play in that task. If Ministries and Regulators get it right – establish good regulatory environments and harmonize otherwise disparate regimes – the pay-off in social and economic terms could be huge. There are so many people out there wondering whether their lives will ever get better, something as dry as “harmonization” could turn a “No” into a “Yes”. That is a heavy responsibility.

2.2.1.5 Satellite Principles for Europe: A Private-Sector Perspective²⁵

The satellite industry has important strategic value to Europe, for reasons that include its unparalleled reach, high-tech leadership and infrastructure for bridging the “Digital “Divide”. Among the assets that the industry provides to Europe are the following:

Global Industry: European satellite communication companies are today among the very largest global operators, ensuring coverage over and between continents. More than 50 million subscribers rely on individual satellite dishes in urban, suburban and rural European areas. European Administrations have filed over 500 applications for orbital slots and frequencies that are now pending with ITU.

High-Tech Leadership: Satellite links provided the first substantial trans-Atlantic channels and still link many parts of the world otherwise without sufficient cables. Satellite operators spurred the development of digital television, and today transmit signals to more than 75% of digital TV homes in Europe. The satellite industry is not only a critical link today for Internet service and ISP connectivity, but it will allow development of services such as digital interactive TV, broadcast TV and radio, secure delivery of data, and high-speed access to sounds and images.

²⁵ This contribution is a consensus-based position paper provided by the European Satellite Action Plan Regulatory Group (SAP-REG), which was formed by the satellite industry in 1997 under a mandate from the European Commission to address regulatory provisions affecting satellite communication services in the European Community. The SAP REG contributes to pan-European, Community and national consultations, making known the views of the satellite industry. It is actively engaged with the Electronic Communications Committee of the CEPT and cooperates with other satellite organizations, including the GVF, the Advanced Satellite Mobile Systems Task Force, and the Satellite Industry Association in the United States, and it plans to strengthen its liaison with committees established under the new framework for regulation of European electronic communications. Because this is a global industry, SAP-REG members include most major satellite operators and manufacturers serving Europe.

Bridging the Digital Divide: Today, communication satellites provide the main infrastructure for delivery of interactive, broadcast and broadband services on a pan-European basis. They have the inherent ability to remove regional disparities and assure access to all parts of the Community.

In July 2001, Commissioner Erkki Liikanen declared at the SAP Plenary meeting that *“from an industrial policy viewpoint, satellite systems are a strategic industry from which Europe cannot be absent”*. In November 2001, Commission President Romano Prodi stated that satellite communications are part of Europe’s goal of creating a dynamic knowledge-based economy. And in December 2001, the Commission recommended in a communication on space policy that Community policy should *“foster the development of satellite communications to provide advanced services to European citizens in the context of policies supported by the Union such as Education, Health, Transport, Environment and e-Europe.”* We could not agree more.

A Strategic Industry Yet to Realize its Potential

The satellite communications sector is at the pinnacle of a huge European industrial base, starting with research and leading to construction and launch of satellites. If the regulatory environment for satellite communications is not optimized, then the entire industry suffers. European industry operates on a global scale through the satellite industry.

Full development of satellite infrastructure and services in Europe depends on the following factors:

Access to frequencies and markets:

The satellite industry is burdened by spectrum limitations, either through reallocation of vital frequency allocations to terrestrial users or through unduly constraining mitigation techniques. This has the unfortunate effect of hampering service to both rural and other less-favoured European regions, where only satellite is viable, and urban areas, where satellite infrastructure fosters competition and consumer choice.

- The satellite industry can only realize its potential through availability of spectrum and entry to European markets.
- There is need to ensure that existing ITU Primary frequency allocations to satellite services are maintained for delivery of innovative satellite services in Europe and where necessary new allocations to satellite services are actively supported.
- It is unacceptable to dedicate, designate or re-allocate ITU allocated satellite spectrum to terrestrial systems based on terrestrial operations in only a small number of countries, or even worse on small areas within some countries, when the effect is to prevent satellite services across the entire continent.
- Moreover, placing stringent mitigation techniques on satellite facilities creates market access barriers and discriminates in favour of other technologies.

Harmonized Licensing and Spectrum Allocations:

The new Electronic Communications package strongly supports harmonized licensing and spectrum allocations, in ways that should bolster the development of satellite networks and services. The Spectrum Decision recognizes that *“certain types of radio spectrum use entail a geographical coverage which goes beyond the borders of a Member State and allow for trans-border service....”* It also states that, *“a certain degree of harmonization of Community policy on the radio spectrum is desirable for services and applications, in particular for services and applications with Community or European coverage....”*

Numerous provisions of the Framework Directive call for a more harmonized approach, particularly with respect to services with a Community nature. Thus, the Framework Directive calls on Member States to *“encourag[e] the establishment and development of trans-European networks...”* (Art. 7(3)(b)). Article 9 provides that *“Member States shall promote the harmonization of use of radio frequencies across the*

Community....” That directive also authorizes the Commission to identify “transnational” markets, covering the Community or a substantial part (Art. 2(m) and 15(4)). And the basic goal of the Authorization Directive is to foster “harmonization and simplification of authorization rules and conditions in order to facilitate their provision throughout the Community.” (Art. 1(1)).

In light of these provisions, the SAP REG maintains the following:

- Satellite services are inherently capable of being provided across national borders, offering pan-European as well as regional infrastructure.
- European-scale regulation, based on the sovereign efforts of national regulators, is imperative.
- Class licence regulatory regimes are needed to facilitate satellite operations in frequencies allocated on the basis of harmonized technical standards.
- Satellite consumer terminals should be exempted from individual licensing to the maximum extent possible.
- And licensing conditions should be harmonized amongst European Administrations in order to permit truly European services.

Rational Fee Structures:

The cost structure for satellite infrastructure and services is different than for the terrestrial communications sector. Satellite operators inherently use spectrum in an efficient manner, because of the high infrastructure cost of placing space stations into orbit. Moreover, satellite footprints cover many countries and cross many borders, and thus are not localized in a way that permits fee structures to be developed in isolation at the national level. This leads to the following conclusions:

- Fees for licensing satellite infrastructure or services should cover only actual administrative costs on the basis of a coherent, harmonized calculation method pursuant to implementation of Art. 12 of the Authorization Directive.
- Fees for spectrum use should not hamper development of a competitive satellite industry, and such fees should be proportionate in relation to their intended purpose and otherwise in compliance with Art. 13 of the Authorization Directive.
- Due to the inherently trans-border nature of satellite transmissions, relying on auction or spectrum trading approaches is difficult if not economically irrational, and should therefore not be employed in national authorization regimes for satellite services.

In pursuit of these principles, the SAP REG supports certain European initiatives that have the potential of fostering strong growth in the industry. It worked within the CEPT to support development of OSS licensing, common and simplified licensing application forms, and comprehensive licensing initiatives aimed at streamlining the regulatory regime across Europe. It supported licensing exemption as well as the new authorization structure to be implemented within the European Union on the basis of the Electronic Communications Review Package.

The satellite industry seeks to think ahead, and work towards a common vision of digital, broadband services across all forms of satellite infrastructure. By its very nature, the satellite industry can and should contribute to basic European goals, bringing regions together, leading the introduction of new digital services and contributing to the evolution of e-Europe. These goals can only be achieved based on a rational and optimized regulatory structure.

2.2.2 CITEL: Regulations for Provision of Satellite Services in the Americas²⁶

The issue of granting licences for satellite networks has been an item of key importance in the regulations of the countries in this hemisphere.

With regard to the current status of satellite regulations of CITEL member governments, the Third Summit of the Americas held in Quebec, Canada, in April 2001 requested that Ministries or departments responsible for telecommunications and appropriate regulatory bodies should cooperate, within CITEL, in order to clarify and simplify rules governing the provision of satellite services in these countries.

As for regulations governing satellite systems and cooperation to meet the requirements and complete the applications needed in each country to obtain licences to provide satellite telecommunications services, the following progress has been made in the context of CITEL:

Because of the interest in the subject, and with the participation of governments, CITEL's Permanent Consultative Committee II: Radiocommunications including Broadcasting (PCC.II) Working Group Relative to Satellite Systems to provide Fixed and Mobile Services prepared a web page on CITEL's website with information on the following subjects, among others: Contact persons in regulatory agencies; frequency bands available to VSAT networks; requirements for frequency coordination; temporal policies; policies on receive-only terminals; and, registration forms. Access to that information can be obtained at the following internet address: http://www.citel.oas.org/sp/ccp2-radio/VSAT/vsat_informacion_de_licencias.asp

Based on information contained in the previous link, common areas and differences were identified among the requirements in the existing regulations of various CITEL member Administrations, and also varying levels of development of such regulations for granting satellite network licences in member countries.

In granting licences, Regulators in the region of the Americas share certain fundamental objectives related to regulatory policies, such as the following:

- Regulators seek to implement simplified, harmonized regulatory policies that will promote investment and deployment of satellite systems (VSAT, broadband, etc.), and that improve public interests, the economy and well-being of countries;
- Regulators grant licences to earth stations and try to ensure that licensees and users are protected from harmful interference.

In the context of CITEL, the Working Group Relative to Satellite Systems to provide Fixed and Mobile Services also began to discuss the concept of OSS (One-Stop-Shop), an initiative that has already been implemented in many European countries by the CEPT. As part of its studies, CITEL will seek to determine which is the most appropriate forum for the OSS concept, the manner in which information is to be updated, and possible financing arrangements.

The first meeting of PCC.II in Orlando, Florida, adopted resolution PCC.II/RES.1(I-03) establishing in CITEL's electronic forum a discussion group to prepare proposed guidelines for implementation of regulatory measures to promote the deployment of broadband satellite networks in the Americas.

During the second meeting of PCC.II, held in San Salvador in October 2003, the comments and proposals of the discussion group were examined at a round-table comprising satellite experts in the sector and regulators. The objective was to encourage the development of adequate, flexible regulatory systems that will permit the rapid implementation and use of, and access to, the services provided through the satellite systems, with an emphasis on broadband networks, as part of the technological, economic, and social development of CITEL member countries.

Based on the results of the round-table discussions, the Working Group Relative to Satellite Systems to provide Fixed and Mobile Services drew up the "Guidelines for the implementation of national regulations that facilitate the deployment of satellite services, particularly broadband services, in the Americas".

²⁶ This contribution was provided by CITEL's PCC.II Working Group.

These guidelines were approved by PCC.II under CITELE Recommendation PCC.II/REC. 6 (II-03) to the effect that, among other things, the Member States' ministries or departments responsible for telecommunications and appropriate regulatory bodies should consider the possibility of including in their national regulations concepts associated with: "block" or "generic" earth station licensing; regional or international hub requirements; availability of procedures, regulations and applications on-line; minimization of regulatory requirements for landing rights; minimization of local presence requirements; consumer protection; development of additional means of promoting satellite broadband deployment; and dissemination of the CITELE Mutual Recognition Agreement aimed at eliminating the duplication of the homologation and certification processes in Member States.

[3] contains Recommendation PCC.II/REC. 6 (II-03) as adopted by the Member States.

As regards global mobile personal communication systems (GMPCS), CITELE acknowledged the benefits of signing the GMPCS Memorandum of Understanding and recommended that its Member States should coordinate with their Customs Authorities to facilitate the circulation of GMPCS terminals through their borders (Recommendations PCC.III/REC. 49 (XII-99) and PCC.III/REC. 56 (XIV-99)).

Another subject of crucial importance to CITELE is the Tampere Convention, which seeks to make it easier for aid and rescue workers to ensure the cross-border transportation of telecommunication equipment during and after an emergency and to use that equipment under secure conditions within the framework of international humanitarian assistance. The Member States have therefore been urged to sign and ratify the Tampere Convention to facilitate its entry into force (Resolution COM/CITELE 169 (XIII-03)).

2.2.3 Africa: Subregion by Subregion

Interspersed between Africa's vast expanses are many cultures, languages, climates... and countries. The continent's tremendous size and diversity has contributed to the emergence of an important trend in the region, with subregional groups of nations forming economic and regulatory organizations.

From TRASA in sub-Saharan Africa to WATRA in West Africa to the East Africa Community, these organizations have all been established in order to enhance Administrations' efforts to achieve national policy objectives, but in a broader, more inclusive multi-national context. One of the primary aims shared by each subregional group is regulatory harmonization – satellite communications not excepted.

This was one of the key findings of an *IDRC Africa Satellite Survey*²⁷ conducted in 2004. It shows that a growing number of African Administrations have begun addressing a regulatory environment that makes it time consuming and expensive to deploy satellite services. Included among the successful approaches identified by the Report are:

- Liberalizing the satellite sector;
- Implementing blanket-licensing for satellite-based terminals;
- Minimizing satellite regulatory fees;
- Recognizing type approvals issued by other Administrations and certification bodies;
- Confirming plans to enhance transparency of satellite regulatory requirements and processes.

The *IDRC Africa Satellite Survey* revealed that satellite-based solutions are seen by Administrations to be uniquely relevant in the subregions, both from a commercial and applications standpoint. This high level of interest is, in turn, elevating the position of satellite regulatory reform on government agendas in the region. Country markets throughout Africa continue to liberalize the satellite sector, in some cases permitting local service provision by national and international players for the first time.

²⁷ The IDRC Satellite Survey was conducted to support the development of a report that provides African policy makers and regulators with information on the regulatory frameworks, end-user applications, cost structures and technical issues pertaining to satellite communications in Africa. Entitled "*Open and Closed Skies: Satellite Access in Africa*", the report was commissioned by the Acacia programme of the International Development Research Centre (IDRC), which is a public corporation created by the Parliament of Canada in 1970 to help developing countries use science and technology to find practical, long-term solutions to social, economic, and environmental problems. For more information, see <http://www.idrc.ca>

Is reform having any local practical impact? According to recent research²⁸, in 1998 Africa accounted for less than 10 per cent of the world market for ISP links – the fourth lowest region in the world. Two years later, no less than 47 per cent of African ISPs, respectively, were linked via satellite. Only Latin America – with 66 per cent – was higher.

Certainly, much regulatory work remains to be done. But the pace of deregulation at the subregional level is accelerating, satellite network solutions are being implemented at an unprecedented rate, and the stage may soon be set for more concerted action at the pan-African level.

2.2.3.1 Strategic Liberalization in the TRASA Subregion

The Telecommunications Regulatory Association of Southern Africa (TRASA) was formed as an inter-governmental organization in December 1997, under the terms of the Southern African Development Community (SADC) Protocol on Transport, Communications and Meteorology. The organization, which had as its primary aim the promotion of access to communications among its 14 Member States, launched at a time when most satellite services had yet to be liberalized in the sub-Saharan region and, as a consequence, availability of satellite communications was provided sporadically, if at all – and even then at exorbitant prices.

Much has happened since TRASA's launch. For example, 12 of the 14 countries in the subregion have now effectively removed barriers to entry for foreign VSAT operators, where:

- There are typically no requirements to install a local hub;
- Licence-fee levels have been systematically lowered, country by country;
- Type-approval processes have been streamlined; and
- A proliferation of services are now being offered, including tele-health, distance learning, rural telecommunications, PSTN backhaul for terrestrial mobile services in remote areas, and domestic and international corporate enterprise applications such as Internet service provision, retail, banking, oil and gas, mining, and much more.

TRASA Members that have strategically liberalized the provision of VSAT services include: Angola; Botswana; Democratic Republic of Congo; Lesotho; Malawi; Mauritius; Mozambique; Seychelles; Swaziland; Tanzania; and Zambia.

Of particular note, ITU and others regard Botswana's regime to be a model in this regard: Type approvals are not required, provided suppliers can produce acceptable type approval certificates from other countries within Region 1; licences are obtainable by private companies wishing to deploy VSAT systems; and there are no technology or service restrictions, with the exception that connection of private networks to the public networks is controlled. Radio licence fees are deemed by the private sector to be reasonable on a per-site basis.

Regarding the TRASA Members that have not yet fully liberalized VSAT services, service provision is only allowed via a limited number of licensed operators – predominantly the incumbent telcos – and the countries limit satellite-operator landing rights.

The above-noted gains have had a positive effect on how satellite projects are encouraged by SADC regulators. Most of the countries have in some way or another introduced regulatory reforms that are conducive to satellite service provision.

²⁸ DTT Consulting.

Meanwhile, TRASA has taken further steps to facilitate harmonization of satellite regulations in its region. During ITU TELECOM AFRICA 2004 it was announced that TRASA had signed a memorandum of understanding confirming its intention to coordinate efforts in a three-year project entitled “Catalysing Access to ICTs in Africa” (CATIA) that aims to advance transparency and the formulation of regional satellite policy principles.²⁹

Included in the same announcement was WATRA, which also signed an MoU with CATIA (see also Section 2.2.3.2). One of the key aspects of CATIA will be the creation of a One-Stop-Shop (OSS) to serve as a single point of contact for information about satellite licensing requirements across the Continent and to provide for the submission of licence applications with a single electronic application form.

Monehela Posholi, TRASA’s Chairman, and Ernest Ndukwe, WATRA’s Chairman, said their respective organizations plan to coordinate a wide range of activities that aim to facilitate implementation of the objectives noted above. For example:

- 1) Workshops will be held comprising top-level national policy-makers, operators and regulators, assisted by experts, international agencies and regulators from other continents with experience in VSAT regulation.
- 2) Regional satellite policy and regulatory guidelines will be developed for their respective regions.
- 3) The OSS to be developed for submitting VSAT licence applications is to include a combined application form which can be simultaneously submitted to all of the regulatory authorities chosen by the VSAT operator. TRASA and WATRA will maintain subregional One Stop Shops for Southern and West Africa, respectively. It is envisaged that an integrated One Stop Shop for Africa may be created towards the end of the CATIA programme that may include additional inter-governmental groups from other regions of Africa.

TRASA’s harmonizing initiatives have been strengthened by support and direction from the Southern Africa Transport and Communications Commission (SATCC), the organization responsible for transport and communication matters in the SADC region. TRASA thus makes recommendations to the SATCC committee on matters relating to telecommunications. The SATCC then submits these for ratification by the SADC. Telecommunication recommendations are then made available for Member States to consider in the development of their own policies and regulations on telecommunication matters.

TRASA has formed five committees, focussed on:

- Licensing and Universal Service;
- Interconnection and Tariffs;
- Numbering and Standards;
- Human Resource Development and Empowerment, and;
- Radio Frequency Planning, Technology and Advanced Services.

TRASA’s success in promoting harmonized regulatory practices amongst its member States has been facilitated by the publication of model policy and regulatory frameworks on a number of subjects. The following are among the recommendations that have been submitted for acceptance by the SATCC executive committee: Fair Competition Guidelines Study Report, TRASA Interconnection Guidelines, TRASA Model Interconnection Regulations, TRASA Bandplans, TRASA Tariff Guidelines, TRASA Model Tariff Regulations, TRASA Recommendations for Effective Regulation and Structures, SADC Model Telecommunications Bill, SATCC Model Telecommunications Policy, TRASA Regulatory Accounting Guidelines, TRASA Administrative Rules, and Procedures Template for Regulators.

²⁹ CATIA is a programme funded by DFID in collaboration with other donors and players, including Cisco, CIDA, IDRC, Sida, and USAID. It is being implemented in coordination with the Canadian government’s Connectivity Africa Initiative and is being managed by Atos KPMG Consulting from a programme office in Johannesburg, South Africa. CATIA includes nine projects, one of which – the low-cost VSAT initiative – aims to facilitate expanded access to affordable satellite Internet across Africa.

