

Chapter 2

Multilateral Cooperation in International Telecommunications: Sources and Prospects*

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The international telecommunications system is among the most successful examples of multilateral cooperation. The standards, rules, and regulations elaborated by the ITU and its subbodies have been widely respected by telecommunications common carriers, and the institutions themselves have avoided the crisis of legitimacy that has more generally affected the United Nations and its specialized agencies.

This chapter seeks to identify structural factors underlying the resilience of international cooperation in this field, and to assess the extent to which they are affected by changes now under way in the telecommunications regulatory environment.

Part I of this chapter outlines a general “structural realist” theory of multilateral cooperation. According to this theory, the extent of multilateral cooperation reflects (a) the *demand* for such cooperation, or the extent of the gains such cooperation can achieve relative to purely bilateral approaches; and (b) the *supply* of such cooperation, or the ease with which the mechanisms for such cooperation can be put into place. The demand for international cooperation is presumed to

The analytical framework of this chapter can be found in Kramer (1983), and especially in Keshane (1983).

reflect the saving in transactions costs of negotiating agreements multilaterally rather than bilaterally; these savings will in turn depend on the degree to which the activity involved must be dedicated to it, and the nature of the contracts on which it rests. Equally, the supply of international cooperation is presumed to involve both first-mover and public good problems; the ease with which these are resolved is expected to reflect the capability of a single country or "club" of countries to internalize the benefits from cooperation, the extent to which negotiators share a common outlook and objectives, and the stability or instability of the technological and economic context.

In Part II, this model is applied to the domain of telecommunications. International telecommunications have traditionally been characterized by factors that resulted in a particularly strong demand for multilateral cooperation. These factors include the fact that given a domestic monopoly at each end, international service could not be provided by a single carrier on an end-to-end basis but had to be provided jointly. Also, for such joint provision to occur, detailed agreements had to be reached between suppliers, and the costs of negotiating such agreements could be minimized by standardizing some features of these agreements on a multilateral basis. At the same time, the supply of multilateral cooperation has been enhanced by the small total number of participants and the high degree of control exercised by each over its environment, by the dominance of an engineering/public service culture, and by a technological context whenever change was evolutionary.

In Part III, we argue that these features, which have provided stability to the international telecommunications regime, now appear in question. The liberalization of entry into domestic telecommunications markets makes end-to-end service by a single entity feasible, at least for the largest customers; together with technological developments, this reduces the need for joint-supply agreements. At the same time, the increasingly competitive nature of the industry's environment and the rapid pace of technological change undermine the gradual, cooperative approach to multilateral negotiation that has characterized international telecommunications.

We conclude that these changes are already affecting the success of multilateral cooperation in telecommunications. This is most evident in the growing difficulties of the standardization process and in the tendency towards bilateralism in the handling of disputes. Adapting international institutions to these changes is the major challenge that lies ahead. Viewed historically, telecommunications has been an outstanding success story of international cooperation. Compared with areas such as trade, finance, or development assistance, interna-

tional cooperation in telecommunications has been distinguished by the resilience of the institutional mechanisms on which it is based, the widespread acceptance and observance of multilateral rules and regulations, and a relative lack of conflict between the technical function of solving immediate problems and the claims of contrasting ideologies and interests.

Can this distinctive performance survive the major changes now affecting telecommunications worldwide? Does domestic deregulation—and the varieties of approaches to it—threaten the international telecommunications regime? To answer these questions, it is important to first identify the general factors that may contribute to stable and effective international cooperation in particular areas; this is done in Part I. Part II examines the extent to which these factors have been at work in the context of telecommunications, while Part III assesses whether these factors are now operating less fully and derives some implications for the likely course of the international telecommunications regime.

A word of warning is appropriate at the outset. The discussion in this chapter is primarily directed to the ITU and its subbodies, since they are the principal locus of multilateral cooperation in the telecommunications sector; but the conclusions apply, perhaps with even greater force, to INTELSAT and the European Conference of Postal and Telecommunications Administrations (CEPT).

