The Political Economy of International Standardization: The Case of the Third Generation Mobile Communications System

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Standards play a pivotal role in determining the competitiveness of a nation or a region's industry and are one of the most important non-tariff devices to enhance or restrict international trade. The negotiation of technical standards is a form of political behavior and incorporates all the dilemmas of international relations. Mobile personal communications, an emergent technology with considerable political and economic implications, presents a prime example of the increasing nontechnical dynamics involved in the process of setting standards globally.

The current conflicts between the US and Europe in standardizing the third generation mobile communications systems also drive home several fundamental questions concerning international telecommunications standards-making. First, the ITU-led international standardization structure has been transformed to a more decentralized one in recent years due to the rise of regional standards bodies. In view of the regionalization trend in standards, what is the role and function of the ITU? Second, the global telecommunications deregulation and liberalization trends have catalyzed a power shift from the public to the private sector in international telecommunications. How has this altered the players' incentive structure in the standards "game?"

This paper will provide a background to the standardization process of the third generation mobile communications system and analyze its political and economic dynamics. It will also map out the broad contours of the changing international standardization regime, and to demonstrate how this change has been reflected in the current standardization case.

generation mobile communications system to encompass all types of digital mobile services in Europe. Although different in their scope, UMTS has the same time scale as FPLMTS: neither is expected to commence until the year 2000. Europeans parallel UMTS timeframe with FPLMTS because both projects target specifically at the third generation mobile communications system. Europeans are not eager to implement UMTS immediately because they have just begun to deploy the Global System for Mobile Communications (GSM, formerly Groupe Speciale Mobile), a pan-European digital cellular system, and several other digital mobile communications services including DECT, CT-2 and DCS-1800.[4] It will take several years to recover the heavy capital investment in these new networks. According to the projection of the Commission of the European Community, the GSM networks are not expected to reach the end of their development capabilities until the end of the 1990s.[5] A more important reason to equate UMTS with FPLMTS is that the European objective for UMTS is to extend service beyond Europe, thus making it a *universal* system. Europeans have explicitly stated that UMTS may be based on or identical to the worldwide standard for FPLMTS.[6] To this end, they have actively participated in the ITU to try to align the development of FPLMTS with UMTS.

The US, on the other hand, has been taking actions independent of the developments in Europe and in the ITU. Determined to "maintain the competitive leadership position in global telecommunications markets,"[7] the US has decided to implement the Personal Communications Services (PCS), which is comparable in concept to FPLMTS yet less advanced and

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[4]DECT stands for the Digital European Cordless Telecommunications, a system for home cordless telephone and office wireless PBX, wireless LAN applications. CT-2 is Cordless Telephone Second Generation, a digital telephone that functions as a cordless telephone at home and in the office. It can be used also as a portable pay phone to initiate calls from the street. DCS-1800 represents Digital Communication System 1800 MHz. It is a derivative of GSM, operating in a higher band. All these new digital mobile communications systems are considered second generation technologies.

[5]Jose Toscano, 'Mobile communications and the European Community telecommunications policy', Telecommunications Policy Directorate, Commission of the European Communities, Brussels, April 1992.

[6]See 'Special Mobile Group (SMG): framework for services to be supported by the Universal Mobile Telecommunications System (UMTS)', ETSI Technical Report, Draft-ETR/SMG-50201, September 1992, p. 5.

[7]Words repeatedly used by the FCC in its PCS proceedings. See, for example, *The First Report and Order and Third Notice of Proposed Rule Making*, FCC ET Docket No. 92-9, 17 September 1992, p. 1.

When one standard starts to establish itself, more and more countries jump on the bandwagon to adopt it. And once a standard is in place, trading relationships can become entrenched.[12]

The concern that the same fate of the irrevocable and entrenched existence of multiple incompatible standards that has plagued the first two generations of cellular communications systems may be repeated again in the third generation network was brought to light in October, 1992, at the third meeting of Task Group 8/1 (TG 8/1)[13], a special ITU technical working group entrusted to study and develop a global standard for FPLMTS. A draft opinion was approved in the meeting, held in Palermo, Italy, to alert participants that unless regions move closer together, the goal of a single worldwide standard for FPLMTS would not be achieved.[14] Although the draft opinion was intended to encourage regions to support the ITU effort in developing a global FPLMTS standard, it plainly reflected the divergent trends that already exist in the development of the third generation mobile communications systems.

