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Formal Description Techniques and Protocol Specification, Testing, and Verification

*by Prof. Dr. Reinhard Gotzhein **(D)****

From October 8 to 11, 1996, the **IFIP** Joint International Conference FORTE/PSTV'96 was held in Kaiserslautern, Germany, organized by the University of Kaiserslautern. With 140 participants from 25 countries (including 14 attendees from 6 Eastern European countries), attendance was above expectations. For the first time, the hitherto separate FORTE and PSTV conferences were combined into one event. Both FORTE and PSTV are well-established conference series, organized under the auspices of the **IFIP** Working Group on Architecture and Protocols for Computer Networks (WG6.1), which is chaired by **Dr. Harry Rudin (CH).** While the scope of FORTE is formal description techniques (FDTs) for distributed systems in general, PS+V is more concerned with communication protocols.

FORTE/PSTV'96 started with one day of tutorials and advanced-technology seminars covering formal methods for multimedia, formal approaches to feature interactions in intelligent networks, quantitative aspects of process algebras, and message sequence charts. The tutorial day was followed by three days of technical presentations from academia and industry, including the latest results in theory, application, tools, and industrialization of FDTs applicable to communication protocols and distributed systems.

FORTE/PSTV'96 featured four invited presentations. listed here chronologically. **Prof. Dr. André Danthine (B)** addressed

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' Conference chair of FORTE/PSTV'96

Revolution in Education Discussed by Keynote Speaker at **IFIP** Congress '96

At the closing session of **IFIP** Congress '96 (see the article on page **1** of the December 1996 ***IFIP*** *Newsletter),* **Dr. Dale Spender** (AUS), a well known expert on language and communication, delivered a provocative address on the present revolution in education and learning. This was especially appropriate, because "Teleteaching '96" was one of the three conferences included under the umbrella of the Congress (see the article on page 8). We print here selected parts of her talk. The complete address can be found on the WorldWide Web at

The biggest business of the future will be the education industry. Never before has education as an enterprise been able to amass such a dazzling array of talent. Never again will it be said that those who can't do anything else can go into teaching. Education is the industry of the future and where the hottest people will want to be. And it is the new technologies that are launching education. New partnerships are being forged; new and huge markets are being found. And this is why education is the industry that everyone will wish they had shares in.

The Education Revolution

We are in the throes of a revolution. Most of what we know about teaching and learning is becoming increasingly inappropriate. For the last five hundred years, teaching and learning have been based mainly on book information, and while we may have developed some pretty good theories and practices for doing education, and for studying it, the print insights and habits won't transfer to the digitised world. Teaching and learning "online" are so transformed that it is not even possible to make the old distinctions between teacher and learner.

As we move from a print culture to a digitised culture, we move from stable information to moving information. Suddenly, it is not the oldest information — the longest lasting information — that is the most reliable and useful. It is the very latest information that we now put the most faith in and which we will pay the most for. Information is now a commodity, just like other goods and services. This will be at the core of the educational industry from now on.

Education will be about participating in the production of the latest information. This is why education will have to be ongoing throughout life and work. Every day there will be something new that we will all have to learn in order to keep up, to be in the know, to do our jobs, and to be members of the digital community. Far

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Who's Who in IFIP: Prof. Jozef Gruska

Occasionally, we are unable to print the biography of an **IFIP** officer before she or he leaves office. **Prof. Gruska's** is one such case. Although his second term as chair of Specialist Group 14 ended last year, we print his biography in recognition of his past work for **IFIP** and because we expect him to remain active in the Federation.

Prof. Jozef Gruska was born in Kosice, Slovakia. He graduated in mathematics from Commenius University in Bratislava and received a Ph.D. in Computer Science from the Slovak Academy of Sciences in 1965. For most of his career, he has been affiliated with institutes of the Slovak Academy of Sciences. His research interests are concentrated in the fields of descriptional complexity (he is one of the founders of the area), parallel automata, and the foundations of computing. His teaching involvement has ranged from high schools (in 1977, he developed a special curriculum and wrote basic textbooks) to teaching at several universities, at home and abroad, to the education of ten Ph.D. students. Recently, he finished a basic textbook, *Foundations of Computing,* with a novel, much broader approach than usual, to be published this year by International Thomson Computer Press.

Working in 1959 with analog computers and becoming the first digital computer programmer in Slovakia, **Prof. Gruska** was a pioneer of computing in Slovakia. His weekly scientific seminar, established in 1966 and still running, is one of the oldest in Europe and has greatly contributed to the growth of a strong research group in theory in Bratislava. He is also one of the founders of two very successful annual meetings, the Mathematical Foundations of Computer Science Symposium (established in 1972) and the winter school SOFSEM (established in 1974), which have greatly contributed to the development of theoretical computer science in Europe and to computing in general in Czechoslovakia. **Prof. Gruska** has organized many conferences and served on the program committees of about 40 international meetings, delivered approximately 120 talks at conferences and seminars abroad, and spent more than eight years as a visiting professor at universities in Europe and North America. He has also served on many scientific bodies at home and has been on the Council of the European Association of Theoretical Computer Science for six years.

His first **IFIP** involvement was at the 1968 Congress in Edinburgh, where he delivered a paper. Since 1971, he has been a member of the Czechoslovak National Committee for **IFIP,** and for six years, he served as its scientific secretary. At **IFIP** Congress '86 in Dublin, he chaired a panel discussion on Pragmatical Aspects of Complexity Theory. As a member of the International Program Committee for **IFIP** Congress '89 in San Francisco, he was responsible for the very successful theory track. In 1989, he was also given the responsibility to establish the **IFIP** Specialist Group (SG) on Foundations of Computer Science. This SG, at first provisional, then permanent, was transformed by the 1996 General Assembly in Canberra into **IFIP** Technical Committee 1. In 1995, **Prof. Gruska** was awarded the **IFIP** Silver Core.

Prof. Gruska's family is scientifically oriented. His wife, Viera, teaches mathematics at the Technical University in Bratislava. Both children are computer scientists: Son Damas works on models of concurrency at Commenius University in Bratislava, and daughter Jana is performing research in robotics as a postdoctoral student at the University of California in Berkeley.

In his leisure time, **Prof. Gruska** hikes and collects folk and modern art, Easter eggs, and other objects. His collection of 88 nativity sets from 33 countries (the largest containing 222 pieces) has had several successful exhibitions. ■

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Aims and Scopes of New Working Groups

In September, the **IFIP** Technical Assembly (TA), meeting in Canberra, Australia, approved four new Working Groups. Following are the Aims and Scope statements for these WGs. (Some of them are slightly modified versions of the ones approved by the TA.)

WG3.7: Information Technology in Educational Management (ITEM)

AIMS:
• To promote effective and efficient use of Information Technology within the management of educational institutions.
• To promote the use and advancement of decision-making tools within educational management, including those from the fields of operations research, decision science, expert systems, and human-computer interaction.
• To follow technological developments (hardware, software, and communication systems) and their possible impact on ITEM application and to recommend and forecast the development of ITEM systems.
• To investigate human, social, ethical, and security and confidentiality aspects of ITEM systems and to provide recommendations for their adequate treatment.
• To promote international cooperation and exchange of information on the state of the art of research, development, and implementation of ITEM systems.
• To propose themes for international, collaborative research and development in ITEM and to seek funding for such research and development from national and international bodies.
• To provide advice and support to countries and educational systems in the developmental stage of their ITEM systems, with special emphasis on developing countries and emerging educational systems.

SCOPE:
• Educational institutions: kindergarten, primary and secondary education, universities, adult education, and in-service training.
• Educational authorities and systems: local, regional, national, and international.
• Research and development institutions: academic, non-profit, government, and commercial.

WG6.7: Intelligent Networks

Intelligent Networks (IN) denotes an environment for fast service creation and service management in telecommunication networks. IN was developed for voice and telephony services but is now also applied widely to mobile networks. The development of new broadband networks and the introduction of interactive multimedia services will create new service architectures where intelligence in networks may be redefined.

AIM:
To identify and study current issues related to the development of intelligent capabilities in networks. These issues include the development and distribution of services in narrowband, broadband, and mobile networks.

SCOPE:
Includes but is not restricted to the following topics:
• Value-added services market development in telecommunications
• Service creation, distribution, and management
• Real-time databases and caches for services
• Performance
• Standardization
• Service-creation architectures applied in voice, data, mobile, and multimedia services
• Software methods and tools for service creation and management

WG6.8: Wireless Communications

AIMS:
• To organize and promote the exchange of information on wireless communication systems and networks, fixed and mobile, land and space, terrestrial and satellite, local and global.
• To help in the research, development, design, standardization, and applications of wireless modules, equipment, and systems.
• To examine technical operational capabilities of future wireless networks for voice, data, text, and image communications. The results of the work will be made available to individuals as well as organizations concerned, such as manufacturers, operators, common carriers, standardization bodies, and users.

