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International Federation for Information Processing
Editor:
Dr. Jack L. Rosenfeld
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Educating for Network-Centric Organizations

WG3.4 Holds Conference in Japan

Occasionally, we see the title of an IFIP conference that seems likely to be of interest to the readership of *the **IFIP** Newsletter.* This was the case with "Educating Professionals for Network-Centric Organizations," sponsored by the Working Group on IT-Professional and Vocational Education in Information Technology (WG3.4) and held 23-28 August 1998 in Saitama. Japan. Some 55 people from 7 countries attended (42 from Japan).

The proceedings were published just recently and do contain much material of interest to the IFIP community at large. In all, there are 21 technical papers and 2 "discussion reports" in the proceedings. Half of them arc by Japanese authors, and the remaining ones come from Finland, Germany, Israel, the UK, and Zimbabwe. In the following text, we present excerpts from several of the papers.*

Prof. Peter Juliff (AU). Mr. Tsurayuki Kado (JP), and Dr. Ben-Zion Barta (l L) edited the proceedings. In their preface to the volume. they made the following remarks:*

> In 1996, when the theme and name of this conference had been set, there was no heavy use of networks in the fields of business, industry and administration yet. However, such use was already well enough established to enable those with a visionary sense to feel that it would be an important subject and could be an interesting theme for a conference to be held in two years' time. It seemed a risky decision at the time, but it turned out to be very successful when conducted in 1998.
>
> It has been stated that "it took until 1997 for the business world to discover the Internet." In less than two years, the Internet and intranets have become vital components for running major parts of the business world....
>
> About half of the papers in these proceedings refer to the world of business and management. Most of the others address the issues of education and training, with no strict boundaries between the two....

Employment and Education in Japan

The conference keynote speaker was Prof. Nobuki Tokura (JP), whose talk, "Education in a Changing Era — a View from Japan," dealt with the demands put on the Japanese educational system by the economic and political changes in that country. Much of this offers an insight into Japanese corporate culture. After a historical introduction, Prof. Tokura proceeded to describe the nature of employment in Japanese companies. as follows:*

> Most Japanese companies have adopted the system of career-long employment,

* **IFIP**

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IFIP Congress 2000 Is Less than One Year Away

Messages from the Principals

From the President of IFIP

I invite you to attend the 16th IFIP World Computer Congress (WCC2000), to be held 21-25 August 2000 in Beijing, China. Technology is advancing at an accelerated rate, and new inventions and ideas are exciting and all-embracing. This flagship of IFIP events will offer opportunities to reflect on the progress that has already been made, to share ideas. and to develop international dialogues and cooperation in this increasingly important field. The Congress is an ideal platform for learning about research and development results in many different fields of computer technology and their applications. A wide spectrum of researchers and practitioners from many different countries will be ready to discuss these important issues. The Congress offers a chance for you to meet leading computer professionals from around the world and not only to be informed about the latest results in your own field, but also to have a peck into other fields and get an impression of the developments in other parts of computer technology. The Congress also features an exciting technical exhibition, where participants will be presented with leading-edge hardware and software products.

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IFIP NEWSLETTER

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The Secretariat can also answer inquiries about **IFIP.**

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Kindly submit material for the ***IFIP*** *Newsletter* three months before the publication date.

Please send announcements of conferences, workshops, and other meetings directly to the Secretariat, which prepares the Calendar of Events. Calls for papers should be sent to both the Secretariat and the *Newsletter* editor.

IFIP on the Internet

IFIP information (including this *Newsletter)* is available through the Internet as follows:
anonymous ftp: ftp.ifip.or.at
WWW: http://www.ifip.or.at

Knowledge Engineering and Agent Technology

Book Planned by TC12

The **IFIP** Technical Committee on Artificial Intelligence (TC12) is planning the publication of a book entitled *Knowledge Engineering and Agent Technology*, edited by the late **José Cuena** (ES, see the obituary on this page), **Yves Demazeau** (FR), and **Jan Treur** (NL), all of the TC12 Working Group on Knowledge-Oriented Development of Applications (WG 12.5). This book will contain many of the papers presented in the IT&KNOWS (Information Technology and Knowledge Systems) conference, one of the seven component conferences of **IFIP** Congress '98. The papers from the conference, however, will be extended to approximately 20-25 pages each. In addition, two invited talks, which were presented at the conference but not included in the conference proceedings, will be printed in this new book, and a summary of the final panel discussion will also be included. Beyond this, there will be new contributions written especially for the book.

The major sections of the book are
- General Views
- Tools and Methods
- Architectures
- Prospective Issues.

The book was under preparation as this ***IFIP*** *Newsletter* was going to press, and publication by 105 Press, an international publisher of books on science, medicine, and technology, is expected early in 2000.

Advertisements Now Being Accepted for the *IFIP Newsletter*

The ***IFIP*** *Newsletter* will now accept advertisements that are appropriate for this publication. The quarterly *Newsletter* is mailed worldwide, free of charge, to over 3000 members of the **IFIP** community, as well as to 44 Member society headquarters, organizers of **IFIP** events, and other recipients. It is also available on-line at the Web address http://www.ifip.or.at/newsletters/newsl.html. Potential advertisers can get further details, including rates and schedule, from the **IFIP** Secretariat (address in the masthead on this page).

Professor José Cuena

We regret to announce the death, on 8 July, of **Prof. José Cuena** (ES). He was a long-time contributor to **IFIP,** most recently as the chair of the Working Group on Knowledge-Oriented Development of Applications (WG 12.5) and the Spanish representative to the Technical Committee on Artificial Intelligence (TC 12). He was chair of the International Program Committee for the Information Technology and Knowledge Systems (IT&KNOWS) conference, which was one of the seven component conferences of **IFIP** Congress '98. At the time of his death, he was a coeditor of a book based upon that conference (see the article on this page). Also, until his last days, he was actively engaged as a track chair in the preparation of IIP2000, the TC 12 conference within IFIP Congress 2000 in Beijing.

In 1998, **Prof. Cuena** received the **IFIP** Silver Core Award for his contributions to the Federation.

With **José Cuena, IFIP** and TC12 lose a valuable member who has contributed much to the development of the TC and to the integration of artificial intelligence in **IFIP.**

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Kluwer Academic Publishers, the **IFIP** Publisher

by Mr. Zachary Rolnik (US) and Ms. Yana Lambert (US)***

Kluwer Academic Publishers (KAP) is the scientific publishing division of Wolters Kluwer, a leading international publishing group with companies in 26 countries and corporate offices in Amsterdam. In 1998, KAP acquired the publishing assets of Thomson Science (Chapman & Hall), then the primary **IFIP** publisher, and purchased Plenum Publishing Corporation, thereby expanding its presence in the scientific marketplace.

KAP, with offices in Boston (US), Dordrecht (NL), and New York (US), operates on a world-wide basis, publishing scientific research at the postgraduate level in the English language. The principal areas include biosciences, business and economics, engineering, humanities and social sciences, mathematics, medicine, and the natural sciences. Products are in the form of books, journals, and electronic products. Kluwer On-Line, a new Internet-based subscription product, was commercially launched in 1999. This provides integrated access to KAP's journal content in a fully-electronic environment. KAP publishes more than 600 scholarly journals and 800 books per annum, making it one of the major scientific publishers in the market.

* Vice-President and Director of Kluwer Academic Publishers—Boston

** Kluwer Editor for **IFIP**

IFIP-Related Activities

The publishing activities associated with **IFIP** are based in the Boston offices. I **FIP** conference proceedings, while published under the **IFIP** umbrella, are slotted into specific marketing programs consistent with their subject matter, thereby allowing KAP to promote the works to both the general **IFIP** audience and subject-specific niche markets.

Kluwer guarantees a 12-week production schedule for **IFIP** books, from receipt of a completely-formatted, camera-ready manuscript to delivery of the books anywhere in the world. To facilitate the preparation of camera-ready manuscripts, Kluwer provides electronic style files and templates to **IFIP** volume editors and contributing authors; these style files and templates are available on Kluwer's **IFIP** Web site, http://www.wkap.com/ifip.

In addition, **Ms. Yana Lambert** (US), the KAP Editor for **IFIP**, has recently completed comprehensive **"IFIP** Editor Guidelines," which detail the publication process, step by step. These Guidelines are currently under review by **IFIP's** Publications Committee chair, **Dr. Roger Johnson** (GB); they should be available on Kluwer's **IFIP** Web site by the time this *Newsletter* is published.

In addition, we are working closely with **IFIP** to "re-launch" *Education and Information Technologies*, the official journal of the I **FIP** Technical Committee on Education (TC3). A new brochure has recently been mailed to several thousand potential subscribers, and additional mailings are planned for the fall of 1999 and beyond. It is hoped that a substantial price reduction, to $60 for individual subscriptions, will generate many new subscriptions to the journal.