INTERNATIONAL COOPERATION: AN EXPLANATORY FRAMEWORK

The phrase *international cooperation* covers an enormous multitude of phenomena, varying in both the nature of the obligations they create and the degree and form of institutionalization of these obligations. Yet this diversity does not detract from a common theme: sovereign states together entering into voluntary “agreements” that in one way or another inform their domestic policymaking. Within the spectrum of such agreements, a particular variant are those that set out on a multilateral basis rules, regulations, and procedures governing a specific functional area of interaction between monetary systems or the exploitation of marine resources. These “agreements” are generally detailed and established mechanisms for dispute resolution. It is these characteristics that are usually taken to define an *international regime*.

Why would governments enter into such regimes? And why has it proven easier to establish and maintain multilateral arrangements in some areas of policy than in others? It is useful to approach these

questions in terms of a *demand* for, and *supply* of, international regimes. The “demand” side refers to the factors that affect the benefits states can obtain from multilateral arrangements; and the “supply” side to the factors that make it either easier or more difficult for these arrangements to evolve.

The Demand for International Regimes

The advantages that can be secured from multilateral arrangements fall into two categories. The first consists of enabling domestic output and investment decisions that would be taken without assurances about future policy in other countries. The second advantage is in the reduction of the costs of actually obtaining these assurances.

The first of these advantages will depend on the extent to which the decisions made domestically are vulnerable to changes in policy in other countries. Thus, if a good or service can only be provided in cooperation with a foreign supplier, and if the return the domestic agent secures from an investment in providing that service depends on the behavior of the foreign supplier, then the domestic agent will have a significant interest in obtaining assurances about the future behavior of the foreign supplier. More generally, domestic agents' interest in controlling the behavior of foreign suppliers will vary according to:

1. the degree of jointness in the supply decisions of domestic and foreign agents; and
2. the degree of sunk costs these decisions involve, and consequently, the domestic supplier's exposure to opportunistic behavior overseas.

Insuring that the gains obtainable from joint supply are realized and the risks of opportunism kept to a minimum requires a framework for cooperation, not only between the agents directly involved in the decision, but also between the states, which can interfere in their action. In principle, such a framework could be established solely through bilateral arrangements between the states. However, multilateral arrangements are likely to prove an effective complement to, or (more rarely) a substitute for, purely bilateral relations when the three following conditions are met:

1. The decisions involved have an inherently multilateral character, in the sense that the benefits country A secures from agreement with country B will at least partly depend on each country's relations with C, D, E and so on;

2. the arrangements themselves are both relatively technical and require fairly frequent revision; and
3. surveillance and enforcement of agreement requires information and approval, not only from the parties directly involved in a transaction but also from others.

Under these circumstances, multilateral agreements will reduce transactions costs relative to purely bilateral negotiations in three respects:

1. They make it easier for participants to discover complex packages of tradeoffs and compensation, allowing each country to secure a better outcome than could be had were compensation only to be provided on a bilateral basis;
2. they allow standardization of the agreements between countries and provide a parallel forum for review, clearly a saving compared with the cost of trying to revise a large number of bilateral agreements one by one; and
3. they can provide for cost-effective enforcement, by encouraging the pooling of information, increasing the visibility associated with noncompliance, and permitting "smaller" agents to coalesce for the purpose of sanctioning "larger" ones.

The Supply of International Regimes

The fact that multilateral arrangements provide benefits to participants is not sufficient, however, to ensure that such arrangements will emerge or survive. The problems are twofold:

1. In practice, such arrangements are likely to resemble clubs in requiring an initial (largely sunk) investment, which it may prove difficult for investor to recoup; and
2. multilateral arrangements may have a quasi-public-good character, such that nonparticipants cannot be fully excluded from obtaining some share of the benefits they provide.

It is a matter of some controversy under what conditions these difficulties are most likely to overcome. Two broad views can be distinguished.

First, some writers have emphasized the role of a "hegemonic" power in initiating multilateral arrangements. This is a role frequently ascribed, at least in the early postwar period, to the United States. Underlying this viewpoint is the argument that the hegemonic power is best placed to "internalize" the benefits arising from the

provision of international cooperation as a public good. In turn, its position of political dominance helps it convince other countries to participate fully in the proposed arrangement. Other writers, however, have pointed out that the statistical relation between the existence of a hegemonic power in the world system and the establishment of multilateral arrangements is, at best, a weak one. According to this view, it would be dangerous to treat the special circumstances of the late 1940s and early 1950s as a paradigmatic case of successful multilateralism.

