Global
Communications
Newsletter

August 2001

Boiled Frogs or Interactive Innovators?

By Giancarlo Pirani, Italy

A recently created training institute in Ivrea, Italy, teaches graduate students how interactive design allows people not to be overwhelmed by dramatically quick advances in technology.

"If you drop a frog into a pan when water is boiling, it will leap out. But if you put the frog into a pan of cold water, and then heat it slowly toward boiling point, the frog — unaware that any dramatic change is taking place — will just sit there, and slowly cook." In his opening speech at the inauguration of the Interactive Design Institute (IDI), Dr. Thackara, Director of Doors of Perception and member of the IDI Steering Committee, compared people living and operating in a world where computing is penetrating every aspect of our lives and the rate of change in technology is accelerating dramatically, to a frog which is going to be cooked without even figuring it out. Interactive design can be the panacea to get out of this unpleasant state.

In fact, interactive design shapes the interaction mode among the person, the computers (both explicit and embedded), and the communication means, thereby proving itself an item of cultural and economic relevance; in fact, interactive design has a significant impact on the value of a communication service for its user. It introduces a new dimension that industries do not always take into due consideration when they design new devices and services.

The IDI Ivrea building , the "Blue House."

To mold a new generation of technicians and managers able to thrive on the ubiquity and acceleration features of modern technology by ideating and designing human-oriented devices and services, the advanced IDI has been created in Ivrea, a town long well known for information technology in Italy. The initial investment of 40 million Euros is supported mostly by Olivetti and Telecom Italia. The IDI, which is independent, is governed by an Association, whose president is Senator Franco Debenedetti, a well-known Italian entrepreneur, economic journalist, and opinion maker.

The main objective of IDI is the development of deep technical and cultural knowledge of communication services, and the promotion of managerial competencies involving an innovative attitude and entrepreneurship. The Director of the Institute, Prof. Gillian Crampton Smith, pointed out that computers and networks are changing almost all aspects of the world. Thus, projects on interactivity determine the quality of our use of these systems and their value. In this sense these projects have huge economic relevance.

To train a new generation to do this innovation, the IDI draws together design culture, business innovation, and technology, focusing on communication services. It will be a community both virtual and real, a cross between a monastery and an airport; a monastery, because it will be a community of people working all together within a single scope; an airport because it will connect

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Report on IEEE Computer Communications Workshop, CCW 2000

Malathi Veeraraghavan and Mark Karol, U.S.A.

The 15th Annual IEEE Computer Communications Workshop, CCW 2000, was held Oct. 1518, 2000, at South Seas Resort, Captiva Island, Florida. Highlights of the workshop included:

- A stimulating keynote speech by Prof. Frank Kelly, University of Cambridge, U.K., titled "Congestion Control: Fairness, Pricing and Stability."
- An evening panel session titled "Lest We Forget" organized by Tim Moors, Polytechnic University, featuring panelists Radia Perlman, SUN Microsystems, Diane Pozefsky, IBM, and Ted Eckberg, Lucent.
- Seven excellent technical sessions: Analytical Models of TCP, Video, Network-Related Measurements and Their Analysis, Pervasive Networking, Quality of Service, Optical Networking/Burst Switching, and Wireless.

The session organizers were Steven Low, Brett Vickers, Walt Willinger, Andrew Campbell, Jorg Liebeherr, Chunming Qiao, and Sirin Tekinay. The chairs of the workshop were Malathi Veeraraghavan and Mark Karol. The Web chair was Tim Moors, and Reinette Grobler was the registration chair.

Overall, workshop attendees enjoyed exchanging leading-edge research ideas in the beautiful setting of Captiva Island, highlighted by a splendid sunset cruise and banquet dinner. The Web site for the workshop is http://uluru.poly.edu/~tmoors/ccw

The next IEEE CCW will be held in Fall 2001 and chaired by Prof. Jorg Liebeherr, University of Virginia (e-mail: jorg@cs.virginia.edu).

A Wireless Balkan!

By Nicolae Oaca, Romania

Greece's mobile industry has experienced two periods of development in its short history. The first duopolistic period started in 1993 when two GSM900 mobile services were launched. The second, competition, started in 1998 when the first DCS-1800 mobile operator entered the market, has seen Greek mobile telephony development become one of Europe's rising stars.