Mr. Zachary Rolnik (Vice-President and Director of KAP—Boston) and **Ms. Yana Lambert** will present the Publisher's Report to the **IFIP** General Assembly in Kuala Lumpur and will be available for individual meetings with Technical Committee and Working Group chairs during the General Assembly. ▭

Conference on Formal Methods for Open Object-Based Distributed Systems Held in Italy

by Laura Semini (IT) and Gianluigi Zavattaro (IT)

The third **IFIP** International Conference on Formal Methods for Open Object-Based Distributed Systems (FMOODS'99) was held 15-18 February in Florence, Italy. The event was the third in a conference series that was initiated in Paris, France, in March 1996 and continued in Canterbury, UK, in July 1997. The purpose of the Conferences is to explicitly focus on the interactions among three important and related fields: formal methods, distributed systems, and object-based technology. The interest in the convergence of these three fields was emphasized by the choice of the invited speakers, of the tutorial lecturers, and of the regular papers presented at the Conference. For instance, the three tutorials, presented by **Pamela Zave**, **Luca Cardelli,** and **Cosimo Laneve** (IT), described new trends in the formal specification of telecommunication services, the foundations for wide-area distributed systems, and an overview of the calculi for object-oriented languages, respectively.

The technical contributions consisted of 5 invited papers, 19 regular papers, and 7 short papers, selected from among 52 submissions. The Conference was partitioned into several sessions, covering the following topics: Languages, Semantics, Java and Coordination, Object Composition and Reuse, Telecommunications, Formal Methods, and Emerging Standards. Also, a panel on CORBA (the emerging standard for distributed platforms), with a tutorial flavor, was organized.

The Conference was well attended, with close to 85 participants. The social event consisted of a visit to the Astrophysics Observatory of Arcetri, located very close to the house of Galileo Galilei.

The Conference was supported by the **IFIP** Technical Committee on Communication Systems (TC6) and its Working Group on Architecture and Protocols for Computer Networks (WG6.1). It was organized by the Universities of Florence and Bologna. The proceedings, edited by **Paolo Ciancarini** (IT). **Alessandro Fantechi** (IT), and **Roberto Gorrieri** (IT), were recently published by Kluwer Academic Publishers, the **IFIP** publisher. **Mr. Gorrieri** and **Paolo Ciancarini** (IT) chaired the International Program Committee, while **Mr. Fantechi** chaired the Organizing Committee. ▭

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Workshop on Data Capture and Interpretation Held in Geneva

In November 1998, the **IFIP** Working Group on Computer Graphics and Virtual Worlds (WG5.10) organized a three-day workshop on Modelling and Motion Capture Techniques for Virtual Environments (CAPTECH'99) in Geneva, Switzerland. The topic of the conference was ongoing research in data capture and interpretation. The goals of capturing real-world data in order to perceive, understand and interpret the data and to react to it in a suitable way are currently important research problems. Once captured, the data is treated either to make the invisible visible, to understand a particular phenomenon so as to formulate an appropriate reaction, to integrate various kinds of information in a new multimedia format, or to satisfy other requirements.

The conference included six sessions of presented papers and two discussion panels: The State of the Art in Capturing Technologies and The Virtual Amusement Park.

Women, Work, and Computerization

New information technologies are changing every sector of society and transforming women's work and women's lives. We are seeing significant changes from women's traditional work to work based on modern technology; from communicating within personal communities to virtual communities; from traditional job gendering to new perspectives on "who does what." In order to follow these trends and chart new courses of action, the **IFIP** Working Group on Computers and Work (WG9.1) has held six conferences on Women, Work, and Computerization (WWC). The seventh in the series, with the theme Charting a Course to the Future, will be held 8-11 June 2000 in Vancouver, BC, Canada.

Participants will be challenged to identify the ways information technology constrains and contributes to women's equality, to examine the way women's professional and personal lives are being transformed in the information economy, and to plot a course to the future for women and computer technologies.

For further information, please contact the individual named in the Calls for Papers column on page 12.

CONGRESS 2000 *continued from page 1*

I have no hesitation in recommending the Congress to you and encouraging you to join us in this truly international event. I look forward to welcoming you to Beijing in August 2000, when the Chinese organizers will do their utmost to accommodate the scientific program in a friendly social and cultural atmosphere.

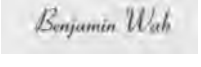
From the International Program Committee Chair

WCC2000, to be held at the turning point of the millennia, will be one of the most important events for IT professionals around the world for years to come. The event will offer technical exchanges at many levels and exhibits of the booming IT industry in China, as well as a large variety of cultural and social activities. The theme of the Congress, "Information Processing: Beyond Year 2000," reflects what most IT professionals are working on as our society is moving into the next millennium. There are reasons to believe that issues discussed in the Congress will have a long-lasting impact on our information society in the future.

Together with various keynote speeches, panels, and workshops, the main technical components of the Congress will be eight federated conferences:

- International Conference on Communication Technologies
- International Conference on Signal Processing
- International Conference on Chip Design Automation
- International Conference on Intelligent Information Processing
- International Conference on Educational Use of Technologies
- International Conference on Information Technology for Business Management
- International Conference on Software __ Theory and Practice
- International Conference on Information Security

In concert with the Congress, a Youth Form, Pioneers Day, student competition, and major IT-industry exhibition are being organized. Moreover, technical visits to Chinese universities and research institutes will be



From the Congress Co-Chair

WCC2000 will be a grand gala of the information industry at the threshold of the 21st century. During the Congress, IT specialists And entrepreneurs from around the world will be gathered in Beijing to exchange academic ideas, present the latest achievements and discuss the developments and trends in a variety of IT fields. Meanwhile, participants will find partners for cooperation, meet old friends and make new ones. Let us get together to face the opportunities and challenges of the new century.

Since China's reform and opening, it is well known that our national economy has achieved a sustained and steady growth and has stepped onto the international economic stage and attracted world attention. China is rapidly developing its information industry and will become the largest global IT-product market. Our government would like to take this opportunity to promote the development of the information industry and give strong support to make the Congress a success.

China is a civilized and courteous country, with a five-thousand-year history of brilliant culture. We would like to warmly welcome IT experts, researchers and entrepreneurs from around the world here to visit China and attend the 16th **IFIP** World Computer Congress. I am looking forward to meeting you in the golden season of next year in Beijing!

President of Chinese Institute of Electronics

From the Organizing Committee Chair

On behalf of the WCC2000 Organizing Committee and the Ministry of Information Industry, I am very pleased to warmly welcome experts, professionals and entrepreneurs of the IT Industry from various countries around the world to attend this great trans-century gathering. The Organizing Committee of WCC2000 will, with the support of the Chinese Government and various organizations, make full preparations and work enthusiastically for the Congress, in order to ensure its success....

China is the largest developing country in the world and also the country with the fastest economic development rate in the world over the last 20 years. The Chinese Government pays great attention to the development of information technology and the information industry and takes the latter as the pillar industry of its national economy, giving first priority to its development. To carry out the policy of reform and opening-up, China must study and absorb the state-of-the-art technology and successful managerial expertise from

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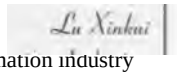
CONGRESS 2000 *cont. from prior page*

other countries. At the same time, foreign countries need to keep abreast of the changes and development in China. The 16th World Computer Congress will provide Chinese and foreign professionals of the IT industry with a good opportunity to deepen their mutual understanding, exchange academic ideas and find cooperation partners. China, a country with an ancient civilization, has a long history and a brilliant culture. The Chinese people are enthusiastic and hospitable. I am convinced that all the participants of WCC2000 will enjoy their stay in China.



Vice-Minister of Information Industry

For further information, please see the Congress Web site at http://www.wcc2000.org or contact the following:

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Prof. Gruska Writes Book on Quantum Computing

Prof. Jozef Gruska (CZ), the founding chair of the I **FIP** Technical Committee on Foundations of Computer Science (TC1), has just completed his latest book, *Quantum Computing.* The publisher, McGraw-Hill Publishing Co., describes the book, which was released in May, as follows:

> In quantum computing, we witness an exciting and very promising merging of two of the deepest and most successful scientific and technological developments of this century: quantum physics and computer science. Despite the experimental developments in quantum computing being in their infancy, there have already been a variety of concepts, models, methods and results obtained at the theoretical level that clearly have lasting value, and these form the main subject of the book. The book provides elements of knowledge from quantum physics and theoretical computer science, two areas of importance for understanding the basic developments in quantum computing, and concentrates on the presentation of concepts, models, methods and results mainly from a computing point of view. No previous knowledge of quantum mechanics is required.

Further information on the book can be found on the Web at http://www.mcgraw-hill.co.uk/gruska , where additional material on quantum computing is continually updated by the author.

In 1989, **Prof. Gruska** convinced the **IFIP** Technical Assembly to form a Specialist Group (SG) on Theoretical Computer Science, which he chaired. He was the first chair of TC1 when the SG became a TC, and he served until 1995. At present, he is Professor of Computer Science at Masaryk University, Brno, The Czech Republic. He has held visiting professorships in many universities in North America and Europe and has been a member of international organizations in computer science. A biographical sketch can be found in the March 1997 ***IFIP** Newsletter* (page 2).

National Abbreviations Used in Newsletter

AT	Austria	DE	Germany	IT	Italy
AU	Australia	DK	Denmark	JP	Japan
BE	Belgium	ES	Spain	MY	Malaysia
BG	Bulgaria	Fl	Finland	NL	The Netherlands
BR	Brazil	FR	France	NZ	New Zealand
CA	Canada	GB	United Kingdom	PT	Portugal
CH	Switzerland	HU	Hungary	SE	Sweden
CL	Chile	IL	1srael	TH	Thailand
CN	China	IN	India	US	USA
CZ	The Czech Republic			ZA	South Africa

Information Technology: What Does It Mean for Scientists and Scholars in the Developing World?

by Prof. Subbaih Arunachalam (IN)

[We often find interesting articles in the newsletter of the **IFIP** Working Group on Social Implications of Computers in Developing Countries (WG9.4). The most recent issue of that newsletter (April 1999) contained the following article by **Prof. Subbaih Arunachalam** (IN), who argues that information technology is widening the gulf between scholars in developing countries and those in the developed world. Although it is not clear whether the current problem is substantively different from cases in which developing countries cannot afford the expensive equipment necessary to carry out certain experiments in the physical sciences, for example, the author makes a clear case that a problem does exist. We have printed the bulk of the article here*; the full text can be found at http://www.iimand.ernet.in/~subhash/current.htm.]