TRASA has clearly demonstrated the benefits that nations located in large regions can realize through participation in a subregional regulators' organization, which has as its primary aim the implementation of harmonized policies and regulations. It should be noted that TRASA has not infringed on the sovereign rights of SADC Member States. Each state is entitled to use TRASA guidelines and models at their own discretion. However, the presence of TRASA has served to encourage its Member States to adopt the proposals to implement national policies in line with SADC's goal of harmonization throughout the region.

2.2.3.2 WATRA: A New Regulators' Group Gets Under Way

In March 2003, 16 of the West African Administrations launched a regulators' organization. Called the West African Telecommunication Regulators Association (WATRA), the Association held its first Annual General Meeting (AGM) in Abuja, Nigeria, where, amongst other key targets, the members³⁰ charted a course to pursue harmonization of telecommunications regulation.

As part of the AGM – and as an indication of the pivotal role envisaged by WATRA for satellite communications in the region – the Association hosted a two-day VSAT Regulatory Seminar. During the course of open-forum discussion, a number of national regulators from across the region indicated their firm interest in making every effort to facilitate both domestic and international satellite service provision through the mechanism of regulatory reform.

While there was no final decision made in respect of an action plan, reports on related initiatives were presented:

- 1) Following the February 2001 launch of a study on "*Policy Harmonization in the Telecommunications Sector of the Economic Community of West African States*" (ECO-WAS), it was recognized that there was a need to harmonize telecommunications policies within West Africa, because of the pivotal role of the sector in economic development.

In a report that addressed the issue of the region's vision of becoming a preferred investment destination, it was clearly stipulated that regulators should undertake a number of clearly defined roles. These included: Implementation of government policies (in their respective countries); acting as advisers to government in the development of telecommunications or ICT policy matters; and regulating and facilitating competition and service delivery in their respective jurisdictions. The report concluded in emphasizing that it was essential that WATRA take the initiative and provide leadership in future regulatory harmonization processes across the subregion.

- 2) On April 2001, ECO-WAS took the decision to establish a regional telecommunications database within the framework of its INTELCOM II telecommunications priority programme. The central objectives of the ECO-WAS Telecommunications Information Management System (SIGTEL) were: Monitor the implementation of the regional information and communications infrastructure; store key data on the West Africa communications sector; and provide users with accurate information on the telecommunications sector.

Given the declared emphasis on the necessity of WATRA taking the lead role in the drive for regulatory harmonization across the subregion, of great significance is the fact that the database is to include a range of regulatory data. For example, the database is to include the existence and types of telecommunications regulatory bodies in the nations of the region, as well as lists of laws, decrees, and regulations applying in each national jurisdiction.

(It is worthy of note that the telecommunications interface between the SIGTEL database server and the various member states' correspondents employs satellite technology.)

³⁰ The WATRA Members include: Burkina Faso, Cape Verde, Côte d'Ivoire, Guinea, Guinea-Bissau, Mauritania, Mali, Niger, Senegal, Togo, Republic of Benin, Ghana, Gambia, Liberia, Sierra Leone and Nigeria. For more information, contact Mrs Lolia S. Emakpore, emakpore@ncc.gov, tel – +234 9 670 3843/+234 9 234 0330 Ext. 1098).

More recently, and as noted in Section 2.2.3.1, WATRA has begun to act upon its aim of promoting satellite regulatory harmonization in its region. In May 2004, the organization held the first in a series of satellite regulatory workshops for West African regulatory Administrations. This programme is part of WATRA's participation in a three-year project entitled "Catalysing Access to ICTs in Africa" (see footnote 29 above).

In coordination with TRASA – and potentially other African inter-governmental organizations – WATRA plans to develop an online One Stop Shop (OSS) resource that provides access to the VSAT regulatory conditions applied by each West African Administration and, potentially, that includes a combined application form that could be simultaneously submitted to multiple Administrations.

2.2.3.3 Association of Regulators for Information and Communication Services of Eastern and Southern Africa (ARICEA) and the East Africa Community

In 2003, the Association of Regulators for Information and Communication Services of Eastern and Southern Africa (ARICEA) was established to promote the sustainable development and application of efficient, adequate and cost-effective ICT networks and services; coordinate cross-border regulatory issues on ICTs; contribute to the achievement of subregional and regional integration; and promote the maximization of the utilization of scarce resources in the ICT sector.

Another African subregional group that is pursuing harmonized satellite regulatory approaches is the East Africa Community. Comprising Kenya, Tanzania and Uganda – and including as observers the Administrations of Burundi and Rwanda – some members of the group are building upon a legacy of having "shared" a telco in recent history and, thus, have long since become comfortable with the concept of cross-border telecommunications in the subregion.

With an eye to promoting satellite-based cross-border solutions, the group has established a Task Force that, with private-sector input, is evaluating the possibility of a VSAT licensing regime for the subregion. At this Report's June 2004 deadline, it had yet to be determined whether a single regional licence or several national licences with mutual recognition or some other approach would be a workable solution.

2.2.4 The Asia-Pacific Opportunity

The Asia-Pacific is commonly referred to as a place of great contradictions, and it would not be inaccurate if similar descriptions were applied to the impact that regulation has had on the availability – and inavailability – of satellite-based telecom services in the region.

Take, for example, Asian demand for wide-area, point-to-multipoint network solutions – particularly those able to serve cross-border applications. Approximately 57% of the world's population lives in one of the most geographically dispersed regions among several of the largest economies of the world, where multinational corporations have established off-shore operations by the thousands.

Yet, provision of cross-border satellite network solutions is a near impossibility because of regulatory barriers. The Asia Pacific Satellite Communications Council (APSCC)³¹ last year sent out a questionnaire seeking information from Administrations and service providers in the region relating to satellite policy and regulations in the Asia Pacific. Responses were received from countries throughout the region – namely, South Asia, Southeast Asia, and East Asia – and information was sought from supplementary sources. Following are excerpts of its findings:

"Most countries seem to have regulations dealing with satellite services in some form or other. Responses to the questionnaire and the information from the other available sources indicate wide disparity in the development of policy and regulations amongst the Asia-Pacific nations. For instance, Malaysia has established [the] Malaysian Communications and Multimedia Commission in November 1998 to regulate Telecommunications, Broadcasting and IT industry. A comprehensive bill to regulate the entire communications sector in the emerging situation of

³¹ APSCC is a non-profit satellite industry association serving the Asia-Pacific region. For more information see <http://www.apscc.or.kr>

convergence has been introduced by India in its Parliament. On the other hand, PTT monopolies still exist in some countries, while in several other countries the process of liberalization is under way.

“Difficulties in the implementation of satellite services... are faced in many countries to [a] varying extent. The regulatory procedures vary from country to country and for different services. Several countries in the region have signed the GMPCS-MoU. The policies mostly follow the GMPCS-MoU. Some countries have adopted requirements for local participation, location of gateways, strict security measures, etc. For other satellite services most countries follow liberal approaches.

“In general the regulations are more stringent in [the] case of broadcasting satellite services. Also some countries have authorized their domestic satellite systems to have [a] monopoly, at least for [a] certain fixed time. Countries not having their domestic satellite systems or not planning to have one, allow free access to any satellite system. Protecting local industry and also developing local employment is an important part of the regulatory mechanism. Some APEC members have signed the MRA agreement.

“Though the Asia-Pacific region is a major user of Satellite Broadcasting, VSATs and Mobile Satellite Services, still no concrete efforts have been made for harmonizing the use of spectrum and licensing policies and regulations in the region.

“It must be realized that the countries in the Asia Pacific region are very diverse: be it in the development of telecommunications infrastructure, in size and population density, in the level of overall development or their strategic perceptions. Hence, harmonizing the policies dealing with use of spectrum, licensing of services or satellites, would take a lot more effort and a very dedicated approach to the entire issue.”

These views have been endorsed by the Cable and Satellite Broadcasting Association of Asia (CASBAA)³². Indeed, the organization’s Satellite Industry Group, which deals *inter alia* with regulatory issues, has endorsed findings and views expressed throughout the Question 17/1 Report.

While APT reported that they do not have any satellite-specific regulatory initiatives underway, the private sector has launched a pan-Asian programme to try to improve satellite regulatory conditions. The initiative has resulted in the establishment of a consensus amongst satellite operators active in the Asian region to jointly advocate national-level “Open Skies” policies for domestic and international VSAT services.

The group has recently begun to approach Administrations seeking their implementation of regulatory approaches that permit competitive access to satellite bandwidth and provision of domestic and cross-border communications. A copy of the Memorandum for which the private sector is seeking government endorsements is in Annex 1.

2.3 Effective Harmonization Practices: Common Problems, Common Solutions

As can be seen from the above-noted examples, addressing the regulatory challenge of facilitating domestic and international satellite communications services is taking place today at the regional and subregional levels through groups of Administrations that share similar objectives. This trend, while not yet universal, is nonetheless apparent in both advanced and emerging regions, and involving both developed and developing countries.

It is driven by the recognition that satellite-based systems are one of the most effective forms of wide-area and, often, cross-border solutions for information and telecommunications worldwide, particularly considering their regional and global coverage and the quantity and quality of services delivered via their platforms.

³² CASBAA is a non-profit cable and satellite industry association serving the Asia-Pacific region. For more information see <http://www.casbaa.com>

From nation to nation and from region to region, there are numerous differences in the way Administrations are addressing the challenge. But there are also striking similarities and, indeed, patterns that have become manifest in the way that successful harmonization programmes are being applied:

- 1) The first most fundamental similarity is the understanding among Administrations that if the regulatory environment for satellite communications is not optimized, the private sector's ability to provide vital services and infrastructure is undermined or prevented;
- 2) The second is the agreement among Administrations within a given region that the solution is light-touch regulation underpinned by harmonized regimes that promote the cost-effective usage of satellite solutions;
- 3) Respecting the sovereignty of individual nations is generally regarded to be of paramount importance in any regional satellite regulatory harmonization effort;
- 4) The next step is typically to create a public platform where access to each Administrations' satellite regulations is provided. This step, for which the worldwide web is ideally suited, provides:
 - a) Nearly immediate, inexpensive transparency to facilitate the private sector's provision of services while relieving Regulators' administrative burden;
 - b) A means by which the regional inter-governmental group, usually through a task force or working group, can view the satellite regulations currently applied in their region, analyse them and thus develop...
 - c) An understanding of where their respective differences and similarities reside.
- 5) Harmonization is usually (or always) pursued by establishing a body of satellite-related policy and regulatory principles that Administrations within the region mutually agree to be in their common interest;
- 6) These principles – which can take the form of Resolutions, Decisions, Recommendations, etc. – are typically non-binding and are meant to serve as regional-level guidance for national-level development and implementation of light-touch satellite regulations;
- 7) Once adopted at the regional level, these principles then effectively serve as a template that, if implemented at the national level by various Administrations, promulgates a progressively more harmonized regional operating environment.

The following subsections explore in further detail some of the key areas where Administrations have focused their efforts to coordinate and harmonize satellite regulatory approaches.

2.3.1 Type Approval and Equipment Registration in the Regional Context

Regulation and licensing of satellite services is appropriate to the extent that it is used to protect public safety.³³ Although satellite communications services can be provided on a universal and cost-effective basis to both large and small consumers, certain measures must be taken in order to ensure that satellite transmission devices do not pose a radiation hazard threat to the public.

Regulations and licensing conditions that can be used to protect public safety include restrictions on physical accessibility of transmission equipment (*i.e.*, use of fencing, secure areas and warning signage), restrictions on the design and configuration of transmission equipment in order to ensure that transmissions do not exceed appropriate levels (homologation or type approvals), and restrictions on the proper installation and use of transmission equipment (*i.e.*, requiring adequate training for equipment installers and operators).

³³ “*Strengthening Access to Communications*”, Policy and Regulatory Guidelines for Satellite Services, 30 May 2003, GVF Regulatory Working Group, p. 11.

In regulating the design and configuration of satellite transmission equipment, however, regulators are encouraged not to duplicate the regulatory efforts of other countries, or impede the importation of transmission equipment through excessive type-approval requirements. Testing requirements from country to country are often redundant, resulting in major delays, high costs and less efficient provision of communication services.

Instead, regulators are encouraged to honour equipment approvals and certificates issued by other countries, or by recognized certification bodies. For example, the European Community has implemented legislation that eliminates government type approvals of satellite and other telecom terminals, introducing harmonized standards and certification procedures to be issued by independent laboratories. This change is being brought about with the Radio and Telecommunications Terminal Equipment Directive 1999/5/EC (the "R&TTE Directive"), which introduces a system based on manufacturers' declaration of conformity and relaxation of the regulatory constraints on the free movement and putting into use of terminal equipment (see [2]).

In addition, several regional entities, like APEC and CITELE have also moved toward adoption of Mutual Recognition Agreements (MRAs) of type approvals, which would eventually also eliminate the need for type approval requirements on a country-by-country basis.

Through APEC, for example, the APEC-TEL MRA framework was developed to enable quicker availability of telecommunications equipment. The MRA provides mutual recognition of test results and equipment certification by the member countries. The MRA is generally implemented in two phases:

- 1) Establishment of procedures for mutual recognition of testing laboratories and mutual acceptance of test results; and
- 2) Establishment of procedures for Mutual Recognition of Certification Bodies and mutual acceptance of equipment certification.

Some of the APEC members have already implemented the MRA and manufacturers of telecom equipment which have their products tested and certified in their own countries need not undergo type approval process again while exporting the product to the other countries. For instance, under the MRA, IDA Singapore has introduced an equipment registration scheme that allows for the registration of certified telecom equipment from both local and overseas suppliers. Registered suppliers need not submit their telecom equipment to the IDA for approval.³⁴

Within CITELE, an MRA has been drawn up for the conformity assessment of telecommunication equipment in two phases. Phase I includes procedures for mutual recognition of testing laboratories as conformity assessment bodies and mutual acceptance of test reports, while Phase II includes procedures for mutual recognition of certification bodies as conformity assessment bodies and mutual acceptance of equipment certifications.

When it comes to the status of MRAs, the *ITU-D Satellite Regulatory Survey* responses indicate that there is a trend towards accepting international or regional standards on unwanted emissions during the type approval of Mobile Earth Station and FSS earth station terminals. Of the respondents, the majority of nations in every region recognize MRAs, with a total of 38 out of 50 countries indicating acceptance. Africa leads the way, where 11 countries recognize MRAs, versus only one that does not. The Arab States had five nations accepting MRAs, versus one that did not. In the Americas seven countries accept MRAs, and two do not; and in the Asia-Pacific region, four nations accept versus two that do not. Finally, Europe has 11 nations that accept MRAs and six that do not.

The situation when it comes to the implementation of satellite equipment in MRAs is much less positive. Overall, just 11 of 54 countries indicated that they have implemented such agreements.

Africa is the only region in which the majority of respondents indicated that they had indeed implemented the MRAs, with five nations having implemented the agreements and four saying that they had not done so. In Europe, five nations have implemented the MRAs for satellite equipment, but 15 have not. In the remaining regions, only one country has implemented the MRAs, while a total of 10 have not.

³⁴ APSCC Study Group 1 Report, Policy and Regulatory Issues Relating to Satellite Communications, October 2002.

In order to help facilitate this transition, the GVF developed a technical framework that enables Administrations to mutually recognize test results generated during the satellite operator type approvals process.

This framework is embodied in a document entitled “*Mutual Recognition of Performance Measurement Guidelines and Procedures for Satellite System Operator Type Approvals*”. The MRA procedure defines a set of standardized measurements that produce a data package, which can be used to check compliance of an earth station antenna model with applicable performance requirements. The procedure further provides for independent auditing of the accuracy and completeness of the data by Authorized Test Entities, which are elected by satellite-operator members of GVF. In this way, the community of satellite operators maintains oversight of the characteristics of earth stations that affect interference and provides a high level of assurance of compliance with ITU coordination agreements.

The availability of a standardized, audited data package alleviates the need for each country to maintain its own testing and verification requirements, reducing costs for Administrations and improving the quality and comprehensiveness of the data submitted to regulators as a part of the licensing or type approval process. At the same time, acceptance by domestic regulators of a standardized data package can greatly reduce costs for satellite service providers, by permitting them to use a single set of tests and data to demonstrate compliance with the technical requirements of both satellite operators and domestic licensing officials in multiple countries. To download a free copy of the framework, go to <http://www.gvf.org>

2.3.2 Satellite Licensing

This section begins with a simple question: How, examined on a region-by-region basis, are satellite licensing procedures and processes being harmonized across regional and subregional groups of individual Administrations?

In the early history of satellite communications, Administrations had either not developed procedures for the licensing of satellite services or, when regimes were implemented, had made little or no attempt at regional or subregional harmonization of light-touch approaches. More recently, various initiatives to facilitate satellite harmonization are being developed and implemented by Administrations, both at the national and regional levels.

This is reflected by both the increasing development of competitive markets that are facilitated by such liberalization, and the increasing number of satellite service licences that are being issued as a result of demand from aspiring entrants to the more competitive satellite services market place.

The data derived from the *ITU-D Satellite Regulatory Survey* shows common threads in contemporary satellite service licensing in a range of key regional markets. These highlight the prevalence of the trend towards the facilitation of harmonized licensing practices across regions.

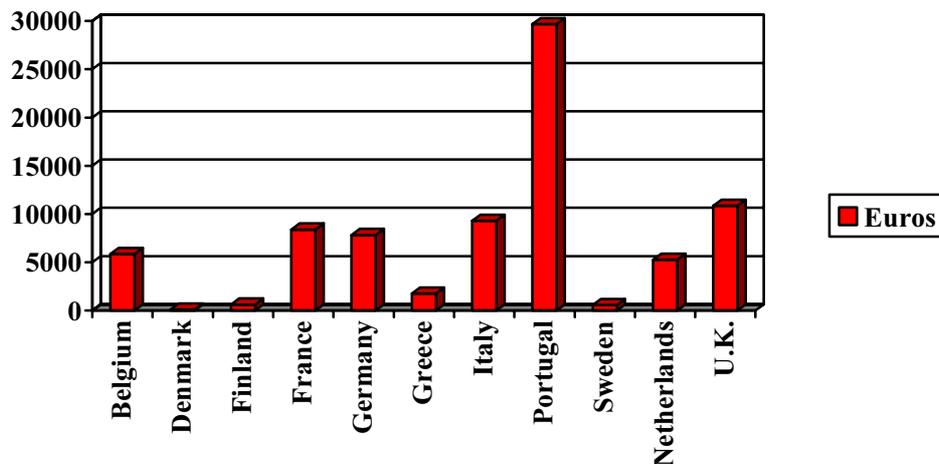
Charts 19-27 below show whether a range of types of satellite service are subject to licensing procedures by Administrations in the Africa, Americas, Arab, Asia and Europe regions. For each satellite service type, the data reveals that a large majority, or in some cases all, of the respondents have implemented a licensing regime. The “Yes” responses are so significant precisely because they reflect how many Administrations have established variously codified licensing procedures for satellite services. In addition, the data shows that different types of satellite services are being licensed. So, whereas in Africa, BSS services are subject to a licensing regime, so, very clearly, are the FSS, MSS, Private VSAT, PSTN Connected VSAT, GMPCS, SNG and AMSS sectors.

This pattern is broadly the same for each of the other regions and accounts for the wide variety of licensing approaches applied throughout the world – and which has served as an impediment to the provision of satellite services. Once again, the development and implementation of harmonized licensing regimes, both across service types and within regions and subregions, is essential.