The draft opinion was prompted in part by the US intention to deploy PCS several years before FPLMTS is scheduled to be introduced worldwide. That the US plan might be detrimental to the goal of a single worldwide standard for FPLMTS was made evident when the Federal Communications Commission (FCC) proposed and eventually allocated almost the same area of the spectrum set aside for FPLMTS internationally for the domestic PCS. Because many consider PCS only as an intermediate system, rather than the encompassing network ultimately envisioned for FPLMTS, the US unilateral action might hamper the possibility of a single global system for the future mobile communications. Specifically, by occupying a large part of the spectrum reserved for a worldwide system for its domestic PCS, the US will make it difficult, if not impossible, for FPLMTS to be implemented globally. This is because the US is the world's

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[12]Office of Technology Assessment, *Global Standards: Building Blocks for the Future*, TCT-512, Washington, DC, March 1992, p. 17.

[13]TG 8/1 reports directly to Study Group 8 (SG 8) of the Radiocommunication Sector, a status equal to that of SG 8's four permanent Working Parties (8A-8D).

[14]CCIR Document 8-1/TEMP/66 (Rev. 1)-E, Palermo, 22 October 1992.

system.[15] For lack of terminology to address the future technological concept, the CCIR temporarily named it the Future Public Land Mobile Telecommunications Services, hence FPLMTS, an awkward and unimaginative yet self-explanatory title.[16]

Between 1985 to 1990, IWP 8/13's work on FPLTMS progressed slowly, in part because the concept of FPLMTS was not defined. Particularly, since the matter being studied was still far in the future, there was little urgency to speed up the work. But more important, the sluggish performance of the group in the early period was due to the US strategy to deliberately delay the FPLMTS process.

The US was not in favor of global mobile communications systems such as FPLMTS, and objected fiercely to the establishment of IWP 8/13. This was because international standards were not to its interest in land mobile communications. In addition, FPLMTS was seen as a European-led initiative to serve the region's political aims. However, the potential stakes involved in FPLMTS made it impossible for the US to ignore the process completely. Most technology-import countries abide by ITU-produced standards recommendations, which exert great powers in guaranteeing the commercial success of a technology. Under the circumstances, the US opted to take a passive role in the FPLMTS forum. The strategy was mainly a defensive one to ensure that US interests not be disadvantaged by the work done internationally.[17]

The US is a continent-sized country with vast uninterrupted landmass. International standards, which would allow seamless mobile communications between and among countries, are not as critical to the US as to Europe, where almost every country is bordered by several others. Americans also argued that transnational mobile communications can be achieved through common interoperability requirements rather than a uniform global standard. Most of all, a rigidly-defined international standard was not in line with the general US policy of keeping radio services as

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[15]Interview.

[16]A search for a new name for FPLMTS is underway in the ITU. One potential replacement name was proposed in the last FPLMTS standardization meeting in October 1993 in Geneva: IMT-2000 (International Mobile Telecommunications for the 2000s). This name is also intended to identify the nominal frequency bands in which FPLMTS will be operating (2000 MHz). See ITU RS Document 8-1/TEMP/170-E, 28 October 1993.

[17]Interview.

US suspicions were not totally unfounded as Europeans did try to promote GSM as a universal standard for digital cellular telephone in the ITU. This attempt was short-lived, however, as the effort to unify digital cellular standards was quickly aborted. Fortuitously, the new FPLMTS project to develop a third generation system provided Europeans with an even greater opportunity to pursue their political goals in mobile communications.

Although the idea of FPLMTS was not initiated by Europeans,[21] there are several political and region-specific reasons why they have supported FPLMTS since its inception. First, FPLMTS's mandate of a universal standard fits into European plans for a unified mobile communications network to facilitate the economic unification of the EC. Second, land-based mobile communications solutions such as FPLMTS[22] better suit the needs of Europe, a densely populated continent. Accordingly, Europe has focused on the development of terrestrial mobile communications systems, which have emerged as a key area in European telecommunications policy in the last ten years. In contrast, the US promotes satellite-based new mobile communications systems more vigorously as space systems can easily cover its large landmass, delivering services in rural and sparsely populated areas.