* Subbaih Arunachalam

Information is key to the growth of knowledge, and dissemination of information is crucial for scientific enterprise. In pre-independent India, when scientists of the caliber of C.V. Raman, Meghnad Saha, J.C. Bose and S.N. Bose made their first-rate contributions to knowledge, the main vehicle for transmission of knowledge was the scholarly journal, and there were far fewer journals then than now. Scientists around the world were almost at the same level as far as accessing information was concerned. True, most journals were published in Europe, and Raman and his Indian colleagues received the journal issues a few months later than their European colleagues — the time it took for the boat to cross the seas.

Journals Are Too Expensive

Today there is a tremendous proliferation of journals, and many of them, especially those published by commercial firms, are out of reach, even for libraries in the West. It is heartening to know that the Association of Special Libraries in the United States is collaborating with like-minded societies to publish less-expensive, quality journals to save scientists from being held to ransom by greedy private publishers. The best academic science library in India, the one at the Indian Institute of Science, Bangalore, receives only 1,562 serials, including the ones received gratis and "on exchange." In contrast, in the United States and possibly Europe, many university libraries subscribe to upwards of 40,000 serials. Thanks to the rising value of the US dollar and pound sterling on international currency markets and dramatic increases in subscription prices of journals and databases, libraries in India and other developing countries have been forced to reduce the

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SCHOLARS IN DCs *cont. from page 5*

number of journals and secondary services they receive.

The situation in Africa is particularly bad. A Nigerian professor [is quoted as saying,] "When you call some of us scientists, we laugh at ourselves. We know we can no longer make contributions to science. I do not know what my colleagues in Kenya or London have found, for example. So I cannot carry out an experiment and believe I am on the path to an original contribution to the sciences. If I have been giving generations of students the same notes for the past ten years, I should not call myself a scientist."...

Limited Access to the Internet

Physicists have gone one step further; they circulate preprints through the Los Alamos e-Print archives long before they appear in print in refereed journals. This service, unlike subscribed journals, is absolutely free to anyone who can access it. Free it may be, but in reality most developing country scientists are excluded. To access information in cyber space, one first needs access to the corresponding electronic technology. Often, technology diffuses rather slowly, and even today most scientists and scholars in developing countries do not have access to the new information and communication technologies. As a result, the performance of researchers can be (and is) affected, not because they are poor physicists or chemists but because they are not connected to electronic information networks....

Most developing countries, especially those with large populations, do not have the necessary infrastructure (computer terminals, networks, communication channels, bandwidth, etc.) to contribute as equal partners in the worldwide enterprise of knowledge production and dissemination. According to Bruce Girard, former director of Latin America's community radio Pulsar, 95% of all computers in the world are in the developed nations; ten developed nations, accounting for only 20% of the world's population, have three-quarters of the world's telephone lines. Teledensity in India is about 1.8 lines per 100 persons. Till 1994, it was less than one per hundred persons. In contrast, however, teledensity in the United States and Canada is more than 60 per 100 inhabitants. To make matters worse, most of India's telephones are concentrated in metropolitan cities. Many scientists do not have a telephone on their desks. Those who have often cannot make calls outside their towns, let alone overseas. Many universities do not have e-mail or Internet facilities. Some have only 1.2- or 2.4-kilobytes-per-second connections. With such low bandwidths and poor terrestrial telephone connections, one can at best send and receive e-mail messages but cannot surf the net or do on-line searches on the Internet....

Scholars from DCs Are Excluded

A growing number of journals, especially in the fields of science, technology and medicine, now receive and review manuscripts by e-mail, and some journals are available only in electronic form. Editors of such international journals will naturally be reluctant to use referees from developing countries, even if they are extraordinarily competent in their fields, simply because it may be extremely difficult to reach them electronically. Nor for that matter will developing country scientists be able to publish their work in these electronic journals.

Prof. Arunachalam pointed out that while the financial community in India has its own communication network, scholars lack such facilities and are not likely to have them soon.

The speedy transition to electronic publishing will make it much easier for scientists and scholars in the developed countries to interact with colleagues and members of their "invisible colleges." [i.e., colleagues not located in proximity — Editor] This is already reflected in the enormous increase in recent years in the percentage of papers resulting from cross-country collaboration involving authors from advanced countries.... My major worry is that the low level of information and communication technologies in the developing countries would lead to the progressive exclusion of a majority of their scientists and scholars from the collective international discourse that is essential for active participation in all fields of research. Even now, when much publishing still takes place in print, participation by India and other developing countries in high-impact journals...is abysmally low. The already existing gulf in the levels of science and technology performed in the developed and the poorer countries will be widened further, which could lead to increased levels of brain drain....

The author noted that India can afford to invest in the necessary infrastructure, and that plans have been discussed for some time. He concluded with the following:

But what is actually happening is disheartening. Different agencies in the telecom sector, which have to implement and deliver, are quarreling with one another. Indeed, this is a characteristic of developing countries: it often takes far too much time for things to happen or to translate something from the realm of the possible to reality. As for differential pricing, both publishers of primary journals and database producers are reluctant to embrace such measures. In one rare exception, the Institute for Scientific Information, Philadelphia, offers Science Citation Index at 50% discount to most developing country subscribers. Even so, it is perceived as too costly!

Given these circumstances, I would not be surprised if very soon the gulf between the scientifically advanced nations and the others widens even further, reducing further the role of the developing countries in the enterprise of knowledge production, dissemination and utilization. Do I sound pessimistic? So did Toni Morrison [who said that nobody seems to care to write about issues concerning black people — Editor].

EDUCATING continued from page I

with an expectation that employees stay with the company until their retirement.... In this lifetime-employment system, an employee's rank, salary, and qualifications within a company are based on the length of her or his service in it. This system is beneficial to employees because of the stability of employment and to employers because of the strong worker loyalty and the resultant ease with which they can formulate personnel plans. However, this system is now changing gradually to a new system, in which workers move to other companies to get better positions....

The seniority system has not always been used; its origin can be traced to a period of serious labor shortages during World War I, when the Yokosuka Naval Shipyard adopted it in order to secure enough technical and skilled workers. This system is now forced to change because of the rapid increase of labor costs. So companies must place more emphasis on employee ability and less on seniority....

Companies are also very eager for vocational training and education....They have education divisions, which formulate plans for educational programs, recruit teaching staffs from inside and outside the companies, make schedules of the programs, execute them and evaluate the programs. They may have special facilities for educational and training programs — usually in the firms' facilities and in resorts — and the remote facilities are connected to the main sites by communication-satellite channels and leased circuits, so that lectures taught in the classrooms of the training centers can be relayed to the remote classes....

The effects of training or education are rather difficult to see. Managers usually prefer immediate output to possible future contributions of workers. Since we are in a period of recession and restructuring, education and training programs are in a very difficult situation....

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We have the University of the Air in Japan. It is a regular university that uses a TV channel and an FM radio channel and some classroom instruction. It has a faculty of liberal arts. Almost 300 subjects are taught, for 6 courses. One of the 6 courses is the industries and technology course. I am in charge of 2 TV subjects. One is "Introduction to computer science," and the other is "Fundamentals of programming."...Many of my students are SEs (system engineers). The following is typical of their comments: "I am an experienced SE with 10 years of service on the job, but I graduated from a school of economics, with little experience in computer usage. I manage to do my job with only the knowledge of COBOL that was taught in the training period for new employees, but I cannot follow the trend of Information Technology without any computer science background. So I am taking your lecture for some support."

In periods of high economic growth, the shortage of SEs was so severe that many companies employed university graduates with any background at all. They were proud of good training courses, which trained graduates with any background into SEs very rapidly. After the collapse of the economic bubble, the demand decreased and the technology itself changed radically. Engineers with knowledge and skills in new technology are in demand, but engineers with limited knowledge and skills have been discharged. In a recession, such improvised engineers are targets of restructuring. Indeed, some students say, "I have been dismissed, and I must try to build up from the basics." These are tragic stories...

[This collapse of the traditional pattern of companies] will have many effects on workers' spirit and behavior. Young employees are losing loyalty to their companies, and they will move to other companies if the wages or conditions are better for them. In what direction should the training and education programs in companies go? Is it better to focus on very limited targets to gain an immediate profit? What do you do about the SEs who were fired because of their narrow knowledge and inflexibility regarding new technology.

The recruiters of many companies have changed their attitude and now demand that the graduates of universities be persons who can work in the firms quickly, without long training periods. Their previous attitude was that they would train and educate graduates from universities... That attitude had a bad effect on students, who considered that the companies could teach well and that they need not study so hard in the universities.