SCOPE:
Includes but is not restricted to the following topics:
• land mobile and personal digital communications
• terrestrial and satellite-based communication techniques
• digital microwave systems and networks
• digital radio and TV broadcasting

All topics should be examined from the viewpoint of architecture and protocols, modulation, coding and decoding, communication techniques (multiple access, error control, flow control, routing, etc.), security, implementation, user aspects, and legal, economic, social, and human issues.

WG8.7: Informatics in Multinational Business Enterprises

AIM:
Encourage collaborative research among practitioners and researchers to investigate processes, theories, and methods associated with the use of information technologies in the structure, governance, and decision making of multinational enterprises.

SCOPE:
• Use of information and communication technologies in multinational enterprises and their effects on strategy, tactics, competitive actions, organizational structures, governance, and operations.
• Development of unified metrics and tools for measurement, spatial mapping, and other analysis for the systematic comparison of alternative international information technology infrastructures and systems.
• Engineering of international information systems. Included are design and development methods, management of development processes, economics of information processing in multinational enterprises, and management of change in diverse cultural settings.
• Cataloguing, study, and analysis of emerging forms of organization in multinational enterprises, based on the use of information and communication technologies.
• Development of new theories and concepts to understand these new international systems. ■

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Personal Impressions of CCDC/AFRICOM'96

*by Prof. Otto Spaniol (D)**

The conference series CCDC**/AFRICOM already has a tradition, at least two events with this name having been held in each of the following three countries since 1984: South Africa, Tunisia, and Zimbabwe. The conferences are jointly organized by the **IFIP** Technical Committee on Communication Systems (TC6), the ICCC (International Council for Computer Communication), and the computer societies of the organizing countries. The most recent event of the series took place in Harare, Zimbabwe, 15-17 October 1996. The major components of CCDC/AFRICOM'96 were a large and very innovative exhibition and the conference itself.

The Exhibition

Everybody was very impressed with the size and the quality of the exhibition. A high percentage of the displays concentrated on applications of multimedia systems and on WorldWide Web usage. It was exciting to see people getting their first experiences of Internet surfing at the exhibition. I would like to give just one example of the spontaneous type of communication that resulted from the exhibition: A visitor to the exhibition was trying to find useful information about insurance in Africa, since he worked in that area. Because of my experience with browsing tools, I was able to help him download some WWW pages related to the topic. But very soon we were joined by another attendee who had very good ideas and tricks for better search strategies. This was the start of a very successful electronically supported group communication, and I observed several similar conversations at the exhibition.

During the first day of the exhibition, I was a little skeptical about its eventual success, since there were not too many visitors. However, for reasons that I did not fully understand (maybe because of TV advertising), the situation was dramatically different for the subsequent days of the exhibition, when it became almost too crowded.

The Conference

There were times when I would have liked the conference to have been as crowded as the exhibition. The conference facilities within the Zimbabwe Conference Center were almost too big and too futuristic. The opening session was held in the main hall, which has some 2000 seats. Thus, the 100 or so participants at **the** opening sessions appeared to be a little lost in this environment. I felt much more comfortable in the subsequent sessions, which were organized in rooms of approximately 200 seats. The organizing committee decided to subdivide a few hours of the three conference days into two parallel streams. The unavoidable consequence was that the number of participants in the technical substream was not overly high (the business-oriented substream attracted more people). For the third and final conference day, the organizers decided on a single-stream event.

The conference presentations included the usual two extremes: business-oriented papers (which sometimes were rather similar to product sales talks) and pure research manuscripts (which sometimes dealt with ideas that will not be technically viable for the next decade). As a whole, the vast majority of the 25 presentations had excellent state-of-the-art content. Nevertheless, for subsequent events, we should try to concentrate on a smaller number of somewhat longer presentations, e.g., on "mini-tutorials" of not less than 60-minute duration about highly relevant topics. This would probably be much more useful for the audience than the enormous number of 25-minute talks (which are too short, too densely packed, and sometimes too specialized).

General Comments

It is essential that organizations like **IFIP** and ICCC improve their visibility and their presence in developing countries. Fortunately, this is facilitated by the fact that access to international networks has become significantly improved during the past few years — from access for very few sub-Saharan countries to access facilities for almost all sub-Saharan countries within less than five years. Of course, the fact that a country has Internet access doesn't necessarily imply that very many people can use it with reasonable effort and cost, but this situation will improve very rapidly. I.e., network access for smaller towns and even for small villages will be provided very soon.

Unfortunately, the situation is much less favourable with regard to the organization

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* chair of TC6

** CCDC = Computer Communication in Developing Countries

Report from the President of the ICCC

*by Dr. Pramode Verma (USA) **

As the **IFIP** community already knows, the International Council for Computer Communication (ICCC) is an Affiliate Member of **IFIP.** It is my pleasure, as President of the ICCC for the 1997-98 term, to reaffirm our continuing relationship and express the hope that we can perhaps build further on the strong foundations we have laid over the past several years.

The ICCC has been especially close to the **IFIP** Technical Committee on Communication Systems (TC6), led by **Prof. Otto Spaniol** (D). Most recently, TC6 and the ICCC cooperated to host a major event in Harare, Zimbabwe, in conjunction with the Computer Society of Zimbabwe [see the other article on this page]. In addition, the two organizations also held a joint meeting in Nyanga, Zimbabwe, to discuss common objectives and, especially, plan joint activities between the two organizations during 1997-98.

The year 1997 is going to be very exciting for the ICCC. We have three events scheduled to take place: Our Conference on Electronic Publishing — possibly the first of its kind — will be held April 14-16 in Canterbury, U.K. (see the article on page **1** of the December 1996 ***IFIP** Newsletter),* followed by the Global Networking '97 Conference, scheduled to take place in Calgary, Alberta, Canada, June 15-17. Finally, the ICCC flagship conference, ICCC '97 — a biennial event — will take place in Cannes, France, November 17-21.

Among the many challenges and opportunities that the ICCC has on its immediate horizon, possibly the most important is the one to explore and reaffirm a charter that will successfully guide it into the next millennium. The Governors of the ICCC have been discussing the ICCC options for some time. A significant recent development has been that at the last meeting, held in Harare, the ICCC Governors voted to explore and initiate a new class of membership: for individuals. If the ICCC proceeds to institute this new class of membership, it will be an important paradigm shift for the organization.

Finally, in keeping with the tradition set by my predecessors, I wish to keep in close touch with **IFIP** events and continue to develop our relationship.

* president of the ICCC

Geographic and Political Issues in IFIP

A discussion of the geographical and political aspects of **IFIP** activities took place during the March 1996 Technical Assembly (TA) in Johannesburg, South Africa. Pursuing this issue, **Prof. Otto Spaniol** (D), chairman of the Technical Committee on Communication Systems (TC6), included the following analysis in his report for TC6 to the September TA.

One of the major driving forces behind **IFIP** since its founding, namely to be a marketplace for information exchange and cooperation between Socialist and Capitalist countries, has become much less important since 1990. This is not because there is no longer a need for such exchanges, but because no significant funds are now available for the organisation of events in Eastern Europe.

To give some examples:

- The COMNET series of conferences in Budapest was a traditional "window" for information about new communication systems. The most recent of these formerly very successful events was held in 1990; all attempts to organize successors of this conference have failed.
- The conference series Networks and Information Processing Systems, in Bulgaria, is still alive because of the enormous effort of the Bulgarian TC6 delegate, but the number of participants has sharply decreased (from several hundred real participants to fewer than a hundred). The most recent event of the series became viable only by means of financial support obtained from the European Union.
- The number of smaller TC6 workshops in Eastern Europe is increasing, but the effort invested (also contributed by members of Western European countries) is enormous and can hardly be justified in the long run.
- The participation of TC6 delegates from Eastern European countries is more difficult than before. As a consequence, the delegates from these countries have little knowledge of **IFIP** and, therefore, cannot contribute significantly to the TC's work. Whereas delegates from some Eastern European countries could regularly participate in former years, these countries (e.g., Hungary) have been practically absent from TC6 meetings for several years. This is mainly because of the global economic situation (which makes it more and more difficult for other countries' delegates to participate, too) and to the changed level of importance of these events. That is, whereas participation in **IFIP** events was extremely highly valued by former Socialist governments, the importance of **IFIP** appears to be considered now as relatively low or even marginal.

In the future, **IFIP** should pay much more attention to the Southeast Asia region (Thailand, Malaysia, Singapore, India, Korea, Taiwan,...). That is the place to be in the coming years! However, **IFIP** should not forget about Africa. Finally, **IFIP** should become much more visible in Latin America.

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*Member Societies Report to **IFIP** on Activities and Concerns*

Twenty **IFIP** Member societies prepared reports for the 1996 General Assembly in Canberra, Australia, about their activities, thoughts on **IFIP,** and other interesting material. Some of the reports were very informative, while others were quite brief. Some indicated healthy, growing societies, while others told of difficult times. We report here on those items that caught our attention.

