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Telecom R&D in the Wake of Privatization in Brazil

By Michel Daoud Yacoub and Helio Waldman, Brazil

The privatization process of the Brazilian Telecommunications System was certainly the major event in the Brazilian economy in 1998. The long expected US$27 billion auction was preceded by a complete overhaul of its holding Telebras, which was reshaped into a collection of three fixed telephony companies: Telesp Participacoes, Tele Norte-Leste, and Tele Centro-Sul Participacoes; eight mobile A-band companies: Telesp Celular, Tele Sudeste Celular, Teleming Celular, Tele Celular Sul, Tele Centro-Oeste Celular, Tele Norte Celualr, Tele Leste Celular, and Tele Nordeste Celular; and the long-distance operator Embratel.

Breaking up Telebras — a very successful and profitable Telecommunications monolith — and selling its parts to private business was controversial, and still is. Press coverage has focused mainly on political issues, with a recent stint of scandal, in which several government officials, including the now dismissed Minister of Communications, are accused of benefiting one of the bidders (in fact, one that has not been successful in the bid) by disclosing important information. In the ensuing debate, carried out within a heavily biased framework for discussion, little attention is being paid to more fundamental issues, such as the fate of the long-term R&D establishment built by the former Telebras monopoly since the seventies. The Telebras R&D effort was contrived around its Research and Development Center (CPqD), a large facility in the city of Campinas near the campus of Unicamp, the State University of Campinas. Among many other technological projects, CPqD was responsible for the development of the Tropico system of the Brazilian SPC digital exchange, a well-timed, successful, and competitive enterprise already incorporated into the world market. Privatization has transformed CPqD into a private foundation, named Fundacao CPqD (FCPqD), thus bringing uncertainty to its long-term prospects.

In a timely move, before privatization and through the government intervention, each Telecom operator signed a binding three-year contract with FCPqD, extending normal operation of the R&D facility through 1999 and 2000. However, no source of income is in place to fund a consistent long-term program. It seems clear that direct funding of large technological projects with public resources is being phased out.

On the other hand, indirect funding through tax incentives has been made possible by means of a government decree, known as the Informatics Law or Law 8248. The main objective of such a law is to draw industry and universities closer. In order to enjoy the benefits of this law, an informatics company must be registered within the Ministry of Science and Technology and, of course, registration is granted provided the company is up-to-date regarding its fiscal repsonsibilities. Once registered, the company is entitled to claim exemption of the tax on its products, which may represent up to 15 percent of the cost of the product. In return, the company must invest 5 percent of the gross revenue obtained from the commercialization of its products. More specifically, only 2 percent must be spent with university and research center contracts, whereas the remaining 3 percent can be used within the company itself. The investment should target three possible items: 1) a continuing education program for its technical staff; 2) an R&D program on science and technology; and 3) an exportation program of goods and services. Continuing education is achieved through courses contracted from universities and the exportation program focuses on improving the quality of their products. The R&D item is the real challenge. A straightforward calculation shows that an immediate 10 percent gain is achieved by a company under this law. One would expect, however, that the long-term gain, should certainly be much greater than this. In theory, this policy helps industries manufacture their products affordably and competitively, while the spirit of research at universities is kept alive. In practice, nonetheless, things work out rather differently. The new mechanisms do not guarantee that the projects are reasonably universal in scope and motivation, so it is not clear whether and how they may be used to support genuine scientific research. Although some exceptional research will eventually be supported, in general, the companies are using these funds widely as a means of carrying out some specific short-term tasks or as an instrument to further promote their own products. Far from being a mechanism to provide research funds, this law works as a device for companies to accomplish part of their everyday internal tasks by subcontracting the services of an external staff. Incorrect usage of the law leads to many other exotic situations, which by no means are any closer to what is understood as research. Although this law has already expired, it is still in use and probably will be extended for a couple of years.

Another future mechanism specifically aimed at telecommunications is a Fund for Technological Development in Telecommunications, mandated by the Brazilian Telecommunications General Law. Although approved before privatization, the law requires further regulation, however, now that the telecom private market is at full steam, there is general consensus that such a regulation is unnecessary. In essence, an old funding model is being phased out. Will a new one ever

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IEEE ComSoc European Operations Corner

By Jacques Kevers, Belgium

Although somewhat late due to publication schedules, the staff of the IEEE European Operations Centre would like to convey its best wishes of a happy and prosperous New Year to all the readers of the *Global Communications Newsletter*. As usual at this time, we would like to provide you with a review of our activities over the past twelve months, as well as with some information on possible developments in the near future.