Half of the 18-year-olds can enter the university, so the quality of students is going down. But the needs of companies are now very demanding. To bridge this gap, universities should consider what to do. The Ministry of Education and its councils propose many reform plans. Universities must deal with these moves. So far, university faculties have focused on research, but teaching is now being stressed. Universities are being requested to include new subjects, such as engineering ethics, problems of intellectual property and social issues for the new information era.

The Japanese have spent much money on consumable goods and real estate, but we learned much from the collapse of the economy bubble. Knowledgeable persons claim that Japanese should invest their money in themselves. In other words, self-learning and/or refresher studies should become popular. There are business opportunities in the education area, especially in network-centered education/learning.

Many say we are in an "opaque age" and cannot find how to proceed. My claim is that if we...consider our problems seriously, we can find a better way, even if it is not the best possible way.

Prof. Tokura also described the role of the Information Processing Society of Japan, a Full Member of **IFIP,** in the design of standard curricula in the information technology area and in running a university accreditation committee.

Distance-Learning Approaches

Mr. Israel Zilberstein (IL) and **Dr. Ben-Zion Barta (IL)** wrote a paper entitled "Data Communication and Distance Learning Methodologies for Technicians' Training." In it, they described the evolution of distance-learning courses for technicians and "practical engineers," which are currently based primarily upon written self-study material, with use of the Internet for several functions. Selections from their paper follow.*

Within the continuous efforts of the School of Technology of the Open University in Israel to improve the teaching and learning process, new methodologies were adopted: the use of engineering and simulation software and the use of data communications for distance learning (DCDL). The DCDL system uses most of the facilities available on the WorldWide Web....

Each course [in the programs for technicians and "practical engineers1 used, until recently, all or most of the following learning methodologies: self-study written units, home laboratories, software for home use, group sessions at study centers, weekly telephone assistance, home assignments and practical work, and a final exam in each course.

Updating the study methods and means in recent years involved two main directions:

1. Intensive use of engineering and simulation software, which includes the use of applications, simulation, and system-analysis packages that were adapted for educational purposes from points of view of complexity, user friendliness, and course content.

2. Introducing DCDL.

...The DCDL system was introduced in the past few years in several Open University academic courses, and we at the School of Technology have used the system in a few courses. Every student receives a modem (if he doesn't have one), a communication-software package, an e-mail address, and basic operation instructions, in order to connect to the system.

The main features of the DCDL system are:

1. E-mail correspondence among students, tutors, and instruction managers at the School of Technology....

2. Discussion groups (or asynchronous conferences) among the students and with the tutor. The tutors pose problems to all the students via e-mail, and the students discuss options and solutions....

3. An Internet site for each course, used for guided access as well as personal access to Internet resources dealing with the technological topics of the course....

4. Interactive self-study courseware that integrates Internet possibilities in computer-based learning....

The DCDL will be used for several semesters as a methodology in addition to the self-study written material, which is still the main learning method, and the other conventional distance-learning methodologies. We intend to put more and more weight on the DCDL and the use of simulation software instead of the written material and the hardware laboratories....

New Paradigms for Education

In the paper "Educational Multimedia in a Network-Centric Society: Requirements, Enablers and Negative Aspects," **Dr. K. Dan Levin** (IL) discussed network-centric education and learning, an alternative to today's paradigm of classroom instruction. His paper concluded with a synopsis of some of the issues discussed in the paper, as follows:*

- We are breaking with the "credit-for-attendance" model and considering alternatives to the lecture as a delivery mode. Students are not place-bound or time-constrained.
- Students are developing new skills to access, organize and synthesize information received via the Internet.
- Teachers need incentives to incorporate technology into their educational programs. They must see benefits to

* **IFIP**

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their own teaching and to their students' learning.

- A new role for the teacher has been identified, one of facilitator and coach, thus establishing a new relationship between teacher and learner.

What is emerging is a highly connected network providing access to resources, tools and information across disciplinary, institutional, national and international boundaries. It will soon be difficult to imagine a course not on the Web.... The challenge is to deal with the technologies at hand, which are quickly outdated, while not being overwhelmed by the new and exciting opportunities available and promised.

Further work needs to be done to study the pedagogical, economical and sociological implications of network-centric education. Some of these issues are:

- What kinds of class activities are best performed locally on individual workstations, and what activities are best performed through interactions over the network?
- How to assure the privacy of the student and the confidentiality of data?
- How to provide sufficient compensation to providers of classroom activities and how to finance this compensation?
- How can we guarantee that humans, not computers, are still identified as the instructors?

Analysis of Education Styles

A comprehensive analysis of the effectiveness of four different education styles was presented by **Dr. Hiroh Yamamoto** (JP), **Prof. Minoru Nakayama** (JP), and **Prof. Yasutaka Shimizu** (JP) in their paper "Effectiveness of Various CAI Education Styles and Support Functions on Self Study." We present key sections of their paper here.*

In these times of radical technical innovations, companies must educate their personnel in a variety of high-level subjects. A more effective education style is being called for in group learning....

Although many studies have been performed on development and evaluation of CAI (computer-aided instruction) systems, no study has evaluated the scores and learning time quantitatively with respect to the education style.

Setting up four education styles that use CAI developed for group learning and CAI developed for distributed education, we investigated their effect on test scores and learning time. Furthermore, we analyzed the difference in the improvement in score between group learning and distributed education....

Materials for educating computer-maintenance personnel are the basis upon which this study was conducted, [with 1,516 trainees]. The traditional style of classroom teaching was also evaluated in order to compare the four different educational styles in this study.

The four education styles evaluated in this paper are

(a) group learning based on CAI. Each student used an individual CAI system but could question an instructor at any time

(b) group learning based on collaborative teaching from textbooks. Teams of three or four students taught each other, with an instructor nearby to answer questions.

(c) group learning based on collaborative teaching from CAI. Similar to style (b), but each team had one CAI system.

(d) CAI-based self-study.

Since the contents differed from one educational style to another, traditional lectures that used the same contents [as used for the four individual styles] were conducted for comparison.... Pre-tests and post-tests were given for all the trainees, to calculate the achievement score by regression.

(1) [The students were divided into two groups, according to scores on the pretest.] We concluded that in [styles (a), (b), and (c),] the group with lower pretest scores showed higher results than the group with higher scores.... In CAI-based self-study, the group with higher scores improved more than the group with lower scores. The rate of improvement in test scores differed between the higher-scoring group and lower-scoring group, depending on whether group learning or distributed education was used. Greater improvement occurred with group learning.

(2) With regard to learning time, the CAI-based self-study cut the time required by 24%, on the average.

Network Access in Finland

One paper described the extent of network use in Finland and the implications for telework. **Prof. Mikko Ruohonen (FI),** in his paper "Network-Centric Work — Implication to Professional IT Education," presented the results of a mail survey of employees of small and medium enterprises and discussed their implications for telework and teleeducation. We present here selections from the paper concerning the survey results.*

In Finland, the country with the highest percentage of Internet access and a well-developed telecommunications infrastructure, telework is not very well established, and the latest surveys on labor movements from rural areas to attractive city areas seem to be contradictory to the objectives of telework. Although our telephone networks are almost 100% digital, the faster Integrated Digital Service Network (ISDN) is not common in Finland. Previous surveys indicate that 3-5 % of households have an ISDN access to the telephone network. This might be owing to many factors, such as pricing of ISDN services, learning potential of users or technological compatibility....

A new technology-based innovation such as telework demands redesign of routines and activities from the user community. Users need to learn the innovation and upgrade or transform their knowledge on using the innovative system in the context of their work. Normally, when teleworkers (or telelearners) need to buy the technology by themselves, costs of the innovation are a major inhibitor. If the voluntary user needs to spend more money to get seemingly similar services from this innovation (such as an e-mail service), he or she will probably not adopt the innovation. It might also be that the telework technology is too complex and difficult to implement and use. At the same time, management procedures need to support new work design and arrangements in order to foster the change process....

A mail survey was executed in collaboration with major Finnish organizations. From 4500 questionnaires sent, 875 people replied. The objectives of the study were exploratory — i.e., we observed the survey group's opportunities and willingness to apply telework, their use of information networks and their intensity of use. We were especially interested in the level of technology investments in households (computers, network devices and access services), the need for information-society services and interest in acquiring new technology for this purpose....

The first set of survey questions examined the amount and quality of ICT (Informatics and Communications Technology) in households and the level of experience in using ICT.... The respondents described themselves as experienced or at least having a good fundamental knowledge of ICT. They used computers daily in their work. We can conclude that these people are qualified to evaluate the benefits of telework and ICT technology.

One of the most interesting findings was that almost 80% reported having and using computers in their homes. This is a very high figure, since the average of home-computer penetration in Finland is near 35%. The computers were quite new.... Survey participants reported that almost all family members used the home computers. About 31% replied that their computers were used by three or more members of the family....

The second set of questions dealt with organizational support for applying telework as one part of work practice.... According to the survey results, companies support telework quite actively;

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almost 50% of the respondents reported that their employers support telework arrangements....

The third set of questions was about telecommunications facilities. Half of the home computers involved a telecommunications device (a modem or the equivalent). Most of the devices were high-speed modems (over 28 000 bps, but only 3% of them with an ISDN-access device). Most of the respondents replied that their telecommunications devices were slow or moderate. Less than 25% indicated that the speed was satisfactory.

