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IFIP CONGRESS '96 IN AUSTRALIA THIS SEPTEMBER

If the excellent program planned for **IFIP** Congress '96, to be held 2-6 September in Canberra, Australia, hasn't persuaded you to register yet, perhaps the following information about Australia will entice you.

September ushers in spring to Australia. Go see, hear, feel, and taste the open spaces by bus, car, train, or air. Or go bush walking, or take a cycling adventure. From the Deep Space Station at Tidbinbilla (part of the NASA network) to the old and new Parliament Houses (the nation's meeting places), War Memorial, Mint, and National Film and Sound Archives (like none you've ever seen or heard), there are sights, sounds, and tastes for everyone. And there is more.

Canberra's Spring Festival Floriade explodes with vivid displays of flora, fauna, and the sounds of exotic Australian birds. Explore a wildlife sanctuary, or wander through Canberra's botanic gardens, or just experience the historic and the picturesque. It is all unbelievably close and easy to get to.

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THE INTERNATIONAL OFFICE OF THE FUTURE

*by Dr. Bernard Glasson (AUS)**
*and Prof Douglas Vogel (USA) * **

Globalization of business, internationalization of trade, and the increasing prevalence of multicultural, interdisciplinary teams are beginning to redefine the nature of office work. Different-time/different-place/different-culture teams will become the norm. Same-time/same-place/same-culture workgroups will become the exception. The International Office of the Future (IOF) will be a dramatically different environment from that which exists in the majority of today's organizations. Imagine a meeting in the 10F:

As the participants arrive at their local conference rooms, the walls near the conference table light up with live video images from similar meeting sites at other locations around the world. Participants feel as if they are all present in the same room. Following introductions. the group leader, assisted by a cultural broker (one who facilitates the exchange of information or ideas among people of different national, professional, or organizational backgrounds), presents an agenda that includes phases of electronically supported problem surfacing or framing, creative brainstorming, information organization, consensus formation, and generation of action plans.

Group members are invited to present their opinions and participate in the discussions verbally as well as through use of a wide variety of technologies, including personal notepads, wireless digital assistants, and conventional laptop computers, enhanced with electronic pens and voice recognition as well as keyboards. Electronic "agents" directed by group members seek out relevant information that may bear on the topic at hand and help group similar ideas, based on participant comments.

As the meeting draws to a close, some participants record on diskette, or other bulk-storage media. information that they want to personally retain. Other participants send meeting information directly to their office computers, to continue their work and seek additional input. In addition, public information is stored in a team memory system, to be ac-

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• chairman of **IFIP** TC8
•• chairman of **IFIP** WG8.4

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

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

Please send the following **IFIP** information directly to the Secretariat: announcements of conferences, workshops, and other meetings; calls for papers; appointments to committees and other positions; and changes of address. The Secretariat is the clearinghouse for all such information, which it will forward to the *Newsletter.*

IFIP on the Internet

IFIP information (including this *Newsletter)* is available through the Internet as follows:
anonymous ftp:
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IFIP CONGRESS 2000 WILL BE HELD IN BEIJING

Prof. Kurt Bauknecht (CH), president of **IFIP,** announced in January that Beijing, China, had been chosen as the site of **IFIP** Congress 2000 by a mail ballot of the General Assembly. More details of the Congress will appear in future issues of this *Newsletter.*

THE COMPUTER SOCIETY OF SOUTH AFRICA

Host to 1996 **IFIP** Council

*by Mr. Christopher Guy (ZA) **

The Computer Society of South Africa (CSSA) is the third oldest such association in the world, having been formally incorporated in 1958. (The American Computer Users Association was founded in 1947, and the British Computer Society was formed from the London Computer Group in 1957.) It is worth noting that at the time of the incorporation of the CSSA, there was only one computer installed in South Africa — a Hollerith HEC4. It is also worth noting that the processing power of the HEC4 was considerably less than that installed in just about any modern automobile!

In retrospect, the aims and objectives of the original founders of the CSSA were remarkably percipient:

- To discuss matters relating to electronic data processing and the development, operating, and programming of digital electronic computers, and to interchange opinions and experience of its members on such matters
- To obtain from members and other sources information relating to electronic data processing and digital electronic computers, and to disseminate such information among the members of the Society by means of a journal or by means of circulars, publications, or otherwise
- To improve the technical and general knowledge and to elevate the status of persons engaged in, or about to engage in, the programming or application of Electronic Digital Computers to data processing
- To establish, form, and maintain a library containing literature, books, periodicals, documents, statistics and returns calculated to improve the status of members and to facilitate investigation, reference and research

With the possible exception of the fourth point, the Society has remained remarkably true to these ideals during its nearly forty years of existence. It has always focused primarily on the needs and aspirations of individuals within the industry.

The CSSA is organised into regional chapters situated in the main population centres around the country. In the larger chapters, Special Interest Groups (SIGs) organise events such as seminars and workshops to disseminate information to both members and nonmembers. In the smaller centres, the chapters themselves organise events.

A small, full-time Secretariat **is** responsible for the day-to-day running of the Society, which now has more than 5 000 members. (Entry into the Society as a Full Member requires a recognised and relevant tertiary educational qualification together with an appropriate period of experience within the profession.) An Executive Committee is elected every year, which in turn, elects the officers.

The CSSA's relationship with **IFIP** goes back to early in 1968, when the Society wrote to apply for membership. The response from **IFIP** was a letter which "expressed concern over the possibility that no coloured member members would be allowed in the Society...." A letter informing **IFIP** that this was not so seems to have been disregarded, and it wasn't until 1971 that the matter came up again. The then President of the CSSA, **Ms. Virginia Mailing,** was invited by the new **IFIP** president, **Acad. Anatol Dorodnicyn** (FSU) to address the General Assembly of **IFIP,** in Ljubljana, Yugoslavia. After a presentation in which **Ms. Mailing** presented a large sample of South African newspaper advertisements showing job opportunities for persons of all races, the application was put to a secret ballot, and approved. The relationship with **IFIP** was cemented when the TC6 International Data Communications Meeting was held in South Africa in November 1974. Since then, many other **IFIP** events have been held in South Africa; the 1984 Council meeting took place in Cape Town; two South Africans have been elected as Trustees **(Mr. Hennie le Roux** and **Mr. Christopher Guy);** and **Prof. Basie von Solms** is chairman of TC II.

As we race towards the millennium, the Society's challenge is to seek a meaningful role in promoting the use of people and computer technology to improve and uplift the lives of South African society as a whole. The CSSA is pleased once again to host an **IFIP** Council meeting and to have an opportunity to meet the participants.

* representative of South Africa, and **IFIP** trustee

Who's Who in IFIP: PROFESSOR DIPAK KHAKHAR

Prof. Dipak Khakhar was born in India and received his public school education in Bombay. His university education, however, was acquired abroad. He was awarded the honors degree of Bachelor of Technology in Metallurgical Engineering and Management by Loughborough University of Technology, England, in 1968, followed by a Ph.D. in Information and Computer Science by Lund University, Sweden, in 1978.

During his doctoral studies and after graduation, he served as Lecturer in the Department of Informatics of Lund University, and since 1985 he has been an Associate Professor. He is also a national coordinator at the Council for the Renewal of Undergraduate Education. He was Dean of the Department of Informatics from 1989 to 1994. In addition, he has consulted for a number of Swedish and international companies and presented lectures and workshops around the world (many for **IFIP).** His areas of interest are data communications, strategic use of information technology, distributed computing, and human-computer interaction. He is also interested in case-based and open distance-learning environments.

He has been a member of the board of the Swedish Information Processing Society, the **IFIP** Member society, and in 1985 was named its representative to TC6, the Technical Committee on Communication Systems, a position he still holds. He has also been TC6 treasurer. In 1989, he was appointed the Swedish representative to the General Assembly. He has served on several **IFIP** committees and as chairman of the Finance Committee since 1992. In 1991, he was elected an **IFIP** Trustee. He was awarded the **IFIP** Silver Core in 1992. Many of us know him as the tireless worker who, single-handedly, has produced the Member Society Catalog, organized the **IFIP** Lectureship Program, and regularly updated the *What Is **IFIP?*** brochure.

In addition to his **IFIP** activities, he is a vice-president of the International Council for Computer Communication (ICCC).

Prof. Khakhar and his wife Kerstin have two sons and a grandson. In his leisure time, he takes pleasure in cooking, golf, and skiing.

IFIP AND UNESCO PUBLISH *A MODULAR CURRICULUM IN COMPUTER SCIENCE*

[Every once in a while, we receive information about a very interesting **IFIP** project, months or years after it has taken place. Nevertheless, it may be sufficiently interesting to bring it to the attention of the **IFIP** community, even at a very late date. This article is one of those cases. — Editor]

In 1994, **IFIP** and the UNESCO Intergovernmental Informatics Program published *A Modular Curriculum in Computer Science,* a booklet of over 100 pages that gives the overall structure and hierarchical presentation of a curriculum for those areas considered to be parts of computer science. The description of each module gives its objectives, prerequisites, outline, contents (divided into topics, with a suggestion for what percentage of the module each topic should occupy), and bibliography. The book, published by UNESCO in English, is intended as a guide for establishing curricula in computer science, primarily for developing countries.