The activities in the Brussels office for 1998 can be summarized as follows:

Member Services

- Complete processing (Society memberships, optional subscriptions, credit card payments) online, directly on the Oracle system, of Affiliate applications received from R8 applicants.
- Online inquiry response and problem resolution: order/renewal status,subscription claims, back issues and replacement issues, changes of addresses for local members.
- Attend local IEEE (co-)sponsored conferences in Region 8 to promote IEEE membership, and serve as a local source for membership applications, conference material, marketing brochures, etc.

Customer Services

The office has been "selling" CS Press books, IEEE Press books, Proceedings, Standards, and Educational Products. Orders for IEEE products are processed on-line, directly on the Oracle system.

Society Support

Specific support was provided to the IEEE Computer Society as well as to the IEEE Communications Society. For the latter, 1998 activities included among other:

- Members support & information over a dedicated phone line
- Maintenance of e-mail aliases and mailing lists for EAME and R8 chapters coordinator
- Cooperation with local chapters for the organization of Distinguished

Lecturer's Tours

- Support provided for chapter creation at Technical University of Catalonia and in Italy
- Promotion of Society membership at ISSLS '98 in Venice and ICUPC '98 in Florence
- Organization of Region 8 Communications Chapters Chairs Meeting in Florence, Italy (9–10 October 1998)
- Proposal for the technical secretariat of Eurocomm 2000
- Bimonthly articles for the *GCN*

Volunteer Services

- Respond to local section/chapter requests for membership/mailing lists, using Oracle and the SAMIeee diskette program for R8.
- Contacts and discussions with R8 Committee & Sections officers on possible ways to cooperate.

1999 Prospects

The development of interactive Web tools, IEEE's Order Entry reorganization as well as a variety of other elements are likely to affect the activities in the regional operations centers of the IEEE, which therefore have started examining ways to develop activities in new areas providing new electronic and information services, while maintaining their current activities at optimal level.

Fields likely to be explored include:

- Professional Activities: dissemination of career opportunities information
- Conference support: secretariat services, updating and dissemination of information related to IEEE sponsorship/cosponsorship, conference budgeting and reporting, and other administrative procedures
- Regional support/ Volunteers services , in order to develop closer relationships with geographical IEEE entities such as chapters, sections and region committees.

The Brussels office remains open for all Communication Society members and volunteers, and would be more than pleased to help solve the problems you could have with your IEEE membership, or to provide you support in your Society activities. For more details on the above, reactions or suggestions,you can contact:

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IEEE Workshop on Networked Appliances

By Tak Kamae, Japan

The 1998 IEEE Workshop on Networked Appliances was successfully held in Kyoto, Japan under the sponsorship of the IEEE ComSoc Multimedia Communications Technical Committee and Institute of Image Electronics Engineers of Japan.

An appliance is generally accepted as a consumer computer system particularly designed for a few focused applications. To compensate for lacking functionalities of each appliance, it can collaborate with other types of appliances through a network; such appliances with networking capabilities for collaboration will be called networked appliances. The workshop main objective is to discuss such appliances, networks connecting appliances for collaboration, and networking capabilities necessary for networked appliances. To realize useful networked appliances, it is important that they have specific functionalities so that different manufacturers' applicances can collaborate with each other over a network. Such a mechanism may be called the networked appliance architecture. The workshop offered good opportunities for discussion of this topic.

Under the leadership of workshop General Chair Tak Kamae, the program was divided parallelly into technical paper sessions (Program Chair Hiroshi Yasuda) and technical demonstration sessions (Demo Chair Fumio Kisshino). At 10 sessions 40 papers were presented, such as Appliance Networking, and Streaming and Resource Management sessions. Ten organizations demonstrated their technologies. An Internet refrigerator demonstrated by V-sync exemplified a typical networked appliance.

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Privatization of the Polish National Operator – TP S.A.

By Pawel Oleszak, Poland

The public offer of the Polish Telecom shares began in October 1998. It is the first privatization process of a telecommunications company in Poland. It is also the biggest privatization undertaking to take place in the history of the Warsaw Stock Exchange. The capitalization value of all TP S.A. shares equals the total value of all companies that are present on the Warsaw Stock Exchange.