Due to the undefined nature of FPLTMS and US defensive tactics, FPLMTS made little progress in the 1985-1990 period. After 1990, however, the project began to pick up steam, propelled mainly by the emergence of personal communications and the outcome of WARC-92.

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[21]The germ of the FPLMTS idea came from a US and a Canadian delegate to the CCIR.

[22]Originally FPLMTS was intended to be a land mobile communications system. The satellite component of FPLMTS was added later, proposed by the US and several other countries.

unit. Further, it should be possible for FPLMTS to be used as a temporary or permanent substitute to fixed networks where fixed network facilities are limited or not available, or where reasons of convenience or economics make this desirable. Additionally, FPLMTS should be designed to allow international operation and automatic roaming of mobile subscribers and stations.[23] The requirements for international operation and automatic roaming have provided forceful justifications for global standardization of FPLMTS. The rising saliency of international roaming is due to the assumption that, although people may not take their cars across the border, they are likely to take their pocket-sized portable phones with them when traveling abroad.[24] International roaming has thus emerged as a valid technical concern which can only be addressed with a common worldwide standard.

The British and other European experiences in PCN have prompted the interest in personal communications-type services in the US, whose industry already lagged behind Europe in the development of advanced mobile communications services. Different from Europe, the US chose to use a broad generic term, Personal Communication Services (PCS), to address the new technological concept.[25] As such, any mobile or portable radio communications system that could provide services to individuals and business falls under the umbrella term of PCS. Similar to PCN and FPLMTS, PCS was expected to exist independent of local wired telephone networks, filling gaps in existing communications services and creating new markets. The broad definition of PCS has helped invite a deluge of industry proposals. Since 1990, more than two hundred PCS initiatives have sprung up. Proposed services range from digital cellular telephone, advanced digital cordless telephone, and portable facsimile to wireless private branch exchange (wireless PBX) and wireless local area network (wireless LAN) services. The industry's obsession with PCS has exerted great pressure on the FCC, which assigns radio frequencies for commercial

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[23]The FPLMTS definition originated in 'Recommendation 687: Future Public Land Telecommunications Systems' which was adopted in CCIR XVII Plenary Assembly in 1990, held in Dusseldorf, Germany.

[24]Interview.

[25]The term PCS was deliberately chosen by the FCC in order not to prejudge the outcomes of the various development efforts.

It also provided the crucial foundation for international standardization, because a standard cannot be fully elaborated without knowledge of the frequency plan that will be used or without the actual allocation of spectrum. With a global spectrum set aside for FPLMTS, it is now realistic to talk about international standardization. The privilege of a defined frequency band reserved ahead of time for its shared or exclusive use also distinguishes FPLMTS from its predecessors: previous attempts to standardize analogue and digital cellular systems were futile in part because there was no common spectrum. With the success at WARC-92, TG 8/1 has gained momentum, plunging into the actual work of drawing up the standard. Since the WARC, the Task Group has adopted an aggressive working schedule to meet at least twice a year, and has taken on new working methods to expedite the production of key components of the standard.

The legitimacy FPLMTS achieved at the WARC enhances its marketability. FPLMTS now appears as a commercial reality and, with a global market projection of hundreds of billions of dollars,[28] countries have begun to consider it with great economic interest. As the interest in FPLMTS intensifies, so does the competition among countries and regions for the global market for this major technological innovation.

Most significantly, the outcome of the WARC galvanized PCS activities in the US, which feared being left behind in this new technological "rush." Initially the US did not support an international spectrum identification for FPLMTS, fearing a fixed global allocation would limit the flexibility for the US to implement FPLMTS-like services domestically.[29] However, in view of the clear trend in the rest of the world toward a worldwide spectrum reservation for FPLMTS, and

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WARC-92 identified the bands 1885-2025 MHz and 2110-2200 MHz on a worldwide basis for use by the terrestrial component of FPLMTS, expected to be needed by the year 2000. Within these bands the portion 1980-2010 and 2170-2200 MHz can be used on a worldwide basis for the satellite component of FPLMTS from the year 2005. See Final Acts of WARC-92.