In 1992 two licenses were awarded, and the next year Panafon (July) and Stet Hellas (June) launched their GSM900 mobile services. Both are affiliates of mobile companies with European expansion visions: United Kingdom's Vodafone and Italy's Stet. The shareholder structure of Panafon involves Vodafone (55 percent), Intracom (10 percent), France Telecom (3 percent); the remaining 32 percent is floated. Stet shareholders are Stet Mobile Holding (59.7 percent), Bell Atlantic (20 percent), Interamerican (5.2 percent), and 15.1 percent free float. In April 1998 a third competitor, CosmOTE, a DCS-1800 mobile operator, entered the market. For the time being CosmOTE' shareholders structure involves OTE, the Hellenic national operator, 70 percent, and Norway's Telenor, 22 percent.

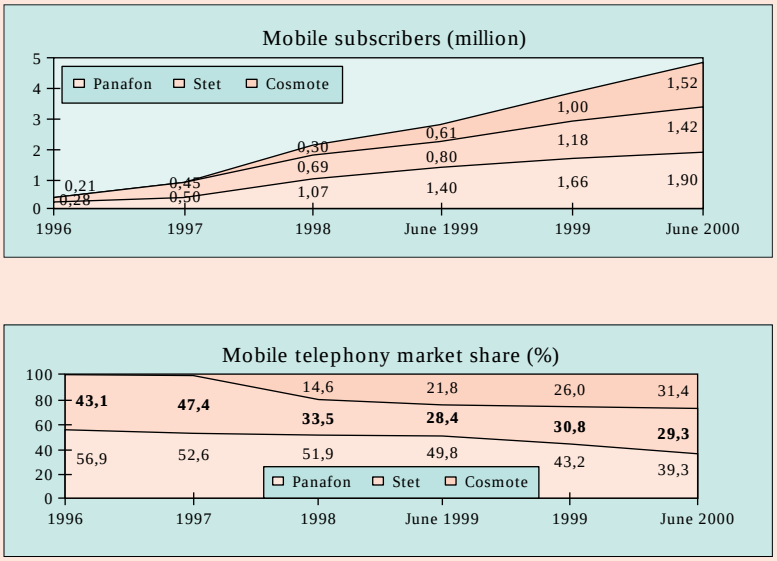

Figure 2.

The number of mobile subscribers has grown rapidly due to an initially poor public switched telephone network (PSTN), a large number of visitors (10 million/year), an insular country, no analog mobile service prior to GSM, and later, strong competition.

Panafon was the first Greek mobile operator to reach 2 million customers on August 25, 2000. CosmOTE experienced the most spectacular increase in customer base: 233 percent in 1999 and 52 percent in the first half of 2000, resulting in a continuous increase in its market quota and moving toward the second market position. Despite a faster launching, Stet Hellas has lost the market leader position and recently the second position.

In 1999 the number of mobile users jumped 86.9 percent to 3.85 million, or 37 percent teledensity, while in the first half of 2000 the customer base increased by 25.7 percent to 4.84 million, or 46 percent mobile density. To compare, in 1999 OTE's fixed telephony subscribers increased from 5.496 million to 5.574 million, or a 1.4 percent increase, while fixed teledensity increased from 52.7 percent in 1998 to 53.3 percent in 1999!

GrD billion		Panafon	Stet Hellas	CosmOTE
Revenues	1998	221.8	118.5	14.5
	June 1999	121.2	69.4	43.4
	1999	270.1		107.5
	June 2000	71.3*	83.7	89.5
EBITDA	1998	88.8	34.4	–13.3
	June 1999	46.2	15.7	6.5
	1999	116.1		24.5
	June 2000	28.8*		19.9
Net earnings	1998	42.6	6.0	–10.6
	June 1999	18.9	1.0.	59
	1999	56.2		6.1
	June 2000		2.7	4.1

* Second quarter 2000
Note: Exchange rate as of June 30, 2000: GrD353.00 to U.S.$1.00.

Table 1.