Financial concerns were the most pervasive theme, especially in developing and post-Socialist countries. How to afford effective participation in **IFIP** was discussed in several of the reports. The report from the Czech Member society pointed out that its **IFIP** dues far exceed its annual budget. Only with governmental support administered through the Academy of Sciences is the society able to pay its **IFIP** dues. On the other hand, such support from the government is not possible in Slovakia. International travel to conferences is difficult too. One Member society pointed out that although a grant was awarded by **IFIP** for an individual from that country to attend **IFIP** Congress '96 in Canberra, the amount was insufficient for him to be able to go. One Member pointed out that since all society work is performed by volunteers, with no administrative staff, requests from **IFIP** for information and reports are often difficult or impossible to respond to. One report suggested that more **IFIP** meetings held by electronic means would enable developing and post-Socialist countries to participate.

Member Activities

The variety of Member activities is impressive. Many hold annual conferences. Among the largest are those of Brazil (1500), India (1600), and Japan (two National Conventions each year, 1500 and 2100 participants in the 1995 Conventions). The Australian Member is reinstating its national conference.

Several Members reported providing Internet access for their members, and the Canadian Member mentioned that it makes "extensive use of the Internet for the operation of the society and for the delivery of services to members." The Portuguese Member is organizing "the first Virtual Informatics Meeting ... via Internet, on the subject: The Information Society."

Some Members provide significant support for their governments and industry. The Albanian Member, for example, has developed databases for the telephone service and other organizations. The Canadian Member is "addressing the human resources crisis in the Canadian software sector" with training and certification programs. The Indian Member is implementing Project INTENT (Information Technology for National Transformation).

The Brazilian Member awards annual prizes for the best M.Sc. and Ph.D. theses and the best undergraduate research project, as well as providing "a student forum for discussing educational and professional subjects." The Czech Member is attempting to involve professionals who have left academia for private companies. The Czech and Slovak Members established the Czech and Slovak Society for Computer Science, in order to maintain "the current level of professional contacts and cooperation among professionals in both countries." The Hungarian Member organized the 1996 International Olympics in Informatics. The Swedish Member offers courses to its members at the graduate level at Swedish universities. The Canadian Member is working to have its designation of Information Systems Professional of Canada recognized throughout the nation.

Restructuring is being performed by the Zimbabwe Member for "raising the Society's profile in the eyes of both its members and the public at large." The Australian Member is concerned with maintaining its membership, which is dwindling because of retirement and resignation of older members and the diffi-

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IFIP TECHNICAL COMMITTEE 9: RELATIONSHIP BETWEEN COMPUTERS AND SOCIETY

The **IFIP** Technical Committee on the Relationship between Computers and Society (TC9) has a charter that is distinct from that of the other **IFIP** Technical Committees, in that it deals not so much with technology as with the impact of that technology on society. Established in 1976 under the chairmanship of the 1994 Auerbach Award winner **Prof. Calvin Gotlieb** (CDN), the TC has extended its coverage for the past 20 years to keep pace with the ever-expanding influence and impact of computers. The work of the TC is carried out primarily by its seven Working Groups (WGs) as well as by the **IFIP** Task Force on Ethics and Special Interest Groups on Copyrights, Patents, and a Universal Access to Information; Disabilities; and Computers, Women and Work.

We quote from the book *A Quarter Century of **IFIP*** (ed. **Zemanek)** for a bit of the early history of TC9. This section was written by **Prof. Harold Sackman** (USA).

> [In 1973, **Prof. Heinz Zemanek** (A), then president of **IFIP,]** submitted a formal proposal to the **IFIP** General Assembly for a new Technical Committee for "Non-Technical Affairs," for the field of human, philosophical, social, and historical matters, with Working Groups on "Information Processing and Society," on "Computer Applications in the Humanities," and on the "History of Computers and Automation." The proposal was turned down. ... Shortly after HCC 1 [the first conference on Human Choice and Computers, in 1974], at the 1974 **IFIP** General Assembly, as **Zemanek's** presidency of IFIP drew to a close, he again attempted to recommend approval of TC9. **Fred Margulies's** [A] extensive report to the General Assembly on the resounding success of HCC 1 was used as the basis for the viability and promise of TC 9. The General Assembly temporized by accepting TC9 "in principle," and setting up a task group to flesh out the detailed proposal. In the spring of 1975, **C.C. Gotlieb** agreed to chair TC9 for one year, at **Zemanek's** request. The first working meeting of embryonic TC9 was held in Boston, August 28, 1975, with 15 people showing up. **Gotlieb** was chairman and **Margulies** was Vice-Chairman. ... At the subsequent IFIP/GA meeting in 1975 at Rio de Janeiro, **Zemanek** again proposed acceptance of TC9, only to have it postponed once more. ... At the 1976 General Assembly meeting, TC9 was finally formally adopted by **IFIP.** Only two Working Groups were authorized, WG9.1, Computers and Work, and WG9.2, Social Accountability. ... **Gotlieb** originally agreed to serve as TC9 chairman for one year, extended it to four years, and was urged on all sides to remain chairman a full six years, the maximum allowable in **IFIP. ...** [In 1981, **R. Brotherton** (GB) was appointed chairman of TC9.] Later in 1982, **R. Brotherton** regretfully announced his resignation. ... **Fred Margulies** graciously accepted the interim Chairmanship of TC9 until a new chairperson could be elected and appointed.

The other chairs of the TC have been **Prof. Sackman** (1983-1989), **Prof. Klaus Brunnstein** (D, 1989-1995), and **Prof. Pertti Jaervinen** (SF, 1996 to the present).

Following are summaries of the TC9 WGs.

The WG on Computers and Work (WG9.1) studies how computers have affected employment levels, job content and structure, and career patterns. It encourages the design and development of systems that promote not only efficiency but job satisfaction. The WG has cooperated with the U.S. Computer Professionals for Social Responsibility (CPSR) and with the U.S. ACM special interest groups on Computer-Human Interaction (SIGCHI) and Office Information Systems (SIGOIS) in sponsoring conferences. It has now run five conferences on Women Work and Computerization.

The WG on Social Accountability (WG9.2) has been deeply involved for the past several years in the development of guidelines for the evolution of codes of ethics, conduct, and/or practice. This has been done in behalf of the **IFIP** General Assembly through a Task Force on Ethics. The results of this work were published under the title *Ethics of Computing: codes, spaces for discussion, and law*, edited by **Prof. Jacques Berleur** (B), chairman of WG9.2, and **Prof. Brunnstein.** In 1991, WG9.2 established the Namur Award, which is presented every two years to persons or organizations that exemplify social accountability in computer environments. The recipients have been **Prof. Joseph Weizenbaum** (USA), **Dr. Riccardo Petrella** (head of the European FAST programme), and **Mr. Carlos-Alberto Afonso** (representative of the Alternex Community, Brazil). WG9.2 also manages two Special Interest Groups: 9.2.1 on Disabilities and 9.2.2 on Ethics.

The WG on Home-Oriented Informatics & Telematics — HOIT (WG9.3) aims to foster benevolent design and use of HOIT. In particular, it cares about the position of and the potentials for vulnerable groups like children; less-educated, disabled, elderly, and nonemployed people; paid and nonpaid workers at home; cultural minorities; and unaware users.

The WG on Social Implications of Computers in Developing Countries (WG9.4) has a special and difficult task: to examine the experiences of introducing computers into developing countries and to raise the consciousness of computer professionals, policy makers, and the public to the potential effects. Primarily working through Internet, WG9.4 maintains a large list of concerned and contributing scientists throughout the world, who give direction to the work of the WG. A widely distributed newsletter also serves as an excellent vehicle for the exchange of ideas and solutions.

The scope of the activities of the WG on Applications and Social Implications of Virtual Worlds (WG9.5) is being changed from stressing artificial intelligence to involving trends in digital media and virtual worlds, as well as the impact of these on society. With this new emphasis, WG9.5 will look at multimedia, animation, virtual worlds for education and training, national developments in multimedia and virtual reality (VR), and the philosophical foundations of VR. Some of the more interesting VR applications are vocational training, architecture, and the virtual hospital.

The WG on Information Technology Mis-use and the Law (WG9.6) is primarily concerned with threats to computer security and the consequent risks to people and organizations. WG9.6 has the responsibility of evaluating and proposing general legal prescriptions to control these threats. The WG is currently working on a program of work to better identify and categorize protection techniques and their possible applications.

The WG on History of Computing (WG9.6) is currently working on two major projects. A joint subcommittee of WG9.7 and TC3 (Education) is developing guidelines for a curriculum in the history of computing, expecting to present its first recommendations shortly. The WG is also responsible for promoting the concept of Pioneer Days at **IFIP** Congresses, where the host organizations are encouraged to recognize the contributions of their national computer pioneers. Such a meeting was held at the Canberra Congress in 1996 and will be part of the Vienna/Budapest Congress in 1998.