The second approach draws on Mancur Olson's theory of collective action. According to Olson, quasipublic goods will be made available when the supply of these goods can be "bundled" with the supply of a private good (that is, a good with standard excludability conditions), for example, a listener-funded radio station (clearly a local public good) that also runs a social club (a private good). While this approach is appealing, it has not proved of wide applicability in explaining multilateral arrangements.

These differences of approach to the establishment of multilateral agreement notwithstanding, three conditions seem particularly important for their instability.

First, the parties to the agreement must be in a position to provide assurance regarding the behavior of the agents who will actually be involved in the transactions. These assurances may be based on a negotiating mandate received from these agents or on a statutory power of regulation, but must in either case be sufficient to make the negotiation credible.

Second, agreements are most likely to be reached and maintained when they are buttressed by a shared world view. The more the negotiators agree about the way the world works, the greater the similarity in the language they use to describe it, the closer their objectives, and the higher the probability of a successful outcome.

Finally, agreements are not likely to survive if parties are frequently placed in zero-sum situations. As became painfully obvious in discussions about the law of the sea, recurring conflicts over common access resources (that is, resources the property rights of which are not vested in individual owners) are particularly damaging in a multilateral context. Participants have few incentives to correctly signal their preferences, mechanisms for arranging compensation are likely to be rudimentary, and the prospects for enforcement will generally be poor.

In short, multilateral regimes are most likely to evolve when the following conditions are met:

1. Decisions require a high degree of jointness between domestic and foreign agents.

2. The sunk costs involved in these decisions are high, so that domestic agents may be vulnerable to opportunistic behavior by foreign suppliers.
3. The agreements needed to control such behavior entail high transaction costs for the following reasons. One, the extent of the costs and benefits from any bilateral link also depends on circumstances of other links. Two, the agreements themselves must be fairly technical and may need frequent revision. Finally, surveillance and enforcement requires information from a broad range of sources and effective disciplinary action in a number of bilateral relations.
4. Countries can find some way of allocating the fixed costs associated with setting up such an effective multilateral approach, and can make such an approach stable because they have an effective mandate to negotiate on behalf of domestic agents and/or the power to regulate their behavior. Negotiators share a common approach to the world and common objectives, minimizing the frequency of zero-sum negotiating situations.

MULTILATERALISM IN TELECOMMUNICATIONS

The conditions outlined above have for many years characterized international telecommunications. Indeed, international telecommunications have been marked by features that strengthened the demand for multilateral cooperation while at the same time making such cooperation easier to achieve.

The Demand for Multilateral Cooperation

Unlike most other goods and services, international telecommunications have virtually always been provided on a joint basis by a domestic and a foreign supplier. This reflects the historical monopoly status of each service provider (telecommunications common carrier) in its domestic market. Given this monopoly, no foreign firm could provide end-to-end service into the domestic market, having to rely on the monopoly provider in the domestic market for the connecting link.

This jointness of supply also has a multilateral dimension. The most obvious instance is when geography requires that traffic between two points must transit a third country, but it also arises because network costs can be minimized by concentrating traffic from thin onto thick routes and by using multiple routing possibilities to handle traffic peaks and minimize network vulnerability. Likewise, for radio transmission media (which until the 1950s were the backbone

of long distance communications) frequency coordination was required to minimize interference between transmission sources. Since such interference can occur over a wide geographical area (and indeed for short-wave radio occurs virtually worldwide), efficient use of the radio spectrum requires multilateral procedures for allocating frequencies to uses and users.

Multilateral supply arrangements not only reduce costs but also increase the value of the network to each user. This is because the value of a network to a user depends on how many termination points representing subscribers can be reached through the network. Given that all supply arrangements must be made jointly (because the existence of domestic monopolies rules out end-to-end provision), the value of international service to a subscriber will depend on the number of joint supply arrangements concluded by its national common carrier.

Together these features have increased the importance for each common carrier of securing a broad range of joint supply arrangements. At the same time, the features of these arrangements have been significantly affected by the investment characteristics of telecommunications networks. In particular, telecommunications investment was for many years largely irreversible in character. Reliance on physical connections, notably cables, for high-quality international transmission, and the relatively limited flexibility of microwave operations meant that once in place networks could not be readily reconfigured. Similarly, the hardwiring of signaling and similar characteristics into exchange equipment meant that formats and protocols were very costly to alter after the early stages of equipment design. These features naturally meant that joint supply arrangements had to be negotiated well before service could start, and they created scope for opportunistic behavior once the investments had actually been made.