European Satellite Licensing Reform – A Case In Point

Europe is a prime example of a region that has set satellite service licensing harmonization as a key telecommunications policy goal – and has begun to see tangible results. In part through the mechanisms of both the European Union (EU) and the European Conference of Postal and Telecommunications Administrations (CEPT), individual national regulatory Administrations have begun harmonizing their respective regulatory regimes.

Chart 16: First-Year VSAT Licensing Fees, 2000



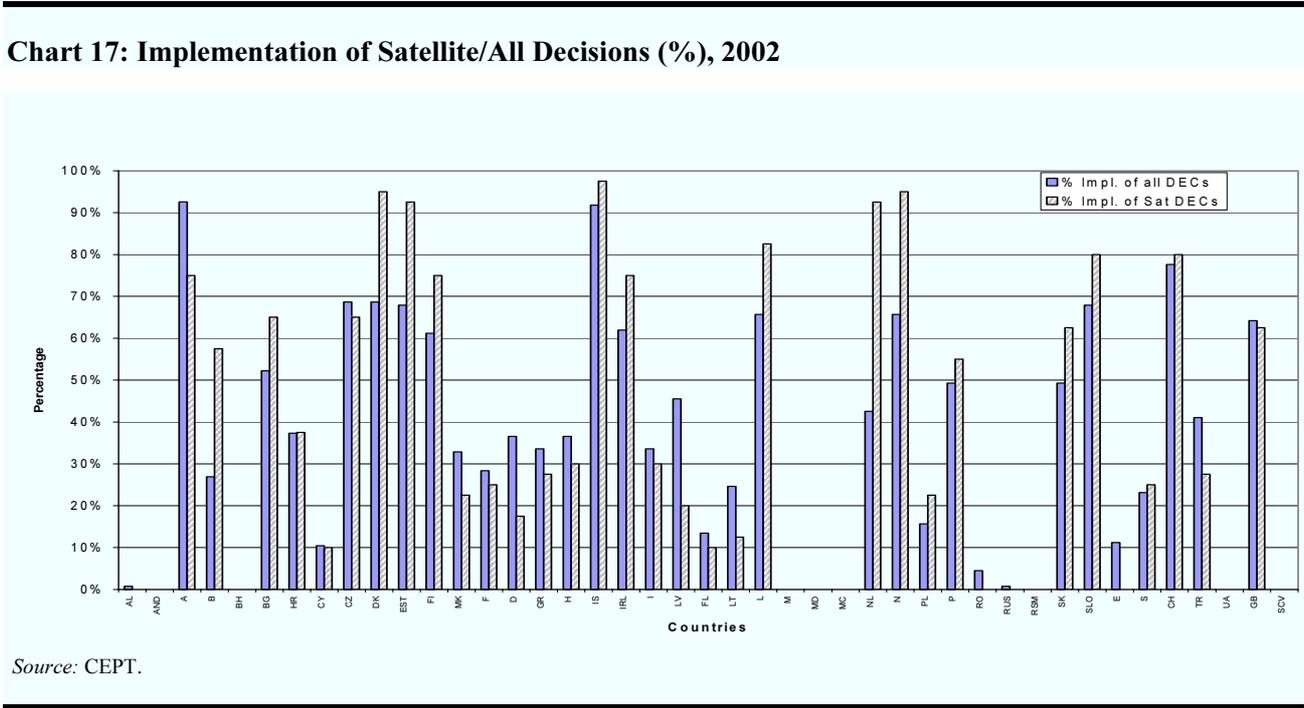
Source: SAP-REG.

For example, Charts 16 and 18 serve as a before-and-after snapshot of VSAT licensing fees in Europe. Chart 16 shows the results of a case study conducted in 2000, when first-year licensing fees in selected European countries were examined, assuming a VSAT network with the following characteristics:

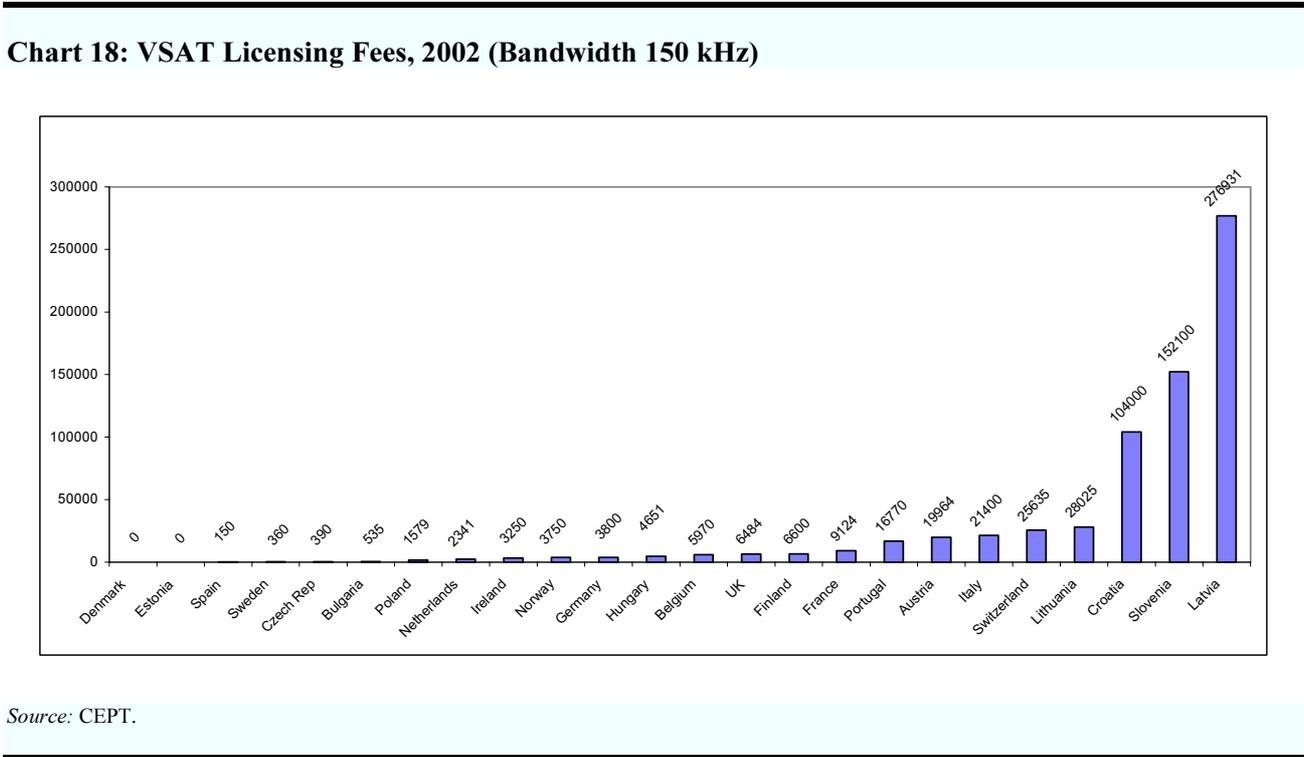
- bi-directional 64 kbit/s link and using 200 kHz – 1 MHz of bandwidth;
- A network of 10 earth stations and one hub all located within a single country;
- Supporting a data service, and using a single satellite;
- With connection to the PSTN, and not requiring coordination.

In the same year, clearly, first-year licensing fees across a range of 11 European Administrations exhibited significant differences. But immediately before, during and after the 2000 case study was conducted, the 45 CEPT Administrations had begun adopting a new satellite “Recommendation” and several satellite “Decisions”, each of which had a direct bearing on receive-only and bi-directional FSS systems’ licence fees. Each involved exclusion from individual terminal licensing requirements of various terminal types. From receive-only earth stations (“ROES”) to certain 10-20 GHz band and 20-30 GHz band two-way systems (“VSATs”, “SITs”, and “SUTs”), in each case they reduced unnecessary licensing and, in so doing, minimized the fees associated with them.

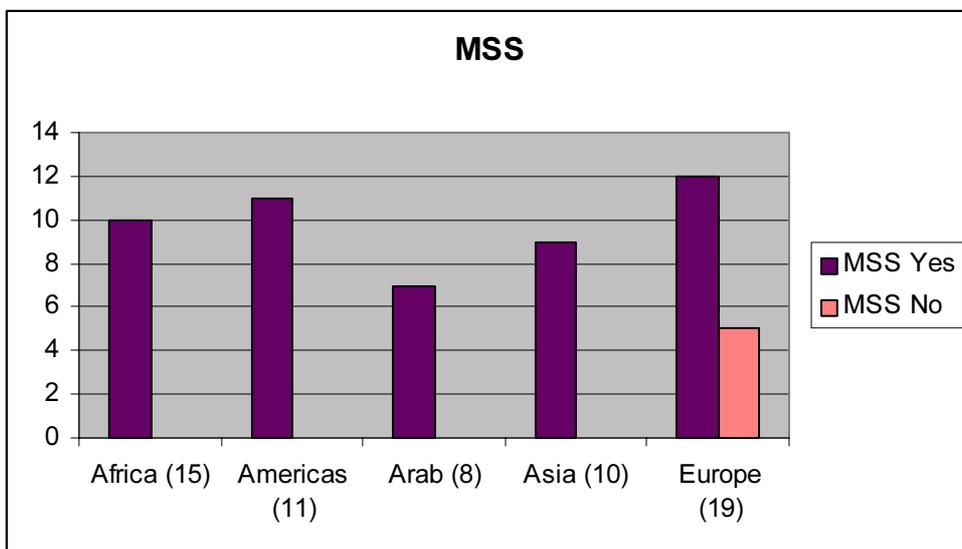
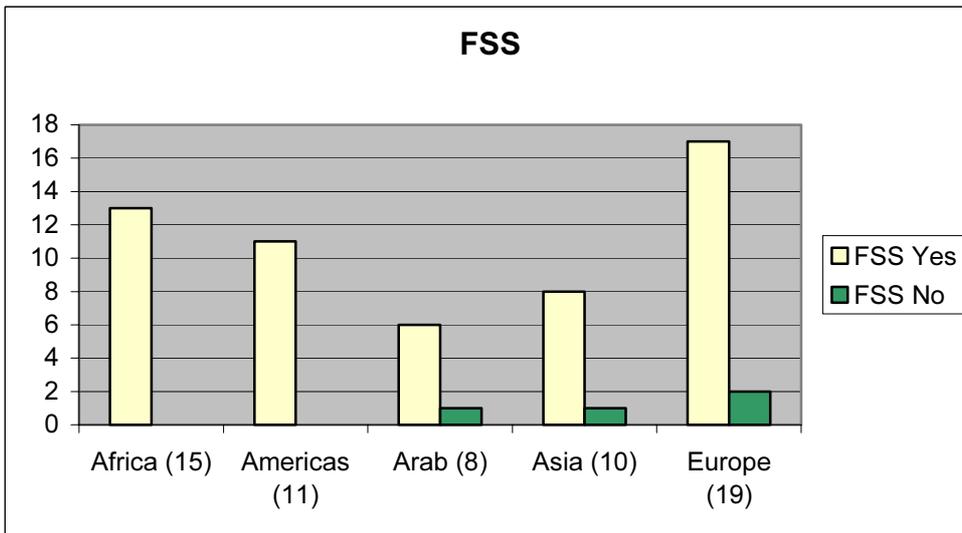
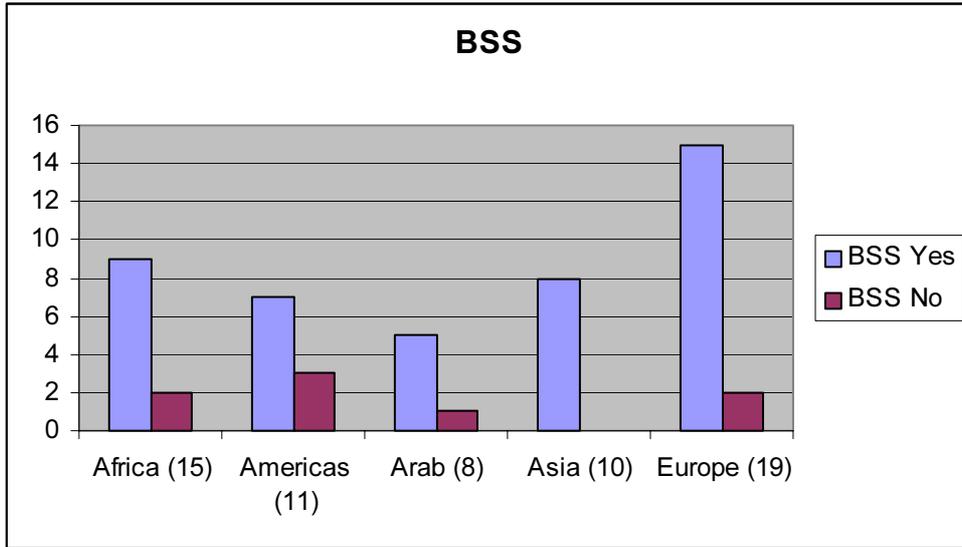
As the 2002 chart below indicates, the majority of CEPT Administrations have implemented a high percentage of satellite-related Decisions and Recommendations.

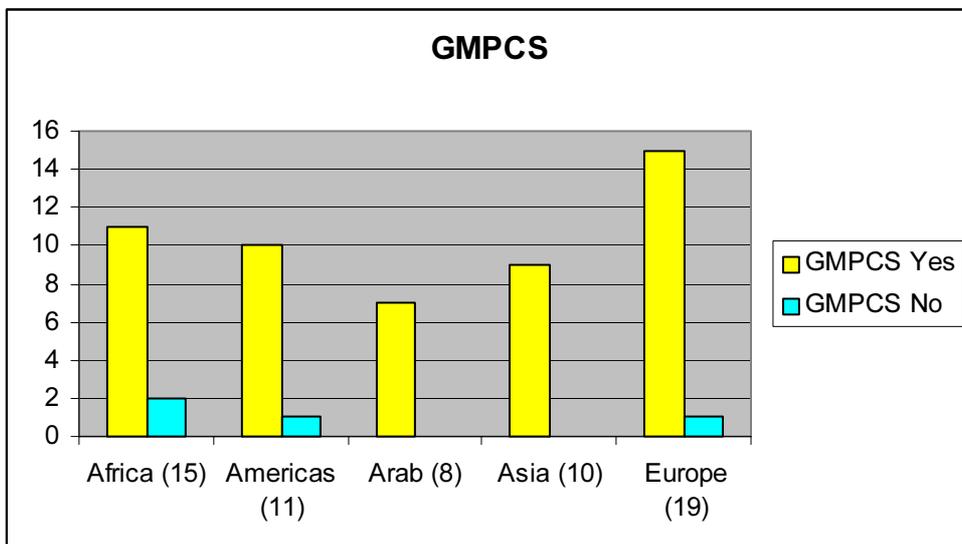
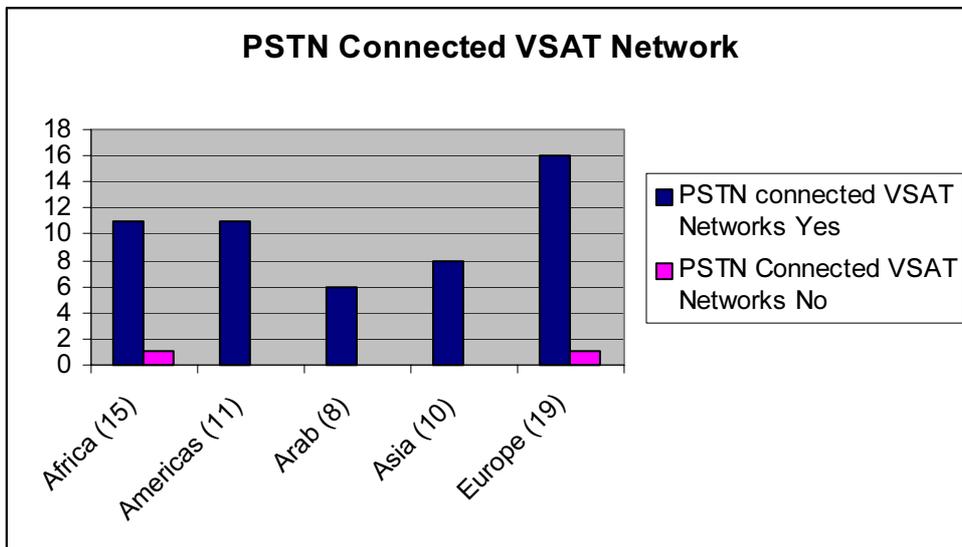
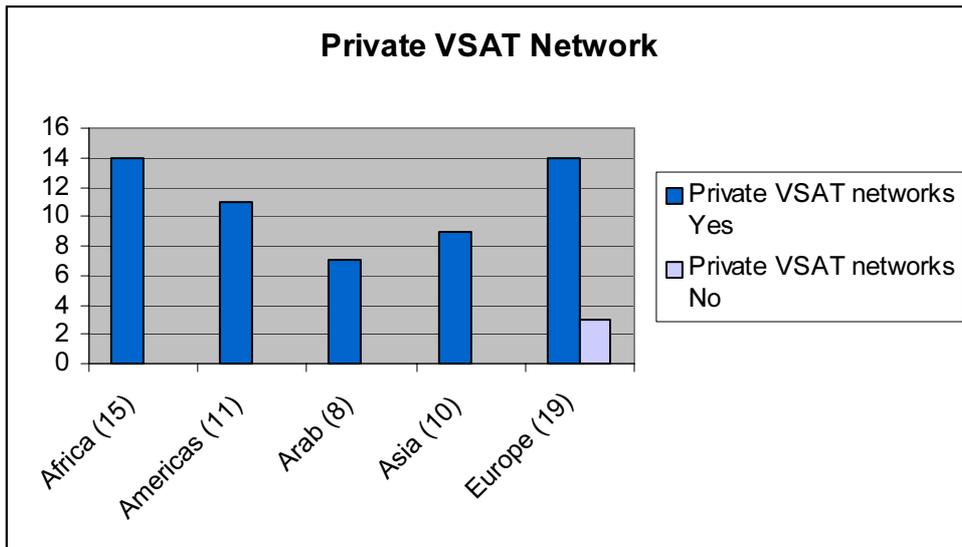