The history of this book goes back to 1984, when **IFIP's** Technical Committee on Education (TC3) prepared the first version of the book, which was widely circulated, under a contract from UNESCO. As a result of many helpful suggestions and the dramatically changing discipline of computer science, TC3 decided to revise the book. Most of the work was done during a three-day workshop in January 1993. Virtually all of the authors of the first book participated. Financial aid was provided by **IFIP,** the U.S. Association for Computing Machinery (ACM), the Swiss Federation of Informatics, and the University of Geneva.

The following paragraphs, from the introduction to the book, give greater detail. *

> It was clear to the authors of this report that any attempt to modify or adapt curricula that have been found valuable in the more advanced countries to accord with some preconceived ideas of the needs of developing countries would be unwise and probably misleading. They prefer to present, in as broad and comprehensive a way as possible, the total content of computer science as it has developed, for example, in the United States of America and Europe, and to offer universities and other institutions the background information from which courses can be constructed to meet local needs. In line with this approach, the following procedure has been adopted.
>
> The subject matter of computer science or informatics has been presented as a framework of interrelated modules, each with its own objectives and general outline and, in most cases, with the content described in some detail. Where possible, the interrelations and prerequisites are indicated.

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IFIP SPECIALIST GROUP 14: FOUNDATIONS OF COMPUTER SCIENCE

Computer Science (TCS) is an old field, yet one that has had significant accomplishments in recent years. To explain why **IFIP** waited until 1989 to establish a Specialist Group (SG) devoted to TCS, **Prof. Jozef Gruska** (SK), chairman of SG14, the SG on TCS, stated that in the early years of **IFIP,** it was felt that most theory was part of or related to programming, so that theory belonged in the Technical Committee (TC) on Programming (TC2). In particular, the Working Group on Formal Description of Programming Concepts (WG2.2) had carried out the bulk of the TCS work in **IFIP.** In 1989 — at the initiative of **Prof. Wilfried Brauer** (D), now an **IFIP** vice-president — an invitation was issued to **Prof. Gruska** by **Acad. Blagovest Sendov** (BG), then president-elect of **IFIP,** to present a proposal to the **IFIP** Technical Assembly. The proposal was accepted, and SG14 was formed. It is anticipated that it will soon be transformed into a TC.

Over the years, theoreticians have made significant contributions to **IFIP** Congresses. In fact, for many years, an invited talk at an **IFIP** Congress has been the most prestigious presentation for theoreticians. In the San Francisco (1989) and Hamburg (1994) Congresses, theory sessions, especially those with invited talks, drew the largest audiences and were attended mostly by people outside of theory, who were eager to hear about new ideas coming from theory and to see, hear, and meet renowned people known to them through textbooks.

The major difference between **IFIP** TCs and SGs, other than the temporary nature of the latter (an SG must be converted to a TC or a WG within a specified number of years), is that the membership of a TC consists of one representative per **IFIP** Member society. Since SGs are not constrained in that way, they can recruit the very best people, regardless of nationality — even from nations not belonging to **IFIP.** SG14, in fact, numbers among its members six recipients of the prestigious A.M. Turing Award (bestowed by the U.S. Association for Computing Machinery (ACM)).

Exactly what is TCS, we asked **Prof. Gruska.** He replied with an analogy: just as physics tries to find the laws of limitations in the physical world, TCS tries to find the laws of limitations in the computational world. He then went on to discuss major areas of TCS.

Major Areas of TCS

Complexity theory has made many very significant contributions. The proofs of the existence of various "complete" problems, especially NP-complete problems, have illuminated the structure of the space of algorithmic problems. Nowadays it is clear that the complexity of problems of continuous mathematics is also very important. The recent invention of interactive protocols has brought not only a very different view to the essence of computation, but also to one of the most basic concepts of modern science: proof. Radically new types of proof have been developed — interactive, zero-knowledge, and holographic — with surprising properties. Several other areas of complexity have also been intensively developed — for example, communication complexity and descriptional complexity.

Parallel and distributed computing is another area in which research has been focused for many years. One of its main goals has been to develop a good model of parallel computers that could play the unifying role for parallel computing that the von Neumann model did for sequential computing. A good understanding of the relations among various models has been obtained through various simulation techniques. Design and analysis of interconnection networks has also brought deeper understanding of the power of various communication structures. Theoretical computer architecture has emerged as an area with important contributions. The design and analysis of parallel and distributed algorithms is also a very broad area of research that tries to understand the power of various parallel architectures.

Cryptography and security of computations and communications is a relatively new area with very impressive contributions; for example, public key cryptosystems, authentication, and digital signatures are widely available in commercial systems. Cryptographic protocols, which can be used to solve in a secure way apparently unsolvable problems, are another important contribution of this theory. Randomization also plays an important role.

Computing by nature is a new field. Some say that computing in the 19th century was performed by man; in the 20th century, by machine; and in the 21st century, it will be performed by nature. TCS is studying alternative ways of computing by nature, such as quantum computing. We already have concepts of quantum computer, quantum Turing machine, and quantum complexity theory, and a proof exists that polynomial-time quantum computing is more powerful than polynomial-time computing on classical computers.

Genetic computing is another popular area within the TCS community. Genetic Turing machines have turned out to be more powerful than quantum Turing machines. Neural computing has also been successfully investigated. Perhaps the most impressive results along these lines have been the ones showing the feasibility of molecular computing, where enormous parallelism can be employed to solve difficult problems. In fact, it is speculated that molecular computing will easily provide more computational power than all the computers yet built.

These other major areas of TCS were also discussed by **Prof. Gruska:**

- Theory of formal languages, automata, and grammars
- Design and analysis of algorithms
- Learning theory
- Computational logic
- Theory of specification of data and systems
- Theory of programming

Unfortunately, space does not permit us to describe all of them.

The SG14 Working Groups

So far, five working groups have been established within SG14:

WG l4.1: Continuous algorithms and complexity (established in 1990)
WG14.2: Descriptional complexity (established in 1990)
WG14.3: Foundations of system specifications (established in 1992)
WG14.4: Computational learning theory (established in 1995)
WG14.5: Cellular automata (established in 1994)

The activities of these working groups have concentrated on workshops.

The LATIN Conferences

A significant activity for SG14 has been participation in the organization of the "LATIN" conferences. South America has a long-standing, thriving TCS community. A significant step in providing an identity, self-confidence, and regular contacts with the world-wide TCS community for the South American theorist has been the establishment of a series of TCS conferences in South America, called LATIN (Latin America Theoretical INformatic), sponsored by SG14. These conferences have a very

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IFIP SG14

Supports the development of the foundations of information processing and develops bridges to other fundamental sciences.

Chairman: Professor Jozef Gruska
Position: Professor of Computer Science
Employer: Institute of Mathematics, Slovak Academy of Sciences
Location: Bratislava, Slovakia
Interests: automata and language theories, descriptional complexity, parallelism, foundations of computing

Working Group 14.1: Continuous Algorithms and Complexity — Most mathematical models in the natural and social sciences, as well as in finance, are continuous. The focus of the Working Group is on theory and application of continuous models.

Chairman: Professor Joseph Traub
Position: Edwin Howard Armstrong Professor
Employer: Computer Science Department, Columbia University
Location: New York, NY, U.S.A.
Interests: information-based complexity

Working Group 14.2: Descriptional Complexity — Investigates all aspects of descriptional complexity (i.e., measures of complexity and their properties) and the use of descriptional complexity in such areas as machine learning, modeling, physics, cryptography, information theory, and statistics.

Chairman: to be appointed

Working Group 14.3: Foundations of System Specifications — Investigates theoretical aspects of the specification and development of computing systems that are based on algebraic and logical concepts and can be studied systematically within a theory of systems specification.

Chairman: Prof. Dr. Hans-Jörg Kreowski
Position: Professor of Theoretical Computer Science
Employer: University of Bremen
Location: Bremen, Germany
Interests: formal specification methods, formal language theory, syntactic methods in picture processing

Working Group 14.4: Computational Learning Theory — To promote the general well being of the field of computational learning theory.

Chairman: Professor Carl Smith
Position: Professor of Computer Science
Employer: Department of Computer Science, University of Maryland
Location: College Park, MD, U.S.A.
Interests: computational learning theory, foundations of computation.

Working Group 14.5: Cellular Automata — Supports the development of cellular automata theory and its applications (especially in parallel computing, the study of complex systems, physics, biology, etc.) and pursues the design and utilization of cellular automata machines.