Most of the teleconnections were typically used a couple of times per week, and the connections lasted, on average, not more than 15 minutes. This means, obviously, that home-computer systems are used for reading and replying to e-mail messages and/or doing remote banking, which is a very common practice in Finland (about 400 000 active users in the population of 5 million people)....

The use of Internet network services for work and business activities was surprisingly low, considering the highly advertised image of Finnish Internet implementation. Less than half of the participants used the Internet in their offices and less than 20% at home. About 30% of the people indicated that they used the Internet for activities other than work tasks. Although there is a high interest in finding information from the Internet, the research group also contained a group that has never used the Internet and is reluctant to use it in the future....

Most of the technical problems [concerning IT-aided learning and education] have been solved, at least in developed countries; however, it seems that many social and cultural issues remain to be resolved.

Information Ethics in Japan

A paper by **Mr. Takeo Tatsumi** (JP) and **Prof. Harada Yasunari** (JP), entitled "Why Information-Ethics Education Fails," discussed problems with educating Japanese students about information ethics — a problem that is surely universal. The paper began as follows:*

In this article, we discuss three reasons why information ethics education in Japan is still something to be worked out and will remain a complete failure. First, "information ethics" is a misnomer, and its contents are poorly defined, at best. Second, higher education is not the right place to teach basic rules of human interaction, while elementary and intermediate schools are not well prepared for the kind of computer literacy education that is required to prepare their students to live in the next millennium. Third, there are very few professors, teachers and instructors equipped with all the necessary background and expertise to handle the course materials required.

We go on to propose several strategies for a successful course and curriculum design for what is broadly, but perhaps wrongly, covered by "information ethics." First, we need to provide the students with a precise understanding of the underlying ethical principles and detailed technical knowledge of the information society in which we are going to spend the rest of our lives. Second, we then need to consider how to bring together researchers and educators in various related fields to discuss and formulate what should be taught on this topic in elementary, intermediate and higher levels of formal education. Third, we must consider how to provide teachers at appropriate levels with the necessary background knowledge....

When we talk about "ethics," we Japanese generally feel that we are discussing either highly moral standards that are completely unrelated to our daily life or historical discussions of philosophers who have argued for various ideas, decades, centuries or millennia ago, that are unrelated to our present-day life. One particular problem in Japanese intermediate education is that philosophy and ethics are taught as rote memory of various trivial historical events, such as which philosopher in European history wrote which pieces of work in what year, rather than by reading and discussing these writings in relation to the students' everyday lives.

People expect of information ethics education everything that does not fall under hardware or software instruction. For example, computer centers do not want the students to bring in food or drink, and smoking is not allowed.... And transfers of files exceeding certain sizes should be refrained from during daytime. All these issues of good manners and etiquette are regarded as matters to be taught by the computing center or in computer-literacy education, and through lack of a better place, they tend to be placed under the category of information ethics. But are they?...

Very often, computer literacy education in Japanese universities is conducted by people in the computer science departments or related fields. With limited exceptions, such people are not equipped with the kind of understanding necessary to teach information ethics. As a result, those actually engaged in computer-literacy education, or in computer science education for that matter, are quite reluctant to cover matters relating to rules, regulations, etiquette and ethics during their instruction....

On the other hand, experts on ethical studies in Japan tend to prefer philological, historical and philosophical discussions, the relevance of which is not immediately understandable by the common student....

A course on information ethics must contain:

- historical and contemporary ethical ideas
- ethical codes of various professions
- social and technical analysis of the present-day world
- information risk management
- rules, regulations, laws and conventions
- e-mail manners and etiquette
- how human rights have been neglected [i.e., how open communications on the Internet have contained derogatory comments based upon the authors' racial, sexual, or religious biases — Editor]...

Formal education conducted by national or standardized schools, more often than not, emphasizes giving a standardized package of knowledge to children, so that they, as adults, can participate in the local community with shared ideas. The degree with which standardization and diversity are enforced or allowed may differ from country to country or from time to time, but the whole point of literacy education is to enable people to communicate with each other in an efficient way. A new challenge that we face today is how to teach children to communicate with people who are brought up in different ethno-cultural, socio-technological and econo-legal backgrounds....

Given the diversity and the expertise required for teachers of this kind of subject matter, we see how difficult it would be to implement such ideas immediately. On the other hand, the explosive growth of network users that we see demonstrates that we cannot wait for a generation until such courses are taught at the elementary or intermediate schools. Therefore, we must seek a way to train teachers who are ready to handle such subject matter, and reeducate present teachers....

It has been shown that the subject of information ethics education at universities or K-12 schools must include principles of the Internet society, technology, national and international standards, regulations, rules and laws and ethics.

In this article, we have discussed why information ethics fails at universities and elsewhere in the school system, and we have proposed a plan to educate or reeducate teachers who will engage in such education.

The Conference proceedings, entitled *Educating Professionals for Network-Centric Organisations*, was released recently by Kluwer Academic Publishers, the **IFIP** publisher (see the advertisement on pages 13 and 14).

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CEPIS Releases Policy Statements on Citizens' Rights and E-Commerce

The Council of European Professional Informatics Societies (CEPIS), an Affiliate Member of **IFIP,** with 29 member societies in 24 countries throughout Europe, and an aggregate membership of over 150 000, has released two policy statements. Because they are of interest to the IFIP community at large, we print them here; however, **IFIP** does not endorse them in any way.

A Citizen's Charter in the Information Society

The Information Society, in general, and Electronic Commerce, in particular, offer many exceptional opportunities and challenges for today's and future generations. Therefore, they deserve encouragement as well as global protection both legal and technical so as to ensure that they will enjoy the highest possible level of confidence.

At the same time, information and communication technology provides a technical driving force that causes fundamental changes in society. It especially changes the way people acquire and use material and nonmaterial goods, i.e., products, services and information about these. It also changes the way people express themselves and make decisions.

The new technology facilitates easy acquisition, distribution and use (as well as misuse) of great amounts of information. This situation requires a new look at the checks and balances. The traditional means of maintaining "level playing fields" in commerce either have to be modified so that they work in the new environment or have to be replaced by better solutions. Also, new skills and talents are needed, so as to make proper use of the opportunities offered.

Regulation concerning this field should consider the following aspects, which are direct results of the fundamental societal changes caused (that truly make an Information Society):

(1) *Access to the Internet and other relevant information resources:* Citizens should be able to obtain affordable access to information and services (implicitly with support from public funds if necessary e.g., via public libraries, subsidised cost of local telephone calls, etc.).

(2) Authenticated and valid information: The information one gets should be what one thinks it is (authentication of contents) and not, for example, a spoof site or part of an international fraud. It should never be misleading or misrepresenting in nature. Any commercial arrangement (such as an e-commerce order or a financial transaction) should be verifiable and mutually binding.

(3) Privacy: Citizens should be able to act in the Information Society without having to fear that information regarding legitimate behaviour and interests is later used against them. For example, they should be able to acquire information (on consumer goods as well as on political positions) without having to fear a "profiling" of their preferences.

(4)Assurance: Everybody should be assured that there are ways of redress in case the authentication or privacy requirements are violated. Citizens should be assisted in finding and employing these when the situation arises; i.e., liabilities should always be clear and should not be biased towards the stronger parties.

(5) Internet literacy: Communities have the duty to give citizens the opportunity to acquire the necessary skills to act in the information society, especially to cope with the opportunities and challenges resulting from the widespread use of the Internet.

It is the responsibility of governments and international government alliances to protect citizens from breaches of the above principles, especially in areas where other governments' activities endanger the citizens. It is not easy to decide what national government forces can achieve in the virtual world, but clear areas for government responsibility and appropriate action include:

(1) Protection against the breaking of cryptography by foreign forces, when it is legal for use within the country.

(2) Protection against impounding of information by other governments when the citizen is unaware of either the data being in that other country or the other country being able to impound it. [E.g., governments should agree to forward data without interference Editor]

Electronic Commerce

[This position statement begins with a general discussion of the importance of e-commerce, followed by definitions, among which is the following.]

There is no generally accepted definition of "e-commerce." As viewed by CEPIS, e-commerce comprises all marketing and sales or free provision of goods and services of which some part is arranged via a private or a public electronic network. Typical examples are the use of chipcards for payments or for the storage and transmission of medical data, advertising and selling tangible or intangible goods and services via the Internet, placing banking and stock exchange orders via specialised nets, and connection to sundry information services on public cable nets.

[The definitions are followed by the reasoning supporting the recommendations. We print the recommendations here.]

(1) E-commerce considered beneficial: Electronic Commerce should be considered beneficial and deserving global protection and encouragement (legal and technical), so that it will enjoy a high level of general trust.

(2) E-commerce-related regulation to be instituted wisely:

• Some public regulation is needed to avoid the strongest parties dictating the rules. Users and customers need enhanced protection, e.g., when they would be forced to use unilaterally secure communication that protects only their counterparts.

• In the full range of e-commerce-related activities, a variety of legal and other kinds of regulation are needed: public information should be subject to quality guarantees, marketing information should be truthful and not unsolicited, and commercial transactions should be secure and capable of legal enforcement.

• Since the strictest forms of regulation may lead to self-defeating arrangements, one often has to settle for lesser security; however,

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Prof. Setsuko Otsuki (JP) chaired the Conference Organizing Committee. and Dr. Barta chaired the International Program Committee.

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all parties (including non-experts) should be made aware of the benefits and risks involved, and how to view a balance of these.