[28]For example, Motorola projected that the wireless communication market will be $600 billion in 2010, Motorola internal report.

[29]The early US objection to global spectrum reserve for FPLMTS also reflected the strong lobbying effort from the fixed microwave operators who did not want to give up their spectrum for PCS-type services, and from cellular operators, who initially viewed PCS as a competitor to challenge their comfortable duopoly right.

The FCC action will have serious repercussions as one European delegate to TG 8/1 explained: "The FCC matched the FPLMTS spectrum for PCS but did not match its concept."[35] This is in reference to the opinion shared by many Europeans that PCS is only a "two and a half" generation system, not a "third" generation system as is FPLMTS. Specifically, they are concerned that PCS would "steal" spectrum from FPLMTS; namely, with PCS occupying the spectrum as early as 1994, by the time FPLMTS is developed around the year 2000, there will not be enough spectrum left for global implementation of the more advanced system.

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Wireless Access: A Paradigm Shift

What the recent international hype about FPLMTS amounts to is *economics*, i.e., international trade and market share. FPLMTS can generate such a furor because the world is on the verge of another major communication revolution, the economic potential of which is as great as the telegraph's or the transistor radio's. Together with cellular mobile radio and other prospective wireless communications concepts such as wireless LANs and wireless PBXs, FPLMTS represents a fundamental change in the telecommunications industry: the emergence of wireless mobile communications systems for providing access to the telephone network or *wireless access*. The advent of *wireless access*, with its potential to liberate communications users from the physical constraints of a wholly wired telecommunications network, signals a major communications paradigm shift. It will redefine our expectations about what communications services should do.

The coming of *wireless access* is primarily related to the coming of the Information Society where almost all forms of economic activity have become more information intensive.[36] Information gathering is now a routine function of almost every job and instant access to information has become imperative for the productivity of the modern workforce. The need to

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[35]Interview.

[36]George Calhoun, *Wireless Access and the Local Telephone Network*, Artech House, Boston, MA, 1992, p. xvi.

requirement for immediate network accessibility for individuals anywhere and anytime necessitates intelligent network capabilities to keep track of users as they move from one place to another.

Wireless access is now poised to become a mainstream access method. Unlike cellular systems, which are adjuncts to the telephone network, future wireless systems such as FPLMTS will be an integral part of the network. The advent of *wireless access* will have a great impact on the future development and configuration of telecommunications network by providing greater flexibility and functionality. As wireless communications systems become a mainstay of the telecommunications network, which is global in nature, it is imperative that certain commonality exists among systems to allow global connectivity. This in turn provides a compelling reason for international standardization.

The High Stakes of International Standards Setting

Despite obvious reasons for global standardization for new access technology such as FPLMTS, the possibility of multiple standards looms. This is because of the high stakes involved in international standard setting. In the past, multiple standards came about when standardization threatened the political strength or economic vitality of a nation or region. Such was the case for the color television and the digital transmission system.

The failure to establish internationally compatible technical standards for color television systems in the 1960s was due to nations' ambitions, particularly the French, to develop their own color television industries and create an export market for their products. The difference in technical standards between the three systems, NTSC of the US, SECAM of France and PAL of Germany, was used as a non-tariff barrier to protect the domestic color television industries. The political ego of the French Gaullists and their manipulation in the CCIR was cited as the greatest impediment to the adoption of an international color television standard.[39]

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[39]Rhonda J Crane, *The Politics of International Standards: France and the Color TV War*, Ablex, Norwood, NJ, 1979.

contention. As a major technological innovation with large economic potential, the emerging mobile communications services appears to parallel the examples of the color television and the digital transmission systems. Further, often with emerging technologies, nations and regions have invested significantly in their own research and all are reluctant to give up on their preferred approach. In the case of FPLMTS, the investments are not yet entrenched on either side. However, if regions insist on pursuing individual interest and refuse to reconcile their differences, the North American personal communications system may once again be different from that of Europe and the rest of the world.