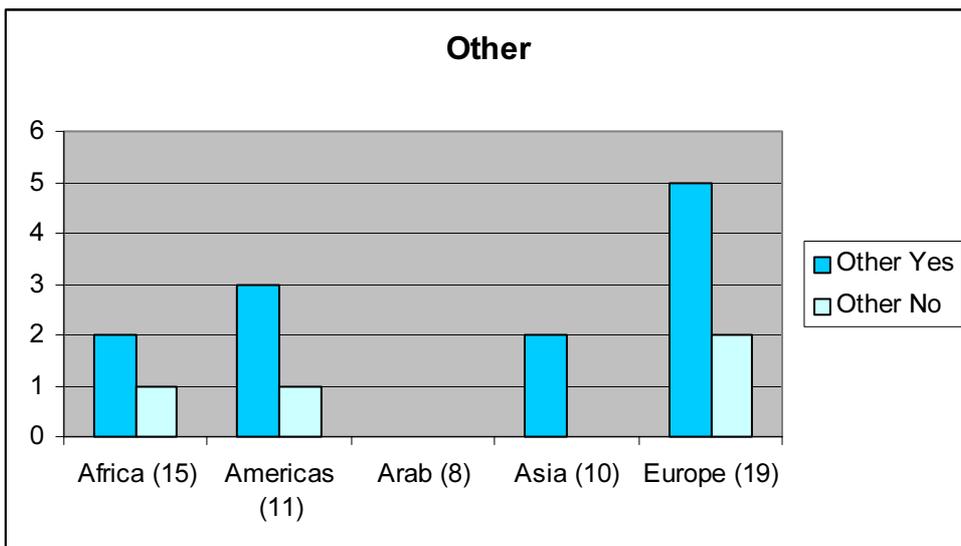
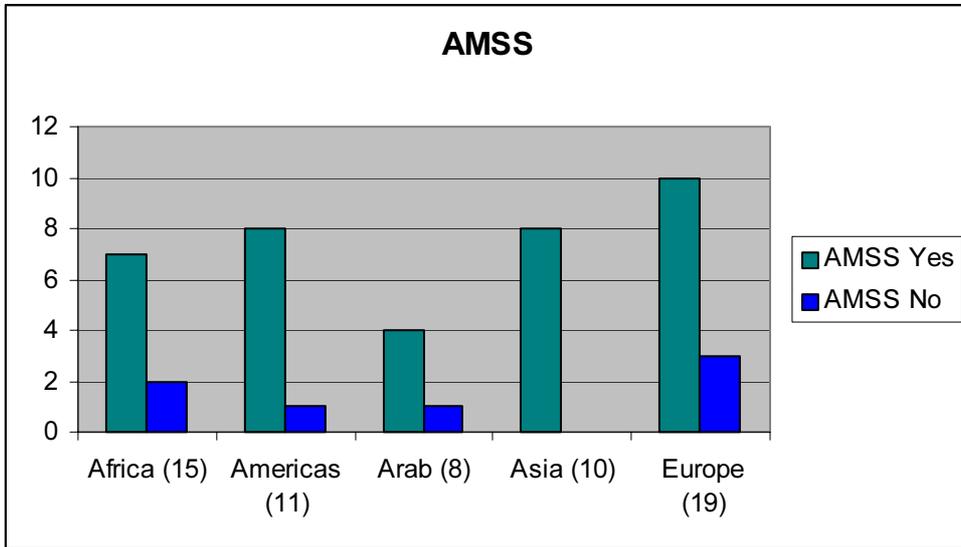
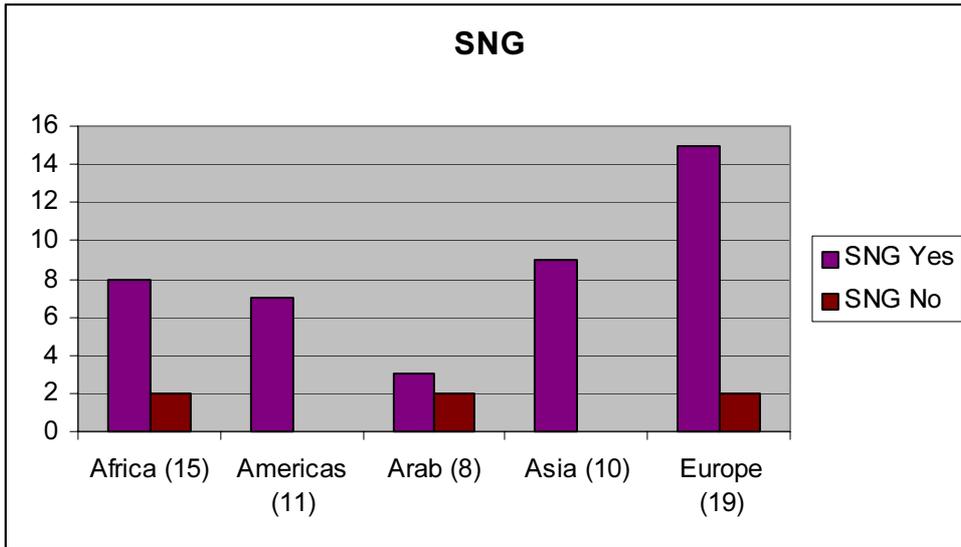
As implementation of the satellite Recommendation and Decisions progressed throughout Europe, it has helped to establish a more harmonized VSAT licensing fee structure across the region, as can be seen in Chart 18.



Charts 19-27: Services Subject to Licensing (Per Service)

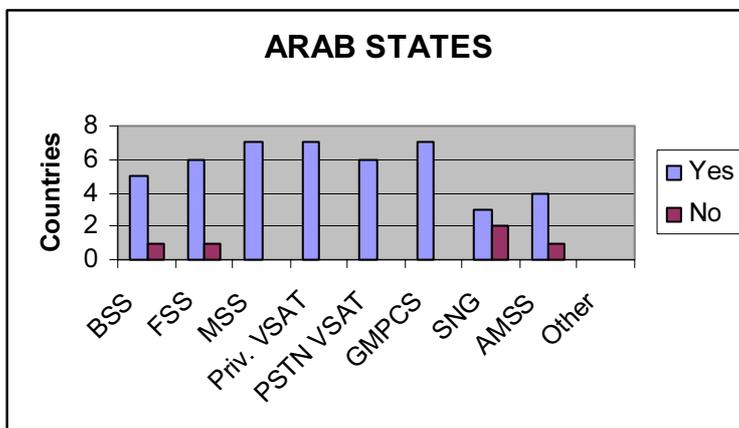
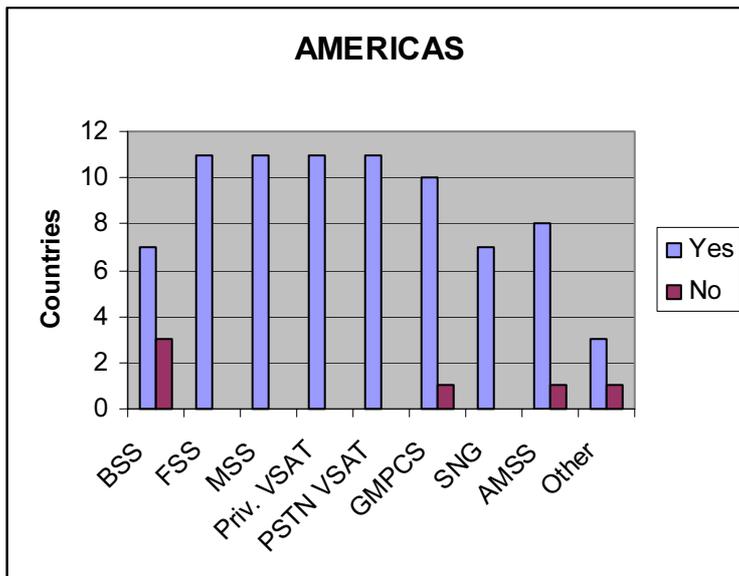
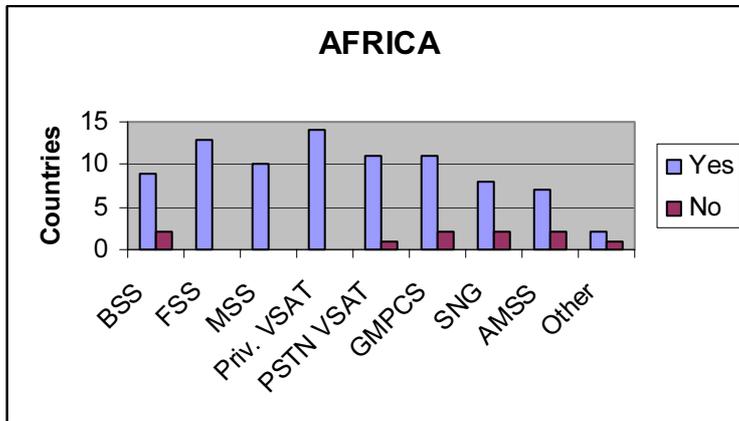


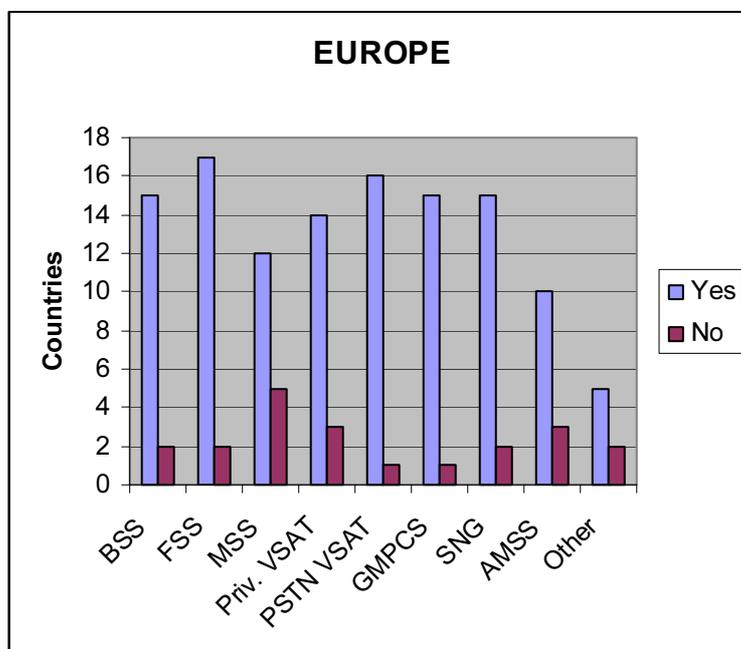
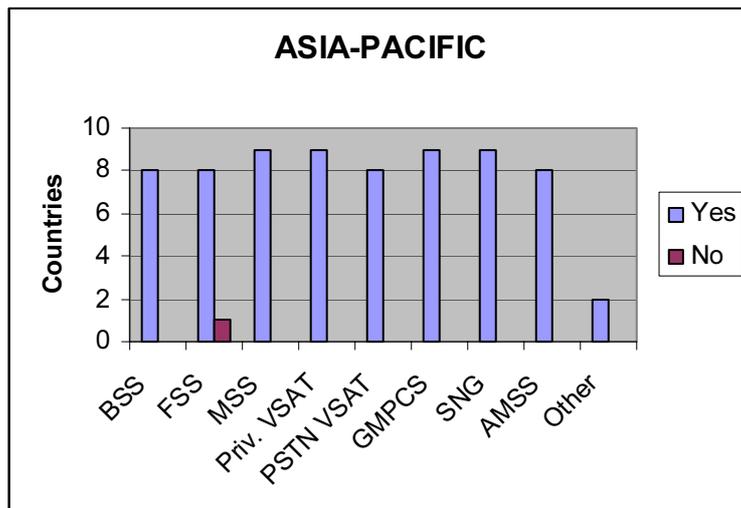




Source: ITU-D Satellite Regulatory Survey.

Charts 28-32: Services Subject to Licensing (Per Region)





Source: ITU-D Satellite Regulatory Survey

2.3.2.1 VSAT Licensing Case Study: Norway³⁵

Norway implemented the CEPT “VSAT” Decision ERC/DEC(00)05 at an early stage. This was very easy, because VSAT licensing was more like a formality, and already very close to “free use” or licence exemption. With no frequency planning in the 10-20 GHz band (this is taken care of by the satellite operator), no frequency coordination, with no protection, and any case of interference should be resolved among the parties.

Further, the whole uplink band 14-14.5 GHz was utilized by VSAT and SNG only (no national fixed services), all users got access to the whole uplink band (no individual frequency assignments). There were no geographical restrictions in this band; the licences were valid all over the country if the operator so wished.

³⁵ This case study was provided by the Norwegian Post and Telecommunications Authority.

Further, there was no power limitation; the operators normally got what they applied for. And, what is really important in this context, no problems have been recognized in this frequency band in Norway.

The licences for VSATs and SNGs were questionable and it became apparent that the ERC/DEC(00)05 could be extended to fit all VSATs and SNGs. In many cases, the current regulation with regard to VSAT and SNG already represents an extension of ERC/DEC(00)05, but licences still had to be issued because a general authorization was not given through national regulation.

A public inquiry proposed licence exemptions for all VSATs and SNGs. The proposal applied to all VSATs and SNGs that comply with the relevant standard of the European Telecommunications Standards Institute (ETSI). Airports were to be excluded and the power limited to 80 dBW effective isotropic radiated power (EIRP). Thus, there would be no licensing in the 14-14.5 GHz band at all.

The “price to be paid” is that SNGs no longer may be used at airports; the operators have to find other solutions. Beyond that, the response has been very positive. To formalize the proposal on licence exemption, we incorporated that in the national regulation on “general authorization”. After public consultation, this regulation was implemented as follows:

After revising the national regulations on Authorized Frequency Use (exemption from individual licences) in Norway, almost all VSATs and SNGs in the frequency bands 14/12 GHz may be used without applying for an individual frequency licence.

The technical requirements for licence exemption are:

- a) Satellite terminals (VSATs) are authorized to use the frequency bands 10.7-12.75 GHz (downlink) and 14.0-14.5 GHz (uplink) in accordance with the frequency use described in CEPT/ERC/DEC(00)05. Antenna diameter is up to 3.8 metres. Maximum allowed radiated power is 80 dBW EIRP. These provisions do not apply to Svalbard or within 500 metres of airfields.
- b) Mobile satellite terminals (Satellite News Gathering (SNG) are authorized to use the frequency bands 10.7-12.75 GHz (downlink) and 14.0-14.5 GHz (uplink) in accordance with the frequency use defined in the standard EN 301 430. Antenna diameter is up to 5 metres. Maximum allowed radiated power is 80 dBW EIRP. These provisions do not apply to Svalbard or within 500 metres of airfields.

General: Use of frequencies that are exempted from individual licences is not protected against interference from other legal frequency usage. No service licences are needed for satellite services in Norway. (Note: Other classes of satellite earth stations/satellite terminals are licence exempted in Norway. A list of those classes can be seen at www.npt.no.)

Note: For comparative purposes, the Netherlands Administration has also provided a VSAT Licensing Case Study, which is noted in [7].

2.3.3 Spectrum

The ITU spectrum allocation mechanism and the ITU Radio Regulations already serve as a *de facto* umbrella treaty for the global harmonization of spectrum-related satellite licensing procedures. In particular, the ITU Radio Regulations are consciously constructed in a non-restrictive manner, intended to facilitate the broadest possible use of space-based orbital and spectrum resources by users in all countries, and relying on the good-faith coordination activities of Administrations as the means by which maximum use of these resources are achieved.

Under this treaty, regional efforts at spectrum harmonization practices can also be particularly beneficial in ensuring that spectrum utilization is not artificially constrained by individual national regulations. At the national level, policies or other measures should serve to harmonize efforts to allow access by foreign satellite operators.

The role and importance of harmonization efforts in the case of FSS and BSS services is a function of the nature and coverage provided by the particular satellite systems, since such networks can provide either domestic or trans-border/international services. In those instances in which service offerings fall within the boundaries of a particular individual Administration, harmonization, other than to avoid inter-system

interference, is not a major concern. But when such services do result in trans-border applications, harmonization – at least on a regional basis – assumes a much more important role.

Harmonization activities are no less important in the case of MSS services, which by their very definition contemplate a mobility feature that is likely to involve movement across national borders. While certain MSS services are primarily regional in nature, in many instances such systems operate on a global basis. As such, both global and regional harmonization efforts are especially critical to the commercial viability of MSS services.

2.4 National Regulation and Policy

The *ITU-D Satellite Regulatory Survey* responses indicated that in almost all cases, satellite telecommunications is included in the Administrations' general telecommunication legislation (see [1], Laws and Regulations Applicable to Satellite Communications).

The 63 Administrations that responded reported a total of 171 laws and regulations applicable to satellite communications. Of these, 145 were adopted since 1995, 78 were adopted since 2000, 27 were adopted since 2002, and five were adopted during the first quarter of 2003. Nine of the instruments had been adopted between 1922 and 1955; of these, three each were in the Americas and Asia Pacific, two were in Europe, and one was in Africa.

Significantly, a disproportionately large number of the remarks made by the African respondents confirmed that their Administrations' satellite communications laws and regulations may or will be reviewed "soon" or "in the future".

The following subsections examine in closer detail how national Administrations are currently applying satellite regulations, as well as the practical impact that it is having on access to communications in their nations.

2.4.1 Strategic Liberalization/Competition

There is a continuing trend in the growth of competition worldwide in satellite services and applications. For the purposes of the questionnaire, degrees of competition were described as Monopoly (M), Partial Competition (PC) and Full Competition (FC). These definitions were, by design, a simplified approach based on the limitations of a questionnaire that had to address a broad range of issues with a relatively small number of questions. Rather than a comprehensive and in-depth survey of strategic liberalization, the Survey sought to identify the extent to which satellite operators are able to competitively provide services in countries throughout the world.

The *ITU-D Satellite Regulatory Survey* results have shown that, perhaps inevitably, respondents differ to some extent in the way in which they categorize degrees of competition. For example, some countries described their market as competitive although they currently have a monopoly provider. An explanation of this may be that there is only a single licensee at this time but the regulation does not exclude new market entrants. Gradients also exist within the sub-categories of PC and FC, again probably depending, to some extent, on the two ways the questions could be interpreted as between (i) what the regulations allow and (ii) how the market looks today in fact.

The Survey confirmed that satellite operators are increasingly engaged in offering bandwidth into partially- or completely-liberalized markets. The Survey asked respondents to list the satellite operators having market access or having service providers with market access: Of nine African Administrations that answered the question, four described competitive satellite markets. Of nine Americas respondents, eight reported competitive satellite markets. Of eight Arab respondents, four reported competitive satellite markets. Of six Asia-Pacific respondents, five reported competitive satellite markets. And of 16 European respondents, 14 reported competitive satellite markets.

These results underscore Administrations' commitment to opening markets to the provision of satellite services in a manner wholly consistent with national policy objectives, which could be achieved through strengthened access to business, consumer and government communications.

2.4.1.1 South-Asia Case Study

“Market opening works: try it.” This was a key conclusion of the “ITU *Asia-Pacific Telecommunication Indicators*” as far back as 2000, when the importance of strategic liberalization – the selective opening of a market, sector by sector, to help an Administration achieve targeted policy objectives – was also underscored. According to the ITU *Indicators*, ultimately, even in countries that choose to retain a monopoly, there are opportunities to open parts of those networks or services to competition and private-sector participation.

In Nepal, for instance, where Nepal Telecommunications Corporation had a monopoly on all international connectivity, the simple step of allowing others to provide international data connectivity had a transforming effect on the local Internet market. Nepal’s international interconnectivity rose five-fold in a few months after the VSAT market was liberalized. (For more information on Nepal, see the ITU case study at <http://www.itu.int/ITU-D/ict/cs/>)

Since then, a similar experience with strategic liberalization was recorded in Bangladesh, where the Administration – once again, in an effort to quickly expand local access to telecommunications – partially deregulated the VSAT sector. A representative of the regulatory agency reported an eight-fold increase in connectivity as a result.

And in India, a series of partial reforms of the VSAT sector have also resulted in measurable gains in access to and use of communications solutions. The first major step was taken in 1998. At that time, India’s regulation required any VSAT operator to use capacity derived from the indigenous INSAT constellation of satellites. However, at the time there was effectively no capacity available on the INSAT satellites, nor had there been for more than one year. (This was partly attributable to failures of India’s INSAT 2A and 2D satellites.)

By the first quarter of 1998, there was a capacity crisis in India. So a meeting³⁶ was held, including the international satellite industry, as well as the Department of Telecommunications (DoT), the Telecommunications Regulatory Authority of India (TRAI), the Indian Space Research Organization (ISRO), as well as selected end users of satellite services.

During the one-day meeting, a new regulation was drafted that would permit any ISP with an international gateway licence to use any properly coordinated satellite in orbit to provide VSAT services. Eighteen months later, the regulation was implemented, and millions of dollars worth of contracts for services immediately began to be signed (see Chart 33).