Chairman: Professor Roland Vollmar
Position: Professor of Informatics
Employer: University of Karlsruhe
Location: Karlsruhe, Germany
Interests: parallelism, especially cellular automata

COMMUNICATION TECHNOLOGY ***TO BE USED BY IFIP***

*by Dr. Reinhard Posch (A) **

With the financial assistance of the Austrian Ministery for Science Research and Arts, **IFIP** will investigate a new communication technology for the needs of both the Secretariat and the Technical Committees (TCs). This communication technology will exploit a variety of infrastructures, from paper mail and fax facilities to ISDN (Integrated Services Digital Network) and the Internet, and even more advanced technologies. The target communication will start with a "Hierarchical and Secure Document Distribution Infrastructure" as well as a Multi-Technology environment.

A steering committee, under the guidance of **Prof. Kurt Bauknecht,** (CH) the president of **IFIP,** has formed a task group consisting of the president, **Mr. Plamen Nedkov,** Administration Manager of the **IFIP** Secretariat, **Prof. Gerald Quirchmayer** of the University of Vienna, and **Prof. Reinhard Posch** of the Graz University of Technology. Details of the plans can be found on the WorldWide Web at

http://www.iaik.tu-graz.ac.at/IFIP/Advanced_Communication.html.

As it is my duty to coordinate the needs of the TCs, I would be pleased to receive suggestions from the **IFIP** community for further phases of the project and also for the field of electronic publishing. Please send your recommendations to

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• vice-chairman of TC II, and Austrian member of TC6 and TC11

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IFIP TO DEVELOP E-MAIL FACILITIES FOR DEVELOPING COUNTRIES

At the September 1995 **IFIP** General Assembly (GA) in Calgary, **Dr. Walter Grafendorfer** (A), then chairman of the Marketing Committee, announced the initiation of a project to develop e-mail facilities for GA representatives from developing countries (DCs) who do not already have such access. The phases of the project are as follows:

1. Identify the need for e-mail and telecommunication facilities for GA representatives from DCs, and their societies.
2. Request contributions (financial, equipment, and expert advice) from **IFIP** Member societies, companies, and other entities, and channel them to the designated recipients.
3. Make available e-mail IDs and space for WorldWide Web (WWW) home pages, at the **IFIP** server, located at the Institute for Applied Informatics and Information Technologies of the University of Vienna.
4. Assist GA representatives to develop WWW home pages for their societies, maintained on the **IFIP** server and referenced in the **IFIP** WWW home page.

The project is now under way and is expected to be complete before September 1996.

Dr. Grafendorfer indicated that he expects support from Austrian organizations and others, in addition to the **IFIP** community's support. ■

CURRICULUM continued from page 3

It is therefore necessary for users of the report to select appropriate modules and to devise courses with specific objectives, introducing such additional integration, practical experience and balance as may be necessary in each curriculum. In some modules, it has been recognized that the content may depend considerably on local conditions, such as the form of administration and the nature of the national economy and culture, and in these, the treatment of the subject must be developed accordingly....

Developing nations have the same need as those in the forefront of the technological evolution of computing to be aware of the newer developments in hardware, software, and applications. In many instances, it may be the more recent developments that offer the greatest or more immediate benefits to such countries. In implementing curricula, therefore, every effort must be made to ensure that the content can be kept up to date and relevant to local needs. ...

Teachers, Equipment, Libraries

No course should be taught without adequate teaching staff. Obviously, one should seek out the most qualified staff that can be afforded. This may not be easy in these days when there is such a demand by industry and government for well-qualified computer scientists. Frequently, colleges and universities cannot compete financially with industry and government. Moreover, schools are not yet producing enough graduates to meet the current increasing demand....

Clearly, some type of computing equipment should be available for the students and faculty to use. Just as laboratories are available for physics and chemistry, for example, some type of computer laboratory should be available for computer science. Teaching a relatively full computer science curriculum without computers is just not realistic. ...

Scientific journals are an absolute must for a library, despite their cost. It is the only way to keep in touch with the topics and the results of international research. ...

Some non-profit organizations also distribute good price-per-value software. ...

Practical Experience

Last but not least, students should be encouraged to seek practical experience in industry or government. Many students now participate in what is called a cooperative programme, in which the school cooperates with industry or government, and the student goes to school one semester and then out to work the next, or some variation on this plan. In this way, upon graduation the student already has realistic experience, and in fact may continue to work at the same place. Such students are usually in great demand. ...

In order to get a copy of *A Modular Curriculum in Computer Science,* one may contact

Prof. Bernard Levrat
University of Geneva
CH—I211 Geneva 4, Switzerland
e-mail: levrat@uni2a.unige.ch ■

KnowRight '95 Was Held in Vienna

*by Klaus Brunnstein (D) **
*and Peter Paul Sint (A) * **

From 21 to 25 August 1995, approximately 150 delegates gathered in Vienna to participate in KnowRight '95, an international conference on Intellectual Property Rights, Global Networks, and Multimedia. The conference was sponsored by the Austrian Computer Society, assisted by the United Nations Industrial Development Organisation (UNIDO) UNESCO, TERMNET (an international standards and terminology organisation) and **IFIP** (in particular, Technical Committee 9 (TC9) on the Relationship between Computers and Society), and supported by many other organisations. **Klaus Brunnstein** (D), the TC9 chairman, and **Peter Paul Sint (A)** were joint chairmen of the conference; TC9 members were active participants on the International Program Committee; and **Walter Grafendorfer** (A), an **IFIP** trustee, served as the conference Organizing Committee chairman. The Conference proceedings were edited and printed by the Austrian Computer Society.

Intellectual property rights, as understood and legally implemented today, especially by copyrights and patents, have developed over the centuries as a result of technical innovation, starting with Gutenberg's invention of book printing. Many believe that the basic principles and concepts have been custom-tailored to the dominant interests of publishers, while the interests of customers of protected products have rarely been envisaged.

Applying such ancient concepts in the light of newly emerging information and communication technologies carries basic risks, since inherited concepts and principles may hardly be applicable. For example, some countries allow software and even algorithms to be patented, while others strictly forbid this. In growingly globalized economic and governmental work, such contradictions may hinder new forms of net-based work and may even make valuable resources and processes unavailable for broadly desired needs.

Moreover, paradigmatic changes such as cooperative networking with multifunctional and multimedia systems call for new laws. As an example, let's assume that a semantically meaningful combination of pieces of information is represented in diverse media and based on individually copyrighted work: the smile of Mona Lisa displayed to the accompaniment of a Mozart melody and Hamlet's words, "To be or not to be...." If such a combination forms a valuable work, it may also be worthy of copyright protection. What then is the relation between the copyrights of the "atomic" elements and the combined piece?

Because such questions can be answered only if lawyers, computer and communication professionals, and experts in commerce, education, libraries, and archives cooperate, KnowRight '95 was organized in order to start such an interdisciplinary discourse. The conference Organizing and Program Committees were successful in attracting outstanding experts in related areas to address the participants.

The Speeches

The keynote speaker, **Jens Gaster** of the European Union, discussed recent developments in EU copyright law, to which **Thomas Dreier** (D) added a historical perspective in his talk "Copyright from Gutenberg to Data Highways." **Thomas Hoeren** (D) contributed an analysis of problems in the draft EU directive on copyrights, which was also complemented by critical discussion of different approaches, especially in U.S. law. Here, some emerging international conflict in law should be avoided, according to **Hoeren.**

Pamela Samuelson (USA), in a very convincing lecture, suggested a new (hybrid) paradigm developed from concepts of copyright and patents. In introducing her (and colleagues') "manifesto," she opened the forum for much broader discussions.

Legal and technical aspects of multimedia systems linked through the WorldWide Web became another focus of KnowRight '95. While Austrian scientists presented the technical background of Hyper-G, a WWW tool with built-in security, at the University of Graz, **Rosemary Shiels** (USA) vividly demonstrated how to be innovative with law curricula, through carefully developed use of multimedia in education.

Charles Clarke (GB) earned much agreement for his positions on the role of "The Publisher in the Digital World." Other contributions covered multimedia pilot projects, basic legal concepts of intellectual property rights (e.g., questions of legal protection of algorithms, software, and, especially, neural networks), terminologies and standards, and technical means for enforcing legal protection, e.g., by watermarking documents and by protecting Electronic Document Interchange (EDI) and especially sensitive data (such as those related to digital cash) by cryptoboxes.

In his opening speech, **Dr. Raoul Kneucker** of the Austrian Ministry for Research, Technology, and Arts described the mission: "Work, Don't Rest!" This was a generally accepted principle, since even the social events in the beautiful Viennese environment permitted intense methodological discourse.