(3) E-commerce messages to be ensured confidentiality: Messaging related to e-commerce should be ensured confidentiality, i.e.. be accessible to only the parties involved in the commercial transaction intended or concluded.

(4) E-commerce challenges to governments: Governments should be encouraged to pass suitable legislation (guaranteeing freedom of expression, promoting quality control, ensuring legally binding arrangements, including signature rules) and mutually harmonise their legislation, so that internationally trusted arrangements result (providing equitable, consistent taxation and effective international law enforcement).

(5) *E-commerce challenges to professional organisations:* Professional organisations and other international institutions, such as chambers of commerce, organisations of notaries and computer societies, should promote good practice through informative and educational programmes; these should take cognisance of and add to international recommendations, in order that an effective basis for development and acceptance of e-commerce will ensue.

In summary, CEPIS considers e-commerce a desirable development, given appropriate governmental and societal regulation and discipline. Specifically, the development of appropriate **standards** and generally accepted **codes of good practice** and codes **of conduct** are recommended. Associated with these should be the institution of competent complaint boards and other forms of assistance.

The full text of the CEPIS statement on e-commerce can be found on the Web at http://www.cepis.org/mission/ecomfull.htm.

For further information, one can contact CEPIS at the following addresses:

- CEPIS Network Legal & Security Issues (lsichair@cepis.org and http://www.wi.leidenuniv.nl/—verrynst/cepisIsi.html)
- CEPIS Secretariat (secretary@cepis.org and http://www.cepis.org)

We congratulate CEPIS on its good work, serving the European Community for over ten years. **Dr. Roger Johnson** (GB), the **IFIP** Secretary-elect, is currently president of CEPIS

FUTURE IFIP MEETINGS

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

GA	5-9 Sep 1999 (Sun.—Thurs.)	Kuala Lumpur, Malaysia
Council	5-9 Mar 2000 (Sun.—Thurs.)	Washington, DC, USA
GA	26-29 Aug 2000 (Sat.—Tues.)	Beijing, China

TECHNICAL COMMITTEE AND WORKING GROUP MEETINGS

WG1.1	4-8 Oct 1999	Hong Kong, China
WG1.2	1-4 Nov 1999	Boca Raton, FL, USA
	Nov 2000	San Jose, CA, USA
WG1.3	13-14 Sep 1999	Bonas, France
WG1.5	1999	Lyon, France
	2000	Japan
WG1.6	Jul 2000	East Anglia, UK
WG2.4	Sep 1999	Canada
	Jun 2001	Pisa, Italy
	Apr 2002	Paderborn, Germany
WG2.7/13.4	4-6 Sep 1999	Edinburgh, UK
WG2.8	Sep 1999	France
WG2.9	Oct/Nov 1999	Brazil
TC3	24-25 Nov 2000	Copenhagen, Denmark
	28 Jul & 3-4 Aug 2001	Copenhagen, Denmark
WG3.1	11 Apr 2000	Villa del Mar, Chile
	Jul 2001	Copenhagen, Denmark
WG3.2	Aug 2000	Beijing, China
	Jul 2001	Copenhagen, Denmark
WG3.3	2000	(to be decided)
	Jul 2001	Copenhagen, Denmark
WG3.4	12 Sep 2000	Sunderland, UK
	Jul 2001	Copenhagen, Denmark
WG3.5	Aug 2000	Beijing, China
	Jul 2001	Copenhagen, Denmark
WG3.6	2000	(to be decided)
	Jul 2001	Copenhagen, Denmark
WG3.7	Jul 2000	Auckland, New Zealand
	Jul 2001	Copenhagen, Denmark
TC5	11 Sep 1999	Berlin, Germany
WG5.7	5 Sep 1999	Berlin, Germany
TC6	14-15 May 2000	Paris, France
	25-26 Aug 2000	Beijing, China
	Mar 2001	South Africa
WG6.1	5 Oct 1999	Beijing, China
WG6.7	24 Nov 1999	Bangkok, Thailand
WG6.8	15 Sep 2000	Gdansk, Poland
WG7.5	Sep 2000	Ann Arbor, MI, USA
TC8	18-19 Aug 2000	Hong Kong, China
WG8.1	20-22 Sep 1999	Leiden, the Netherlands
WG8.2	May/June 2000	Aalborg, Denmark
WG8.3	Jul 2000	Stockholm, Sweden
WG8.6	Apr/May 2000	Sydney, Australia
WG8.8	Sep 2000	UK
TC9	27-28 May 2000	Cape Town, South Africa
WG9.1	12-14 Sep 1999 (in conjunction with ECSCW99)	Copenhagen, Denmark
	fall 2000 (provisional, in conjunction with PDC 2000 conference)	
WG9.2	14-16 Jan 2000	Namur, Belgium
	Aug 2000 (provisional, in conjunction with summer school)	Gotland, Sweden
WG9.3	1 Jul 2000 (after HOIT2000)	Wolverhampton, UK

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Calls for Papers

Seventh **IFIP** WG9.1 Conference on **Women, Work and Computerization — WWC 2000**
8-11 June 2000, Vancouver, BC, Canada
papers due: 30 Sep 1999
contact: Deborah Kirby
IFIP–WWC 2000
c/o School of Communication
Simon Fraser University
Burnaby, British Columbia
Canada V5A 1S6
tel: +01 604 291.3764
fax: +01 604 291.4024
e-mail: wwc2000@sfu.ca
or dkirby@sfu.ca
URL: http://www.sfu.ca/–wwc2000/

IFIP WG9.3 International Working Conference on **IT at Home: Virtual Influences on Everyday Life — HOIT2000**
28-30 Jun 2000, Wolverhampton, UK
expression of interest due: 11 Oct 1999
contact: HOIT2000@scit.wlv.ac.uk
URL: http://hoit2000.scit.wlv.ac.uk/

International Conference on **Computers Helping People with Special Needs — ICCHP 2000**
17-21 Jul 2000, Karlsruhe, Germany
abstracts due: 1 Nov 1999
contract: Joachim Klaus
Universität Karlsruhe **(TH)**
D-76128 Karlsruhe, Germany
fax: +49-721-608-69 73 77
e-mail: joachim_klaus@ira.uka.de
URL:
http://szswww.ira.uka.de/icchp2000.html

Sixteenth **World Computer Congress (IFIP Congress 2000)**
21-25 Aug 2000, Beijing, China
papers due: 16 Jan 2000
contact: Li Xiaoming
Dept. of Computer Sci. and Technology
Peking University
Beijing 100871, China
tel: +86-10-62756231
fax: +86-10-62751792

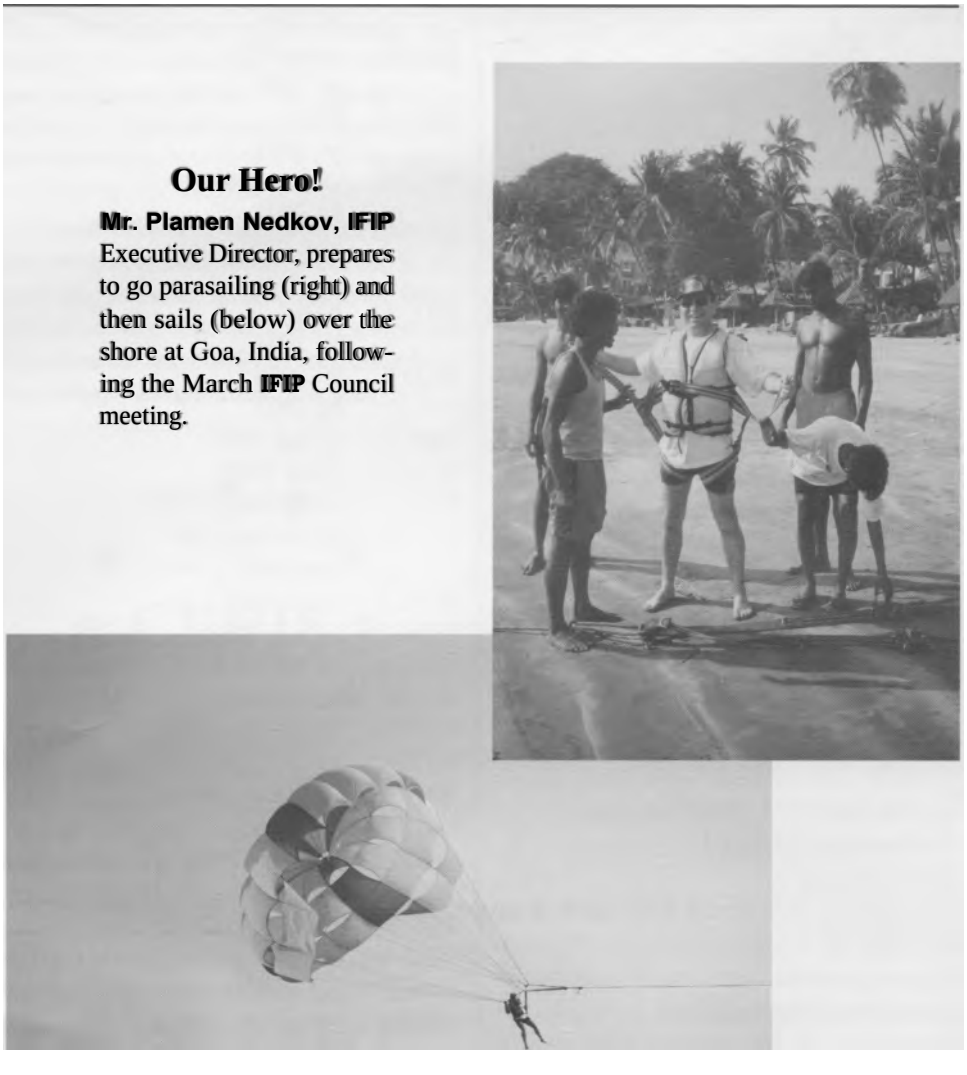
Will event organizers please send calls for papers to both the **IFIP** Secretariat and the *Newsletter* editor. Note that calls cannot be listed in this column until the events have been approved by **IFIP**.