The shares were offered to investors in two parts, namely in the Polish offer (70 million shares, 5 percent of company's capital) and in the foreign offer (140 million shares, 10 percent of company's capital).There is also an offer of 140 million additional shares that can be offered in some special cases. The nominal value of one share is 3 PLN(about 0.90 USD). The Polish offer targets the Polish individual investors (49 million shares, 3.5 percent of company's capital) and the Polish institutional investors (21 million shares, 1.5 percent of company's capital). The foreign offer is directed to institutional investors from outside Poland.

Year	1993	1994	1995	1996	1997
Telephone density	11.5	13.0	14.9	16.9	19.3

Figure 1. *Telephone density in Poland in years 1993-1997.*

The final market price of one share will be known on November 7. In the case where there is not enough shares in the Polish offer their number can be increased by up to 70 million shares (5 percent of company's capital). The regulator especially wants ordinary people to take part in the privatization process. This is why the individual investors were able buy the shares for 5 percent less if they declared their intention to buy them between October 19–30. If the declaration for the purchase of shares was made between October 31–November 6, the discount to the individual investors would be only 3 percent (in relation to the price offered to the institutional investors).

Before the start of the privatization process, the regulator considered such processes in Western and Central Europe; thus the process in Poland is similar to the privatization that took place in other countries. Experience has shown that shares of telecommunications companies are a good investment in the long term (3–4 years), the Polish regulator expects the whole operation to be a success. However, the financial situation of the TP S.A. is unlike the situation of foreign operators at the moment of privatization. For example, there is still a large gap between the telephone density in Poland and West European countries.

Revenues from the shares can be smaller, or at least can appear later, due to the fact that the Polish Telecom has to invest relatively more than foreign operators so that its network will be up-to-date with the global technology. In longer term, this tactic surely will assure a high share price (even several times the current price as it was in the British Telecom's case). Also, all telecommunications companies have to invest systematically in order to offer new services, higher bandwidth, etc. — this is why shareholders have to wait longer for eventual revenues than in other industry domains.

Since 1991 the TP S.A. has invested systematically in its network. It is currently the biggest stationary telephony operator in Poland. The growth rate of number of telephone lines was about 14 percent (higher than in the EU) per year between 1993 and 1997. The telephone density during that period is shown in Table 1.

The TP S.A. also leases telecommunications links to other institutions and companies (with cellular operators in-between). As the largest radio communication operator in Poland, it offers data transmission in its two packet networks and in one satellite data transmission network, as well as telegraph services. It has also the decisive voice in PTK-Centertel, the cellular NMT 450i operator. PTK-Centertel was the only cellular operator from June 1992 until September 1996. In March 1998 PTK-Centertel started another cellular network — one that uses the DCS 1800 technology. It will cover the area of 10 main agglomerations in Poland and four main Polish routes.

Information Technology and Communications Exhibit and Conference

By Voula Georgopoulos, Greece

The 12th International Exhibition of Information Systems, High Technology Products INFOSYSTEM HI TECH '98, took place last year in Thessaloniki, Greece on 30 September–4 October 1998. The exhibitors represented products and services from a wide range of information technology and communication areas providing knowledge, possibilities, and necessary solutions with state of the art technologies. The immediacy of the need of applications became evident through the solutions provided by the exhibitors. Today's businesses require optimal assistance from technology in order to be able to successfully compete in the European Union. This exhibition has become established as one of the most significant in Greece and the Balkan region with its innovative feature of special showcases on electronic trade and telemedicine. The electronic trade network E-GORA was presented and scientists explained the latest technology innovations that provide true solutions in this area. The potentials of telemedicine were presented, showing potential applications in the important and sensitive sector of public health care where patients, in certain cases, can be treated immediately, even from long distances.

A very interesting presentation by the European Committee on the program "Information Society Technologies (ISTs)" informed visitors of the European Committee's recent activities in the area of research and development.

The companies representing information technologies and telecommunications had the opportunity to use high-speed telecommunications lines to show innovative telematics applications.