To develop a subscriber base, mobile operators were keen to provide new services and facilities. Panafon and Stet Hellas provided services for sending and receiving short messages via a mobile phone, as well as WAP services: Panafon Go WAP amd STET online WAP. Panfon launched its ISP, Panafonet, and its own branded portal, Pan.gr, while Panafon Fleet Manager is an integrated logistics package for managing corporate vehicle fleets. In line with its one-stop shop strategy, Panafon also launched virtual private network (VPN) services to corporate customers. Late in July 2000, STET Hellas became the first Greek operator to introduce the high-speed circuit - switched data (HSCSD) feature to its GSM mobile network, while early in July 2000, STET became the first operator in the Greek market to provide free sponsored mobile calls for its customers.

In July 1999 Panafon introduced a loyalty tariff plan (VALUE Plus) for existing customers, and in September 1999 a new tariff plan (VALUE) to attract new customers. Since the launch of Stet 0.5, the tariff contract with the lowest monthly fee per-second charge on the market, contract net additions have risen dramatically. STET customer churn remained a serious challenge during the first half of 2000: average churn rate was stable at 12 percent, reflecting churn for both contracts (31 percent) and prepaid (2 percent).

Both GSM900 operators launched prepaid packages in 1997 (Panafon in October and Stet in April); CosmOTE did so at the end of 1998, with a strong impact on boosting subscriber numbers. "Panafon a la Carte" is the leader in prepaid services in the Greek cellular market, over 44 percent market share, but the increasing proportion of prepaid customers, who traditionally have lower levels of usage, has had an impact on the average revenue per user which was GrD 15.313 for the year to 31 March 2000, compared with GrD 20.115 for the year to 31 March 1999.

Financial results of mobile operators are in line with spectacular increases in subscribers base (Table 1).

For the quarter ended 30 June 2000, Panafon income

(Continued on next page)

before tax increased by 19.6 percent to GrD 19.7 billion, compared to the same period of last year. Pretax margin increased to 27.6 percent, from 24.3 percent for the comparative period. Turnover increased 5 percent to GrD 71.3 billion driven by a 25 percent increase in airtime revenues over the previous period. Earnings before interest, tax, depreciation, and amortization (EBITDA) increased to GrD 28.8 billion, while EBIT grew by 15.1 percent to GrD21.1 billion over the same period.

For the first half of 2000, STET Hellas total revenues increased by 20.5 percent, while EBITDA increased 34.3 percent year to year. EBITDA for the period improved by 34.3 percent year to year to 21.1 billion. Operating income was GrD 10.6 billion, up 39.5 percent year to year, while earnings before taxes were GrD 6.5 billion, more than double the figure for the first semester of 1999. Net income for the first half of 2000 was GrD 2.7 billion, compared to 1.0 billion for the first half of 1999. The six-month EBITDA margin (EBITDA over revenues) increased to 28 percent, up from 24.2 percent.

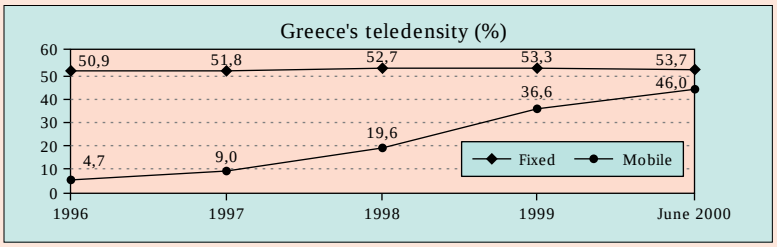

Figure 3.

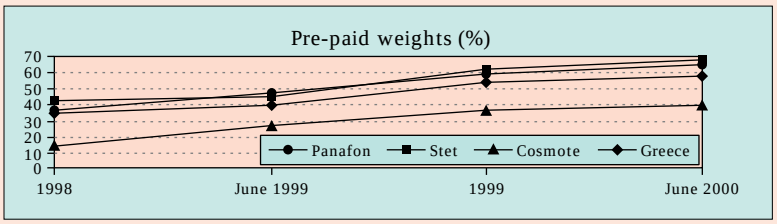

Figure 4.

CosmOTE had US$52 million gross profit in the first half of 2000, three times more than in the same period of 1999, while turnover doubled to US$233 million (GrD88.8 billion).