IFIP TC9

Deals with the impact of computers on individuals, groups, institutions, and society.

TC9 Chairman: Professor Pertti Jaervinen
Position: Professor of Computer and Information Science
Employer: University of Tampere
Location: Tampere, Finland
Interests: research methods, social effects of computing, information systems

TC9 Vice-Chairman: Prof. Jacques Berleur
Position: Professor of Computer Science
Employer: University of Namur
Location: Namur, Belgium
Interests: epistemology of computing, computers and society, social issues of computing, ethics of computing

TC9 Secretary: Professor J.A.N. Lee
Position: Professor of Computer Science
Employer: Virginia Polytechnic Institute
Location: Blacksburg, VA, U.S.A.
Interests: history of computing, programming languages, compilers, civil engineering

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Working Group 9.1: Computers and Work — Studies implications of computerization for employment levels, job content and structure, industrial relations, and worker participation in information system design.

WG9.1 Chairman: Prof. Andrew Clement
Position: Associate Professor of Information Studies
Employer: University of Toronto
Location: Toronto, Ontario, Canada
Interests: information policy, workplace implications of IT, privacy and surveillance, participatory design

Working Group 9.2: Social Accountability — Aims at making computer professionals aware of social consequences of their work. Also studies codes of ethics and conduct.

WG9.2 Chairman: Professor Colin Beardon
Position: Professor of Art and Design
Employer: University of Plymouth
Location: Exeter, Devon, U.K.
Interests: computers in art and design, computers and culture, social aspects of networks and virtual environments, computers and craft work, computers in education

Working Group 9.3: Home-Oriented Informatics and Telematics — Fosters benevolent design and use of **HOIT.**

WG9.3 Chairman: Professor Kresten Bjerg
Position: Associate Professor of Psychology
Employer: University of Copenhagen
Location: Copenhagen, Denmark
Interests: psychology of homelife, domestic information ecology, virtual body / virtual home / virtual neighborhood, electronic diary

Working Group 9.4: Social Implications of Computers in Developing Countries — Studies social consequences of introducing computers into developing countries.

WG9.4 Chairman: Dr. Chrisanthi Avgerou
Position: Lecturer in Information Systems
Employer: London School of Economics
Location: London, U.K.
Interests: Information Systems in developing countries, organizational implications of information systems

Working Group 9.5: Applications and Social Implications of Virtual Worlds — Considers social effects of virtual reality and other Al applications.

WG9.5 Chairman: Mr. Guenther Cyranek
Position: Consultant for Interactive Media and Learning
Employer: Technology Center for Automation and Informatics (CTAI)
Location: Florianopolis, Santa Catarina, Brazil
Interests: information technologies in developing countries, interactive media and learning, informatics and society

Working Group 9.6: Information Technology Misuse and the Law — Deals with issues related to computer security risks.

VG9.6 Chairman: Eur. Ing. Richard Sizer
'osition: Independent consultant on risk analysis and IT security
ocation: Farnborough, Hampshire, U.K.
interests: IT misuse and the law, safety-critical software and systems, social issues concerning IT, standards and criteria applicable to IT security issues

Working Group 9.7: History of Computing — Promotes the study of history of computers and prepares curricula in this area.

WG9.7 Chairman: Professor J.A.N. Lee
Position: Professor of Computer Science
Employer: Virginia Polytechnic Institute
Location: Blacksburg, VA, U.S.A.
Interests: history of computing, programming languages, compilers, civil engineering

Reflections on Teleteaching 96

Organizers Evaluate IFIP's First Virtual Conference

Teleteaching 96 (TT96), one of the three conferences held under the umbrella of **IFIP** Congress '96 (see the article on page 1 of the December 1996 ***IFIP*** *Newsletter),* was the fifth in a series of conferences run by the **IFIP** Technical Committee on Education (TC3). Teleteaching refers to the use of computers and communication technologies in teaching and learning. TT96 addressed the use of these technologies across all sectors of education (elementary, secondary, university, and industry) and had particular relevance for those involved in open learning and distance education. The conference practiced what it preached, making use of teleteaching technologies such as video conferencing, e-mail, television, video, radio, and the WorldWide Web. The major thrust of TT96 was a "virtual" conference. Students and educators participated from their desktops or from local access points around the world. Teams in different countries held e-mail discussions prior to the Congress, and their results were presented and interpreted at the actual Congress in Canberra, Australia, in September, where there were 77 registered attendees from 16 countries for TT96.

Teleteaching 98 will be one of the seven conferences constituting **IFIP** Congress '98. Consequently, the strengths and weaknesses of TT96 have been thoroughly assessed, in order that TT98 be a success. **Prof. Sandra Wills** (AUS), chair of TT96 (and a vice-chair of TC3 as well as chair of four previous **IFIP** conferences), and two colleagues, **Ms. Geraldine Lefoe** (AUS) and **Mr. Robert Corderoy** (AUS), released a critique of TT96 in October 1996, just a few weeks after TT96. (For TC3 members, it is available on the CD-ROM described below.) **Prof. Wills** shares the following additional thoughts with the readers of the ***IFIP*** *Newsletter.*

Some delegates observed that they flew a long way to do things that they could have done from their desktops at home, which is true, in a way. There are challenges in integrating a virtual conference with an on-site conference. What is the value added for the paying, on-site delegate? To me, the value added has to do with the fact that often at home we do not make the time to sit at our desktops for our own professional development, and when we do, we are alone.

The "Internet Cafe" was a face-to-face meeting place as well as a virtual meeting place. Whether that opportunity was worth $1000 [Australian dollars] is another question. I always knew that running an education conference as part of the **IFIP** Congress was going to be difficult. We would never charge those prices in the education sector. The format of TT96 was the best compromise I could find to match the constraints I was operating under.

I think that the TT96 program was uncomfortably different; you had to really participate in order to get something from it, and some people did not feel comfortable actively participating. There were a number who were not high tech, would not have had access to this equipment on their desktops at home, and were nervous about asking for help. In hindsight, we definitely did not have enough helpers in the Internet Cafe, or enough instructions on what to do.

An analysis of the discussion groups on line showed about 100 "virtual" delegates from 20 countries, with Canada probably being the most active. I would have liked ten times the number of virtual delegates, but that's something we still have to work on: how to attract delegates so that they commit themselves to putting the time aside to participate at their desktop, when work and home intrude around them. It still seems to be "easier" to apply for funding, buy tickets, exchange money, organise passports, sit on planes for 24 hours, heave luggage around airports and hotels, counteract jet lag, communicate in foreign languages, and fight homesickness than to set aside 3 hours to participate from your desktop!!

There is a direct relationship between the number of papers accepted and the number of registrations. Academics, and maybe individuals from industry too, get funding to come to conferences if they have papers accepted. This was one of the reasons for low attendance in the two traditional conferences within Congress '96 (not enough papers were submitted). It was even more of a problem for TT96, where we didn't have any papers at all. Although we can re-engineer the format of conferences in the same way that we are trying to re-engineer our universities and schools, so that they provide more flexibility, we are still operating within an infrastructure or culture premised on the old formats. Everything doesn't change at once, unfortunately.

No print proceedings were produced for TT96. The proceedings, developed on the fly on the Web, are available to anyone and will remain on the Web until TT98. Five months after the conference, on-site delegates, as part of their registration, were sent a CD-ROM that contains edited highlights from the Web pages plus excerpts from videotapes of conference events. It was to be published by Chapman & Hall, the **IFIP** publishers; however, in the end it was felt that there were too many unresolved copyright issues in duplicating other people's Web sites and publishing conversations from list sery discussion groups. The CD-ROM was, therefore, sent only to registered TT96 delegates and TC3 members, and is not for sale. I think the CD-ROM is a rich resource for Teleteaching. So, check out the Web pages on

http://www.acs.org.au/ifip96/tele.html

I am happy enough with the conference. It was not perfect, but I have been to three **IFIP** Congresses and had dealings with a fourth and, as an "impoverished" educator, was not always happy with the fees and formats of those either. I am happy that we practised what we preach and that we demonstrated a model that we can all now reflect on and improve, if we really are to move forward into the brave new world that so many of us talk about as being just around the corner.

Professor Brauer Has Been Honored by University of Hamburg

*by Mr. Plamen Nedkov (BG) **

We are happy to announce that on November 29, 1996, **Prof. Wilfried Brauer,** an **IFIP** vice-president, was awarded the degree of Honorary Doctor of Sciences (Doktor der Naturwissenschaften ehrenhalber) by the Department of Informatics of the University of Hamburg. **Prof. Brauer** is the second recipient of this outstanding honor from the Department of Informatics, the first being the late German computer pioneer **Prof. Konrad Zuse,** to whom **Prof. Brauer** handed the award in 1979.