During the next year, the international satellite industry – again, in coordination with DoT and TRAI – urged for implementation of needed reforms, this time including:

- removal of a 64 kbit/s ceiling on VSAT data rates;
- Reducing VSAT licensing fees;
- Permitting interconnection of VSAT networks with all other types of network.

In mid-2002, the Indian Administration again agreed to address each of the above regulations and implemented reforms, which had a discernable positive effect on access to satellite-based services: Growth in the use of VSATs increased more than 30% during the period. But perhaps the most telling indicator in this regard is the fact that the number of Indian Internet subscribers increased to 3 million in 2001, compared with 250,000 in 1998.³⁷ While not all of this growth can be attributed to the satellite regulatory reforms, a large share is due to the fact that ISP direct access to competitive satellite bandwidth was permitted.³⁸

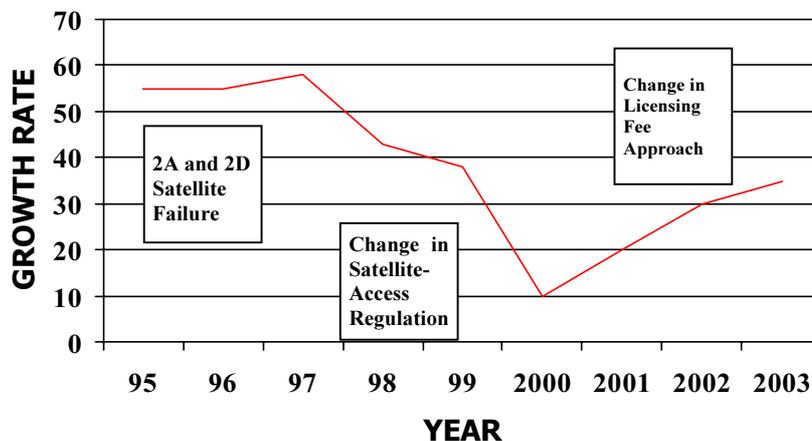
³⁶ The meeting was hosted by the VSAT Services Association of India.

³⁷ NASSCOM and India’s Department of Telecommunications.

³⁸ VSAT Services Association of India.

The conclusion: Competition works.³⁹

Chart 33: Indian VSAT Regulatory-Reform Assessment⁴⁰



2.4.2 National-Level Licensing

Many Administrations have created licensing regimes for the terrestrial segment of satellite networks. The responses to questions pertaining to ground segment licensing were in line with the responses discussed hereinafter in section 2.4.2.1 (Establishment of Independent Regulatory Authorities). In most cases, the entity named responsible for satellite regulation is the same entity responsible for ground segment licensing.

There are some exceptions. In Canada, Industry Canada is responsible for licensing all services except BSS receive-only stations. Licensing for FSS is done together with the Ministry. In Suriname, the President is responsible for licensing all services. Korea indicates that the Broadcasting Commission is responsible for BSS and that there are no separate regulations for ground segment. In Romania, the Ministry, Regulator and the Inspectorate General for Communications and Information Technology (IGCTI) are jointly responsible for licensing most services. For FSS, it is the responsibility of the Ministry together with IGCTI.

Efforts to require licences for the ground segment can be divided into two groups – authorization requirements for satellite service providers and individual licensing for earth station facilities. Both approaches are discussed below.

Network Operator and Service Provider Licensing

As for FSS, traditionally, most governments have required each individual VSAT terminal to be licensed; this was in addition to requiring a network operator's licence. But more than 10 years ago, a new approach to regulating VSATs – “blanket licensing” – began to be implemented and it has been successful. The U.S. Federal Communications Commission (FCC) was one of the first Administrations to apply such a regime and, when asked what they would have done differently in implementing blanket licensing, their reply was, “We would have done it sooner.”

³⁹ As of this Report's June 2004 deadline, the Telecommunications Regulatory Authority of India had announced a new round of satellite regulatory reforms, including an “Open Skies Policy” for VSAT and DTH services, further reduction of license fees, complete removal of data-rate restrictions, streamlined site-clearance procedures, and more. See <http://www.trai.gov.in>

⁴⁰ Chart provided by the VSAT Services Association of India.

With this regulation, VSATs are configured based upon technical criteria – involving power level, frequency, antenna diameter, etc. – that eliminate the risk of unreasonable interference. Thus, a single blanket licence can be issued covering a very large number of VSAT terminals.

For mobile systems, international frequency coordination procedures, as well as the use of harmonized standards, eliminated the risk of harmful interference and a growing number of countries were able to exempt the circulation of terminals from individual licensing requirements.

Streamlined satellite licensing approaches have worked well both for the regulator, for the industry, and for end users, wherever it has been applied, including Administrations in North and South America, Asia, and Europe. Indeed, 45 European nations have now adopted a set of policy principles that eliminates the need for individual licensing of receive-only and interactive VSAT terminals. The policy principles were adopted through the CEPT and, more recently, have begun to be *implemented* by individual national Administrations (see also the Norway case study above).

The CEPT Decisions exempt VSATs or mobile handhelds from individual terminal licensing requirements, provided that they meet specific technical criteria – such as frequency use, maximum radio power, antenna diameter, etc. – that assure adherence to recognized standards. Stations that meet these requirements can quickly and easily be put under a general “blanket” type of licence. In this case no or minimal administration is necessary and there is no need to require a licence prior to operating the terminal. There are key advantages in having such generic Decisions, both for the CEPT and also for satellite operators, since one Decision can cover multiple technically-comparable antenna and terminal types. (A sample Decision is available as one of the *ITU-D Question 17/1* Information Documents at <http://www.itu.int/md/meetingdoc.asp?lang=e&type=sfolders&parent=D02-RGQ17.1-C>

The seriousness with which European regulators are taking VSAT streamlined licensing is best demonstrated by the relative speed of implementation:

- 1998, streamlined licensing of VSAT services was not implemented anywhere in Europe; as this Report was being compiled, approximately a dozen Regulators had implemented streamlined licensing regimes for VSATs, either for receive-only terminals, interactive systems, or both.

These exemptions and policy principles are divided into the following adopted ‘Decisions’:

- Receive-Only Earth Stations (“ROES” Decision): Almost 90% of European countries have adopted this principle;
- Exclusive 14/12 GHz band VSATs (“VSAT” 2000 Decision), which have now been implemented by 15 countries;
- Several Decisions for mobile terminals, which have been implemented by certain countries;
- 30/20 GHz band Interactive Earth Stations (“SIT” and “SUT” Decisions), which have been implemented by 17 and 18 countries, respectively, and are expected to be re-affirmed by the Draft Decision on shared 14/12 GHz band VSATs to be adopted in the last quarter of 2003 (“VSAT” 2003 Decision);

In addition, the same policy principles have inspired the adoption of similar Decisions concerning other types of terminals such as LMES or S-PCS.

Likewise, CITELE has adopted a Recommendation PCC.III/REC.62 (XVIII-01) to facilitate the implementation of Ka-Band FSS systems intending to provide broadband services in the Americas. (See [3].)

It is important to note that CEPT and CITELE develop and adopt Recommendations, Decisions, or Resolutions, and each individual country within the respective regions of Europe and the Americas decides whether it wants to implement the regulation in their nation. Increasingly, individual Regulators are deciding to proceed with blanket licensing based on their national interests.

Meanwhile, the trend toward streamlined satellite licensing approaches is becoming even more simplified. Under the terms of the new EU Authorization Directive, EU countries have begun to implement a “general authorization” system. As opposed to blanket licences – which are still administrative acts or explicit decisions – general authorizations no longer require licence applications to be made prior to providing

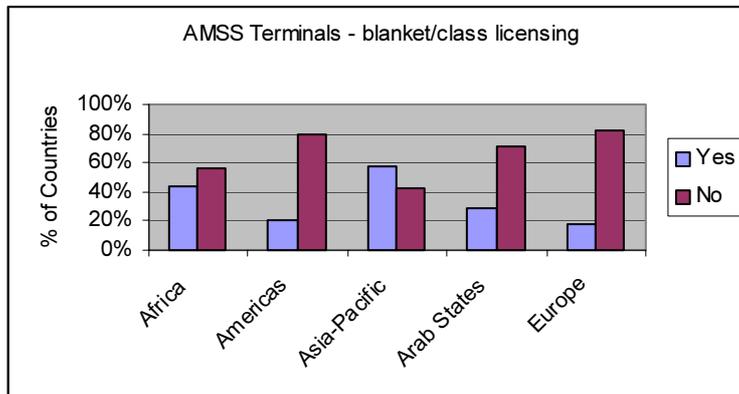
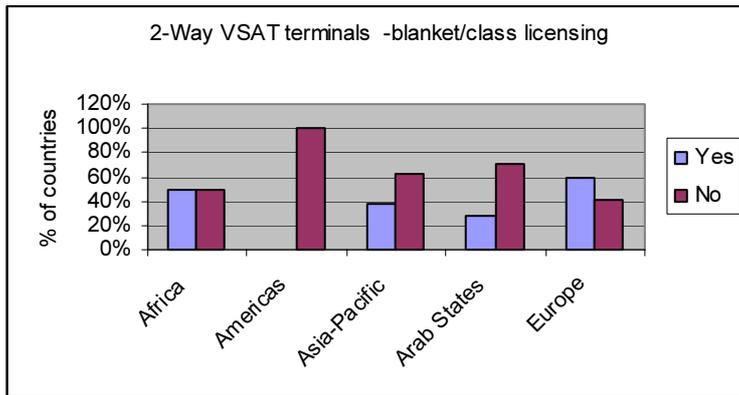
service or running a network. Administrations might require a notification, including basic information on the operator, the network location, the type of service provided, etc. However, the service can be offered under general authorization and cannot be put on hold awaiting a reply or consent of the Administration. This approach is an important step forward in the development of satellite licensing approaches that maximize access to new services.

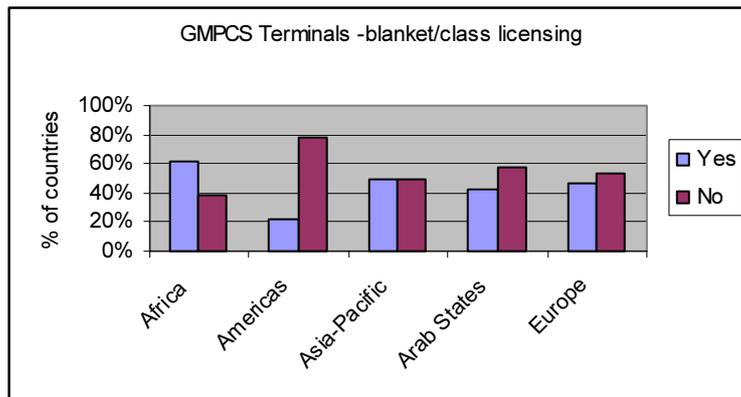
General authorization also recognizes fully the international nature of satellite services, whereby there is no need to have a service provider located in each country. It overcomes, therefore, the difficulty of obtaining blanket licences in countries where a small number of terminals belong to several service providers, or where foreign ownership restrictions require the establishment of a national presence.

Implementation of streamlined licensing results not only in faster implementation of service, but also lower costs of implementation. This derives from the fact that with individual licensing of terminals or services, licensing fees are often imposed on the use of individual terminals or on each of the service providers and require more administrative work on behalf of the Regulator or responsible national body.

The following graphs indicate by terminal and by region those having provisions for blanket or class licences.

Charts 34-37: Satellite Terminals – Blanket Licensing





Although all countries surveyed require the licensing of MSS, the requirements and conditions vary between countries. The licensing of MSS can be addressed on the premise that four types of licence are relevant to MSS which may include Space segment licence⁴¹; Gateway licence⁴², Licence for the provision of services⁴³ and Licensing of MSS user terminals⁴⁴.

A majority of countries indicated that receive-only FSS terminals do not require a licence. In the Americas region, all countries responded that a licence was not required. In the Arab States region, for example 63% of the countries responding stated that a licence was required.



Source: ITU-D Satellite Regulatory Survey.

⁴¹ A licence for the launch and operation of satellite(s) issued by the Administration where the company is based (or where the satellite has been notified).

⁴² Licences for gateway, feeder link/Telemetry Tracking and Command Earth Stations and other facilities. Licences issued by Administration in which the infrastructure is located.

⁴³ Licence for the provision of GMPCS telecommunications service, including access to frequencies.

⁴⁴ The GMPCS Reference Handbook defining what constitutes a licence to carry and use a user terminal as any of the following, viz: An individual licence, “whereby for each terminal a separate authorisation is issued”; a general licence or class licence, “whereby one generic authorisation is issued, which applies to all users and to all terminals of a given category”; a licence exemption, “whereby there is an exemption from requiring an individual licence for each terminal”; a blanket licence, “whereby an operator or service provider is authorised to use a certain number of technically identical terminals”.

Although theoretically licensing serves similar purposes throughout, four different approaches have been noted with regard to VSATs. These approaches are split in regards to the satellite segment of VSAT services and the ground segment of VSAT services. In regard to the satellite segment, landing rights and spectrum licensing are relevant. Whereas for downlinks, service provider and earth station licensing are equally regarded. In theory, independent of the name, the verifiable purpose of these licences is public safety and preventing harmful interference. As licensing requirements grow to meet other un-related needs, the larger the barrier becomes for services to be implemented. There is a direct correlation between over-regulation in this regard and the hindering effects it has on communication technology development locally.

2.4.2.1 Establishment of Independent Regulatory Authorities

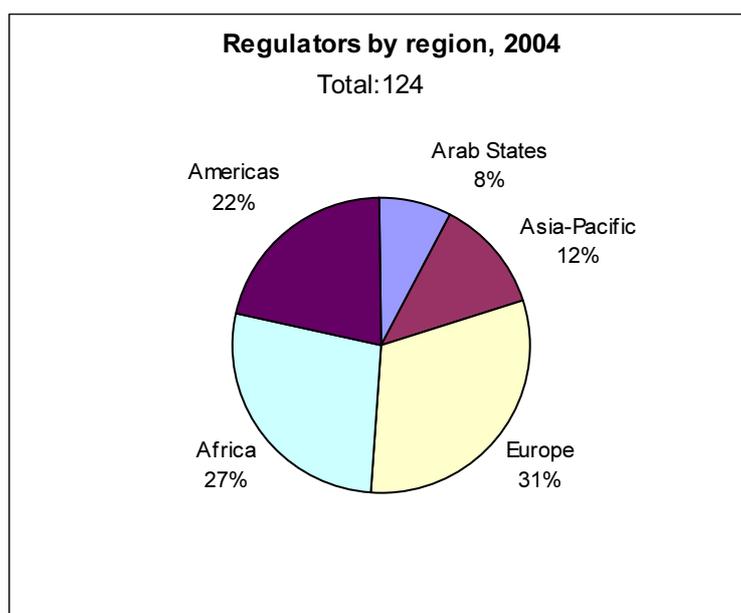
Countries have discovered that they must establish the proper legislative and regulatory environment in order to attract private investment and promote competition. Without an appropriate legal framework for sustained infrastructure development, other efforts aimed at bridging the “Digital Divide” may have little long-term impact.

The advent of competition and privatization has made most governments fully aware of the importance of effective, well-financed, and professionally-staffed regulatory authorities. These regulatory bodies have been mandated to implement fair competition to ensure that services are:

- Extended to more people;
- Made more affordable, geographically and economically;
- Provided at high levels of service quality; and
- Relevant to, and understood by, a broad range of society.

ITU’s Regulatory Database reports that there are 124 separate regulatory authorities (see Chart 38). While the Arab region has the lowest percentage of independent Regulators of any world region, it also has the newest – Bahrain’s Telecommunication Regulatory Authority – which was set up in 2003.

Chart 38: Independent Regulators by Region, 2004



Source: ITU.

The results of the *ITU-D Satellite Regulatory Survey* demonstrate that the majority of entities responsible for satellite regulation are the same entities responsible for general telecommunication regulation. The exceptions are Canada, Romania and Spain. Though these three countries have separate Regulators, the responsibility for satellite regulation rests with the policy maker. In countries where there is no separate Regulator, the regulation of satellite communication rests with the policy maker. In some countries, the frequency spectrum Regulator is different from the Regulator licensing services.

The results pertaining to the establishment of TRAs at the global level, evidenced by the pie chart above, gives credence to the assertion⁴⁵ that the standard institutional structure for the telecommunications sector around the world today includes a separate Regulator. However, in some instances, whilst regulatory authorities have become entities separate from the incumbent national operator, those entities with independent regulatory functions combine their activities with policy-making, which may also include supervision of state shareholdings in the incumbent operator.

The establishment of TRAs is welcome, but what is of paramount importance is that where the policy maker and regulator are distinct entities, good cooperation between policy maker and regulator is of the essence and independence is best guaranteed if responsibility for the state shareholding in telecom companies rests with an entity other than the telecoms regulator.

Positive reasons for the recommended independence and separation of the TRA's activities include firstly the perceived neutrality and insulation of TRAs from political or operational pressures; secondly operators and investors will generally have greater confidence that an independent TRA will regulate a market objectively and transparently, which in turn leads to increased investment in the sector and to related benefits that satellite services can provide to any economy.

2.4.2.2 Additional Authorizations

There were a total of 54 responses to the question that asked whether additional authorizations were required by Administrations for foreign space-segment operators of satellites, irrespective of prior coordination and notification. Of the responses, 20 of the countries surveyed require the procurement of additional authorizations and 34 do not, including MSS, FSS and BSS.

Many countries request that public network operators hold licences so that there is some quality assurance of the service being provided to their public. A few countries have adopted this rule also for private VSAT services. As the nature of private satellite services is being understood better, the requirement for this type of licence is declining. As it is not a public service and not usually connected to the PSTN, and can be privately owned, it is understood that this is a redundant licensing process that causes extreme time delays and confusion. These types of licences can also be referred to as Service Provider Licences, Value-Added Service Licences and sometimes certain types of Class Licences.

As to MSS in particular, satellites in orbit(s) and their attendant requirements for spectrum and orbital slots comprise the space segment of mobile satellite systems. In order for a mobile satellite operator (the "Operator") to deploy its network, the country in which the system is headquartered, acts as the Operator's notifying administration to ITU.

The notifying Administration, on behalf of the mobile satellite operator, will submit the appropriate notification of the mobile satellite system to ITU in accordance with the Radio Regulations. It has been recommended that the role of the notifying Administration's ITU notification and coordination "creates an effective way of balancing the needs of governments to monitor and manage the use of the radio spectrum...and the needs of satellite operators to get spectrum assignments and succeeds in the coordination of their systems".⁴⁶ Therefore the mobile satellite space segment need only be authorized by the specific notifying Administration. Any other course of action by non-notifying Administrations in space segment authorization may prove redundant and can only impede the deployment of MSS.

⁴⁵ InfoDev: *Telecommunications Regulation Handbook Module 1*, p. 1-6. Year 2000.

⁴⁶ See the GMPCS Reference handbook.

2.4.2.3 Timeframes: Processing Applications and Licence Duration

The time spent (expressed in weeks) in processing licence applications varied between a minimum of one week to a maximum of 52 weeks⁴⁷. The Survey responses do not state whether the licensing time frame is applicable either to the licensing of MSS services, networks or MSS terminals. In addition, the duration (expressed in years) of licences, which may be awarded, vary between a minimum of one year to a maximum of 25 years. In some jurisdictions the duration is stated as being negotiable or even unlimited. The Survey responses do not state whether the licence duration is applicable either to the licensing of MSS services, networks or MSS terminals.