Panafon and CosmOTE have plans for regional expansion. The rationale for a Balkan expansion should be found in a lower fixed telephony penetration rate, long waiting list and waiting time, quality of services, an incipient but booming market for mobile telephony, regional synergy able to lower costs, and mainly geographical affinities. Moreover, mobile technology permits faster rollout, while the costs seem to be cheaper than fixed telephony. That is why Greek mobile operators are keen to go international.

Panafon and Vodafone bid for a majority stake in AMC, Albanian Mobile Communications, the only cellular operator in Albania. To complement its long-term Internet strategy, Panafon announced recently its plans to launch an ISP and Internet portal in Cyprus: Panafon Cyprus.

CosmOTE has the privileged position of being 70 percent owned by OTE, the Greek national operator, present in many countries in the region: Yugoslavia (20 percent stake in Telekom Serbia), Romania (35 percent stake in RomTelecom), and so on. At the EuroForum conference Balkans and South East European Telecoms, Athens, November 16 and 17, 1999, Nikolaos Manasis, CosmOTE's CEO in that time, declared that he wanted "to build one CosmOTE in every Balkan country": CosmoROM in Romania, CosmoBUL in Bulgaria, CosmoYUG in Serbia, CosmoMAC in FYROM, ComoALBA in Albania, and so on. He focused on a 65-million-inhabitant potential market with about 26 percent fixed-line penetration rate and 8 percent mobile teledensity. In Yugoslavia, OTE has a secondary position in Telekom Serbia, with Telecom Italia owning a 29 percent stake. Telecom Italia seems to still be facing digestion problems after Olivetti's hostile takeover, while the need for communications infrastructures in Yugoslavia increased after NATO airstrikes and its return to democracy. Romania's CosmoROM was not so fast to launch its services, planned for the end of 1999 and postponed in May 2000, while a mobile license was received in December 1998! The existing ownership structure (RomTelecom, 100 percent) seems to be not very helpful in raising the funds to finance business development: some US$250 million/year for the first years in order to keep pace with the existing GSM900 operators. Thus, a strategic partner is a prerequisite for CosmoROM to be able to compete with MobiFon (Telesystem International Wireless and AirTouch) and Mobil Rom (France Telecom). Will this be CosmOTE? In Bulgaria, OTE in partnership with KPN of The Netherlands bid for the majority stake in BTC, a national operator having a mobile license, and after more than a year negotiations failed.

Now, Mr. Manasis is in the position to give life to his dream: a wireless Balkans. In May 2000 he was appointed to the post of Chairman and CEO of OTE, and his debut seems to be very aggressive. The CosmOTE and Telenor (Norway) joint offer, US$85.6 million, for an 85 percent stake in the Albanian mobile operator AMC was far over the joint offer of Panafon and Vodafone (US$40.5 million). The AMC network covers 26 percent of Albania's territory with 50 percent of the country's inhabitants, with CosmOTE and Telenor intending to invest US$120 million to expand its network and improve service quality. The price paid, some US$7000/subscriber is not too far to the Euro 7800/subscriber France Telecom paid for the United Kingdom's Orange. It is clear that Mr. Manasis intends to focus on mobile telephony; fixed telephony business is losing ground worldwide. It is very probable that OTE will compete again in Bulgaria for the mobile license announced early in September. At the Athens conference Mr. Manasis also announced CosmOTE's IPO. Now CosmOTE is to offer 48.7 million shares to Greek and international investors. The flotation, set for October, would amount to about 15 percent of CosmOTE's equity. Early in October, the launch price for a share was established at US$8.3, valuing CosmOTE at US$2.6 billion. For the time being OTE is in a restructuring process preparing for next year's market liberalisation. A strategic partner could be attracted this year, by the sale of a minority (10 percent) stake. A new managerial team appointed in May 2000 and a simplified decision making process giving Mr. Manasis more decisional power could accelerate the OTE restructuring process. To compensate for fixed telephony stagnation, OTE has a chance: mobile telephony.

CONTRIBUTIONS TO THE GLOBAL COMMUNICATIONS NEWSLETTER ARE WELCOME. CONTACT THE EDITOR AT gcn@comsoc.org

Boiled Frogs or Interactive Innovators? (continued)

people, places, and ideas through visiting faculty, sabbatical fellowships, and student visits and internships. In this sense it is a hub as well as a hive. In this way the famous "six degrees of separation" characterizing the "small world" [1] could be even further reduced.