Standards as Industrial Policy in the Era of Regionalism

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The rise of regionalism is one of the three global economic trends to have emerged since the late 1970s. According to Robert Gilpin, a leading US political economist, the international economic system based on free trade principles established after World War II has been significantly transformed as a result of the decline of US hegemonic power and the divergence of national interests among the advanced industrialized countries. By the mid-1980s, a mixed system of revived mercantilism, economic regionalism, and sectoral protectionism had emerged to replace the liberal international economic order.[41]

The revival of mercantilism came about as a consequence of increasing struggle for world markets by various nations as American economic leadership waned. Since then, economic activity has become increasingly politicized as government interventions on behalf of national economies has yielded positive results.[42] High-technology industries, because of their value-added characteristics, are particularly being targeted as strategic sectors subjected to government protection.

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[41]Robert Gilpin, *The Political Economy of International Relations*, Princeton University Press, Princeton, NJ, 1987, pp. 394-408.
[42]Office of Technology Assessment, *op cit*, *Ref* 12.

is ahead of the US in the mobile communications game.[43] The prospect of GSM becoming a de facto world standard for digital cellular telephony is severely undermining US technological preeminence in radio communication.

Europe is now taking the same political approach toward UMTS, the European third-generation mobile communications system. Instead of using an established standard as a marketing device to create an international market for their products as in the case of GSM, however, Europeans now aim at influencing the development of the international standard while the third generation technology is still in its formative stage.

As explained earlier, it is hardly a coincidence that Europe's UMTS has the same timeframe as FPLMTS. In addition, UMTS has the same spectrum requirement as the international system. This is because the ITU work on FPLMTS was influenced more by Europeans than by Americans until recently. The European influence surfaced in the CCIR Report to WARC-92. In the Report, which provided the technical guidance for the WARC, the CCIR recommended that 230 MHz of spectrum be set aside globally for FPLMTS by the year 2000. This recommendation, prepared by TG 8/1, largely reflected European thinking. Because of the authoritative nature of the report, many developing countries followed its recommendations. With the support of these countries, which form the majority of the ITU's membership, the FPLMTS spectrum identification was successfully adopted.

While RACE,[44] an R & D initiative of the EC, is conducting pre-normative research on UMTS, ETSI[45] is responsible for drawing up detailed technical standards for the system. Attempting to reuse the previous GSM expertise and the successful project management team structure, ETSI entrusted the UMTS standardization to the same committee which drew up the GSM standard only to change its name to Special Mobile Group (SMG).[46] SMG members have

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[43]Robert Morris, cited in 'For once, Europe is ahead of the US game,' Financial Times Survey: Mobile Communications, *Financial Times*, 8 September 1993, p. II.
[44]RACE is 50 percent funded by the EC and 50 percent by the private industry.
[45]ETSI was created in 1988 as a direct response to the 1987 Green Paper in the Development of the Common Market for Telecommunications Service and Equipment, which called for liberalization of telecommunications networks and services and harmonization of telecommunications standards in Europe.
[46]'ETSI shifts third-generation project into GSM group', *FinTech Mobile Communications*, 26 September 1991.

as evidenced by the overwhelming support for the FPLMTS spectrum reservation at WARC-92. Realizing that it may not be able to rely solely on its domestic market power, the US decided that it will benefit from a standards setting arena where influence is determined by expertise and resource contributions.

Since 1991 the US has expanded its participation in TG 8/1 in terms of the number of participants, leadership positions held, and the proportion of technical document contribution.[52] The current US strategy is to influence FPLMTS with its PCS thinking, and to drive the development of FPLMTS in the direction of PCS so that the US can reuse the R & D for PCS for FPLMTS. This strategy is also aimed at eliminating the cost of introducing a different system around the year 2000, several years after PCS is to be deployed.[53] The recent aggressive US participation in TG 8/1 is intended to counter the early European influence in the ITU: if the US supports the development of standards in international standards bodies, it could preclude the European-favored standard being adopted by the ITU. Since a key factor determining outcomes in standards development bodies is the amount of resources and expertise that participants bring to bear, the weighty US contributions may help sway the development of FPLMTS standard in its favor.