Prof. Brauer was the first Professor of Informatics in Hamburg and the first Director of the Institute for Informatics, founded in 1971. The Honorary Doctorate was conferred on him at the Institute's Silver Jubilee festivity, at which an address was delivered on behalf of the **IFIP** president, **Prof. Kurt Bauknecht** (CH). ■

* Executive Director of **IFIP**

EDUCATION REVOLUTION continued from page 1

from teaching a body of knowledge that will last for life, the new generation of information professionals will be required to search out, add to, critique, "play with," and update information daily and to make available the constant changes that are occurring.

The Cyberteacher/Learner

I am prepared to "teach" my current research to others who are interested in the topic — who want to know where I am up to. In order to participate in the global production of the latest information in the area, I would even be willing to sell my information to others who want it, just as I have sold books in the past — except that I no longer need a publisher. I could indeed set myself up as an online teacher and make my course available to the students of the world, a course which I could update daily as I "learnt" more about the topic in interaction with other cyberusers and other cyber sources. And I could do all this from my own home; I don't need an institutional setting to become a world teacher. But as I do research, learning and teaching on line, the Internet allows me to be both teacher and student — at the same time and on the same topic — which is why the dividing line between teaching and learning ceases to be useful.

The most significant development that is taking place, and which needs to be grasped at every level, is that information is now becoming interactive. Anyone who has access to it can make a contribution, can become an information producer. Whereas once you had to be the published author to produce information, the way is now open to all. And this means there are no established authorities any more. Teachers and students are doing the same thing, are sharing the same status, are participants in the same process.

This is truly the end of teaching/learning, and of grading/examining, as we have known them. It is no wonder that traditional educationalists are shocked at the very prospect of digitised education. It deskills all teachers on a grand scale. It puts an end to the role of teacher.

Competition for Students

We all know that universities are competing with each other for students in cyberspace. Courses delivered by television and radio started the trend, and distance learning is expanding. As more and more courses are offered online, universities will be able to draw on the entire nation — or the world — as potential students. We can start to see the waste of duplication, of providing 37 English I courses or Engineering II courses, ad infinitum. And the waste is even greater when so many of these courses are of such poor quality. This is why it makes sense for a couple of universities to specialise and to provide the best possible English I courses or Engineering II courses — which can then be taken up by other universities.

Dr. Dale Spender

Now the implications of this must be obvious: a huge reduction in the number of teachers or lecturers presenting the courses and a huge increase in computer support staff, media specialists etc. Many of those now doing the teaching could well be deployed as tutors or librarians, to assist students whose courses are coming from other universities. Teachers will have to compete with each other — and with independent writers, researchers, and service providers, who also have information to sell to potential students. From local schools to universities, much more emphasis is going to be placed upon the client or the customer. While I don't think it will happen in the next year or so, it could be the case by the turn of the century that there will be one rule for everyone in the education business: if you haven't any clients or customers, if there are no "users" who want to buy the information you are offering, then, like artists and performers who can't find an audience, you probably won't have a job.

Now this is not the time or the place to argue whether this shift to information as a commodity, and to the education industry, is a good or bad thing. The stand I am taking is that this is the way the world works and that as a creator of content — as writer or teacher — I am going to get on with it.

New Teacher Skills Essential

A basic requirement will be that every teacher be computer competent — and this means much more than simply being able to use a word processor. Just as it would not have been sufficient for educational professionals to be merely functionally literate in a print-based system, so now will it be unacceptable for information professionals to be merely electronically functional.

If teachers at all levels have to be as adept with the computer as their teaching/research resource as they once were with print, and the use of the textbook, then the retraining of existing staff will be a mammoth and costly exercise. But retraining the staff is only the beginning. Think of the enormous task that is involved in transforming existing knowledge sources — journals, textbooks etc. — from print to online interactive format. An educational community that has been primarily word-oriented will have to become visually sophisticated. In the cyberage, layout is increasingly important. Graphics is a whole new area of educational expertise, a source of extensive information and meaning.

Teachers who could once be found in the library, the laboratory or their studies or staff rooms, preparing their lessons or writing textbooks, will soon be found creating scripts, or delivering performances in studios — or else developing sophisticated software, intelligent agents, or interactive "games" based on the old print texts and lessons.

Just as it takes teamwork to produce everything from TV-delivered courses to a CD-ROM, so too are educational professionals going to find themselves increasingly working with teams of creative information people in the very near future, and computer professionals and support staff will be as much — if not more — a parf of the teaching—learning process as textbook writers and educational publishers have been to the print-based system.

As educational institutions become more like movie studios, there's nothing to stop television and cable providers from becoming more like educational institutions. It would even be very easy for our telephone companies, for example, to start delivering educational content and to charge for it.

The Classroom of the Future

I have sat in an Internet Cafe in the centre of Brisbane, which is right next to a uni-

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Dr. Johnson Is President-Elect of CEPIS

Dr. Roger Johnson (GB), a trustee of **IFIP,** has been named president-elect of the Council of European Professional Informatics Societies (CEPIS). He is a past-president of the British Computer Society and has been active in CEPIS almost continuously since its establishment in 1988. Nineteen informatics societies and federations are currently members of CEPIS (an Affiliate Member of **IFIP),** representing over 150 000 IT professionals in 17 European countries.

Dr. Walter Grafendorfer (A), another **IFIP** trustee, has been honorary treasurer of CEPIS since 1995.

AFRICOM continued from page 4

and the attendance of conferences: It has become extremely difficult to travel between African countries. In many cases, such travel is unaffordable (because of both time and cost). We could even say that it is easier and cheaper to reach Zimbabwe from any European country than from the vast majority of neighbouring African countries. For that reason, AFRICOM'96 should have been called ZIMBABWECOM'96, since almost all conference participants came from the organizing country. There were two invited speakers from two other African countries (Mauritius and South Africa) and some ten more invited speakers representing other continents of the world.

Recommendations

One concludes that the dissemination of information to developing countries by means of "international" conferences becomes more or less restricted to the country in which the event is held. There may be some dream about improving that situation by videoconferencing or by similar means, but we have to admit that this is much easier said than done. As a consequence, I see an increased need for dissemination by other means than "classical" conferences, e.g., by visits of small expert groups and by direct consultations, which, moreover, could be arranged much more easily and rapidly.

EDUCATION REVOLUTION continued from page 9

versity, watching countless students (mostly male) pay their $5 per half hour to access the Internet in this highly social scene. Some of the students were even accessing university information, and I was puzzled as to why they would pay to do so in the Cafe, when they could go online at the nearby university — for free. But when I asked them about this, they thought I was the one who was behaving strangely. "Why," they asked me, "would you sit in the library, where you have to be quiet and still, when you can come down here and muck around and have a good time with your friends — and still do your assignments?" As I watched them larking around, drinking their coffee and eating while working on their machines, while music blared and lights flashed and people came and went, I knew I was watching the classroom of the future, where students drop in to a social environment and log on to and interact with their courses, which are being delivered by "professionals" from any part of the globe.

Flexibility of the medium also needs to be exploited, providing students the opportunity to learn in their own time frames — after work, at weekends etc. — and at their own pace, in their own homes, and on their own laptops. Students who might be reluctant to "talk in class" or who have "minority" views should find the online environment (and "non-face-to-face" interaction) attractive. More equal access to teacher attention and time should occur.

We Need to Do More

We have the resources but not, it seems, the vision or the ability to seize the moment. Except for the occasional event or presentation (such as this Congress), we don't even have a good record of bringing together the computer professionals, the educationalists, and the content contributors. The response to the digital renaissance in some of our educational institutions borders on the shameful and is no less the behaviour of the Dark Ages than was that of the scribes who tried to destroy the corrupting influences of the printing press.

Everyone who is at this **IFIP** Congress faces a personal and professional challenge — as I do every day of my information life. These are extraordinary times and call for extraordinary creative responses. There is nothing to stop us from being innovators in the new digital environment, and it is the only way we will have a legacy to pass on to the next generation.

FORTE/PSVT continued from page 1

current developments and standardization efforts for Video Dial Tone Services, based on ATM technology. **Prof. Dr. Manfred Broy** (D) provided a broad view of FDTs and a discussion of their shortcomings with regard to scientific and semantic foundations. By reviewing some successful and failed applications of formal methods, **Prof. Dr. Ed Brinksma** (NL) examined the conditions under which the application of formal methods is profitable. Finally, **Dr. Lothar Mackert** (D) discussed trends in network computing from a market and industry perspective and identified areas of needed research.

FDTs are being applied more and more in industry, with commercial tools available to support the use of some FDTs. To document this, FORTE/PSTV'96 featured both tool demonstrations, running in parallel with the Conference presentations, and industrial-usage reporfs.

The Conference proceedings, entitled *Formal Description Techniques IX — Theory, Application and Tools* and edited by **Prof. Dr. Reinhard Gotzhein (D),** the Conference chair, and **Mr. Jan Bredereke** (D), have been published by Chapman & Hall. Unlike previous proceedings of FORTE or PSTV, the final proceedings were produced before the Conference. The volume includes 28 refereed papers that were carefully selected by the International Program Committee, based on more than 400 reviews, out of 110 submissions. Twenty-four of these are research papers, and four are industrial usage reports (an acceptance rate of 24% and 50%, respectively).