2.4.2.4 Licensing Fees

Nearly all the countries surveyed indicate the need to pay fees⁴⁸ for the licensing of the MSS ground segment. With regard to the licensing requirements of FSS and BSS, the same global trends can be seen as for MSS. Overall, 35 of 37 countries surveyed required licensing for BSS, while 46 of 47 required licensing for FSS. It should simply be noted here that the comments with regard to the proposed need for licensing fees to be equal to, but not greater than, the costs that are imposed on the regulatory agency to issue the licence apply to FSS and BSS, as well as MSS. Regulatory transparency and responsible licensing fees are core aspects of an efficient, competitive satellite services marketplace.

Precise sums were not requested by the questionnaire, and this is an area that warrants more in-depth examination. (See also section 2.3.2 for analysis of harmonized European licensing fees.) However, the Survey did reveal that in a handful of countries, licensing the ground segment is stated as being exempted from payment of licence fees. It is submitted that the differentiation between the type of fees, which may be charged, improves transparency and makes it easier to determine that the administrative charges related to cost recovery are indeed cost-based, if it is the case.

Furthermore, separating administrative licence fees related to spectrum management from other administrative fees improves transparency and accountability. In this respect the prevailing practice is that administrative fees should not impose unnecessary costs on the telecommunications sector. The most transparent manner by which to achieve this objective is an explicit cost-recovery scheme involving the establishment of licence fees based on projected or actual costs of the regulator.

It is proposed that the fundamental rationale for licensing fees should compensate only for administrative costs to the Regulator, not be used as a source of real profit for the government and/or the regulator. Specifically, fees that exceed the average resource hours required to process an application inhibit or prevent access to telecommunications services. When fees are raised for the provider, fees are in turn raised for the customer, which is prohibitive to competition, fair prices and universal service offerings. Utilizing fees to compensate for administrative costs also helps to promote the independence of the regulatory agency, by freeing the agency from dependence on the government's general budgetary process.

In addition, it is proposed to publicize rules regarding satellite licensing and to clearly define fee structures for the public without discrimination. Companies assess expected costs before market entry, so clarity and availability of this is critical. This is so especially because the cost structure for satellite infrastructure and services is unique, when compared to other telecommunications sectors, particularly the high cost of placing

⁴⁷ The *IDRC Pan-Africa Satellite Survey* conducted in 2003/2004 revealed some cases where processing took up to two years.

⁴⁸ InfoDev: *Telecommunications Regulation Handbook Module 2* at page 2-17 – “The term license fees is used to describe different things. It may include one or more of the following:

- a) A fee paid as a premium or “rent” to a government or licensing authority for the right to operate a network, provide a service or use a limited resource, such as radio spectrum or numbers;
- b) Administrative charges to compensate a regulator for its costs in managing and supervising use of the radio spectrum; and
- c) Administrative charges to compensate a regulator for costs incurred in performing other regulatory functions, such as licensing operators, ensuring compliance with license terms, resolving interconnection disputes, establishment and supervision of other aspects of the regulatory framework, etc.”

space stations in orbit. Moreover, satellite footprints are cross-border in scope, and thus are not localized in any way. Therefore the implications of such cost structures on economies of scale and scope are to be both acknowledged and taken into account in assessing the effective competitiveness and resultant need for light touch regulation of such particular markets.

2.4.2.5 Commercial or Local Presence

When it comes to fair and open competition in individual markets for satellite service providers, today's regulatory state of affairs presents a mixed bag. To begin with the positive, of the 51 respondents, 42 say that they offer the same regulatory treatment for foreign and domestic space-segment operators.

The situation is still generally positive when it comes to prohibitions or restrictions placed on the use of the space segment when offered by foreign entities. In this instance, 39 of the 53 countries say that they do not restrict or prohibit foreign entities.

However, the picture is not nearly as positive when it comes to requiring space-segment providers to establish a commercial or legal presence in the country in which it wishes to offer service. Almost half of the surveyed countries – 24 out of 52 – require a local presence. As discussed above, requiring a local presence for space-segment providers only serves to increase costs and decrease efficiency, thus forcing higher prices on consumers.

A review of the requirements for network service providers shows that they face, overall, an even more restrictive environment than do the space-segment providers. Of the 55 countries that responded, 39 require network service providers to have a commercial or legal presence in order to provide service. There can be little doubt that some countries have faced the loss of potential satellite services due to the local presence that their current regulatory regime requires.

The situation was better in terms of whether conditions are placed on foreign ownership of providers of satellite-based services. Overall, 17 countries place conditions on foreign ownership of satellite service providers, while 36 do not.

Finally, the situation was most positive when it comes to satellite network service providers being allowed to transmit and receive signals to and from foreign satellites. Only eight of the 54 responding countries say that they do not allow such transmissions. Obviously, placing restrictions on transmissions to foreign-owned satellites will present a major regulatory hurdle for any commercial satellite operator looking to operate in one of these eight countries.

Regarding the procurement of mobile satellite space segment licences in particular, a local presence is required in a significant number of countries (12). For the procurement of mobile satellite ground segment licence, a local presence of Network Service Providers is required in a very high number of countries (35). Although the Survey results do not provide data on the need for the local presence of the MSS providers, based on supplementary sources of information this in fact tends to be the case in most jurisdictions.

The impacts and costs of establishing a commercial local presence can be very far-reaching and even more complicated is the payment of licensing fees discussed hereinbefore. Foreign ownership rules are capable of complicating the entire process of incorporating a company within any jurisdiction. In addition to the fact that even after a local presence is established, local partners in such arrangements may often gain inequitable benefits. It may be concluded that foreign ownership restrictions are generally contrary to the spirit if not the letter of foreign trade agreements including the General Agreement on Trade in Services – GATS – discussed in great detail hereinbefore.

From an infrastructure and technology perspective, the ground segment of a mobile satellite system comprises a network(s) of earth stations that link the satellites with the national and international terrestrial networks. These earth stations are usually operated and sometimes owned by a local earth station operator who would apply for the applicable authorizations or licences from TRAs.

However it must be noted that technological advances have led to the possibility of providing MSS even within those territories where earth stations are not physically located thereby negating the need for the local presence of earth station infrastructure. The state of the art in MSS operations allows for the possibility to support a global mobile satellite network and offer MSS on a global scale, based on one or two earth stations.

It is not therefore financially feasible to either construct several earth stations or to establish earth stations in each country, especially when the astronomical costs of carrying out this burdensome licensing requirement is considered.

Satellite telecommunications services are an important adjunct to terrestrial services and should not be deemed an infringement to terrestrial lines and restricted to hub installations. Similarly, the public interest is not served by geographic service restrictions. In some countries, competitive VSAT services are only permitted in “Technology Parks” or certain “Free Trade Zones”. If the services are beneficial within these geographic confines they also will bring important benefits to all regions within a country – especially rural areas, educational institutions and hospitals.

2.4.2.6 Space Segment Operators Providing Services Direct to End Users

A major issue for many operators is the ability to provide services directly to end users, without having to go through a local entity. This ability allows for the lowest cost for consumers, as well as the capability to roll out new services in a rapid fashion.

When asked if space segment operators are allowed to provide services directly to end users, 34 out of 54 countries said that they were. Europe led the way, with 16 nations allowing direct access, versus only two that do not. In the Asia-Pacific region, seven countries allow direct service to end-users, and two do not. The Americas have six nations that allow direct service, versus four that do not, while in Africa, six nations also allow direct service, while five do not. In the Arab States, only one country allows direct service, versus seven that do not.

2.4.2.7 Technology Neutrality

Modern telecommunications services are being provided to consumers using a number of different technologies, such as wireline, satellite and terrestrial wireless networks. In order to facilitate fair competition between these technologies, regulators must strive, to the extent possible, to make their regulations, licensing requirements and regulatory fees technically neutral.⁴⁹

For example, an authorized Internet service provider (ISP) would ideally be able to select either a terrestrial (wireless or wireline) or satellite system architecture to build its network, based solely on the relative costs and benefits of each available technology. In contrast, if discriminatory regulatory requirements make one or more of these technologies relatively unattractive, the ISP will likely be forced to choose the technology that is least encumbered from a regulatory perspective, rather than the technology that can provide the best service at the lowest price.

Authorized ISPs are the most prolific suppliers of “IP Telephony”, and it is precisely the restricted opportunities to offer such services that are so clearly indicated by the respondents to the *ITU-D Satellite Regulatory Survey*. Of the Administrations that indicated they did effect service-specific regulation for satellite-based services (17 of a total of 58 respondents), a significant proportion declared that they were against provision of “IP Telephony” for which there were the most stringent restrictions, or outright prohibition. In some cases the national Administration was open in stating that this prohibition was in favour of retaining the national telcos’ voice telephony monopoly.

In order to ensure that regulations are technology-neutral, Regulators are encouraged to limit their regulations and licensing requirements for satellite services, using them solely to:

- 1) Protect the public safety; and
- 2) Manage scarce public resources, such as frequency spectrum when there is a risk of harmful interference.

In line with the latter, and in contrast to the stated position of a number of Administrations on “IP Telephony”, a majority of the respondents (37) indicated that their regulatory regimes did not impose any

⁴⁹ “*Strengthening Access to Communications*”, Policy and Regulatory Guidelines for Satellite Services, 30 May 2003, GVF Regulatory Working Group, p.10.

service-specific regulations for satellite-based services, thus falling into line with the desired position of ensuring that regulation does not act against technology neutrality.

2.4.2.8 Special Applications: Satellite News Gathering

Satellite News Gathering (SNG) refers to the temporary, occasional, and short-notice, transmission of television or sound for broadcasting purposes using portable, or transportable, uplink earth stations operating in the FSS framework.⁵⁰ SNG equipment is defined by its ability to uplink video and associated sound, or sound-only programming; by its provision of two-way coordination (communication) circuits; and, by its ease of set-up and operation, typically by a crew of no more than two people in one hour. SNG sound-only programming may also be operated in the MSS framework.

Thus, SNG differs from most other forms of satellite transmission in a number of ways, but most notably in that the requirement for SNG is usually identified only days, and possibly hours, before transmission. Similarly, the requirement lasts only for a fraction of a day, a few days, or at most, weeks. Despite this distinction, the SNG operator must comply with the regulations of the host country and with a number of procedures that are designed to ensure the proper management and protection of the space segment and frequency spectrum.

The SNG operator must have access to temporary agreements and/or authorizations in a timely and cost-effective manner. The regulatory framework within which an SNG operation can effectively take place must quickly meet the operator's requirements in respect of frequency authorization, coordination with the space segment provider, and information regarding tariffs and administrative costs, together with permissions for supporting lines of communication. It is the occasional and temporary nature of these requirements that necessitate expeditious approval for the activation of portable earth stations.

a. Space Segment

a.1 Orbit spacing: Satellite systems may use orbit spacings of two degrees. For SNG operations, the particular satellite configurations in the orbital arc appropriate for the required circuit must be taken into account. Some administrations require that transmitting earth stations have an antenna radiation pattern designed to ensure that side-lobe peaks do not exceed $G = 29 - 25 \log q$ (dBi), at least in the direction of the geostationary orbit.

a.2 SNG Frequency Bands: All frequency bands allocated to uplinks for FSS may be used by SNG systems. However, since an SNG earth station requires a small antenna for high portability, the operating frequency band is extremely important. At present, the 14 GHz band is most commonly used, in part because the technology is sufficiently mature. It may be possible to carry SNG on a shared basis with other TV signals, and communication channels, depending on the satellite transponder bandwidth available and its intermodulation characteristics.

a.3 Satellite G/T: For normal operation it is desirable to take account of satellite G/T values of 0 dB (K-1). For maximum flexibility SNG earth stations should be capable of working to satellite G/T values as low as -6 dB(K-1), even if this involves lower performance. In the event of operation in the 6/4 GHz band, global beam values of G/T as low as -12 dB(K-1) can be encountered.

⁵⁰ As suggested through a liaison between Study Group 1, Question 17/1, and ITU-R Working Party 4B, this section is derived from ITU's *SNG User's Guide Online*. Of particular note for the attention of Regulators, the online resource includes a standardized set of procedures required for the temporary authorization of SNG transmissions (<http://www.itu.int/ITU-R/study-groups/sng/index.html>).

In addition, and as suggested through a liaison between Study Group 1, Question 17/1, and ITU-R Study Groups 1, 4, 6 and 8, Working Party 6S noted the relevance of a Reference Manual on Satellite Broadcasting – 2000 (Edited by John Batchelor, ABU), which addresses most aspects of SNG, as well as satellite platforms, sound and TV Broadcasting, earth stations, link budget calculations, planning aspects and makes references to WRC-2000 decisions on BSS. See also [6] for further related ITU-R Recommendations, Reports and resources.

a.4 Space Segment Booking: The SNG operator must have a quick and clear understanding of what space segment will be available in a timely manner (e.g. less than 24 hours), principally regarding transponder characteristics, amount of bandwidth and power, and earliest available time of access.

b. Ground Segment: Earth Station Approvals

Earth station approval is necessary to allow the responsible body to ensure compatibility of the SNG terminal equipment with the space segment. Administrations are urged to assess the possibility that SNG terminal equipment whose technical performance has been approved by the space segment providers be accepted on a uniform basis. A technical report demonstrating the measured performance characteristics of SNG terminal equipment should be available to the Administration. At a minimum, the report should document:

- Transmit gain as a function of frequency
- Transmit off-axis gain
- Transmit main beam e.i.r.p.
- Transmit beamwidth and polarization
- Transmit main beam spectral density for the worst 4 kHz
- Transmit off-beam spectral density for the worst 4 kHz
- Maximum energy dispersal (where required)
- Receive G/T as a function of frequency
- Cross-polarization isolation
- Pointing accuracy performance
- Receive and transmit frequency agility within the operating bands
- Spurious emissions (in-band and out-of-band)
- Manufacturers' model numbers, modulation characteristics and frequency stability
- Other technical characteristics – part of the SNG standard used in the host country

b.1 Uniform Operating Procedures and Temporary Authorization for SNG

Successful application of SNG technology requires uniform agreement on standard technical approaches (see Recommendation ITU-R SNG.722) and recognized operating procedures. The frequency and number of programme sound channels as well as the number of auxiliary, data and coordination simplex and duplex channels should be uniformly adopted.

b.2 Frequency Assignment and Coordination: Frequency coordination procedures are derived from international and national regulations. A necessary prerequisite of managing radio interference, and thus enabling the authorization of SNG terminal equipment, is the coordination between terrestrial radio services and the SNG operator. For reasons both of portability and ease of coordination, the use of the higher frequency bands (e.g. 14 GHz and 30 GHz) is beneficial. Part of the 14 GHz band is not shared with the fixed service using radio-relay systems, thus rendering easier SNG coordination. In some countries, including the United Kingdom, Germany, France and Italy, the 14 GHz band is used for fixed and other terrestrial purposes, rendering coordination essential.

b.3 Support Communications: To facilitate effective SNG operations, support communication facilities may be required, including: point-to-point microwave links, two-way simplex/duplex radio, wireless microphones and mobile satellite terminal equipment for voice and data links. In the case of radio-related services, temporary authorizations to use the necessary frequencies at the intended location may be required. These also must be obtained in a timely manner.

b.4 Designated Point of Contact: Each Administration – or other relevant organization – should, if possible, establish a designated point of contact to be available for approaches from SNG operators on a 24-hour, seven-day-a-week basis. The designated point of contact should be available to provide assistance in the temporary authorization of SNG earth stations owned by foreign operators – specifically to act as

intermediary in the exchange of information necessary for authorization procedures and frequency coordination, and to provide guidance regarding the administrative procedures of the host government. Reference [4] provides web access to a summary on the points of information exchange between the SNG operator and the host administration. Or for more information, refer to the ITU website at the following URL: <http://www.itu.int/ITU-R/study-groups/sng/index.htm>

2.4.3 Spectrum

There is still considerable variability among ITU Member Administrations in respect of spectrum-related regulatory policies. At the same time, it is encouraging to note that most *ITU-D Satellite Regulatory Survey* respondents (more than 85%) indicated that their Administrations have in place a national table of frequency allocations and/or national spectrum management plans including satellite service allocations and slightly more than half indicated that such information was available either electronically (via email) or on-line. Also, almost all respondents indicated that standard BSS, FSS and MSS services were subject to licensing and that some sort of licensing fee would be imposed as part of the licensing process.

About three-quarters of the respondents indicated that they generally have the same regulatory treatment for foreign and domestic satellite operators, while one-fourth of the survey respondents indicated that use of space segment offered by foreign operators was in some fashion restricted or prohibited, and an additional eight Administrations indicated that some additional authorization for foreign space segment operators of coordinated and notified satellite systems would be required.

Thus, although the underlying trend line of these responses is encouraging, there is still present some degree of acceptance of the notion that provision of space segment services by foreign licensed satellites somehow warrants differential treatment than that accorded to space segment services provided by domestically-licensed operators.

2.4.4 Transparency

Transparent and fair practices are critical to the success of satellite regulation. Parties benefit in multiple ways.⁵¹ Regulators use transparency to safeguard their legitimacy and efficiency. Regulators also obtain information from the regulated industry and other interested parties that they need in order to base their decisions on all relevant facts and diverse views. Operators and service suppliers depend on transparency to ensure that their concerns are heard and that they play a role in shaping important decisions.

This was confirmed in *“Feedback to Regulators from the Private Sector”*, a study presented by CompassRose International to the ITU Global Symposium for Regulators held in Hong Kong in December 2002, which stated categorically that companies look at the big picture of the regulatory environment, not just specific regulations. Transparency and responsiveness matter. Companies varied in their methods for assessing markets, with some looking first to the overall environment and others to more specific regulations. Despite varied responses on the ways in which the markets are analysed, *“all companies in the survey said that transparency of regulatory processes and responsiveness of regulators are extremely important factors in their willingness to enter and stay in markets.”*

For transparency to have its full effect, there must be systems and processes in place to allow regulators to gain valuable information, consult all stakeholders, render their decisions, and justify them based on the public interest and the facts provided to them, with evidence of transparency and unbiased decision-making.

With two exceptions, all respondents to the *ITU-D Satellite Regulatory Survey* indicated that their law, decrees and legal instruments were publicly available and in many cases are available on the web. Sixty-eight per cent of the respondents indicated that their licence application forms were available, and in the majority of cases can be found on the web.

2.4.5 Type Approvals

The current state of type approvals and equipment registration requirements varies across the globe. In general, restrictions tend to be higher in the developing world as compared to the developed world. However,

⁵¹ *Trends in Telecommunication Reform 2002.*

all regions could do more to harmonize their approaches to type approval and equipment registration, in order to lower costs to consumers and enable more cost-effective access to satellite services.

The results from the *ITU-D Satellite Regulatory Survey* on satellite services reveal that a majority of nations continue to require type approval for terminals (44 of 56 respondents), while a slight majority no longer require type approval of terminal components (29 of 55 respondents).

When broken down by region, the Asia Pacific region was the least restrictive, with five nations requiring type approvals, while three did not. Asia-Pacific was followed by Europe, with 11 nations requiring type approvals of terminals, and six not. After that, things become much more restrictive, with the Arab States having seven nations versus one, the Americas having 10 nations versus one, and finally, Africa with 11 nations requiring type approvals versus one nation that did not.

The situation was much more positive when it came to allowing the self-declaration of conformity by manufacturers. Overall, 42 of 56 nations allowed self-declaration. The exceptions to this trend were found in the Americas, where only six of 10 nations allowed self-declaration, and the Asia-Pacific region, where four nations allowed it and three did not.

Finally, the situation was more restrictive in terms of requiring the registration of equipment. Overall, 38 of 56 nations required registration of equipment.