Follow-up

Since legal and technical issues require follow-up discussions, participants agreed that an electronic discussion forum should continue, aiming at preparing future workshops and conferences, culminating, hopefully, in KnowRight '98 as a major part of **IFIP** Congress '98 in Vienna and Budapest. Fortunately, both UNIDO and UNESCO have established working groups on related issues, the participants of which partly overlap those of KnowRight. It was broadly agreed that conference participants should join a UNIDO electronic discussion group organised with the technical support of the University of Hamburg.

It was argued that intellectual rights must be balanced with duties (e.g., liabilities), which requires an analysis of customer needs. Moreover, "information property" must be balanced against the free flow of information, e.g., in education, libraries, and archives, since new information is usually based on some freely available information gained during education or scientific discourse. Such balance between individual rights and free access to society's heritage needs special consideration for computer networks.

While the first phase of this electronic cooperation is devoted to the analysis of

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* former chairman of TC9, and joint chairman of KnowRight '95
** joint chairman of KnowRight '95

OPERATIONS AND MANAGEMENT OF DISTRIBUTED SYSTEMS

*by Dr. Salah Aidarous (CDN) **

The sixth International Workshop on Distributed Systems: Operations and Management was held in Ottawa, Canada, October 16-18, 1995. It covered the operations and management of application software and services within a distributed system and the impact of advanced computing and network technologies on network and service management. The workshop was attended by 80 experts and practitioners, representing the computing and telecommunications industries, service providers, and corporate and end-user communities.

The evolution of broadband and narrowband services to large, interconnected networks with interorganizational, distributed applications will be supported by distributed management techniques, systems, and tools. As distributed management technology matures, many implementation challenges are being encountered. The workshop emphasis was on the experiences gained and the challenges faced in the implementation of distributed management technologies.

Topics discussed covered current management technologies (e.g., SNMP and OSI) and their evolution to distributed processing (e.g., ODP). Key issues included when, where, and how to apply distributed management, the transition from current infrastructures, and how to ensure interoperability of networks and management systems in a multi-paradigm management environment. Because of the large number of standards bodies and implementation fora that deal with different aspects of implementing distributed management, there is a need to harmonize these activities and provide a consistent set of solutions to the industry.

Management platforms (hardware and software) to support emerging distributed management techniques and the deployment of distributed applications was an area of interest. The challenge is for software applications from different suppliers to efficiently interwork and provide added value to the business.

Several applications of distributed management were discussed, including Network Management, ATM/Broadband Management, and Information Management. The views presented indicated the need to change the way equipment suppliers, service providers, and corporate customers do business. Distributed technologies should support flexible evolution of networks, the services they support, and the organizations that run the business. Performance prediction of distributed applications is key to successful implementation. Performance modeling and monitoring tools are needed for the design and development of distributed management applications.

Examples and case studies, from providers of services and providers of equipment and systems, were discussed. Presentations covered various aspects, from strategies to introduce distributed management in enterprise and network management to management frameworks for broadband network services. Cost-effective strategies for the transition from the current environment and interworking with existing legacy systems are key implementation issues.

The workshop was sponsored by the **IFIP** Working Group on Network Management for Communication Networks (WG6.6), with technical co-sponsorship by the U.S. Institute of Electrical and Electronics Engineers (IEEE) Communications Society Technical Committee on Network Operations and Management (CNOM), and hosted by Bell-Northern Research, Ottawa, Canada.

Dr. Salah Aidarous (CDN) was chairman of the International Program Committee, and **Mr. Bill Robinson (CDN)** was chair of the Organizing Committee. ■

* chairman of the International Program Committee of the workshop

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good reputation and have become a part of the international calendar of main events in TCS.

The Future of TCS

Prof. Gruska. says that it is becoming increasingly clear that the scientific base of TCS has larger goals than just to serve computer and communication technologies and their applications. The TCS community must broaden its research scope, deepen its investigations, and extend its methodologies. To accomplish this, it will be necessary to open new lines of research and to work on multidisciplinary problems with other sciences and technologies. The TCS community must also grow geographically. Developing countries must have a high level of education in computing, and theory holds an irreplaceable position in computing education.

Promoting new areas of research and multidisciplinary research, and supporting TCS development outside its main centers seems to be what SG14 can and should do in order to contribute both to theory development and to the **IFIP** mission. ■

PROFESSOR KONRAD ZUSE

Dear members of the **IFIP** community,

It is with great sadness that I inform you that **Prof. Konrad Zuse** (D) passed away December 18, peacefully, in his family's presence. Festivities for his 85th birthday were held in Huenfeld, Germany, this summer, with many friends and colleagues present, including **Prof. Heinz Zemanek** (A), a past president and the historian of **IFIP. Konrad Zuse,** who built the first electromechanical computer in 1938, devoted his life to the development of application-oriented computing, and his high-level programming language, PLANKALKUEL, anticipated many structures and concepts of high-level languages later to be developed. **Konrad Zuse** also made valuable contributions to social implications of computing.

For **IFIP, Konrad Zuse** made his last appearance and contribution at **IFIP** Congress '94, where he was a major contributor to the History of Computing sessions. The **IFIP** Technical Committee on Relationship between Computers and Society (TC9), and especially its Working Group 9.6 on the History of Computing, mourn the death of a great pioneer in our field. Many of us also lose an outstanding mentor and close colleague.

Klaus Brunnstein
former chairman of TC9

COMPUTERS HELPING PEOPLE WITH SPECIAL NEEDS

The Austrian Computer Society, in cooperation with **IFIP** and several other computer societies and Austrian ministries, announces that the fifth International Conference on Computers Helping People with Special Needs (ICCHP'96) will be held at the Johannes Kepler University of Linz, Austria, 17-19 July 1996.

It has been noted that people with special needs seem to be neglected in the application of computers to serve humanity. A critical task of a democratic human society is to ameliorate the lives of all its members. ICCHP'96 aims to provide an international exchange concerning research and development, especially in technology, medicine, and social sciences, for people with special needs.

The fifth ICCHP will keep to the following proven design:

- a preconference with introductory seminars and workshops
- the Conference, with parallel tracks
- a poster session parallel to the Conference
- a product and project exhibition
- parallel events: e.g., International Computer Camp for visually impaired and hearing impaired, Integrated Master Classes for Music (open to disabled and nondisabled students)

The conference topics are

- Theory and Practice in Rehabilitation Technology
- Communications without Barriers
- Mobility and the Human Environment
- Computers Supporting Medicine
- Education and Rehabilitation

The exhibition will feature technical equipment, systems, software, and medical and pedagogical programs. It will be open to Conference delegates as well as to the public.

V. Risak (A) is General Chair of the Conference; **J. Klaus** (D) is Chair of the International Program Committee; and **R. Wagner** (A) is Chair of the Organizing Committee.

For further information, please contact the conference office:

Klaus Miesenberger
University of Linz
Altenbergerstrasse 69
A-4040 Linz, Austria
tel:+43-732-24 68-92 32, fax:+43-732-24 68-93 22
e-mail: icchp@mvblind.uni-linz.ac.at ■

OFFICE OF THE FUTURE continued from page 1

cessed and used by others with an interest in the meeting outcome.

This scenario is but one of many examples possible in the [OF. In fact, the IOF can perhaps be best characterized as a "space" rather than a place.

Conference in April

Prospects for the IOF give rise to numerous questions. What are the salient issues? What design options or solution strategies exist to address these issues? How might these design options be best implemented? What are their implications? In order to address these issues, the **IFIP** Working Group on Office Systems (WG8.4) is sponsoring a conference entitled The International Office of the Future: Design Options and Solution Strategies, at the University of Arizona, Tucson, Arizona, April 9-11. The purpose of this conference is to provide a forum and prototype environment in which researchers and practitioners can interact. Electronic meeting technologies and facilities will be available for participant use and evaluation.

Specific topics include multicultural-team productivity, platform requirements, global telecommunications, effective use of the Internet and the information highway, information-system infrastructure, business systems and processes, and social/political implications.

The General Chair of the conference is **Jay Nunamaker** (USA), the Program Chair is **Bernard Glasson** (AUS), and the Organizing Committee Chair is **Doug Vogel** (USA). For further information, please contact

MIS Department, attn. D. Vogel
430EE McClelland Hall
University of Arizona
Tucson, AZ 85721, U.S.A.
tel: +I (602) 621 2748, fax: +1 (602) 621-2433
e-mail: vogel@bpa.arizona.edu

The IOF Trilogy

This conference is the second in a trilogy that will expose the basic issues, generate ideas — both conceptual and practical — to address these issues, and report on and demonstrate how these ideas have been implemented and have worked in practice. The first conference in the WG8.4 IOF trilogy was held in conjunction with **IFIP** Congress '94 in Hamburg, Germany. The resulting monograph, *The International Office of the Future: A problem analysis*, was published by Delft University of Technology in February 1995. This "Arizona event" is the second in the trilogy. The outcomes will, in part, be used in the planning and conduct of the final event in the trilogy — a global, multisite conference to be held in September 1997, intended to simulate and demonstrate the office environment of a globally distributed real or virtual organisation. Researchers participating in this final event will enjoy the opportunity to experience working in a truly globally distributed environment and to conduct a number of relevant experiments.