The next FORTE/PSTV Conference will be held in Osaka, Japan, 18-21 November 1997 and will return to Europe in 1998. For further information, please see the WorldWide Web page at

http://sunfish.ics.es.osaka-u.ac.jp/forte.pstv97

or send e-mail to

forte-pstv97@ics.es.osaka-u.ac.jp

Information about submitting papers is in the Calls for Papers column on page 12.•

FOCUS Holds Annual Meeting

*by Dr. Jack Rosenfeld (USA) **

Focus (Federation on Computing it the United States), the U.S. Member of **IFIP,** exists solely to provide U.S. representation in and support tc **IFIP.** As the U.S. Member in **IFIP,** ii replaced AFIPS (American Federation of Information Processing Societies), disbanded in 1991, which had a much broader charter: organizing conferences, publishing technical material, and performing other activities. At present, the member societies of FOCUS are the Association for Computing (ACM) and the Computer Society of the Institute of Electrical anc Electronics Engineers (IEEE-CS), although membership is not restricted tc these two founding societies.

I was invited to the annual FOCUS meetings. last October, as an observer and as a spokesman for **IFIP.** This article, written in order to bring to the attention of the **IFIP** community one possible mode of supporting and maintaining close ties with **IFIP,** describes the meeting I was able tc attend.

* Editor of ***IFIP*** *Newsletter*

FOCUS holds its annual meetings on two days, one for the **IFIP** Technical Committee (TC) representatives (the meeting I attended) and one for the FOCUS Board of Directors. Nine of the U.S. TC representatives attended, as well as the FOCUS chair **(Dr. Bruce Shriver),** the **IFIP** General Assembly (GA) representative **(Mr. Howard Funk,** who is an **IFIP** vice-president), and other members of the FOCUS Board, a total of 15 attendees. The number was especially impressive when one realizes that FOCUS provides no travel funds to participants (except for the GA representative).

The most interesting aspect of this meeting was how much it sounded like an **IFIP** Technical Assembly (TA) or GA meeting. Naturally, the reports on TC activities were similar to those heard at the TA and the GA, but the concerns raised about the future direction of **IFIP** were also similar. Among the issues discussed were how individuals can participate in **IFIP** Working Groups without actually attending meetings, what effort in **IFIP** is expended in accomplishing something truly significant, how to make conferences self-supporting, the leading role **IFIP** should play in social issues of information processing **(Dr. Shriver** stressed the importance of this matter), continued self-evaluation by TCs, and the future of **IFIP** Congresses. Furthermore, the written reports of most of the TC representatives, available before the meeting, were extensive and carefully considered. In addition to what one might expect, they included comments on a list of issues raised previously by chairman **Shriver:** increasing U.S. participation in **IFIP,** the amount of financial support **IFIP** gives its TCs, the effectiveness of the TCs, the length of term of TC representatives, communication between **IFIP** and the FOCUS societies provided by the representatives, **IFIP** Special Interest Groups, succession of representatives, strategic planning of TCs, and joint TC activities.

In addition to the annual face-to-face Board meetings (approximately 15 people attended the one in October), bimonthly meetings of the Board are held by telephone conference call. ■

IFAC Continues Discussion of "No-Show" Authors

In the December 1994 newsletter of the International Federation for Automatic Control (IFAC), an article was printed on "no-show" authors (authors who, after their papers have been accepted for a conference, do not attend and present them). We summarized it in the March 1995 ***IFIP*** *Newsletter.* Since then, the IFAC newsletter has discussed further aspects of the issue, which we include here because of its relevance for **IFIP.**

The original article set out the following premise: No-show authors re unethical, and their unacceptable behaviour should be stopped. There were a number of thoughtful suggestions to improve on this basic proposal. It was suggested that explicit correspondence with the offender be initiated before any "blackball list" or other drastic action is taken, because what may appear to be a no-show situation may in fact be something else.

One writer described his attempts to act responsibly when he found himself in the conference city after a long trip but having fallen seriously ill. He tried, from his sickbed, to call the organizers at the conference site, but he was unable to inform them of his problem. Surely, he should not be classified as a no-show. Another writer described his attempts to contact the organizers about one week before the conference in a distant land. Email attempts failed, even though email addresses were published by the organizers. In this case, it was the organizers who failed to follow through with useable communications means. Still another writer explained that he is physically disabled and unable to get to conferences even though he can continue to contribute to the field. He thought that conference papers submitfed but not presented represented one means of getting his work exposed. This is a particularly interesting case and one that deserves attention. According to **Professor Stephen Kahne** (USA) [then the IFAC president], special arrangements should indeed be made for such an individual. These arrangements could consist of having others present his work at the conference; alternatively, a request by the individual to have his paper included in the postprint volume (with a note that the paper would not be presented because of special circumstances) should be honored by the organizers. Clearly, this is not the source of most of the occurring no-show problems.

One author complained that he was forced into a no-show situation because the conference organizers insisted that the actual authors make the presentation. This is a harsh rule but one that, if stated at the outset of the paper solicitation process, is certainly reasonable. No-show responses are not appropriate in such cases. But the burden is on the organizers to state the rules up front. Of course, there were also a number of commentators who proposed solutions such as up-front deposits at the time of submission. The President of IFAC, after having given this much thought, states that in his opinion this would be unfair to authors from certain countries and organizations in which such practice is either illegal or otherwise prohibited. It would be unfair to do this for all authors just to ferret out the few potential offenders.

Finally, the President urges caution when contemplating black lists or other measures. The situation must be understood completely in all cases. The rules for the meeting must be stated explicitly in the Call for Papers and other announcements, and organizers must insist on feedback from apparent offenders before taking draconian measures. To the authors, the President states that ethical standards are of supreme importance in any professional field, not the least in automatic control.

In conclusion, the President states: "Our professional integrity is the most important attribute we have, and the potential impact of an accusation of unethical behaviour may destroy a career." ■

CALLS FOR PAPERS

IFIP TC6/WG6.1 Joint Intl. Conf. on **Formal Description Techniques and Protocol Specification, Testing, and Verification — FORTE/PSTV'97**
18-21 Nov 97, Osaka, Japan
papers due: 11 Apr 97
contact: Prof. Teruo Higashino
Dept. of Information and Computer Sciences
Osaka Univ.
Toyonaka, Osaka 560
Japan
tel: +81-6-850-6607, fax: +81-6-850-6609
e-mail: forte-pstv97@ics.es.osaka-u.ac.jp
WWW: http://sunfish.ics.es.osaka-u.ac.jp/forte.pstv97/

15th **IFIP World Computer Congress**
31 Aug – 4 Sep 98, Vienna, Austria,
and Budapest, Hungary
papers due: 16 Jan 98
contact: http://www.ocg.or.at/ifip98

Will event organizers please send calls for papers to both the **IFIP** Secretariat and the *Newsletter* editor. Note that calls cannot be listed in this column until the events have been approved by **IFIP.** ■

MEMBER REPORTS continued from p. 5

culty in recruiting new members. The Portuguese Member is striving to improve its involvement with **IFIP.** The Slovak Member is organizing Working Groups and is working to revive IT professional life in regions of the country outside of Bratislava.

Codes of Ethics, inspired by the work on this topic by the **IFIP** Technical Committee on Relationship between Computers and Society, was mentioned. In its report, the Japanese Member presented its new code, and the Slovakian Member mentioned planning work on a new code.

A number of Members used their reports to deliver messages to the **IFIP** General Assembly. The Canadian Member noted that it remains difficult to convince its members of the benefits of affiliation with **IFIP** and suggests that **"IFIP** respond to this challenge by documenting how **IFIP** international efforts and initiatives support the work of national Member associations. For example, the work on the promotion of international standards [for professional qualifications] could be documented to show how **IFIP** supports the efforts of the Member countries and how it ultimately could affect the individual practitioner in these countries." The Austrian Member encouraged **IFIP** Technical Committees and Working Groups to provide input to the society's journals. The Bulgarian Member urged organizers of **IFIP** conferences held in Europe to seek financial support from the EU. The Singapore Member encouraged **IFIP** to establish international standards for IT professionals. The Swedish Member noted that the Nordic countries are eager to exchange information with other Member societies, and expressed a desire that **IFIP** be a conduit for such exchanges. ■

FUTURE IFIP MEETINGS

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

Council	2-6 Mar 97 (Sun.–Thurs.)	Bratislava, Slovakia
GA	31 Aug – 4 Sep 97 (Sun.–Thurs.)	Gramado (Porto Alegre), Brazil
Council	1-5 Mar 98 (Sun.–Thurs.)	U.K.
GA	5-8 Sep 98 (Sat.–Tues.)	Budapest, Hungary
GA	(contiguous to **IFIP** Congress '00)	Beijing, China