2.4.6 Gender Programmes

With regard to matters of gender in telecommunications, the facts speak for themselves: Women are still vastly under-represented in government, business, political and social institutions; men still hold most of the management and control positions in telecommunication companies and regulatory or policy making bodies; regulatory decisions are made without any gender-related impact analysis; service licences are attributed to companies without equal opportunity policies and controlled mostly by men.⁵²

Thus, when *ITU-D Question 17/1* was launched during WTDC-2002 in Istanbul, Turkey, an examination of gender considerations was called for. When the questionnaire for the *ITU-D Satellite Regulatory Survey* was sent to Administrations, they were asked to address the following: “How do you see satellite services as a tool for promoting business assistance programs to assist women entrepreneurs?”

Of 63 responses, 41% answered the question. Many of these expressed a positive attitude toward using satellite services to promote women entrepreneurs (words such as “vital”, “very promising”, and “very encouraging” were prevalent). Further, the respondents emphasized the importance of satellite systems in rural communities where infrastructure was scarce and where it was assumed that there was a large population of women who would not have access.

In answering the question, however, less than 1% of the respondents specifically mentioned *how* satellite services could be used. Some of those that did respond included the following:

- **Bahrain:** “In Bahrain, the availability of any technology that will assist minority groups to communicate with other groups, and businesses generally, will be of great benefit. The general shortage of international bandwidth in the Gulf Region is a factor holding back the development of many businesses, and in particular new entrepreneurs. New bandwidth delivered almost overnight through the use of satellites will provide a valuable tool for these people and promote competition from traditional suppliers of bandwidth in the region. The issue of women particularly as entrepreneurs in the Gulf Region is perhaps constrained by issues other than the delivery of satellite services.”
- **Nepal:** “VSAT-based online booking/storekeeping/ordering system utilization will help women entrepreneurs.”
- **Papua New Guinea:** “Satellite services will enable women entrepreneurs to make new contacts, explore new markets, and conduct business both within the country and internationally.”

⁵² *Gender Aware Guidelines for Policy Making and Regulatory Agencies*, ITU Task Force on Gender Issues, Prepared by Sonia N. Jorge.

Clearly, these and other responses suggest that a more detailed examination is needed. Answers to an in-depth series of related questions could be posed to relevant parties, including lines of inquiry such as:

- Since satellite services enable better connection of ICTs in telecentres or community business centers, how might this access to communications be specifically applied to promoting business assistance programmes to assist women entrepreneurs?
- FSS systems are sometimes used to enhance the coverage of terrestrial mobile networks and provide PSTN links, while MSS promises ubiquitous mobile service via satellite. Can such services serve as an enabling tool for would-be women entrepreneurs and, if so, how?
- BSS and FSS systems have been proven effective in providing distance education. What can regulators do to facilitate women's access to and use of satellite-delivered resources? (For example, will the regulations governing satellite services be more flexible than fixed-line connectivity?)

3 Implications for the Future

The public-policy principles discussed above and below are intended to provide a clear guideline for Administrations seeking to establish a licensing and regulatory structure for satellite services, or to reform existing regulatory structures in order to facilitate competition.

What has been shown by the *ITU-D Satellite Regulatory Survey* is that, first, the regulatory community is, sector-by-sector, introducing liberalized approaches to satellite telecom and broadcasting systems and services. Second, while these approaches vary considerably from Administration to Administration, they are all horses running in the same course.

There is a general recognition among Regulators that regulation is not an end unto itself and, indeed, that without more progressive approaches the price to be paid is lower availability of communications, higher prices and lower quality of service.

Further, there is an acknowledgement by Regulators that responsibility resides with them in the short term. Liberalization, licensing, spectrum, type approvals, enforcement, gender awareness... these top the list of key areas to be addressed in order to achieve the aims of the World Summit on the Information Society (WSIS) and to bridge the "Digital Divide". The following section is meant to serve as a guideline for Regulators committed to acting upon those key areas.

3.1 Liberalization/Competition

The trend towards greater liberalization and increased competition clearly represents the wave of the future. At the same time, it must be understood that they are not ends in and of themselves, but are actually the means to a greater end – which is to provide all users around the world with access to the most innovative and affordable telecommunications services possible.

The track record of liberalization and competition to deliver on this promise is fairly impressive. Particularly in the developed world, this past 30 years has witnessed the emergence of an array of new telecommunications services and applications beyond anyone's imagination. Yet we know there is still a significant gap (albeit starting to diminish) between the applications available in developed as contrasted with developing countries.

To accomplish their goal, the twin engines of liberalization and competition actually work hand in hand. In the case of competition, there are two essential attributes at play. The first is that of quality (or innovation) – to prevail in the marketplace a supplier of services or products needs to provide a higher quality product than his/her competitor, something that is more versatile, faster or easier. The second is that of cost – competitors win when their services or products cost less than those of their competitors.

Liberalization then serves as the enabling mechanism permitting competitive forces to function as envisioned. Unnecessary regulation takes its toll in various ways, stifling competition along the way. Regulation can serve as an impediment to competition, as an out-and-out barrier to entry in certain circumstances and as a disincentive in others. Unnecessary technical standards or licensing requirements can frequently retard the innovation necessary for competition to advance. It also extracts a considerable price –

the cost of complying with unnecessary regulatory requirements, whether in the form of increased expense for compliance or fees intended as general revenue generators, simply increases the cost to the ultimate user, because that is where this cost is ultimately borne.

A second, even more insidious cost is that of time, as unnecessary or excessive regulatory frameworks slow advancement down, thereby delaying benefits. And, as we have seen with certain technological advances, timing is critical to market success – there are certain windows of opportunity and if they are missed, then a product has no chance to succeed. While this may ultimately be the risk assumed by the entrepreneur, it nonetheless has a corollary societal cost as well, by consuming capital resources that are then no longer available to support other endeavours. What general lessons can be extracted from this by telecom regulators? The overriding lesson is to focus on the specific purpose(s) that the regulatory framework is intended to accomplish, and narrowly tailor the framework to that purpose, in the most unobtrusive and transparent manner possible.

Given the inherent characteristics of the telecom (generally) and satellite (specifically) business sectors and the way in which they utilize spectrum resources, there are certain basic aspects where regulatory control is absolutely essential. Unfortunately, past practices have often over-shot what is truly and minimally necessary to serve this purpose.

- 1) **Simplify as much as possible.** For example, if there is no need to regulate based on distinctions between domestic and international satellite services, then do not regulate on that basis;
- 2) **Continually review the regulatory framework that is in place for improvement.** As competition emerges, less regulation may be necessary. The regulatory framework that seems important today may not be necessary three years from now;
- 3) **Be sensitive to hidden costs – including time.** Regulatory structures that are unnecessarily complex extract their greatest price not in terms of money but in terms of time; and finally
- 4) **Do not use the regulatory process for other purposes,** including, if possible, revenue generation.

3.2 Licensing

Licences provide a country with a useful tool to ensure safety and keep up to date with technology developments and demands. Licence requirements and their associated costs vary worldwide, but a significant trend has emerged with the countries adopting state-of-the-art policy approaches. This trend is gearing towards a more simplistic, publicly available approach that is attractive and accessible for satellite operators and foreign companies.

In applying satellite licensing in the future, the following practices are recommended:

- **Participate in One Stop Shops:** Administrations are encouraged to either participate in existing regional one-stop-shop (OSS) satellite licensing programmes, or support the formation of new ones. OSS programmes generally consist of a central database and/or web portal where applicants can access the satellite licence application forms and relevant contacts of every administration in the particular region. OSS licensing efforts are already under way in:
 - Europe where a CEPT OSS initiative designed for 46 Administrations has been launched at www.eto.dk
 - The Americas, where CITELE, the telecommunications entity of the Organization of American States, has created a one-stop VSAT licensing information database for the Americas at www.citel.oas.org/pcc3_old/vsat/vsat_information_of_licensing.asp
 - Africa, where TRASA and WATRA have resolved to establish One Stop Shops, and the East Africa Community and the African Telecommunication Union which are considering involvement in establishing OSS satellite licensing solutions.
- **Enhance Transparency:** Rules applicable to satellite services should be transparent, non-discriminatory, and widely publicized. Applicable rules should be readily available to the public and industry preferably on the Internet, or through the regulatory agency or ministry.

Contact information with multiple persons listed should be clearly posted to facilitate processing. Trained personnel should be available during business hours to respond to public inquiries.

- **Permit Regional Licensing:** In regions of the world where sovereign nations form regional economic or telecom alliances, a satellite service provider licence could be recognized on a regional cross-border basis.
- **Licence Only When Essential:** Once facilities are licensed for use, no further licence should be required. Circulation of visiting mobile terminals that do not create interference should be allowed in order to encourage global roaming. Licence requirements can be limited to those instances where regulatory review is necessary to prevent harmful interference. Mobile terminals and many beneficial FSS and BSS uses do not raise spectrum or policy concerns and should be permissible without a regulatory licence. One example is receive-only (R/O) terminals which, regardless of antenna size or the satellite utilized, do not cause interference. R/O terminals should be treated similarly to satellite terminals used for personal television purposes. Another example is terminals that, assuming they operate in a primary frequency band, do not cause harmful interference.
- **Consider Technology-Neutral Licensing:** In order to facilitate fair competition between different technologies, Regulators should strive, to the extent possible, to make their regulations, licensing requirements and regulatory fees technically neutral. In order to ensure that regulations are technology-neutral, Regulators should strictly limit their regulations and licensing requirements for satellite services, using them to protect the public safety and manage scarce public resources, such as the frequency spectrum.
- **Avoid Bilateral Fees:** Regulations should be clear that users and service providers have the right to own and operate earth stations independent of the monopoly operator. The regulator needs to be independent from the operator. While some countries still have not established autonomous licensing bodies, the practice of bilateral arrangements warrants close scrutiny. During periods when regulatory frameworks may continue to function on the basis of bilateral agreements, these should be non-discriminatory and cost-based. While the bilateral PTT framework is not advisable, if it is in place it should not exact “landing fees” on satellite users in the country. Generally these bilateral fees raise service costs and do not add value for the customer.
- **Apply Minimal/No Fees:** While it is reasonable for applicants to absorb administrative fees, regulatory fees should reflect actual administrative processing costs.
- **Optimize Application Processing:** Establish reasonable time periods – 30 to 45 days after an application is filed – by when the regulator should respond. Where public comment is appropriate, the application should be placed on public notice as soon as possible. Further, in limited circumstances, where timely licensing is not feasible, temporary authorizations may be granted.
- **Eliminate Local Presence Requirements:** Do not include such a requirement in national or regional satellite service licensing procedures. The licence itself may establish a jurisdictional nexus to a regulatory authority.
- **Implement General Authorizations:** A light touch, enabling regulatory framework, that focuses on a harmonized set of conditions based on general authorizations is instrumental for the further development of satellite services. This entails in particular that:
 - Use, movement and availability of terminals that are licensed in their country of origin and introduced into the market may not be subjected to a similar licensing requirement in any other country;
 - The authorizations for gateway earth stations and the space station issued by the administrations of the country where the gateway is located and the home country of the satellite operator respectively, could be mutually recognized without requirements for any further formalities;

- The decision to locate a gateway in a certain country should be based solely on a commercial decision of the operator rather than being a regulatory requirement, unless it is justified;
- Satellite communication services for satellite users involved in temporary uses, including news coverage or demonstrations require an expedited approval process that many jurisdictions lack. National Administrations should implement expedited processes for special cases.

3.3 Spectrum

As spectrum demands continue to increase on a global basis, it will be increasingly important for all Administrations and all satellite operators cooperatively to pursue ways of ensuring that maximum utilization of available spectrum resources can be achieved. This principle applies with particular force for satellite systems operating in designated bands, whether intended for FSS, BSS or MSS use. As such, the regulatory regimes in place specifically need to focus on legitimate spectrum management concerns, particularly avoidance of harmful interference.

In this vein, there are a number of interesting trends occurring around the world of considerable relevance. Perhaps one of the most noteworthy is the current spectrum policy review now taking place in the United States. Although the focus of that review is broadly directed to spectrum policy generally (and not in any particular way focused on satellites), it is nonetheless significant because it has as its underpinning the notion that excessive spectrum regulation not only contributes to spectrum scarcity, but also results in significant portions of spectrum lying fallow. The clear lesson to be drawn from this is that, in the context of spectrum-oriented regulation, over-reaching is undesirable and less regulation is preferable to more unjustified regulation.

At the same time, a word of caution is also in order. One discernible trend in the spectrum regulatory reform movement in some countries is increased interest in or consideration of the use of so-called market-based allocation methodologies (i.e., auctions and/or trading) as a preferred means for spectrum allocation decisions, as well as expanded opportunities for use of spectrum-related fees in connection with licensing activities. This is based on the rationale either of promoting greater efficiency in actual spectrum utilization and/or exploiting creative ways of generating additional revenue sources for Administrations.

Irrespective of how this may (or may not) work in other areas, given the regional/global character of the provision of satellite services, reliance on auction-based allocation mechanisms can be fraught with considerable difficulties. At a minimum, it can subject a global or regional satellite operator to considerable uncertainty and vulnerability in its ability to provide service. Even in those instances where Administrations seek to employ such policies only with respect to domestically licensed satellite operators, such practices inevitably lead to concerns about the absence of a level playing field between domestic and foreign operators, with the consequence of increasing pressure for restrictive rather than permissive market access policies imposed upon satellite operators.

Similarly, while so-called cost-recovery principles for spectrum-related regulatory activities may be difficult to question, the perception of spectrum as an attractive new source of governmental revenue generation poses significant concerns. At the end of the day, it is effectively nothing more than a tax to be paid by the ultimate end user of any telecommunications service provided.

The radio-frequency spectrum is a scarce resource and it is therefore important that national Administrations provide access to it for all radio communications users in an optimized way considering that the free circulation and use of radio equipment/terminals is indispensable for the development of satellite communication services in the present global economy. Limiting spectrum availability for the satellite industry has the unfortunate effect of hampering services to remote regions of the world where satellites constitute a critical telecommunications link.

It is recommended that Administrations:

- **Maintain Satellite Spectrum:** The satellite industry can only realize its potential through continued availability of spectrum and entry to national markets worldwide;

- **Preserve Primary Allocations:** There is need to ensure that existing ITU primary frequency allocations to satellite services are maintained for delivery of innovative satellite services worldwide and where necessary new allocations to satellite services are actively supported by national Administrations.

Placing stringent mitigation techniques on satellite facilities creates market-access barriers and discriminates in favour of other technologies.

3.4 Type Approvals

Approximately USD135 billion in telecommunications and information equipment is affected by type-approvals processes throughout the world each year⁵³, a significant percentage of which is satellite-based systems. As noted earlier in the Report (subsection 2.3.1), some Administrations require type approval testing and certification for satellite terminal equipment already tested and certified by other Administrations.

Governments have taken steps to eliminate this redundancy, because there is a growing recognition that it unnecessarily adds cost and delays to the provision of communications services. Mutual recognition agreements (MRAs) – whether on the global level through the GMPCS-MoU or through regional MRAs (such as APEC and CITEL) – provide a mechanism whereby simplified procedures can be applied.

Therefore, Administrations are encouraged to:

- 1) **Mutually recognize** type approvals of GMPCS terminal equipment;
- 2) **Actively participate** in regional mutual recognition agreements (MRAs); and
- 3) **Eventually eliminate type approvals**, aiming instead for the implementation of self-declaration of conformity for manufacturers.

3.5 Regulating Forms of Service

Satellite networks can be effectively used to provide all forms of telecommunications services. As a result, Administrations that regulate “forms of services” often apply those regulations to satellite operators.⁵⁴ For example, some countries still maintain limits on the number of carriers that are permitted to provide international voice traffic. Other countries restrict the provision of private-line resale services, call-back services, or international carriage of “IP telephony”.

Countries are encouraged not to place any restrictions on the number of international telecommunications services.

It is recognized that some countries use revenues from international telecommunications services to help subsidise and reduce the costs of local telecommunications services. These implicit universal support mechanisms can still be maintained in a fully competitive market, however, through the imposition of universal service fees on international carriers, or through interconnection requirements.

In any event, any such restrictions that are imposed by a country should be technology-neutral – applying equally to satellite-based and wireline telecommunications service providers. Since satellite networks can be used to provide all forms of telecommunications services, no country should limit the number of satellite licences that are issued in an attempt to restrict certain types of telecommunication services.

3.6 Enforcement

Most countries have little difficulty securing enforcement of telecommunications laws, regulations and licensing conditions, including regulations for the satellite sector. In order to maximize industry compliance,

⁵³ USTR announcement made on the occasion of the conclusion of a Mutual Recognition Arrangement (MRA) for telecommunications equipment among members of the Asia-Pacific Economic Cooperation (APEC) forum, 15 September 1998.

⁵⁴ “*Strengthening Access to Communications*”, Policy and Regulatory Guidelines for Satellite Services, 30 May 2003, GVF Regulatory Working Group, p.10.

laws and regulations should be designed in recognition of the fundamental characteristics of the business community.

Like all mainstream businesses, satellite and other telecommunications service providers are highly risk averse. This means that business ventures seek, above all else, predictability and consistency. A rational business would prefer to invest in a country where it is likely to receive a modest, but predictable and consistent revenue stream, as opposed to a country where the company might receive an initially large, but unpredictable and inconsistent revenue stream.

Recognizing these basic principles, countries are encouraged to:

- 1) Develop laws and regulations for the telecommunications sector that are objective (non-discriminatory), easily understood (transparent) and highly predictable;
- 2) Such laws and regulations should also prohibit arbitrary and discriminatory actions. For example, all mainstream telecommunications service providers would be willing to pay an annual licensing fee to provide satellite services in a country, as long as the fee was reasonable and reasonably consistent from year to year.

Mainstream businesses tend to avoid investing in countries that lack objective, transparent and predictable regulatory structures. When mainstream businesses avoid investing in certain countries and regions, a gap develops in the chain of supply and demand. Either a certain percentage of the demand for telecommunications services is not met by existing suppliers, or the demand is met, but at much higher prices than would exist in a competitive market.

A significant gap between supply and demand encourages the growth of non-mainstream businesses, which may be willing to provide services in non-compliance with domestic laws and regulations.

The most expedient way for governments to discourage the development of non-mainstream businesses is to create legal and regulatory conditions that are conducive to the mainstream business community. When given the option, consumers – particularly business customers – will purchase services from mainstream business as opposed to non-mainstream businesses. Furthermore, mainstream businesses are often willing to help the government regulate and “police” the participants in an industry segment in order to help eliminate unfair competition from non-mainstream business ventures.

As a result, the best way to ensure compliance with laws, regulations and licensing conditions is to establish a strong mainstream business community through the adoption and use of objective, transparent and predictable laws, regulations and licensing conditions.

3.7 Gender-Aware Guidelines

The *ITU-D Satellite Regulatory Survey* responses highlighted the need for detailed guidance on the subject and, for that, the ITU Task Force on Gender Issues has prepared the “*Gender-Aware Guidelines for Policy-Making and Regulatory Agencies*”. These were designed to assist Regulators in considering the gender dimension in their work and especially in setting policies and regulations that take into account the needs of users, both women and men. They are no less applicable to the application of satellite regulation.

The Gender-Aware Guidelines point out that, “so-called gender-neutral policies or rules are not enough”. What is needed is to ensure that “gender analysis becomes an integral part of licensing and regulatory activities. Successful implementation... requires the development and promotion of new policies within the institutions seeking transformation into a gender-aware environment, e.g., acceptance of these guidelines, in total or in partial form, as part of the institution’s rules of conduct. The process of implementing these guidelines should also be conducted with full participation of all parties, and, if possible, with participation of gender experts (e.g., from Gender Units or consultants in the area) to ensure full understanding of the issues and avoid unproductive resistance to the process.”