A final objective of these activities will be the use of technology to assist in the development of a specification of the information systems and technology requirements of the IOF.

Interested parties are invited to join the WG8.4 list server to stay abreast of emerging discussions. To join the list, send a message to

majordomo@iof.curtin.edu.au

The body should contain the line

subscribe IFIPwg84

The home page address is

http://www.cba.uga.edu/conferences/IFIP.html

Related ACM Conference

After this WG8.4 event was first announced, the organisers became aware of a conference organized by the ACM SIG on Computer Personnel, entitled The Virtual Workplace: Impact on Individuals, Organisations and Societies. Because of the complementary nature of the two conference themes, **IFIP** WG8.4 and the ACM have agreed to collaborate to enable those who are interested to attend both events. The WG8.4 event will finish around noon on April 11, in sufficient time for participants to fly to Denver for the early evening start of the ACM SIGCPR event. The home page for the ACM event is

http://www.acm.org/sigcpr/ ■

National Abbreviations Used in Newsletter

A	Austria	FSU	former Soviet Union	S	Sweden
AUS	Australia	GB	United Kingdom	SF	Finland
BG	Bulgaria		Italy	SK	Slovakia
CDN	Canada	IL	Israel	USA	U.S.A.
CH	Switzerland	IRL	Ireland	ZA	South Africa
D	Germany		Japan	ZW	Zimbabwe
DK	Denmark	N	Norway		

THE INFORMATION HIGHWAY FOR DEVELOPING COUNTRIES

Conference to be Held in Zimbabwe

*by Mr. Geoff Fairall (ZW)**

The application of information technology for the benefit of all is now recognised as an important component for development. The spread of this technology to regions such as southern Africa is limited only by the ability of the local telecommunications authorities to provide adequate and up-to-date data communications facilities. Internationally, a global information infrastructure initiative is taking place, featuring the international data highway within and between industrialised countries.

Consequently, the Computer Society of Zimbabwe is organising CCDC/AFRICOM '96 in Harare, Zimbabwe 15-17 October. (CCDC stands for Computer Communication in Developing Countries.) **Mr. Geoff Fairall (ZW)** is chairman of the Organizing Committee, and **Mr. Lawrence Gudza (ZW)** is chairman of the International Program Committee. The Conference aims to

- assess the current status of computer communications in the region and identify common goals in terms of the perceived requirements for data communications services.
- review existing and likely future international technologies as well as suggest future directions for the region.
- influence the data-communications-service providers and facilitators in the region.

The ICCC (International Council for Computer Communications, an Affiliate Member of **IFIP)** and **IFIP,** two important international bodies, desire the global information infrastructure to be extended to and bring benefit to developing countries. For this reason, they promote the holding of conferences and workshops such as CCDC/AFRICOM'96, which is the fifth such event in Africa.

The Computer Society of Zimbabwe considers the strategy and policy issues surrounding the development of data communications facilities to be the most important aspect; thus, the Conference proper will not be a technical one. Separate technical workshops before or after the Conference, however, have been proposed.

The timing of CCDC/AFRICOM'96 has been chosen to coincide with the annual IT AFRICA Exhibition, which will have a "communications" flavour in 1996 and present the opportunity for the demonstration of the latest products and services of interest to the region.

The Conference will take place over three days, in which papers will be presented. Working group sessions will allow group participation and discussion, with final sessions including conference feedback.

Proceedings, including records of deliberations and resolutions, will hopefully form the basis of, or at least influence, national policies in the region.

Further information can be obtained from

The Computer Society of Zimbabwe
P.O. Box CY 164
Causeway
Harare, Zimbabwe
tel: +263-4-795021/792431, fax: +263-4-708861
e-mail: csz@grf.uz.zw or csz@harare.iafrica.com ■

IFIP vice-president, and Organizing Committee chairman of CCDC/AFRICOM'96

INTERESTING ASPECTS OF MEMBER SOCIETY REPORTS

Nineteen Member societies of IFIP prepared annual reports for the 1995 General Assembly (GA) in Calgary last September. Many interesting trends and ideas from the Members' activities during the preceding year are highlighted in these reports. We present here some of the most interesting and pervasive comments.

The most common activity discussed was gaining access to the Internet or some other on-line service, or providing e-mail service for members, free or at low cost. The Australian Member society faced an interesting dilemma. They originally thought that advertising would enable them to offer a very inexpensive on-line service to their members; however, insufficient advertising revenues forced them to increase the fees charged.

Another common trend involves harmonizing international standards for Information Technology professionals. The Canadian Member society is especially interested in such a project. Several other Members presently set standards for their nations, and the Australian Member does this for foreign professionals in Australia. The Singapore Member suggested that **IFIP** establish international standards.

Several Members reported large professional events or large numbers of events. The Brazilian Member had 2200 attendees at its 15th annual congress. The Hungarian Member's congress, which focused on the five years of democracy and market economy and their impact on informatics in Hungary, attracted over 600 participants. The Japanese Member held two national conventions with a total of 3700 participants. The Norwegian Member held 94 seminars and conferences and 130 society meetings; its Software '95 conference had 1100 participants and 18 000 exhibition attendees. The Swedish member held 80 events.

Three Members discussed collaborations with other Members. The Swedish Member is especially interested in exchanges of information with other Members.

Financial Problems

Several of the smaller Members mentioned their difficult financial circumstances. One, recently on the brink of dissolving, reported the hope of soon returning to normal operation. Another asked **IFIP** for suggestions how a small society can manage to participate in **IFIP.** (The major expense is not the annual dues, which are tailored to the size of the Member, but the cost of sending representatives to the meetings of the GA and Technical Committees (TCs). This perennial problem deserves thoughtful consideration by the GA.) One Member reported that it was concentrating its international activities with the Council

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IFIP BULLETIN IS NOW AVAILABLE ON-LINE

The ***IFIP*** *Bulletin*, in its entirety, is now accessible on-line through the WorldWide Web, either by links from the **IFIP** home page at

http://www.ifip.or.at

or directly at

http://www.ifip.or.at/bullet27.htm

The on-line *Bulletin* is continually **updated,** containing the current addresses of officers of **IFIP** and its Technical Committees, Specialist Group, and Working Groups, as well as addresses of General Assembly members and of Member societies.

MEMBER SOCIETY REPORTS continued from page 10

of European Professional Informatics Societies (CEPIS, an Affiliate Member of **IFIP)** and might no longer be able to afford participation in **IFIP.** The Norwegian Member reported that it was establishing a foundation for international work to which Norwegian TC representatives could apply for financial support.

The reports also contained a number of other interesting activities and ideas. The Austrian Member would like **IFIP** TCs and Working Groups (WGs) to prepare articles for publication in Member society publications. The Canadian Member reported studying a serious crisis in Canadian software human resources, and efforts to make the Canadian information technology industry more visible. The Danish Member asked for a revival of the **IFIP** Annual Report. It also requested that the **IFIP** Secretariat provide it with the names and addresses of all Danish WG members, ***IFIP*** *Newsletter* subscribers, and participants in IFIP—sponsored events. Such listings could help all Member societies recruit new members. The German Member called for closer **IFIP** ties with industry. The Japanese Member reported that it is urging its members to attend **IFIP** Congress '96 in Canberra in September (see the article on page 1). The Norwegian Member reported a 13% annual increase in membership. The U.S. Member, an organization whose sole mission is to support **IFIP,** reports holding frequent meetings by teleconference and an annual in-person, two-day meeting.

GRAFENDORFER HONORED BY CEPIS

Dr. Walter Grafendorfer, an **IFIP** trustee, was recently named Honorary Treasurer of CEPIS (Council of European Professional Informatics Societies). **Dr. Grafendorfer** is Honorary Secretary General of the Austrian Computer Society, a position he has held since 1975 (with interruption). He is a communications engineer and a Lecturer in Computer Science at the Universities of Vienna and Linz, as well as other institutions.

CEPIS, an Affiliate Member of **IFIP,** was established to provide a coordinated voice for the view of European informatics professionals on major issues to European institutions. It currently has twenty members from seventeen countries.

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principles and understanding, a second phase will aim at developing — if possible and necessary — new solutions, both legal and technical. Implementation of such measures will, in a third phase, also involve international harmonization or at least "interoperability" of diverse legal codes. KnowRight '98 may then summarize the attempts and insights, as well as the failed hopes.

Will readers with questions or who wish to work actively in "Project KnowRight" please send their messages to **Klaus Brunnstein:**

brunnstein@informatik.uni-hamburg.de

The discussion group's address is

knowright@informatik.uni-hamburg.de

This is not a list server with automatic subscription, since we wish to concentrate on active contributions, with due netiquette! ■

HUMOR FROM NEW ZEALAND

We recently received a notice about The Gathering, an international computer-security conference held in New Zealand in February. What caught our eye was the following enticement.