TECHNICAL COMMITTEE AND WORKING GROUP MEETINGS

WG1.3	Jun 97	Rome, Italy
TC2	5-6 Jun 97	Konstanz, Germany
WG2.2	97	Graz, Austria
WG2.3	22-26 Sep 97	Alsace, France
WG2.4	22-26 Sep 97	Estes Park, CO, U.S.A.
	Jun 98	Berlin, Germany
WG2.5	Oct 97	New Mexico, U.S.A.
WG2.6	2-4 Jun 97	Konstanz, Germany
	7-10 Oct 97	Leysin, Switzerland
	May 98	L' Aquila, Italy
	15-18 Dec 98	New Zealand
WG2.7/WG13.4	19-21 Mar 97	Atlanta, GA, U.S.A.
WG2.8	2-6 Jun 97	York, England
WG2.9	May 97	Haifa, Israel
	Jan 98	West Indies
	Jan 99	Dublin, Ireland
TC3	23-24 Aug 97	Harare, Zimbabwe
	Sep 98	Vienna, Austria
	99	Copenhagen, Denmark
TC5	8 Nov 97	Detroit, MI, U.S.A.
TC6	2-3 May 97	White Plains, NY, U.S.A.
	3-4 Apr 98	Stuttgart, Germany
TC7	22 **Jul** 97	Detroit, MI, U.S.A.
	Jul **99**	Cambridge, U.K.
WG7.3	**Jun 97**	Seattle, WA, U.S.A.
WG7.4	**Jul 97**	Detroit, MI, U.S.A.
TC8	27-29 Jun 97	Ambleside, U.K.
	29-30 Aug 98	Vienna, Austria
	99	Israel
WG8.1	17 Jun 97 (with CAISE)	Barcelona, Spain
	Nov 97 (with QSSE)	Delhi, India
	15-17 Jul 98	Beijing, China
WG8.2	Jun 97	Philadelphia, PA, U.S.A.
	Dec 97 (with ICIS)	Atlanta, GA, U.S.A.
	Dec 98	Helsinki, Finland
	Jun 99	St. Louis, MO, U.S.A.
	Aug 00	Jutland, Denmark
WG8.3	14 Jul 98	Bled, Slovenia
WG8.4	3 Oct 97	Perth, Australia, Tucson, AZ, U.S.A., and Delft, the Netherlands
WG8.5	5 May 97	Stockholm, Sweden
WG8.6	Jun 97	Ambleside, U.K.
	Dec 98	Helsinki, Finland
TC9	**11-12** May 97	Corfu, Greece
WG9.5	2-3 Oct 97 (tentative)	Florianopolis, Brazil
TC10	Sep 97	Gramado, Brazil
	Sep 98	Vienna, Austria, or Budapest, Hungary
	Sep 99	Toulouse, France
WG10.4	28 Jun – 1 Jul 97	Seattle, WA, U.S.A.
	Jun 98	Munich, Germany
	Jun 99	Madison, WI, U.S.A.
	Jun 00	New York, NY, U.S.A.
TC11	May 97 (with SEC 97)	Copenhagen, Denmark
	Sept 98	Vienna, Austria, or Budapest, Hungary
WG11.1	13 May 97 (with SEC 97)	Copenhagen, Denmark
WG11.2	May 97 (with SEC 97)	Copenhagen, Denmark
WG11.5	May 97 (with SEC 97)	Copenhagen, Denmark
TC13	Jul 97	Sydney, Australia
WG13.4/WG2.7	19-21 Mar 97	Atlanta, GA, U.S.A.

National Abbreviations Used in Newsletter

A	Austria	CH	Switzerland	P	Portugal
AUS	Australia	CZ	The Czech Republic	PRC	China
B	Belgium	D	Germany	S	Sweden
BG	Bulgaria	GB or UK	United Kingdom	USA	U.S.A.
BR	Brazil	IL	Israel	ZA	South Africa
CDN	Canada	NL	The Netherlands	ZW	Zimbabwe

Ethics of Computing

Codes, spaces for discussion and law

J. Berleur, Computer Science Faculty, University of Namur, Belgium
K. Brunnstein, Faculty of Informatics, University of Hamburg, Germany

Ethics of Computing represents the first attempt to confront, on a world-wide basis, the way computer associations face up to their own social responsibilities in an age increasingly dominated by information and communication technology.

This major reference work deals with the codes of ethics and conduct, and related issues. It is the first book to deal with 'homogenous codes', namely codes of national computer societies. Some thirty codes are compared and analysed in depth. To put these into perspective, there are discussion papers covering the methodological, philosophical and organizational issues.

Features of this handbook, which is based on the work of the International Federation for Information Processing (IFIP) Ethics Task Group, are:

- consideration and analyses of 30 codes of ethics and conduct
- papers on the meaning of professionalism
- education on ethical attitudes and existing policies in universities and educational institutions
- clarification of the issues at stake in considering 'ethics of computing'
- recommendations from IFIP Technical and General Assemblies to their member societies to open spaces for discussion.

This is essential reading for all computer associations and their members, as well as those in business, public and government organizations at the policy making level. It will also be of considerable interest to university lecturers and students in computer science and business management departments.

April 1996: 234x156 mm: 344 pages: 1 line illus: Hardback: 0-412-72620-3: £50.00

For further information contact:
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NETWORKS AND COMMUNICATIONS SYSTEMS

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Chapman & Hall, the principal publisher for the International Federation for Information Processing I. (IFIP), are offering a selection of 1995 and 1996 IFIP TC6 titles on Networks and Communication Systems at a special price. Choose any 10 titles from those listed below for only £650 - **this represents at least 20% discount on the full list price.** Members of IFIP are entitled to a **30% discount** on all titles published by Chapman & Hall on behalf of IFIP. (Note: these discounts cannot be used in conjunction.)

1995 TITLES	Edited by:	ISBN:
Communications & Multimedia Security	Posch	0412732602
Computer Networks Architecture and Applications	Raghavan	0412711907
Data Communications and their Performance	Fdida	0412732505
Formal Description Techniques VII	Hogrefe	0412644509
Intelligent Networks	Martikainen	0412717301
Local & Metropolitan Communication Systems	Hasegawa	0412711702
Open Distributed Processing	Raymond	0412711508
Performance Modelling & Evaluation of ATM Networks	Kouvatsas	0412711400
Protocol Specification, Testing and Verification XIV	Vuong	0412636409
Protocol Specification, Testing & Verification XV	Dembinski	0412716208
Protocol Test Systems VII	Mizuno	0412711605
Protocols High Speed Networks IV	Neufeld	041271180X

1996 TITLES		
Advanced IT Tools	Terashima	0412755602
ATM Networks: Performance Modelling and Evaluation	Kouvatsos	0412792001
Broadband Communications	Mason	0412759705
Communication & Multimedia Security II	Horster	0412797801
Distributed Platforms	Schill	0412732807
Formal Description Techniques IX	Gotzhein	041279490X
Formal Description Techniques VIII	von Bochmann	041273270X
Formal Methods for Open Object-based Distributed Systems	Najm	0412797704
Information Networks & Data Communication	Aagesen	0412757508
Intelligent Networks & New Technologies	Norgaard	0412789000
Protocol Test Systems VIII	Cavalli	0412781107
Protocols for High-Speed Networks V	Dabbous	0412758504
Testing of Communicating Systems	Baumgarten	0412787903

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Calendar of Events (continued from page 16)