Included among the Guidelines are the following action items:

I. General

1. Facilitate and promote the establishment of a Gender Unit within the Regulatory Agency, the Ministry and/or as an inter-agency effort;

2. Review, revise or develop new regulations, circulars, issuances and procedures to remove any gender bias;
3. Promote gender analysis as part of the policy process;
4. Develop and establish systems to gather gender statistics;
5. Dialogue with other national entities.

II. Human Resources

1. Ensure equal hiring opportunities for all women and men, regardless of race, ethnicity, class and age;
2. Ensure that a certain percentage, targeting 50%, of all supervisory and management positions are occupied by women;
3. Develop campaigns to attract women professionals (particularly for technical and decision making positions);
4. Develop and ensure the existence of appropriate support systems for professional women and men;
5. Ensure that there are no wage disparities among the genders and establish a policy to eliminate any such gaps.

III. Training

1. Ensure equal access to training opportunities;
2. Promote gender-awareness training opportunities for women and men;
3. Support technical and management programmes that train women professionals and create internship programmes with educational institutions.

IV. Licensing Activities

1. A certain percentage of licences should be awarded to woman-owned companies and/or companies with women in top management positions;
2. Develop and market licensing procedures where potential women owners can have access to the information;
3. Promote the development of business assistance programmes and partnerships with expertise in assisting women entrepreneurs;
4. Develop licence award criteria based on social responsibility of the business as well as universal access objectives of the proposed venture;
5. Ensure that licences awarded contain certain conditions to promote gender analysis and mainstreaming for the particular company.

Use of the Guidelines themselves should be the rule for policy and decision makers in satellite and, for that matter, all regulatory matters. They can be used in two ways: 1) as a checklist of issues to consider when making decisions; and 2) a consultative document to provide ideas on how to mainstream gender in regulatory and licensing agencies. The guidelines serve as a complement to existing human resources and licensing policies in place. They are not intended to be an exhaustive list of rules and should not be used as such. (For a complete copy of the Guidelines, go to www.itu.int/ITU-D/gender)

4 Suggested Next Steps for Consideration by Study Group 1

By its very nature, the satellite industry is able to contribute to the provision of telecommunications services that bring nations and regions together. These goals can only be achieved, based on a rational and optimized regulatory structure. In this regard, the Report has revealed several priority areas that warrant follow-up action through *ITU-D Question 17/1*, to the extent that budgetary resources are available:

- **Provide Access to Regulatory Information/Requirements:** As has been shown by the Report, transparency is not only essential for providing expanded access to services, but is also

instrumental in promoting harmonization. Regional and subregional groups of Administrations that do not as yet have a web-based facility to provide access to their satellite regulatory requirements should be engaged and steps taken by BDT Programme 1 to facilitate the establishment of such resources. In related action, making the *ITU-D Satellite Regulatory Survey* responses publicly available for such purposes would be a potentially immediate and valuable first step, assuming that prior permission is provided by the Administrations that responded.

- **Develop Capacity-Building:** Regulators' efforts to develop effective satellite regulatory reforms are greatly aided by having the opportunity to share experiences with their regulatory counterparts from other Administrations, for example, satellite-regulatory seminars, workshops and sessions could be held in conjunction with related events around the world. This could be done by *ITU-D Question 17/1*, with support from Regulatory Reform Programme and the regional Centers of Excellence, which are part of the Human Resources Development Programme.
- **Conduct Second-Level Analysis:** Several areas that warranted further study by *ITU-D Question 17/1* Rapporteur's Group were brought to light, but two in particular urgently need to be understood more clearly through the work of ITU-D Study Group 1:
 - **Satellite Regulatory Costs:** The Report has shown that each country's satellite regulations vary considerably and that one of the major barriers to cost-effective service provision is the wide variety of fees, levies, duties and taxes that are imposed on satellite systems and services. An analysis by the Rapporteur's Group of current practices should be conducted to serve as a benchmark for successful practices.
 - **Domestic vs. International Services:** The Survey revealed that numerous Administrations are ambivalent regarding whether/how they should distinguish between domestic and international services when regulating satellite communications. The question has become particularly acute with the advent of voice over IP, and an in-depth examination of the subject should be undertaken by the Rapporteur's Group to provide guidance to the regulatory community.

5 Conclusions

This Report is linked closely to market access opportunities. Opportunities are defined as potential benefits to those seeking market access and those countries enriched by an influx of technology, applications and services. This is critical for satellite service providers. Importantly, Regulators have seen time and again that where they have made regulatory progress for the satellite community, this has either benefited the terrestrial players at the same time or to the same extent or has advanced their cause several steps.

Another conclusion is that while competition in telecommunications markets is invariably regarded as a good thing for business generation and socio-economic growth, there is not a pre-packaged off-the-shelf solution that is going to work everywhere. Although there are certain core principles when aiming for competitive markets, regulatory solutions need to take account of all relevant local factors including most obviously the position of the existing market players and the needs of consumers but, importantly, taking into account cultural and economic and political differences. The *ITU-D Satellite Regulatory Survey* shows that it is possible to identify a number of successful practice elements that may be packaged in different ways so as to serve individual markets and take account of local requirements. Thus achieving some economies of scale.

So what should Regulators be aiming for? They should support the WTO process and do all they can to promote the concept that satellite services should be *included* in WTO commitments. Aside from a regulatory tool box the WTO is an ambassador for competition. It has been interesting to watch the shifting patterns since the mid 1990s. At that time, most Least Developed Countries regarded the introduction of competition in their telecom networks as a sinister plot to bypass their revenues and generate extra money for the fat cats in the West. The fat-cat paradigm.

Now the regulatory community sees an increasing realization that there really is something in it and that a dynamic competitive environment which allows market entry and which is regulated in a way which is *fair*

to all bears all sorts of fruit. This has never been more true than today with Internet and broadband, and mobile applications on offer. New ways to capitalize on ICTs are coming to light all the time including critical life-saving or life-enhancing applications.

WTO is, however laudable, not the end of the story. Domestic regulation needs to be upgraded so as to provide for a pro-competitive environment and that means that Regulators must be willing to champion change. It follows that it does not suffice to say that such changes are desirable or necessary. It has to be properly explained. That implies education and training where ITU-D can and does play a key role. But can this be improved and better coordinated with other agencies? Yes.

The “Digital Divide”

Well it had to be mentioned. Many, maybe most and possibly all Regulators know that, if we are talking about developing countries, there can be no better (and in many cases no other) way of bridging the Divide than to use satellites. Satellite networks can provide turn-key solutions which get around all the problems associated with reaching people in remote and rural areas and helping them to connect across unimaginable distances. Or at least they have that potential.

But how do we get around the fact that those most in need of ICTs can not afford the service (any kind of communication service) and lack the language and technical skill to access the data? This comes down to the orientation of the governments concerned and is linked with the earlier point about educating Regulators. Communications have the capacity to help drive up business opportunities and generate wealth coupled with almost limitless potential as a tool for education and health and safety. Regulators need to be prepared to seed fund ICT projects where there is no market solution possible but that is not an easy one to sell. Almost as difficult is promoting domestic regulatory reform so as to open the door, not just to foreign operators, partners, and investment but to multilateral aid sources.

Regulatory Reform

Satellite regulatory reform has and will continue to be promoted substantially. This, in turn, will facilitate expanded access to cost-effective digital communications services throughout the world. Stronger socio-economic development will be realized as a direct result in the form of enhanced public services – including health through telemedicine, education through distance learning and universal access through rural communications – as well as stimulating private-sector activity by attracting foreign investment, creating jobs, encouraging exports, and much more.

To accomplish this, Regulators and satellite operators must work together to promote the ideals of: Expanded access to services, competition and lower Prices, technology innovations, efficient use of public resources, fairness, consistency, timeliness and transparency all within the satellite telecommunications market.

The real value of this Report lies not in the collection of the data itself but in the use that is made of it. Specifically, the opportunity to view the evidence supporting the need to getting the formula right for satellite communications in all countries.

6 References

- [1] *Laws and Regulations Applicable to Satellite Communications*: Laws/regulations, year adopted and remarks provided by CITELE [please note that this information is also being updated on CITELE’s website], [as well as by the *ITU-D Satellite Regulatory Survey* respondents].
- [2] *The R&TTE Radio and Telecommunications Terminal Equipment Directive*: The EU’s approach to terminal certification can be downloaded from <http://europa.eu.int/comm/enterprise/newapproach/standardization/harmstds/reflist/radiotte.html>
- [3] *CITELE Recommendation*: Facilitating the Introduction of Broadband FSS Ka-band Systems in the Americas. (Recommendation PCC.II/REC. 62 (XVIII-01)) <http://citel.oas.org/ccp2-radio.asp>
CITELE Recommendation: Guidelines for the implementation of national regulations that facilitate the deployment of satellite services, particularly broadband services, in the Americas. (Recommendation PCC.II/REC. 6 (II-03)) <http://citel.oas.org/ccp2-radio.asp>

CITEL Recommendation: Reiterating the call for CITEL Member States to sign and ratify the Tampere Convention to facilitate its entry into force. (Resolution COM/CITEL 169 (XIII-03))
<http://citel.oas.org/ccp2-radio.asp>

- [4] *Satellite News Gathering (SNG):* Uniform Operating Procedures and Temporary Authorizations:
<http://www.itu.int/ITU-R/study-groups/sng/index.html>
- [5] *GMPCS-MoU Implementation:* Administrations that have implemented the GMPCS-MoU are listed at: www.itu.int/osg/gmpcs/search.asp
- [6] *References Cited Through Liaison with ITU-R Study Groups 1, 4, 6 and 8 by Working Party 6S:*
- a) *ITU-R Recommendations BO Series:* This addresses a wide range of issues related to the Broadcasting Satellite Services (Sound, Television, Data). It includes such things as Recommendations on terminology, test conditions, standards for broadcast systems, interference, protection issues and reference antenna patterns, etc. The 40 Recommendations can be seen at: <http://www.itu.int/rec/recommendation.asp?type=products&lang=e&parent=R-REC-BO>
- b) *Draft Recommendation Developed in the WP 6S April 2004 Meeting:* Methodologies for determining the availability performance for digital multi programme BSS systems, and their associated feeder-links, operating in the planned bands. This DNR specifically helps in determining system characteristics for digital BSS tailored to specific countries or service areas.
- c) *ITU-R Reports BO Series:* This series of the ITU-R Reports includes items on satellite service (sound and television), interference calculation methods, earth station antenna pattern measurements.
- d) *DSB Handbook:* This resource relates to terrestrial and satellite-based digital sound broadcasting to vehicular, portable and fixed receivers in the VHF/UHF bands, ITU-R, 2002.
- e) *Satellite Communications Handbook:* ITU-R has issued a Handbook on satellite communications prepared by ITU-R Study Group 4 and available via the ITU Bookshop.
- [7] *VSAT Licensing Case Study – The Netherlands:* The regulation for small VSAT terminals has been relaxed in the Netherlands since June 2001. Details on the Netherlands VSAT licensing approach are available at: <http://www.at-ez.nl/>

ANNEX 1

Memorandum of Understanding on Asia-Pacific Satellite Communications Regulatory and Trade Issues

Developed by the International Satellite Operator Community
For Adoption by the Governments and Inter-Governmental Organizations of Asia

Coordinated by the Global VSAT Forum
With Endorsement From:

The GVF Regulatory Working Group
The Asia-Pacific Satellite Communications Council
The Indian VSAT Service Providers Association
The Indonesian Satellite Industry Association

Executive Summary

The leading operators of communications satellites serving Asia have a consensus to advocate core regulatory and trade principles that advance the delivery of VSAT-based services to consumers, and commercial and government enterprises throughout the region.

Foremost among those principles is the importance of “Open Skies” policies that facilitate direct access to all available on-orbit satellite resources serving Asia, while upholding the sovereignty of national regulatory administrations and adhering to International Telecommunication Union standards.

Implementation of national Open Skies policies would enable the provision of essential communications – including services based on the Internet Protocol – for a host of network applications, whether they be domestic or regional, receive-only or interactive, or for use by the public or private sectors.

The benefits of VSAT-based communications can be realized by many enterprises, from banks, ISPs and stock exchanges to schools, hospitals, and rural telecenters. As a direct result, VSATs are capable of elevating economic, educational, and health standards. Higher economic and social standards attract foreign investment, which creates employment opportunities, which leads to increased exports, which yields stronger hard-currency earnings.

The operators of communications satellites serving Asia have observed that regulators throughout the region share certain fundamental goals regarding VSAT regulatory policies. These can be summarized as follows:

- Enforce radio frequency allocation policies
- Ensure that licensees are protected against unreasonable interference
- Encourage VSAT uses that advance the public interest, economy, and social well being of the country.

Despite the almost universal presence of these goals on regulators' and policy-makers' agendas, most regulations governing satellite-access conditions in the region are not based on an Open Skies policy and, thus, do not effectively facilitate the provision of vital VSAT services throughout the region.

The international satellite-operator community proposes the attached Memorandum of Understanding for adoption by the governments and inter-governmental organizations of Asia. By advancing these principles, access to vital communications will be significantly enhanced throughout the region, benefiting administrations, end users, and service providers alike.

Memorandum of Understanding Regarding 'Open Skies' Satellite Communications Policies in Asia

Fully Recognizing,

The Buenos Aires Declaration of the first World Telecommunication Development Conference (March 1994), which calls for International Telecommunication Union (ITU) Members to restructure regulatory systems in order to:

- a) create a stable and transparent environment to attract investment
- b) facilitate access of service providers to the network with a framework that promotes fair competition while protecting network integrity
- c) ensure the provision of universal service helping to achieve integrated rural development as well as promoting innovation and the introduction of new services and technologies; and
- d) guarantee the rights of users, operators and investors.

Further Recognizing,

The Report of the ITU's Second Regulatory Colloquium (March 1994), which states that “Innovative technologies and services will make a direct and large contribution to providing universal service... by a combination of terrestrial radio technology, VSAT systems, and new satellite technologies”,

Recalling,

The World Trade Organization (WTO) Reference Paper on Regulatory Principles (February 1997) that defines core regulatory obligations, including universal service, competitive safeguards, public availability of licensing criteria, independent regulator, regulatory impartiality, and objective, timely, transparent and non-discriminatory allocation of scarce resources,

Further Recalling,

The ITU Policy Forum and the Global Mobile Personal Communications by Satellite Memorandum of Understanding represents an important effort by the satellite industry and governmental bodies to foster the growth of international satellite services,

Noting,

The ITU World Telecommunication Development Report (March 1998), which states, “Technology that theoretically provides telecommunication access from anyplace on the surface of the earth is already available”,

Further Noting,

The ITU World Telecommunication Development Report (March 1998), which states that, “... universal access is now not so much an engineering or supply-side problem but rather a regulatory and policy challenge”,

Recognizing the Universal Concern,

That expanded access to cost-effective communications solutions are urgently needed to advance education, safety, health, and economic prosperity in many economies,

Acknowledging,

That the global satellite industry has the technical resources and expertise to provide effective satellite-based communications for this purpose today,

Concerned,

That policies in some administrations are inhibiting the provision of satellite-based communications,

Supported,

By the work of United Nations agencies, governmental, intergovernmental, and non-governmental organizations, humanitarian agencies, telecommunication equipment and service providers, media, universities and communication-related organizations to improve and facilitate satellite-based communications,

Desiring,

To ensure the reliable, rapid, and cost-effective availability of satellite-based telecommunication resources for direct-to-home, broadband, mobile, broadcast, rural telecommunications, disaster mitigation, telemedicine, distance learning, Internet, and other public- and private-sector network services,

Therefore the Undersigned Understand As Follows:

According to our respective roles and competencies, the national regulatory administrations of Asia Pacific intend to formulate and support Open Skies policies. We intend to develop regulatory solutions that facilitate direct access to all available on-orbit satellite resources serving VSAT applications in the region, while upholding the national regulatory administrations' sovereignty and adhering to International Telecommunication Union standards.

In particular, we intend to develop regulatory and policy approaches that facilitate VSAT network solutions, whether they be for domestic or regional applications, receive-only or Tx/Rx services, or public- or private-sector communications solutions.

Signed by the following Asian governments and inter-governmental organizations with the understanding that any signatory of this document may withdraw upon 30 days notice:

ANNEX 2

GVF Model VSAT Licence Application Template

I Application Procedure

Applications for licences pertaining to the operation of transmit-receive Very Small Aperture Terminal (VSAT) earth stations used to provide telecommunication services for the public must be sent to the Regulatory Authority for Telecommunications and Posts:

[Contact name, address, telephone/fax numbers, and email]

Applications must include the following information:

- a) Name and address of applicant
- b) Name, telephone and fax number of contact person representing the applicant
- c) Legal status of the applicant/company
- d) Details of ownership of the applicant/company
- e) License class requested
- f) Details of the planned category of telecommunications service
- g) Details of the geographic location of the VSATs, including an outline map
- h) Planned date of startup of the activity subject to licence
- i) Proof that the applicant/company does not have a dominant position in the market.

The granting of a licence is subject to the applicant's fulfillment of certain conditions. These include in particular specialized knowledge, efficiency, and reliability on the part of the applicant.

The Regulatory Authority can request the applicant to provide any proof and supporting documents it requires to make a decision on the granting of the licence. The applicant is advised to submit appropriate proof and supporting documents as listed in Section II together with its licence application.

II Proof and Supporting Documents

a) Proof of Specialized Knowledge

Under the Telecommunications Act, anyone who guarantees the necessary knowledge, experience and skills of the persons engaged in the exercise of license rights is deemed to possess the required specialized knowledge.

Accordingly, the applicant should detail the relevant knowledge, experience and skills of the persons intended to operate the VSAT system. The applicant can submit, *inter alia*, licenses granted to the persons to set up, connect, modify and maintain terminal equipment as proof of specialized knowledge.

b) Proof of Efficiency

Under the Telecommunications Act, anyone who guarantees availability of the means of production for setting up and operation necessary to exercise license rights is deemed to possess the required efficiency.

c) Proof of Reliability

Under the Telecommunications Act, anyone who guarantees compliance, as a licensee, with the legal provisions is deemed to possess the required reliability.

The applicant should in particular state whether itself, one of its affiliate companies or a person appointed to manage its business has in the past five years been subject to:

- The withdrawal of a telecommunication licence
 - The imposition of conditions for non-fulfillment of obligations ensuing from a telecommunication licence or
 - Legal proceedings for violation of telecommunications or data protection law, or whether
 - Such legal proceedings are pending.
- d) Outline map showing the geographic location of the area in which the activity subject to licence is to be performed (if not a transportable VSAT)
- e) Interference analysis report where relevant, i.e. when involving C-band frequencies.

III Fees

Fees are charged for the granting of a licence under the fees ordinance issued by virtue of the Telecommunications Act. (Fees do not exceed USD 1,000.)

IV Process

Your completed application will be placed on Public Notice for a 30-day comment period. If no objection is filed by the Ministry or the Public, your application is deemed automatically granted on the thirty-first day. A confirmation will be mailed to you or sent electronically within 10 days of grant.

Notwithstanding the foregoing, temporary authorization is available when necessary to serve the public interest.

V Exceptions

No licence is required for:

- a) VSAT earth stations operating via satellites utilizing frequencies reserved for fixed satellite services
- b) Receive-only VSAT earth stations