THE GATHERING:
AT THE EDGE OF THE EARTH

If the possibility of being mugged adds excitement and challenge to attending a conference, The Gathering is not for you. In New Zealand, we have one of the lowest crime rates in the world.

If your lungs *need* the feel of crisp, sharp pollution, The Gathering is not for you. We don't have smog.

If you enjoy giving your money away, The Gathering is not for you. Tipping is *not* done in New Zealand, and strangers will *not* be continuously thrusting their hands in your face for gratuities or charity.

If you love hustle, bustle, noise, and tall buildings, The Gathering is not for you. Queenstown is a little town nestled in the Southern Alps.

If you enjoy getting to a conference only to find out that everything is "extra," you'll hate The Gathering. There are *no* extras. Everything is included in the price of your registration. All you have to do is get here and find a place to stay — and we'll help with that if you like.

Come and enjoy our southern hospitality. Take the opportunity to relax, unwind, and get away from the rat race.

CONGRESS '96 continued from page 1

The 14th World Computer Congress comprises three conferences: Advanced IT Tools, Mobile Communications, and Teleteaching 96. They were described in the ***IFIP*** *Newsletter* in June 1995 (page 1), and the keynote speakers and tutorials were discussed in the December 1995 *Newsletter* (page 3). In addition, the conferences will be preceded by tutorials in Sydney and Melbourne; a technical exhibition will take place; and social activities and tours will be available. For further information, contact

14th World Congress, IFIP'96
GPO Box 2200
Canberra, A.C.T. 2601, Australia
tel: +61 6 257 3299, fax: +61 6 257 3256
e-mail: ifip96@acs.org.au
WWW: http://www.acs.org.au/ifip96.html ■

CALLS FOR PAPERS

Second **IFIP** Intl.Conf on **Communication and Computer Networks — SEACOMM 96**
27-29 Aug 96, Kuala Lumpur, Malaysia
papers due: 29 Feb 96
contact:
SEACOMM'96 Programme Committee
Malaysian National Computer Confederation
46A, Jalan SS2/66
47300 Petaling Jaya, Malaysia
tel: 603-7751576, fax: 603-7747026
e-mail: seacomm@sittdec.org.my
http://bbshost.sittdec.org.my/conferen/ seacomtn/seacomm.htm

Fifth Intl. Conf. on **Computers Helping People with Special Needs — ICCHP'96**
17-19 Jul 96, Linz, Austria
papers due: I Mar 96
contact: Joachim Klaus,
University Karlsruhe
Engesserstrasse 4
D-76I28 Karlsruhe, Germany
tel:+ 49-721-608-2760, fax:+ 49-721-69 73 77
e-mail: joachim_klaus@ira.uka.de

IFIP TC6/TCI I Intl. Work. Conf. on **Communication and Multimedia Security**
23-24 Sep 96, Essen, Germany
papers due: I Mar 96
contact: Prof. Dr. Patrick Horster
University of Technology Chemnitz
Theoretical Computer Science and Information Security
Strasse der Nationen 62
09111 Chemnitz, Germany
fax.: +49 371 531-1810
e-Mail: pho@informatik.tu-chemnitz.de

Ninth **IFIP** TC6/WG6.1 Intl. Workshop on **Testing Communication Systems — IWTCS**
9-11 Sep 96, Darmstadt, Germany
papers due: I I Mar 96
contact:
e-mail: iwtcs96@darmstadt.gmd.de
http://www.darmstadt.gmd.de/ gattung/ iwtcs/iwtcs96.html
or
Bernd Baumgarten
tel.: +49-6151-869-263
e-mail: baumgart@darmstadt.gmd.de
or
Heinz-Juergen Burkhardt
tel.: +49-6151-869-291/292
e-mail: burkhard@darmstadt.gmd.de
or
Alfred Giessler
tel.: +49-6151-869-275
e-mail: giessler@darmstadt.gmd.de
at
GMD - TKT
Rheinstr. 75
64295 Darmstadt, Germany
fax: +49-6151-869-224

IFIP WG7.3 Intl. Conf. on **Performance Theory, Measurement and Evaluation of Computer and Communication Systems**
7-11 Oct 96, Lausanne, Switzerland
papers due: 15 Mar 96
contact:
perf96-submit@Irc.epfl.ch

Seventh **IFIP/IEEE** Intl. Workshop on **Distributed Systems: Operation and Management**
28-30 Oct 96, L'Aquila, Italy
summary due: 31 Mar 96
contact: Gianfranco Ciccarella
Scuola Superiore G. Reiss Romoli
Via G. Falcone, 25
67010 L'Aquila, Italy
tel: +39 862 336377, fax: +39 862 336363
e-mail: ciccarella@ssgrr.it
or
Roberto Saracco
CSELT
Via G. Reiss Romoli 274
10148 Torino, Italy
tel: +39 11 2286906, fax: +39 1 1 2285685
e-mail: roberto.saracco@cselt.stet.it

IFIP TC6/WG6.1 Joint Intl. Conf. on **Formal Description Techniques for Distributed Systems and Communication Protocols, and Protocol Specification, Testing, and Verification — FORTE/PSTV'96**
8-11 Oct 96, Kaiserslautern, Germany
papers due: 19 Apr 96
contact:
FORTE/PSTV'96 Organization Committee
Univ. of Kaiserslautern
P.O. Box 3049
D-67653 Kaiserslautern, Germany
tel: +49 631 205-3426 or -3287
fax: +49 631 205-2640
e-mail: forte.pstv96@informatik.uni-k1.de

Intl. Conf. on **Open Distributed Processing — ICODP 97**
26-30 May 97, Toronto, On., Canada
papers due: 27 Sep 96
contact: ICODP'97
Jacob Slonim
IBM Centre for Advanced Studies
844 Don Mills Road
North York, Ontario, Canada M3C 1 V7
tel:+l (416) 448-2245, fax:+l (416) 448-2859
e-mail: icodp97@vnet.ibm.com

Will event organizers please note that calls for papers cannot be listed in this column until the events have been approved by **IFIP.**

FUTURE IFIP MEETINGS

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

Council	3-7 Mar 96 (Sun.–Thurs.)	Sandton (near Johannesburg), South Africa
GA	5-10 Sep 96 (Thurs.–Tues.)	Canberra, Australia
Council	Mar 97	Slovakia (Bratislava or elsewhere)
GA	(contiguous to **IFIP** Congress '98)	Vienna, Austria, or Budapest, Hungary
GA	(contiguous to **IFIP** Congress 2000)	Beijing, China

TECHNICAL COMMITTEE AND WORKING GROUP MEETINGS

TC2	13-14 Jul 96	Oxford, U.K.
WG2.I	10-14 Jun 96	Rancho Santa Fe, CA, U.S.A.
	17-22 Feb 97	Bischenberg, Alsace, France
WG2.2	Sep/Oct 96	Macao
	97	Graz, Austria
WG2.3	15-19 Apr 96	Han-Sur-Lesse, Belgium
	Jan 97	California, U.S.A.
WG2.4	3-7 Jun 96	Ameland, The Netherlands
	Jun 97	Berlin, Germany
	98	Colorado, U.S.A.
WG2.7/ I 3.4	15-18 Apr 96	Vancouver, BC, Canada
WG2.9	second quarter 96	Northwestern U.S.A.
TC3	1-2 Sep 96	Wollongong, Australia
	97	Ghent, Belgium, or The Netherlands
TC5	10 May 96	Trondheim, Norway
WG5.7	3 Nov 96	Kyoto, Japan
TC6	26-27 Apr 96	Montreal, Canada
	6-7 Sep 96	Australia
	or mid Oct 96	Zimbabwe
	Mar/Apr 97	Cambridge, U.K.
	Sep/Oct 97	Beijing, China, or Tunisia
	Apr/May 98	Bulgaria or Denmark
TC7	17-20 Jun 96	Munich, Germany
	Jul 97	Detroit, **MI,** U.S.A.
	Jul 99	Cambridge, U.K.
TC8	12-13 Apr 96	Tucson, AZ, U.S.A.
WG8.1	7 May 96	Geneva, Switzerland
WG8.2	Dec 96 (with ICIS)	Cleveland, OH, U.S.A.
	Dec 97 (with ICIS)	Atlanta, GA, U.S.A.
TC9	16-17 Mar 96	Tel Aviv, Israel
WG9.2	10-12 May 96	Copenhagen, Denmark
SIG9.2.2	13 May 96	Copenhagen, Denmark
WG9.5	7 Jul 96	Brighton, U.K.
WG9.6	9-10 Mar 96	Hamburg, Germany
TC 10	Sep 96	Canberra, Australia
WG10.4	27 Jun – 2 **Jul 96**	Marioka, Japan
TC11	May 96	Samos, Greece
	97	Denmark
WG 11.1, 2, 5, 8:	22 May 96	Samos, Greece
WG I 1.3	22-24 Jul 96	Como, Italy
WGI2.2	3-6 Jul 96 (with ICML96)	Bari, Italy
TC 13	14 Apr 96	Vancouver, BC, Canada
WG13.1	16 Apr 96	Vancouver, BC, Canada
WGI3.2	13 May 96 (during working cont.)	Geneva, Switzerland
WG13.4/2.7	15-18 Apr 96	Vancouver, BC, Canada
SGI4	**96**	U.S.A.