FUTURE MEETINGS *continued from page 11*

WG9.4	15-16 Sep 1999	Kuching, Malaysia
	24-26 May 2000 (provisional, in conjunction with WG9.4 conference)	Cape Town, South Africa
WG9.5	12 Nov 1999	Fortaleza, Brazil
WG9.6	27-28 Nov 1999	Bratislava, Slovakia
WGl0.3	Oct 1999	Newport Beach, CA, USA
WGl0.4	Jan 2000	Cape Verde
TC11	29 Sep 1999	Amsterdam, the Netherlands
WG 11.1	30 Sep-1 Oct 1999	Amsterdam, the Netherlands
WG 11.2	30 Sep-l Oct 1999	Amsterdam, the Netherlands
WG 11.5	18-19 Nov 1999	Amsterdam, the Netherlands
TC 13	28-29 Mar 2000	Eindhoven, the Netherlands
WG13.1	1 Sep 1999	Edinburgh, UK
WG13.2	1 Sep 1999	Edinburgh, UK
WG13.3	1 Sep 1999	Edinburgh, UK
WG13.4/2.7	see WG2.7 above	
WGl3.5	1 Sep 1999	Edinburgh, UK

This information is furnished to the *Newsletter* by the Secretariat. Will TC and WG chairs kindly keep the Secretariat advised of the dates and locations of their future administrative meetings and also send a copy of the minutes to the Secretariat.

Some meetings are scheduled in conjunction with Working Conferences, for which the conference dates are listed.



Our Hero!

Mr. Plamen Nedkov, IFIP Executive Director, prepares to go parasailing (right) and then sails (below) over the shore at Goa, India, following the March **IFIP** Council meeting.

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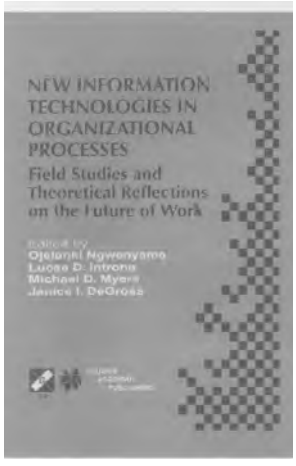
New Information Technologies in Organizational Processes: *Field Studies and Theoretical Reflections on the Future of Work*

edited by **Ojelanki Ngwenyama,** *Virginia Commonwealth University, Richmond, VA*
Lucas D. Introna, *London School of Economics & Political Science, UK*
Michael D. Myers, *University of Auckland, New Zealand*
Janice I. DeGross, *University of Minnesota, MN, USA*



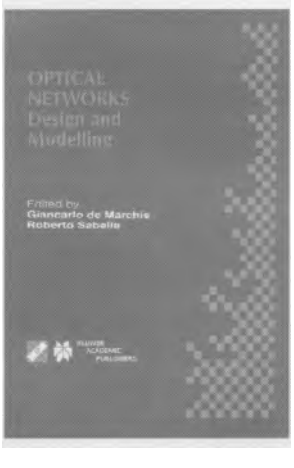
A number of relatively new technologies, such as Enterprise Resource Planning systems, the Internet and intranets, have entered the organizational landscape. These technologies have not only enabled a wide range of social and organizational transformations, but have also challenged much of the received wisdom that operates in academic and industrial discourses. This book attempts to capture some of these strands by discussing the social and organizational Issues surrounding the implementation and use of these new technologies in organizational processes. Some of the contributions are critical and reflexive by nature, while others offer rich Insights through the analysis of cases. The book represents a wide scope of traditions of thought, as well as research approaches, in addressing these emerging issues.

A number of practical and theoretical topics are discussed in detail, including:

Implementation of ERP; Electronic commerce; Intranet implementation; The management of standards; Issues of organizational analysis; Understanding BPR tools; Collaborative technologies; Knowledge work environments.

This book contains the selected proceedings of the International Working Conference on New Information Technologies in Organizational Processes: Field Studies and Theoretical Reflections on the Future of Work, organized by IFIP and held in St. Louis, Missouri, USA, August 1999.

July 1999, 312 pp. Hardbound
ISBN 0-7923-8578-0 $150.00



Optical Networks: *Design and Modelling*

edited by **Giancarlo De Marchis,** *Fondazione Ugo Bordoni, Rome, Italy*
Roberto Sabella, *Ericsson Telecommunicazioni, R&D, Rome, Italy*

Optical network design and modelling is an essential issue for planning and operating networks for the next century. The main issues in optical networking are being widely investigated, not only for WDM networks but also for optical TDM and optical packet switching. This book contributes to further progress in optical network architectures, design, operation and management and covers the following topics in detail:

Routing strategies and algorithms for optical networks;
Network planning and design:
Wavelength conversion and wavelength assignment in optical networks;
Technologies for optical networks (transport, access and local area networks);
Transmission aspects in wide area optical networks;
New paradigms for traffic modelling.

This book contains the selected proceedings of the Second International Working Conference on Optical Network -Design and Modelling, which was sponsored by IFIP, held during February 1998, in Rome, Italy.

July 1999, 200 pp. Hardbound
ISBN 0-412-84790-6 $120.00

continued on the following page... .

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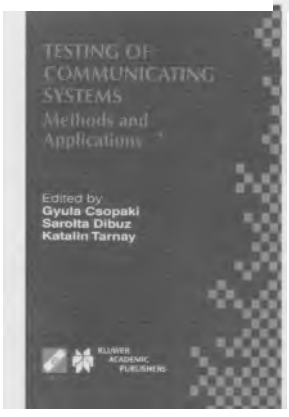
New!

Testing of Communicating Systems: Methods and Applications



edited by **Gyula Csopaki,** *Technical University of Budapest, Hungary*
Sarolta Dibuz, *Ericsson Telecommunications Ltd., Budapest, Hungary*
Katalin Tarnay, *Hungarian Academy of Sciences, Budapest*

Testing of Communicating Systems presents the latest worldwide results in both the theory and practice of the testing of communicating systems. This volume provides a forum that brings together the substantial volume of research on the testing of communicating systems, ranging from conference testing through interoperability testing to performance and QoS testing. The following topics are discussed in detail:

Types of testing;
Phases of the testing process;
Classes of systems to be tested; and
Theory and practice of testing.

This book contains the selected proceedings of the 12th International Workshop on the Testing of Communicating Systems (formerly the International Workshop on Protocol Test Systems), sponsored by IFIP, and held in Budapest, Hungary, September 1999.

The book contains not only interesting research on testing different communication technologies from telecom and datacom systems to distributed systems, but also presents reports on the application of these results in industry.

Testing of Communicating Systems will be essential reading for engineers, IT managers and research personnel working in computer science and telecommunications.

my 1999, 416 pp. Hardbound
SBN 0-7923-8581-0 $165.00

Order Today!

Engineering for Human-Computer Interaction

New!

edited by **Stéphane Chatty,** *Centre d'Etudes de la Navigation Aérienne, Franc*
Prasun Dewan, *University of North Carolina at Chapel Hill, USA*

This book comprises the proceedings of the Seventh Working Conference on Engineering for Human-Computer Interaction sponsored by IFIP, held in Heraklion, Greece, September 1998. It contains research articles written by researchers from all over the world, who set out to explore and evaluate new techniques for designing and building user interfaces or groupware systems. It also contains the reports of workshops held during the conference on the most recent research issues raised by user-interface engineering.
This book addresses:

Architectures for human-computer interfaces and groupware systems;
Applications such as virtual universities;
Criteria for information visualization techniques;
Formalisms for modeling user interaction.

Engineering for Human-Computer Interaction will be of great interest to computer scientists, software developers, information systems managers and human factors engineers, especially those working in user-interface design or research in human-computer interaction.