The US policy to accelerate PCS standardization is also a response to strong industry pressure from eager PCS entrepreneurs. Telocator, the Personal Communications Industry Association, has threatened that if North American PCS standards are not developed by 1994, the industry will deploy non-standard equipment as soon as they receive licenses from the FCC.[54] The push from Telocator for a set date is exerting tremendous pressure on T1 and TIA, both of which have been working rigorously to meet the industry-imposed deadline. The two groups

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[52]For example, at TG 8/1's fourth meeting in Montpellier, France (1-11 June 1993), there were 25 US participants among a total of 100 from 19 countries and three international organizations. Three of the ten working groups are chaired by Americans. The nine input documents from the US delegation ranked the highest among all participating administrations.

[53]Interview.

[54]Interview.

standards are concerned.[59] Thus, starting out with one fully harmonized analog standard--AMPS--the US is now adopting more than one digital cellular standard, and perhaps several for PCS, thereby creating a technologically fragmented market similar to the one Europe faced before.[60] In comparing European and US standards-setting progress in land mobile communications, it becomes clear that the standardization policies in the two regions are moving in opposite directions. This divergence bears a direct impact on the development of the third generation mobile communications systems and poses one of the greatest threats to the global implementation of FPLMTS.

A further obstacle to the harmonized introduction of FPLMTS, inextricably related to divergent regional regulatory policies, is the uncoordinated nature of the implementation of major mobile communications systems in Europe and the US. Major European countries have just launched GSM and several other advanced digital mobile communications systems such as DECT, CT-2 and DCS-1800. Hence they prefer to delay the introduction of a full-fledged third generation system so as to maximize the potential of existing and newly introduced networks. On the contrary, the absence of large scale implementation of advanced digital mobile communications technology in the US has prompted the industry to fill the void with PCS. Although PCS may not be as advanced as FPLMTS, an early implementation of personal communications-type services will yield high short and medium-term dividends. The preoccupation of US industry with short-term gains has exacerbated the problem of time scale differences, the most tangible hurdle to bringing into consonance the global implementation of the third generation mobile communications system.

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[59]Some have described the introduction of PCS in the US as "standards making through chaos." This is due to the diverse nature of PCS applications. There is a wide range of technologies proposed to provide PCS services including digital cellular, CT2, spread spectrum, CT3, and cable. There is an equally wide range of proposed applications including wireless PBX, in-building, local loop replacement, and air-to-ground service. The frequencies used for the different experiments range from 600 MHz through 900 and 1800 MHz to 3, 5, 7, 13 and 28 GHz. See Ian Channing, 'Customers wanted; prospects of personal communications', *Communications International*, September 1993, p. 6.

[60]According to Paetsch, the dissemination of a multitude of incompatible second generation standards in the US will disqualify these systems as a potential integrative platform for third generation systems. In contrast, the convergence of second generation systems in Europe will facilitate the integration and combination of the third generation system.

Europe, T1 in the US[65], and Telecommunications Technology Committee (TTC) in Japan.[66] These regional bodies have emerged to become the primary suppliers of standards for their individual regions, sidestepping ITU's authority as the sole international standards organization. The emergence of regional entities reflected the vastly accelerating development of new and sophisticated telecommunications technology, and the global trend toward pro-competitive regulation and service liberalization. More open and agile regional organizations can respond more effectively to the rapidly changing telecommunications environment than the unwieldy ITU which has suffered from a broad membership and slow procedures. In this respect, the devolution of authority away from the ITU and toward the regional standards bodies is inevitable. The result is a decentralized global standards architecture with the role of the ITU delegated to coordinating the work of the regional bodies, which take the actual initiative and set flexible, market-oriented standards to meet regional needs. This is precisely the situation with respect to the standardization of the third generation mobile communications systems. While T1 and ETSI spearheaded the substantive standards work for PCS and UMTS in their respective regions, the ITU has become a common forum for the regional bodies to meet and become familiar with each other's work. Indeed, the Palermo draft opinion which called for the support of FPLTMS is an appeal to the two regions specficially, rather than to individual administrations collectively. In doing so, the draft opinion recognized the role of the regional standards bodies in conducting the essential work of standardization.[67]

In light of the regionalization trend, whereby regional standards bodies increasingly determine network standards within their respective regions, what is the role left for the ITU? In fact, the ITU still has several critical roles to play in standards. For one, the ITU remains the

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[65]Although formally a national body, T1 is regarded as a "regional" standards organization because of its influence on the Western Hemisphere.