Event	Date	Location	Sponsored by	Org. Contact
Intl. Conf. on Management of Multimedia Networks & Services '97	8-11.7.1997	Montreal, CDN	IFIP WG6.4/6.6	rboutaba@crim.ca
Intl. Conference on Functional Programming	9-11.7.1997	Amsterdam, NL	ACM SIGPLAN, IFIP WG2.8	simonpj@dcs.gla.ac.uk Fax: +1 5036901548
6th IFIP Conference on Human-Computer Interaction	16-18.7.1997	Sydney, AUS	IFIP TC 13	judy@socs.uts.edu.au Fax: +61 295141807
2"d Intl. Work. Conf. on Formal Methods for Open Object-based Distributed Systems	21-23.7.1997	Canterbury, GB	University of Kent at Canterbury IFIP WG6.1	h.bowman@ukc.ac.uk Fax: +44 1227762811
Conference on System Modelling and Optimization	22-25.7.1997	Detroit, USA	IFIP TC7, Oakland Univ. & Wayne State Univ.	polis@vela.acs.oakland.edu Fax: +1 810 370 4261
11th Working Conf. on Database Security	11-13.8.1997	Lake Tahoe, CA., USA	IFIP WG11.3	spoonerd@cs.rpi.edu Fax: +1 518 2764033
Informatics (Computer Science) as a discipline, and in other disciplines: What is in common ?	17-20.8.1997	Enschede, NL	IFIP WG3.2	vdhoeven@cs.utwente.nl
8th International Conference on Production Engineering - Rapid Product Development	18-20.8.1997	Sapporo, J	JSPE, CIRP, IFIP WG5.2/5.3	isn00003@niftyserve.or.jp Fax: +81 3 3367 0994
Designing Interactive Systems	18-20.8.1997	Amsterdam, NL	ACM, SIG, CHI	Lmcclelland@design.corp.philips.com Fax: +31 40 2734959
Capacity Building for Information Technologies in Education in Developing Countries	25-29.8.1997	Harare, ZW	IFIP TC3, Comp.Soc.Zimbabwe	csz@harare.iafrica.com Fax: +263 4 708861
Intl. Conference on Management & Control of Production & Logistics	31.8.-3.9.1997	Campinas, BR	IFAC, IFIP TC5	aguilera@ia.cti.br Fax: +55 192402023
I0th International Workshop on Testing of Communicating Systems	1-3.9.1997	Seoul, ROK	IFIP TC6/WG6.1	mckim@sava.kotel.co.kr Fax: +82 25265567
Intl. Conf. on Intelligent Networks	2-5.9.1997	Versailles, F	IFIP WG6.7	guy.pujolle@prism.uvsq.fr Fax: +33 1 39254057
Symposium on Robot Control	3-5.9.1997	Nantes, F	IFAC, IEEE Robotics & Automation, IMACS, IFIP TC12	khalil@lan.ec_nantes.fr Fax: +33 40747406
2"d Workshop on ATM	24-26.9.1997	Canada	IFIP TC6	andre@inrstelecom.uquebec.ca
3rd International Conference on Communications & Multimedia Security	25-26.9.1997	Athens, GR	IFIP TC1 1/ TC6	dgrit@aegean.gr Fax: +30 1 36451 54
7th Conf. on Performance of DCS	Sep 1997	Lund, S	IFIP WG6.3/7.3	ultk@tts.lth.se
7th IFIP WG2.6 Work. Conf on Database Semantics	7-10.10.1997	Leysin, CH	IFIP WG2.6	Fax: +41 21 6935195
Intl. Conference on Computer Applications in Shipbuilding	13-17.10.1997	Yokohama, J	Society of Naval Architects Japan IFIP TC5	koyama@nakl.t.u-tokyo.ac.jp Fax: +81 3 56847746
Secondary School Mathematics in the World of Communication Technology: Learning, Teaching and the Curriculum	26-31.10.1997	Grenoble, F	IFIP WG3.1	comu@grenet.fr Fax: +33 76871947
Conf. AFRICOM 97	Oct 1997	Tunisia	IFIP TC6, ICCC	f.kamoun@ensi.matn
Computer Application in Prod. Engineering	5-7.11.1997	Detroit, USA	IFIP TC5, SME	Fax: +815 987 6725
Work. Conf. on Large-Scale computer-supported Distance Learning Implementations	24-26.11.1997	Madrid, E	IFIP WG3.6	felisa@horacio.dieec.uned.es
IFIP TC 11 WGI1.5 Working Conference on Integrity and Internal Control	4-5.12.1997	Zurich, CH	IFIP WG11.5	strous@iaehv.nl Fax: +31 492 548636

A schedule of administrative meetings can be found elsewhere in this *Newsletter.*

Calendar of Events

Event	Date	Location	Sponsored by	Org. Contact
5th Intl. Workshop on Hardware/Software Co-Design	24-27.3.1997	Braunschweig, D	IFIP10.5, IEEE CAS, ACM SIGSOFT, ACM SIGDA	ernst@ida.ing.tu-bs.de Fax: +49 5313914587
3'd Intl. Symposium on Autonomous Decentralized Systems	9-11.4.1997	Berlin, D	IEEE Computer Society, IPSJ, The Soc. of Instr. & Control Eng. of Japan	moeller@fokus.gmd.de Fax: +49 3025499202
ICCC/IFIP Work. Conf. on Electronic Publishing '97 - New Models & Opportunities	14-16.4.1997	Canterbury, GB	ICCC IFIP TC6	millermr@boat.bt.com Fax: +44 1473 227677
XIII IFIP WG10.5 Conf. on Computer Hardware Description Languages and Their Applications	20-25.4.1997	Toledo, E	IFIP WG10.5	cdk@it.uc3m.es Fax: +34 I 624 9430
SIG-VHDL Spring '97 Work. Conf. VHDL User's Forum in Europe	23-25.4.1997	Toledo, E	IFIP TC10, ECSI	rachoux@eleq.de.epfl.ch Fax: +41 216934663
rd Intl. Symposium on Environmental Software Systems	28.4.-2.5.1997	Whistler, CDN	GI, Austr.Res.Ctr.Seibersd., IFIP TC5	denzer@htw.uni-sb.de Fax: +49 681 586712
7th IFIP Conf. on High Performance Networking	28.4.-2.5.1997	White Plains, NY, USA	IFIP WG6.4	ahmed@watson.ibm.com
Empowering Citizens through IT Innovation in Governmental & Municipal Information Systems	5-6.5.1997	Stockholm, S	IFIP TC8	traunm@ifs.uni-linz.ac.at Fax: +43 73224689308
IFIP WG9.2 Work. Conf. on Culture & Democracy revisited in the Global Inf. Society	8-10.5.1997	Corfu, GR	IFIP WG9.2/9.5	vassilios.laopodis@dg3.cec.be Fax: +32 2 2968998
5th IFIP/IEEE Intl. Symp. on Integrated Network Management	12-16.5.1997	San Diego, CA, USA	IFIP WG6.6, IEEE, CNOM	danstokes@aol.com
International Conference on Integrated & Sustainable Industrial Production Systems	14-16.5.1997	Lisbon, P	Ordem dos Engenheiros IFIP WG5.3, IEEE SMC	Fax: +351 1 352 4632
IFIP TC 11 Conference on Information Security: Research and Business	14-16.5.1997	Copenhagen, DK	IFIP TC11, DANFIP/DD	coopjacl@inet.uni-c.dk Fax: +45 3927 3322
2"d Intl. Workshop on Software Engineering for Parallel & Distributed Systems	17-18.5.1997	Boston, MA, USA	ACM/SIGSOFT, IEEE, IFIP WG10.3	russo@nadis.dis.unina.it Fax+39 81 7683186
Conference of Industrial Systems	20-22.5.1997	Belfort, F	IFAC, IFIP, (MACS	ifac.cis97@lmp.enibe.fr
Intl. IFIP Work. Conf. on Quality of Service	21-23.5.1997	New York, NY, USA	IFIP, CTR, IEEE, ACM, AT&T, IBM, Lucent Technologies	campbell@ctr.columbia.edu Fax: +1 2123169068
6th IFIP Intl. Conference on Women, Work and Computerization	24-27.5.1997	Bonn, D	IFIP WG9.1 Computer and Work GI, SIG8.1	up-vision@t-online.de Fax: +49 56911068
IFIP WG3.3 Working Conference "HCI and Educational Tools"	27-28.5.1997	Sofia, BG	IFIP WG6.3, Institute f. Inf. Techn., Bulg. Acad. of Science	darinad@fmi.uni-sofia.bg Fax: +359 2 656157
Joint International Conference on Open Distributed Processing and Distributed Platforms	27-30.5.1997	Toronto, CDN	IFIP TC6, IBM Canada, Hewlett Packard Canada	kmachoney@ocri.ca Fax: +1 613 592 8163
4th IFIP Work. Conf. on Visual Database Systems	28-30.5.1997	L'Aquila, I	IFIP WG2.6	spaccapietra@di.epfl.ch Fax: +41 21 6935195
3'd Intl. Conference on Reliability, Quality and Safety of Software-Intensive Systems	29-30.5.1997	Athens, GR	ENCRESS, IFIP WG5.4	Fax: +30 1 3645154
IFIP WG8.2 Working Conference: Information Systems and Qualitative Research	31.5.-3.6.1997	Philadelphia, PA, USA	IFIP WG8.2	peffers@crab.rutgers.edu
14th IMEKO World Congress'97	2-6.6.1997	Tampere/Helsinki, SF	IMEKO	Fax: +358 31 3162171
Symposium on Transportation Systems	16-18.6.1997	Chania, GR	IFAC, IFIP TC5	tasos@hra.ergasya.tuc.gr Fax: +30 821 69410
Conf. on Inf. Techn. f. Competitiveness	19-21.6.1997	Florianopolis, BR	IFIP WG9.4, DSE, SBC	cyranek@ctai.rct-sc.br
rd IFIP WG8.6 Intl. Conf."Facilitating Technology Transfer Through Partnership"	25-27.6.1997	Ambleside, GB	IFIP WG8.6 ISRC, Univ. of Salford, UK; DCS, Univ. of Manchester, UK	t. mcmaster@mcs.salford.ac.uk Fax: +44 161 7455559

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IFIP Congress '98 - 15th World Computer Congress	31.8.-4.9.1998	Vienna, A and Budapest, H	IFIP
IFIP Congress 2000 - 16th World Computer Congress	Sep 2000	Beijing, PRC	IFIP

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