Essential Reading in Education

from Chapman & Hall on behalf of the International Federation for Information Processing (IFIP)

Information Technology in Educational Management

Edited by **B. Barta** and **Y. Gev,** both of the Ministry of Education, Culture and Sport, Israel and **M. Telem,** School of Education, Tel Aviv University, Israel

This volume reviews the state-of-the-art in information technology in educational management with emphasis on research, approaches, methodologies, applications and tools. Most of the issues presented relate to the schooling system - primary and secondary - with other chapters devoted to higher education. All those concerned with information technology in educational management will find this book of particular interest; especially policy makers, heads of department and senior staff dealing with the planning and running of educational systems, and teaching staff and system designers.

- addresses use of software packages and educational decision support systems – provides practical advice
- covers the entire range of ITEM applications, from class scheduling to financial support

Contents: Preface. **Part One: Issues in information technology in educational management.** Maximizing the potential of information technology for management: strategies for interfacing the technical core of education. Information technology assimilation in schools: a theoretical and practical framework. Computer assisted school administration and management: where are we and where should we go? The use of task analysis and user acceptability audits in implementing information technology systems in schools. **Part Two: Implementation status - national reports.** Managing change in "ITEM". ISE - information systems in education. Case study of the Information Systems Strategy (ISS) of the Hong Kong Education Department. Computer-aided school management in North-Rhine Westphalia: The Kaufmaennische Schulen (College of Commerce) in Ahaus. The development of computer assisted school administration in New Zealand: a case study. School management information system authority in Israel. The development of ITEM in England and Wales. Information technology in educational management of Nepal. Information technology and the management of Victorian schools - providing flexibility or enabling better central control? State of the art in information technology in educational management in the Czech republic. **Part Three: Higher education.** Interactive voice response - more power to students. CASMAC - a cooperative approach to university administrative computing. DUX: a remote-access on-line information system. The Queensland Tertiary Admissions Centre: an example of cooperative system using state of the art technologies. Contribution of the information technology/information systems to human resources management in the university. **Part Four: Educational decision support systems.** "Sheshet" - decision support system for guidance and placement of enrolling high school students. Geographic information and school facility planning. Interactive simulation for planning, coordination and control: mathematical decision support systems in education. Computerised support in decision-making processes in Israeli schools. **Part Five: Specific applications. Information** technology and the management of instructional programs: meeting the challenge of curriculum-time compression in schools. Schedule planning by using genetic algorithms for developing education materials and curricula. The use of information technology in educational counselling: applications for high school counsellors. Having an "assistant" makes better teaching. Educational management in Israeli elementary schools. Educational management - information technology and school autonomy. The computer as decision making tool in the junior high school. Educational resource management with a human interface. **Part Six: Panels and discussions - summaries.** Information technology in educational systems: where are we? Where are we going? Introduction of IT in school management: approaches, preparation, human and political aspects. ITEM as a catalyst for school reform. Pedagogical decision making in a computerised school environment. Telecommunications in educational administration and management of learning in higher education. Index of contributors. Keyword index.

December 1994: 234x156mm: 264pp: 40 line illus: Hardback: 0-412-62090-1: £49.00

Integrating Information Technology into Education

Edited by **D. Watson,** Centre for Educational Studies, King's College London, UK, and **D. Tinsley,** IT Consultant, UK

This volume examines the latest research and development issues in integration of information technology, and the related problems of quality, at the secondary education level (students aged between 11 and 18 years). The book crosses all aspects of the curriculum and issues in secondary education, from global research to individual teacher's issues. Seven main themes are explored in the book: current developments in society and education influencing integration; teachers: their roles and concerns; learners: their expectations of and behaviour in an integrated environment; developments and concerns in the curriculum; successes and failures in existing practice; organization and management of integrated environments; identification of social and political influences. This book is fascinating reading for professionals involved in every aspect of education and informatics.

Contents: New technologies: integration into education. The computer: ally or alien? The roles and needs of mathematics teachers using IT. An action research role for teachers. Classroom ethos and the concerns of the teacher. Using evidence about teacher development to plan systematic revolution. The reality of learners' achievements with IT in the classroom. A curriculum for teachers or for learning? The case of Cabri-geometre: learning geometry in a computer based environment. Moving schema. Developing analytical competency through informatics teaching. Integration of informatics into education. Promoting interdisciplinary and intercultural intentions through the history of informatics. Implementation of computers in Malaysian schools: problems and successes. Interpreting internal school influences on the educational integration of IT. Factors affecting the use of computers in the classroom: four case studies. Integrating IT into teaching - struggling with windmills. Effects of learners' characteristics and instructional guidance on computer assisted learning. Post experimental phases of IT across the curriculum projects: the Spanish view. Social and political influences on the integration of informatics into Japanese education. The failure of the education system to attract girls to formal informatics studies. Learners and their expectations for an integrated informatics environment. Societal and organisational influences on integration: what about networking? Short Papers. The teachers role in a new problem-centred interdisciplinary approach. Teacher training, problems in mathematics teaching and the use of software tools. School environments and students' opinions on informatics. Animation microworlds for children as developers. How to develop "discoveries". Integration of portable computers into Australian classrooms: issues and outcomes. Developing an open learning environment with communication technologies. The British approach to the integration of IT into the curriculum. Focus groups report. Addresses of contributors and programme committee. Index of contributors. Keyword index.

February 1995: 234x156: 336pp: 40 line illus, 32 halftone illus: Hardback: 0-412-62250-5: £49.00

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Teleteaching '96

Edited by **S. Wills,** University of Melbourne, Australia

Teleteaching refers to the use of computers and communications technologies in teaching and learning. This CD ROM reflects the interactive approach of the IFIP Teleteaching '96 conference and consists of a number of projects rather than being an electronic version of a conference proceedings book. It will feature highlights from all aspects of the conference including: the Landcarenet email and video conference between Canberra and Vienna, the Virtual Teachers Resource Centre and the Special Role of the Internet for Special People.

August 1996: CD-ROM: 0-412-78100-X: c. £55.00

World Conference on Computers in Education VI

Edited by **D. Tinsley,** IT Consultant, UK, and **T. van Weert,** School of Informatics, University of Nijmegen, The Netherlands

Special Offer

Members of IFIP member societies may purchase the *World Conference on Computers in Education CD-Rom* (0412714604) at a 50% discounted rate of £47.50. This offer is valid until 01.06.96.

Contributions from all parts of the world and from all levels and disciplines present the leading edge of the applications of computers and computing to the techniques and systems of education. This volume discusses many topics of interest, including: accreditation; artificial intelligence; developing countries; distance learning; equity issues; evaluation (formative and summative); flexible infrastructure; informatics as a study topic; information technology; knowledge as a resource; learner-centred learning; methodologies; national policies; primary education; social issues; software; teacher education; teleteaching; tutoring. This book is of vital importance to all those concerned with computers and education. Teachers, trainers, policy makers, researchers, curriculum developers, multimedia software engineers and educational equipment manufacturers will find it indispensable.

July 1995: CD-ROM: 0-412-71460-4: £95.00
July 1995: 234x156mm: 1168pp: 250 line illus, 13 halftone illus: Hardback: 0-412-62670-5: £95.00
Set (Book and CD-ROM): 0-412-73650-0: £123.75

Software Quality and Productivity

Theory, practice, education and training

Edited **by M. Lee,** City Polytechnic of Hong Kong, Hong Kong, **B. Z. Barta,** Ministry of Education, Culture and Sport, Israel, and **P. Juliff,** Deakin University, Victoria, Australia

As the world becomes increasingly dependent on the use of computers, the need for quality software which can be produced at reasonable cost increases. This book brings together the work of leading international researchers and practitioners who are concerned with the efficient production of quality software. Key topics addressed include: requirements, design and development methodologies; object-oriented analysis, design and development; software process and capability; project management; quality, reliability and standards; specifications, metrics, assessment; reusability; integrated environment, CASE tools; education and training.

Contents: Keynote papers. Requirements, design and development methodologies. Object oriented analysis, design and development. Software process and capability. Project management. Quality, reliability, standards. Specifications, metrics, assessment. Reusability. Integrated environments, case tools. Education and training. Index of contributors. Keyword index.