A further implication of these technical characteristics was that, to be effective, joint arrangements to provide service had to specify a considerable amount of detail. From a purely technological point of view, this detail included the physical nature of the connections to be used and their electronic and signaling properties. But arrangements also had to be made for the collection and division of revenues, for liability in the event of outages, and so on.

In short, international telecommunications services could not efficiently be provided without a large number of joint supply agreements. Each of these agreements had to specify both detailed technical features of interconnection and provide pricing and accounting guidance, and the agreements had to be reviewed in line with changing technology and demand patterns.

These features created clear scope for multilateral cooperation. To begin with, multilateral control of radio spectrum use was essential if radio technology was to be used effectively, both domestically and internationally. And at the same time, multilateralism could standardize key features of joint supply arrangements and thus reduce the transaction costs involved in established international service.

The Supply of Multilateral Cooperation

While necessary conditions for successful multilateralism, these demand side features cannot be considered sufficient. In particular, it remains to be explained both how the mechanisms for cooperation were put into place and why these mechanisms succeeded in meeting their perceived objectives.

It is conventional, in this context, to separate the question of *regime formation* from that of *regime stability*. The first of these concentrates on the question of how the public good aspects of "supplying" international cooperation are overcome, that is, on why participants cooperate rather than adopting free-rider strategies. Hegemonic explanations do not appear to be particularly relevant to the ITU or its subbodies; indeed, over the longer term, these bodies have been distinguished by a relative equality of power among the major (mostly European) participants. Rather, a more plausible approach could draw on Olsen's *logic of collective action*, that is, a link between the public goods supplied by multilateral cooperation in this field and more classical private goods. Two such private goods are of particular importance: First, the rules set down by the ITU and its subbodies may have reinforced the entry barriers confronting potential rivals to the monopoly common carriers. Second, the main benefits of the technical standardization process may have been appropriable only by those direct participants in that process. But important though these factors may be, they have been buttressed by others that made the system particularly stable and effective once established.

To begin with, the participants in the negotiating process were uniquely wellplaced to make credible commitments. The ITU and its subbodies are organizations grouping the telecommunications common carriers; these carriers are vested with the authority which comes from their status as utilities operating in the public interest, and with the power that comes from their monopoly status. Even in the case of the United States, with its multiple international carriers, AT&T had held a dominant position. Moreover, the 1934 Communication Act's delegation of responsibility for international negotiations to the Department of State has been confirmed by subsequent Executive orders, providing a further element of centralization.

Moreover, the negotiating process has clearly not been zero-sum in character. The carriers involved have almost never been in direct competition; rather, the activity's regulatory structure has kept them out of each other's markets. Even in the area of spectrum allocation, where interests have more frequently clashed, the overriding need to minimize signal interference has kept conflict within fairly tight bounds.

Finally, the participants have shared a common culture and outlook to a highly unusual degree. The telecommunications industry has generally been heavily dominated by engineers, with broadly similar training insuring a strong shared emphasis on *network integrity* (that is, the central role of the common carrier network in providing service to users) and an ideology of public service. As a result, the international negotiating teams have been relatively insulated both from considerations of commercial rivalry between countries and the trend toward politicization of the negotiating process.

These features can be viewed as largely structural, but their effects have been bolstered by their conjunction with two additional factors.

To begin with, for many years the development of telecommunications technology was sufficiently evolutionary for change to be accommodated within the gradual process of international negotiation. The delays needed for standard setting were acceptable, as the lag in the pace at which new technologies were introduced did not threaten carriers' competitive position.

Perhaps most importantly, over the long course of their history, the ITU and its subbodies have proved highly capable of avoiding conflict. This is to some extent a question of history. Partly due to the unique institutional features of the telecommunications industry in the United States (the multiplicity of international carriers and the division of regulatory responsibility between competing agencies of government), the ITU was never dominated by the United States; it was consequently spared the crises arising from the United States' changing role in the world economy. The specific financial provisions for the ITU (whereby contributions are self-assessed rather than levied) reinforced the ITU's independence by limiting the institution's reliance on United States funding. But the international regimes has also been successful due to this ability to match regulatory instruments to the features of specific issue areas.