Activities refer to three elements: a graduate program, a research laboratory, and a knowledge sharing program.

The diploma program is a two-year program consisting of lectures, workshops, and exercises introducing students to concepts and skills in design, business, and technology. These studies are complemented by the execution of a series of projects emphasizing different aspects of interactive design, culminating with a single project in which teamwork is strongly encouraged. The final examination is a critique by practicing designers, technologists, and potential investors. The program is designed to encourage innovation, coming from creative individuals not afraid to follow weird or unpopular paths.

The IDI will run a collaborative design research laboratory, undertaking projects to invent and develop new ways in which technology can be designed to serve the needs and desires of people to enrich their everyday lives.

Some sample themes covered by the first projects will be:

- Wearable computing: continuous value creation via "smartness on the move"
- Connected appliances: how they interact with us, and what benefits they will bring
- Smart cities: communication services connecting citizens, culture, and business
- Hybrid learning: knowledge environments combining the real and the virtual

The third featured element of IDI is knowledge dissemination and sharing, one of its core processes. For this purpose the IDI will develop a series of channels for proactive sharing of knowledge and know-how, ranging from special interest conferences and workshops, through newsgroups and mailing lists, to other forms of interaction and publishing, starting with the Website of the Institute: http://www.interaction-ivrea.it.

The Institute will host about 100 people selected from students and researchers all over the world. After the two-year program the students will get a post-graduate diploma; they will stay at the Ivrea campus with the resident researchers of the laboratory.

Attending the opening ceremony and visiting the related exhibition, I had the opportunity to assess the status of the progress of this initiative; even though some steps are still to be made along the path toward interactive design's exhaustive implementation, I found in Ivrea many promising seeds. A new star seems to have been born in the universe of what George Gilder has called "microcosm" and "telecosm"[2], characterized by the ultra-fast pace of computers' penetration and the explosion of connectivity.

The seeds have been put; let us wait trustfully for the crop.

[1] D. J. Watts and S. H. Strogatz, "Collective Dynamics of 'Small World' Networks", *Nature*, vol. 393, pp. 440-442, 4 June 1998.
[2] G. Gilder, *Telecosm — How Infinite Bandwidth will Revolutionize Our World*, The Free Press, 2000.

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IEEE ICC2001 Helsinki
By Savo Glisic, Technical Program Chairman

This year ICC was held in Helsinki, Finland, June 11–14. A record number of 1145 papers were submitted for presentation at the conference, and after the reviewing process 628 papers were selected to be included in the program.

Most of the received papers came from the United States (339), then China (120), Japan (80), Korea (80), Taiwan (73), Italy (59), Canada (58), Finland (49), the United Kingdom (33), and so on. The distribution of accepted papers was 234 from the United States, from China 51, from Japan 45, from Italy 38, from Taiwan 33, from Canada 32, from Korea 31, from Finland 28, and so on.

The papers were organized within 78.5 technical sessions of the General Conference and 7 symposia. The symposia were on Access Networking, Quality of Service, Next Generation Internet, Mobile Internet, High Speed Packet Switching and Circuit Switching Networks, Personal Communications, and Communication Theory.

The general conference was organized by ComSoc Technical Committees and covered the following areas: Communications Software, Communications Switching and Routing, Communication System Integration, Communication Theory, Computer Communications, Enterprise Networking, Gigabit Networking, Information Infrastructure, Multimedia Communications, Network Operations and Management, Personal Communications, Radio Communications, Satellite and Space Communications, Signal Processing and Communication Electronics, Signal Processing for Storage, and Advanced Signal Processing for Multimedia Applications.

In addition, 15 tutorials and 2 workshops were presented in the most attractive areas. Special attention was paid to organizing a number of business and application sessions where the world's foremost experts participated as panelist from different fields in communications. These sessions were the best attended, with on average 200–400 participants per session.

The number of registered participants was over 1400; altogether, more than 1700 people were involved in the conference. Technical sessions were well attended, and the organizers prefer to believe this was due to the high quality of the presentations rather than bad weather in Helsinki.

A special touch was evident in the organization of the Plenary session and banquet, creating a warm relaxing atmosphere people enjoyed very much. With a feeling of satisfaction, people are looking forward to meeting again at the next ICC.