August 1999, 392 pp. Hardbound
ISBN 0-412-83520-7 $180.00

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Calendar of Events

(continued from page 16)

Event	Date	Location	Sponsored by	Org. Contact
5th IFIP Conf. on Intelligence in Networks	22-26.11.1999	Pathumthani, TH	IFIP WG6.7	vw@cs.ait.ac.th, http://www.cs.ait.ac.th/smartnet99
6th Annual Australasian Conf.on Parallel & Real-Time Systems	29.11.-1.12.1999	Melbourne, AU	RMIT, IFIP WG 10.3, ACS	p_bertok@cs.rmit.edu.au, Fax: +61 3 9925 6139
Intl.Conf. on Very Large Scale Integration	1-4.12.1999	Lisbon, PT	IFIP WG10.5, API, FLAD	lms@inesc.pt, Fax: +351 1 3145843
Intl.Worksh.on IP based Synth.& System Design	14-15.12.1999	Grenoble, FR	INPG, IFIP WG10.5	saucier@imag.fr, Fax: +33 476503421
Work.Conf. "Chile 2000-The Bookmark of the School of the Future"	10-14.4.2000	Vina del Mar, CL	IFIP WG3.1, UNESCO, CONICYT, Fund. ANDES	elagos@umce.cl, Fax: +56 2 2412728
3rd Intl. Conf. on Nonlinear Problems in Aviation and Aerospace Univ.	10-12.5.2000	Daytona Beach, FL, US	INFA, IFIP TC7, Emory Riddle Seronautical	il2v@virginia.edu, Fax: +1 804 9823084
7th Intl.IFIP Conf. on Women, Work and Computerization	8-11.6.2000	Vancouver, BC, CA	IFIP WG9.1, WG on Women and Computing	ebalka@sfu.ca, http://www.sfu.ca/—wwc2000/ Fax: +1 604 2914024
Conf.on the Social and Organizational Perspective on Research and Practice in IT	9-11.6.2000	Aalborg, DK	IFIP WG8.2, Aalborg Univ.	pan@cs.auc.dk, Fax: +45 9815 9889
IT at Home: Virtual Influences on Everyday Life	28-30.6.2000	Wolverhampton, GB	IFIP WG9.3	cm1950@wlv.ac.uk, Fax: +44 1902 321453
2nd IFAC/IFIP/IFORS Conf.on Management and Control of Production and Logistics	5-8.7.2000	Grenoble, FR	IFAC, IFIP TC5, IFORS	mcpl@lag.ensieg.inpg.fr, http://www -lag.ensieg.inpg.fr/manifestations/mcp12000.html
Work.Conf. on Institutional Improvement through IT in Educational Management	27-31.7.2000	Auckland, NZ	IFIP WG3.7, Auckland Inst.of	p.nolan@massey.ac.nz, Fax: +64 6 3509299 Techn.& Massey Univ.
IFIP World Computer Congress 2000	21-25.8.2000	Beijing, CN	IFIP	mqzhou@public.bta.net.cn, http://www.cie-china.org/wcc2000.htm, Fax: +861 06828 3458
3rd IFIP/GI Intl.Conf. on Trends towards a Universal Service Market	12-14.9.2000	Munich, DE	IFIP TC6, German Soc.f. Comp. Science	usm2000@informatik.uni-muenchen.de, http://usm2000.informatik.uni-muenchen.de
Work.Conf.on Reliability and Optimization of Structural Systems	25-27.9.2000	Ann Arbor, MI, US	IFIP WG7.5, Univ.of Michigan	nowak@umich.edu, Fax: +I 734 7644292
4th IEEE/IFIP Intl.Conf.on Information Techn. for Balanced Automation Systems in Production & Transportation	27-29.9.2000	Berlin, DE	IFIP WG5.3, Fraunhofer IPK-Berl in	basys2000@zmms.tu-berlin.de, http://www.zmms.tu-berlin.de/BASYS2000, Fax: +49 30 31472581
Work.Conf. on Software Architecture for Scientific Computing Applications	2-6.10.2000	Ottawa, CA	IMP WG2.5	morven.gentleman@iit.nrc.ca, Fax: +1 613 9520074
IFIP TC6 WG6.1 Joint Intl.Conf. on Formal Description Techn.f. Distributed Systems & Comm. Protocols (FORTE) and Protocol Specification, Testing & Verification (PSTV)	11-13.10.2000	Pisa, IT	IFIP WG6.1, C.N.R., I.E.I.	t.bolognesi@iei.pi.cnr.it, Fax: +39 050 554 342
Workshop in IT and Organizations	10-10.12.2000	Brisbane, AU	IFIP WG8.2	kylie@socs.uts.edu.au, Fax: +61 2 95141807
Feature Modelling and Advanced CAD-for-the-life-cycle-systems	12-14.6.2001	Valenciennes, FR	IFIP WG5.2/5.3, IFAC, IEEE, CIRP	feats2001 @univ-valenciennes.fr, Fax: +33 3 27141288
7th IFIP World Comp. Conf. on Comp.in Edu.	29.7.-3.8.2001	Copenhagen, DK	IFIP TC3	tf@sek.ddf.dk, Fax: +45 33 931580
Symp.on Inf.Control Probl.in Manufact.Techn.	24-26.9.2001	Vienna, AT	IFAC, IFIP TC5	e318@ihrtl.ihrt.tuwien.ac.at, Fax: +43 1 50418359
IFIP Congress 2002 - 17th World Comp.Congr.	25-30.8.2002	Montreal, CA	IFIP	george@cips.ca, Fax: +1 416 368 9972

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

Calendar of Events

Event	Date	Location	Sponsored by	Org. Contact
12th IFIP Work.Conf. on Testing of Communication Systems	1-3.9.1999	Budapest, HU	IFIP WG6. I	sarolta.dibuz@lteth.ericsson.se, http://hsnlab.ttt.bme.hu/iwtcs99.html
Intl.Conf.on Advances in Production Management Systems 1999	6-10.9.1999	Berlin, DE	IFIP WG5.7, VDI, Partner f. Berlin	APMS99@ipk.fhg.de, Fax: +49 30 393902503
Intl. Conf. on Information Technology	9-11.9.1999	Kuala Lumpur, MY	MNCC, IFIP TC6	nair@mncc.po.my, Fax: +603 7747026
IFIP WG9.4 Conf. on The Social Implications of Computers in Developing Countries	15-16.9.1999	Kuching, MY	IFIP WG9.4, Univ.Malaysia Sarawak	roger@fit.unimas.my, Fax: +82 672301
Work.Conf.on Information System Concepts: An Integrated Discipline Emerging	20-22.9.1999	Leiden, NL	IFIP WG8.1	http://www.wi.leidenuniv.nl/~wrycroft/ISCO4-fhtml Fax: +31 71 5276985
Work.Conf. on Comm. and Multimedia Security	20-21.9.1999	Leuven, BE	IFIP TC1 I	Fax: +32 16 321986
FM'99: World Congress on Formal Methods	20-24.9.1999	Toulouse, FR	FME, IFIP WG2.3, ACM, AMAST,	db@it.dtu.dk, http://www.it.dtu.dk/—db/fm99/ FACS/BCSFM99Main/FM99Main.html, Fax: +45 45884530
18th Intl.Conf. on Computer Safety, Reliability and Security	27-29.9.1999	Toulouse, FR	IFIP TC10, EWICS, ENCRESS, LAAS	kanoun@laas.fr, http://www.laas.fr/safecomp, Fax: +33 562 336411
10th IFIP WGl0.5 Work.Conf.on Correct Hardware Design and Verification Methods	27-29.9.1999	Bad Herrenalb, DE	IFIP WGl0.5	kropf@ira.uka.de, Fax: +49 721 6083962
Symp.on Integrated Circuits and Syst.Design	29.9.-2.10.1999	Natal, BR	SBC, IFIP WGl0.5, SB Micro	luba@iee.ufrgs.br, Fax: +55 51 3191576
7th Annual Work.Conf. on Information Security Management & Small System Security	30.9.-l.10.1999	Amsterdam, NL	IFIP WGll.l/11.2, TNO	rossouw@ml.petech.ac.za, http://www.rau.ac.za/ifip Fax: +27 41 5043313
Symp.on Agent Systems and Applications	3-6.10.1999	P.Springs, CA, US	IEEE, IFIP TC6, USENIX	danny@acm.org, http://www.generalmagic.com/asa
IFIP TC6/WG6. I Joint Intl.Conf.on Formal Descr.Techn.(FORTE XII) and Protocol Specification, Test. & Verification (PSTV XIX)	5-8.10.1999	Beijing, CN	IFIP WG6.l, National Natural Science Foundation of China, Chinese Inst. of Electronics	jianping@cernet.edu.cn, Fax: +8610 62785933
10th IFIP/IEEE Intl. Workshop on Distributed Systems: Operations & Management	11-13.10.1999	Zurich, CH	IFIP WG6.6, IEEE CNOM, IEEE Swiss Chapter on Broadband Comm.	stiller@tik.ee.ethz.ch, Fax: +41 I 6321035
1999 Intl. Conf. on Parallel Architectures and Compilation Techniques	12-16.10.1999	Newport Beach, CA, US	IFIP WGl0.3, IEEE	nader@ece.uci.edu, http://www.rose-hulman.edu/PACT
Work.Conf. on Infrastruc. f.Virtual Enterprises	27-28.10.1999	Oporto, PT	IFIP WG5.3, Esprit Prodnet	cam@uninova.pt, Fax: +351 I 2941253
Conf. on Broadband Communications '99	10-12.11.1999	Hong Kong, CN	IFIP WG6.2, Hong Kong Telecom	eetsang@ee.ust.hk, Fax: +852 2358 1485
3rd Intl.Work.Conf. on Integrity and Internal Control in Information Systems	18-19.11.1999	Amsterdam, NL	IFIP WGl l.5	strous@iaehv.nl, Fax: +31 492 548636

(continued on page 15)

IFIP Congress 2000 - 16th World Computer Congress	21-25.8.2000	Beijing, CN	IFIP
IFIP Congress 2002 - 17th World Computer Congress	25-30.8.2002	Montreal, CA	IFIP

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IFIP does not assume any financial or legal liability. A schedule of IFIP administrative meetings can be found elsewhere in this Newsletter.