In particular, little reliance has been placed on supranational authority, and the scope for discretionary decisionmaking at an international level has been minimized. Even in the area of radio regulations, which do have a binding character on participants, the use of priority rules and of general principles such as "common use of common frequencies" has substantially curtailed the discretionary

power of the International Frequency Registration Board. And excepting the areas such as frequency allotment where common observance was essential to the process's success, decisions have not been formally binding on participants, though in practice they have generally been treated as such.

In short, the historical stability of the international telecommunications regime can be traced to specific features affecting the demand for, and supply of, multilateral cooperation in this industry. In particular:

1. The jointness of supply arising from the monopoly status of each carrier in its home market creates a need for international agreements.
2. The effective provision of international service requires that such agreements be reached with large number of suppliers.
3. Together with the fairly technical nature of these agreements, and the need to revise them in line with changing technologies, this creates scope for significant transactions costs savings from multilateral as against purely bilateral approaches.
4. It has proven possible to organize such multilateral cooperation effectively because monopoly status has conferred significant credibility to participants in the bargaining process: participants shared a common culture and broadly similar objectives; the relatively slow pace of technological change has permitted gradual, negotiated adaptation (notably through standard setting); and the ITU and its subbodies have achieved an unusually close fit between regulatory mechanisms and the features of individual issue areas.

PRESSURES FOR CHANGE

These forces for stability now appear threatened by changes in domestic and international regulatory arrangements. The changes center on the liberalization of entry into the provision of common carriage services, but their effect has been compounded by rapid technological advances.

Changes in the Demand for Multilateral Cooperation

Two fundamental changes appear likely, over the long term, which will affect the demand for multilateral cooperation.

The first of these changes arises from the growing prospect of carriers offering direct end-to-end service, or in other ways minimiz-

ing their need for interconnection. As entry into domestic markets is liberalized, foreign carriers may seek to interconnect into the domestic network at the local level rather than at a designated international gateway. Indeed, for the largest corporate users, end-to-end service may be provided, for example, through satellite or digital microwave links.

New technologies are of obvious relevance in this respect. To begin with, satellite and digital microwave technologies appear to reduce the sunk costs a carrier must incur to provide end-to-end service into a foreign market. They consequently increase the "contestability" of telecommunications service both domestically and internationally, further reducing the scope for exclusive joint supply arrangements.

At the same time, the enhanced information- and signal-processing capabilities of digital switching, and of PCM transmission, increase the telecommunications network's flexibility in coping with differing and/or changing formats and protocols. The availability of "black boxes" for protocol and code conversion reduces the need for interface standards to be specified in considerable detail and makes it possible to implement a common service in diverse network contexts.

However, the importance of these developments should not be exaggerated. Despite market liberalization and the availability of new technologies, end-to-end international service is likely to remain a fairly limited phenomenon, primarily an option for the very largest users (though of broader significance in the VAN context). Moreover, inexpensive protocol conversion does not eliminate the advantages of standardization, particularly for smaller users of advanced services. In short, joint supply arrangements are likely to remain the central pattern, but they will be more in the nature of *commercial joint ventures* than of the cooperative structure that was dominant in previous years.

Changes in the Supply of Multilateral Cooperation

The factors altering the demand for multilateral cooperation are also acting on the supply side of the equation. But here their impact appears to be more drastic and immediate. Three trends, each of which makes it increasingly difficult to secure international agreement, stand out.

First, liberalization erodes the bargaining mandate of participants in international negotiations. As the number of common carriers increases, and as the interests of those carriers diverge, the definition and implementation of a national bargaining position becomes more problematic. Moreover, the growing divide between the interests of government representatives, on the one hand, and the (increasingly

frequently private) carriers on the other, increases the likelihood that the “soft law” of the ITU will be respected less fully than it once was. These trends are already evident in the United States, the United Kingdom, and, to a lesser extent, Japan.

Secondly, the rapid pace and changing character of technical advance also complicated the negotiation process. The clearest examples can be seen in the area of technical standardization. As technical advance accelerates and comes to depend on technological and scientific bases outside of telecommunications, it becomes more difficult to identify a particular standard as “optimal” in terms of user needs, and current and prospective changes in technology. That standardizing microelectronics-based products requires a finer level of definition (for example, in terms of electrical structure) than was needed for electro-mechanical or analog technologies, further exacerbating these difficulties. It has therefore become more difficult to both identify the direction technological change will take, which is indispensable if standards are to be set in a dynamic context, and to specify the standards themselves.