The main point of interest in the supporting parallel events program for the 12th INFOSYSTEM-HI TECH '98 was the 4th Conference on Information & Communication Technologies: "New Technologies in the Public and Private Sectors, held between 2–3 October at HELEXPO's Congress Center "Ioannis Vellidis." This event had the backing of the Ministry of the Interior, Public Administration & Decentralization. IN addition to the technical speakers, there were speakers representing: The European Union, ministries, state bodies, and business executives.

In addition to the scientific presentations, various politicians also presented their views on the future of telecommunication in the service of the public.

The problem of the year 2000 and its far reaching effects

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Chapters Corner Goes on with Readers

By Kenzo Takahashi, Japan

How does reviving the Chapters Corner sound? Since this feature has been missed for some time, readers may assume that this is an announcement or special report about ComSoc Chapters. In fact, in the past, the Chapters Corner played the role of "information delivery" relating to Chapters activities. In *Communications Magazine* the News column of general events or monthly Conference Calender covered this information until the Chapters Corner was introduced in 1991. However, the original purpose of the Chapters Corner was to encourage readers interested in local Chapter activities and to form a greater connection between the Communications Society as a whole and each local Chapter.

Former *Global Communications Newsletter* editor B. G. Lee reported (in the September 1998 issue) that the *GCN* editorial group would take over the Chapters Corner in order to reduce the loss of focal points on local Chapters activities which *GCN* faced with the new comprehensive system of regional activity management under a regional Director. Just as roses look outstanding among natural green leaves, any ComSoc publication or event can be more meaningful with a background of ongoing Chapter activities. Through Chapters Corner, readers unfamiliar with Chapter activities will see how meaningful and interesting they can be, and readers who are interested in promoting their Chapter activities will learn more skillful procedures.

Because the greater academic power of a group brings greater creative results, it will be important to first extend the power — in other words, the number of Chapter members. The second step will be to make each Chapter more attractive by publishing their academic results and news of current activities and special events. What then should the new goal of Chapters Corner be in the upcoming era of the Communications Society? It should be greater interactivity and mutual support and collaboration among Chapters beyond their local borders, in order to foster greater participation in academic and professional activities, which is the fundamental idea behind the Chapter Corner.

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INFOSYSTEM HI TECH '98/*(Continued from page 3)*

in many aspects of daily life was given particular emphasis. The importance of quality in telecommunications was addressed by a representative of the Division of Quality of the Hellenic Telecommunications Organization OTE. Academic speakers provided views on the cellular, satellite, and low-earth-orbit satellite communications and the requirements in the existing telecommunications infrastructure.

The conference finished with a round table discussion on the Greek telecommunications and information market evolution and perspective, in which a number of representatives from industry participated.

IEEE WORKSHOP/*(Continued from page 2)*

IrDA-related appliances and an IrDA-capable ISDN pay phone demonstrated by NTT showed the usefulness of networked appliances. JetSend related appliances demonstrated by Hewlett Packard suggested the importance of peer-to-peer protocol for communication among appliances.

Stimulating technical discussions with 153 participants were held at paper sessions and refreshments were enjoyed with technical conversations at demo sites. The workshop executive committee decided to have a next workshop in Germany in September, 1999. Please refer to http://www.media.kyoto-u.ac.jp/ieee/multicomm/IWNA98 for details.

The *IWNA '98 Proceedings* are still available at a cost of ¥5000 from IWNA '98 Secretariat, c/o Institute of Image Electronics Engineers of Japan, 1-8-6, Hamamatsu-cho, 2nd Floor, Minato-ku, Tokyo, 105-0013, Japan. The e-mail address is iieej@ma.kcom.ne.jp

PRIVATIZATION IN BRAZIL/*(Continued from page 1)*

be phased in?

In its more than two decades of existence, FCPqD, the former CPqD, has developed strong ties with major Brazilian universities, especially Unicamp and PUC-Rio. Highly productive academic groups have been supported by it on a long-term basis. These groups now face new challenges. Privatization was thought to bring new opportunities for University partnerships with corporate newcomers. The new partners, however, tend to emphasize educational projects, leaving behind the Brazilian dream for national empowerment in science and technology.

In a move to keep academic R&D alive in this new and uncertain environment, Unicamp is supporting the creation of a Center for Research, Innovation, and Education in Telecommunications, to be funded (hopefully) by state agencies and industry. The new center will have a triple focus: scientific research, industrial interaction, and educational reform. International cooperation will be a key factor for its success. Alea