[66]TTC is also regarded as a regional standards body largely because of the sheer scale of industry and influence Japan effectively brings to bear on the Asian region.

[67]It needs to be pointed out that the ITU does not conduct detailed technical standards work because it does not have the staff and resources needed to perform the costly enterprise. However, while in the past the ITU coordinated standards programs proposed by a few technologically advanced countries, its coordination effort now focuses on regional standards organizations such as ETSI and T1.

The developing countries markets are undoubtedly the primary incentive that drew regions to the FPLTMS forum in the first place. Europe and the US have their own solutions to mobile communications, and each contains a big enough market to sustain its own standards. They are not likely to compromise on an international solution that is not fit for them. It is only the recognition of their common stakes in the developing countries markets that has bound them together in the ITU and has helped hold the FPLMTS forum together as long as it has been.

Driving Forces for International Standardization

While social concerns and developing country's interests lend legitimacy to the ITU, its role as the primary body for setting international telecommunications standards is made indespensible by other forces driving toward global standardization. These forces are the globalization of telecommunications networks and services, and the important role played by multinational corporations in the global telecommunications industry.

Direct dial telephony between nations in the 1960s marked the beginning of the globalization of telecommunications networks. Since then, telecommunications and radio communication systems have been interconnecting on a larger and lager scale, giving rise to telecommunications networks that are increasingly global in scope. In the meantime, services are becoming internationalized as new information, computer, and communication services merge and extend their reach to all countries of the world. Accordingly, major new services such as digital radio broadcasting and personal communications services are being developed for global markets rather than for domestic use.

The globalization of telecommunications networks and services has required standardization to penetrate more deeply into national networks. Historically, standardization has been restricted to a few points in the network, i.e., the gateways. The equipment in the national network was practically not involved in international standardization. Gradually, however, nations have to open up the network for more standardization in order to allow for greater

decisions. The most aggressive among them are the multinational telecommunications manufacturers. An important reason for the growing presence of giant multinational companies in telecommunications is that new technologies such as FPLMTS are very expensive to develop. They necessitate large economies of scale and will require mass markets to amortize development costs. In addition, the rapid pace of product innovation and development no longer allows companies the luxury of testing the home market before probing abroad. Unless a company operates in all regions of the world economy, it will not be able to achieve economies of scale in order to pay for production.[73]

Multinational manufacturers have strong incentives to ensure market access abroad. International standards, which allow them to sell the same products all over the world, benefiting from a large market and lowered production costs, are in their most basic commercial interest. Due to the enormous commercial implications in the development of the FPLMTS standard, multinationals such as Motorola, AT&T, and Ericsson are the most eager and consistent participants in the FPLMTS forum. They are leading the way for global standards, as well as trying to influence the choice of standards to their advantage. Multinationals' interests do not always coincide with the home government's interest. Their independent status adds an important dimension to the dynamics of international standardization of FPLMTS. The dominant role they play in the telecommunications industry will have significant implications for counteracting regionalism.

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[73]Gilpin, *op cit*, *Ref* 41, pp. 402-403.

PCS, viewed as a domestic version of FPLMTS, in 1994, as an attempt to leapfrog European advances.

In the meantime, the ITU itself is facing a challenge as to what its role is in a decentralized global standards architecture. With regional standards bodies performing the essential work of standardization, the function of the ITU is reduced to coordinating regional initiatives. It is unclear whether a marginalized ITU has the leadership needed to overcome regionalistic obstructions to follow through the FPLMTS project.

Yet, it is still too early to determine if different regional agendas would ultimately topple the FPLMTS forum. Mixed motivations abound. The real actors in the standards negotiation are commercial interests, particularly multinational mobile communications corporations which have incentives to access global markets. A "standard war" would not suit their interests. The presence of multinationals have changed players' incentive structure in the FPLMTS standards "game." The critical role they play in the telecommunications industry will have significant implications for counteracting the trend of regionalization. The final outcome of FPLMTS standardization may be determined by the cross-cutting pressures of regionalism and multinational commercialism.