The technical difficulties are also compounded by the growing number of actors involved in the standardization process and the conflicting nature of their interests. This is partly a natural consequence of the intersection of the technologies of computers and of communications, which has brought a broad range of suppliers of electronics-based equipment into the telecommunications policy-making process. But it is also a result of the telecommunications equipment industry’s response to the regulatory changes of recent years—a response that involves greater independence from the common carriers and an increased reluctance to passively accept the standards these carriers set.

Third and last, it is the change in the carriers themselves which may prove most significant over the long run. As liberalization proceeds, both the engineering confraternity and the ideology of public service give way to a more commercial emphasis. Shared technical objectives become of less concern relative to the competing objectives of the marketplace, a trend the increased scope for end-to-end service can only accentuate. At the same time, the ideological divide between the countries that are liberalizing their telecommunications markets and those that are not inevitably affects the context for multilateral negotiation.

The Overall Outcome

Overall, the factors weakening the basis for multilateralism in telecommunications can be summarized as follows:

1. The prospects for end-to-end service will alter the nature and significance of joint supply arrangements.
2. The greater flexibility of digital technologies reduces the need for detailed multilateral agreements about interfaces and network characteristics.
3. The increasing number of entities involved in providing telecommunications common carriage (including value-added services), and their more arm's-length relation to governments, erode the negotiating mandate of participants in multilateral bargaining.
4. The more rapid pace of technological change, and the digitalization of telecommunications technologies, make it more difficult to set and specify standards.
5. Finally, the increasingly competitive nature of the telecommunications industry is altering its cultural context from an emphasis on shared engineering goals to one based more on commercial values.

The effects of these trends are, of course, far from immediate. They are more in the nature of gradual shifts than of cataclysmic breakdowns. The differing national approaches to liberalization make the process both more complex and more drawnout. Nonetheless, the signs of change are evident.

Technical standardization is perhaps the most relevant area in this respect. The changing technological context, the expanding number of participants, and the growing diversity of their interests have interacted to vastly complicate the standardization process. While it would be inaccurate to say that fewer standards are being set, the following trends are apparent:

1. Standards increasingly lag behind product development, to the point where some standards set at great cost are virtually obsolete by the time they are released (teletext is a case in point).
2. Even when set, standards are formulated in an increasingly loose manner, with a proliferation of options which undermine interconnectability. X25 set the pace in this respect, but similar outcomes appear likely in the definition of the intermediate stages of OSI.
3. As a result of (1) and (2), standards are having a more limited impact on product development than they had in the past; for example, in the evolution of electronic mail.

By no means does this imply international standards are becoming irrelevant; on the contrary, the emerging OSI standards, and even those for 2B + D ISDN, may have a far-reaching impact on carriers and equipment manufacturers. But standardization is no longer the game in town, and new corporate strategies of leap-frogging the standard-setting process are likely to gain in importance.

A second area where the multilateral institutions are under increasing pressure is that of *disputes and settlements*. Bilateral disputes in international communications have been rare; most conflicts involve differing interpretations of CCITT/CCIR regulations, rather than a substantial rejection of those regulations. Indeed, in one famous instance, the senior Secretariat official of CCITT wrote to the Chairman of the FCC to remind him of how a CCITT regulation, which merely had the status of a recommendation, was to be interpreted. But more recently the liberalization of the use and resale of international leased circuits, and the licensing of competitive international carriers, have created new sources of conflict; for example, in charges of traffic diversion, of discrimination in the granting of licenses, or of "whip-sawing" with respect to new entrants. These conflicts have not been dealt with through multilateral procedures; rather, they have resulted either in bilateral consultations, as in past conflicts between the United Kingdom and Japan and between the United States and Germany, or through ad hoc multilateral discussion with limited numbers of participants.

These instances of standard setting and disputes settlement highlight the growing gap between the traditional practice of multilateralism in telecommunications and changes underway in the industry structure. It will be a major challenge to adapt multilateral institutions to these trends; for, though multilateral cooperation in telecommunications is both inevitable and desirable, the process will be far less smooth than in the days when the ITU was a "monopolies' club."

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