December 1994: 234x156mm: 416pp: 45 line illus, 5 halftone illus: Hardback: 0-412-62960-7: £59.00

Education and Information Technologies

Edited by B.Y. Samways, ISS Training Centre, Birmingham, UK and B. Collis, University of Twente, The Netherlands

A refereed quarterly journal publishing papers from all sectors of education on every aspect of information technology and information systems. Subjects which are indicative of the changes in the methods of teaching and learning, as well as examples of good practice and innovative ideas are addressed.

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CALENDAR OF EVENTS

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Event	Date	Location	Sponsored by
Work. Conf. on Mathematical and Scientific Computing: Quality of Numerical Software	8-12 Jul 96	Oxford, U.K.	**IFIP** TC2, WG2.5
Fifth Intl. Conf. on *Computers Helping People with Special Needs — ICCHP '96*	17-19 Jul 96	Linz, Austria	OCG **IFIP** TC9 TC13 et al.
Tenth Work. Conf. on *Database Security*	22-24 Jul 96	Como, Italy	**IFIP** TC 11, WG 11.3
Work. Conf. on *Implementation of Decision Support Systems*	22-25 Jul 96	London, U.K.	**IFIP** WG8.3 London Sch. of Ec.
Second Work. Conf. on *Information Technology in Educational Management*	22-26 Jul 96	Hong Kong	**IFIP** TC3, HKBU
South–East Asia Communication Conference — SEACOMM 96	27-29 Aug 96	Kuala Lumpur, Malaysia	MNCC, **IFIP** TC6
Workshop *Teleteaching '96*	2-5 Sep 96	Vienna, Austria, and Prague, Czech Rep.	**IFIP** TC3/WG3.6
IFIP Congress '96 — Fourteenth World Computer Congress	**2-6 Sep 96**	**Canberra, Australia**	**IFIP**
Intl. Symp. on *Operations Research — SOR* '96	4-6 Sep 96	Braunschweig, Germany	DGOR, GMOEOR **IFIP** WG7.4
Ninth Intl. Workshop on *Testing Communication Systems — IWTCS*	9-11 Sep 96	Darmstadt, Germany	**IFIP** TC6 WG6.I GMD
Work. Conf. *Intelligent Networks 96*	**11-12** Sep 96	Dallas, TX, U.S.A.	**IFIP** TC6, IEEE CS
Intl. Conf. on *Design of Information Infrastructure Systems for Manufacturing — DIISM '96*	16-18 Sep 96	Eindhoven, Netherlands	**IFIP** TC5, WG5.3/5.7; Eindhoven U.; CIMOSA
Work. Conf. on *Development and Application of Computer Techniques to Environmental Studies — ENVIROSOFT '96*	18-20 Sep 96	Como, Italy	**IFIP** TC5, WG5.11; Wessex Inst. of Tech.
Intl. Work. Conf. on *Communication and Multimedia Security*	23-24 Sep 96	Essen, Germany	**IFIP** TC6, TC II
Intl. Workshop on *Personal Wireless Communications*	end Sep 96	Chania, Greece	**IFIP** TC6 TG Wireless Netw.
Open Conf. on *Formal Description Techniques and Protocol Specification, Testing, and Verification — FORTE/PSTV'96*	8-11 Oct 96	Kaiserslautern, Germany	**IFIP** WG6.I
Intl. Conf. *CCDC 96 and AFRICOM 96*	15-17 Oct 96	Harare, Zimbabwe	ICCC, **IFIP** TC6
Fifth Intl. Workshop on *Protocols for High-Speed Networks '96*	28-30 Oct 96	Sophia Antipolis, France	**IFIP** TC6/WG6.I
Intl. Workshop on *Distributed Systems: Operation and Management*	28-30 Oct 96	L'Aquila, Italy	**IFIP** WG6.6 IEEE SSGRR
Second Intl. Symp. on *Mathematical Modelling*	5-7 Feb 97	Vienna, Austria	IMACS, TU Vienna, IFAC, **IFIP**
Conf. on *Optimal Control: Theory, Algorithms and Applications*	27 Feb – I Mar 97	Gainesville, FL, U.S.A.	**IFIP** TC7, WG7.2; N.S.F., U. of Fla.
Second Intl. Symp. on *Environmental Software Systems — ISESS '97*	28 Apr – 2 May 97	Whistler, Canada	**IFIP** TC5, Ger. Comp. Soc., Aus. Rsch. Ctr. Seibersdorf; U. of Guelph
Conf. on *Information Security: Research & Business — **IFIP/SEC** '97*	14-16 May 97	Copenhagen, Denmark	**IFIP** TCI 1
Intl. Conf. on *Open Distributed Processing — ICODP 97*	26-30 May 97	Toronto, On., Canada	IFIP TC6, IBM
Fourteenth ***IMEKO** World Congress*	2-6 Jun 97	Tempaere/Helsinki, Fin.	IMEKO
INTERACT 97	14-18 Jul 97	Sydney, Australia	**IFIP** TCI3
Eighteenth Conf. on *System Modelling and Optimization*	21-24 Jul 97	Detroit, MI, U.S.A.	**IFIP** TC7, Wayne Univ.
Intl. Conf. on *Computer Application in Production Engineering — CAPE '97*	19-21 Nov 97	Chicago, IL, U.S.A	**IFIP** TC5; SME
IFIP Congress '98 — Fifteenth World Computer Congress	**23-29 Aug 98**	**Vienna, Austria, and Budapest, Hungary**	**IFIP**
IFIP Congress 2000 — Sixteenth World Computer Congress	**Sep 2000**	**Beijing, China**	**IFIP**

The **IFIP** Secretariat can furnish details of most of the events listed. Please see page 12 for a schedule of **IFIP** administrative meetings.

CALENDAR OF EVENTS

Event	Date	Location	Sponsored by
Distributed Platforms — ICDP'96	27 Feb - I Mar 96	Dresden, Germany	**IFIP** WG6.1 RWTH Aachen et al.
Workshop on *Formal Methods for Open Object-Based Distributed Systems*	4-6 Mar 96	Paris, France	**IFIP** WG6.1
Symp. on *Industrial Benefits and Advances in Formal Methods — FME'96*	17-22 Mar 96	Oxford, U.K.	Comm. of European Comm., **IFIP** WGI4.3
Work. Conf. on *Impact of Information Technology from Practice to Curriculum*	18-21 Mar 96	Neve-Ilan, Israel	**IFIP** TC3, TC9/WG9.5
Second Intl. Symp. on *Advanced Research in Asynchronous Circuits & Systems— ASYNC '96*	18-21 Mar 96	Aizu-Wakamatsu, Japan	**IFIP** TC10, WGI0.5; IEEE-VLSI; IEICE
First Intl. Workshop on *Software Engineering for Parallel and Distributed Systems*	25-26 Mar 96	Berlin, Germany	ICSE **IFIP** TC 10
Work. Conf. on *Software Engineering and CASE Tools for Control Technology of Manufacturing Systems*	28-29 Mar 96	Stuttgart, Germany	**IFIP** WG5.3
Seventh Work. Conf. on *Reliability and Optimization of Structural Systems*	2-4 Apr 96	Boulder, CO, U.S.A.	**IFIP** WG7.5, Univ. of Col., Tech. Univ. of Munich
Work. Conf. on *International Office of the Future: Design Options and Solution Strategies*	9-11 Apr 96	Tucson, AZ, U.S.A.	**IFIP** WG8.4 U. of Arizona
Intl. Symp. on *Network Operation and Management '96*	16-19 Apr 96	Kyoto, Japan	IEEE CS **IFIP** WG6.6
Third Intl. Workshop on *The GRAI Approach*	18-19 Apr 96	Bordeaux, France	AUGRAI **IFIP** Eur. Comm.
Intl. Conf. on *Compiler Construction*	22-26 Apr 96	Linkoeping, Sweden	**IFIP** WG2.4
Work. Conf. on *Broadband Communications '96 — BB'96*	22-26 Apr 96	Montreal, Qu., Canada	**IFIP** WG 6.2 IEEE-CS
Work. Conf. on *Domain Knowledge for Interactive Systems Design*	8-10 May 96	Geneva, Switzerland	**IFIP** WG8.l, WG13.2
Intl. Conf. on *Nonlinear Problems in Aviation and Aerospace*	9-11 May 96	Daytona Beach, FL, U.S.A.	Intl. Fed. of Non-Linear Analysts I **FIP** WG7.2
Work. Conf. on *Domain Analysis and Modelling for Interactive Systems*	9-12 May 96	Geneva, Switzerland	**IFIP** WGI3.2 WG8.I
Twelfth Intl. Open Conf. on *Information Systems Security: Facing the Information Society of the 21st Century — IFIP/SEC'96*	21-24 May 96	Island of Samos, Greece	**IFIP** TC11 Greek Comp. Soc Cyprus Comp. Soc.
Work. Conf. on *Optimization-Based Computer-Aided Modelling and Design*	28-30 May 96	Noisy-Le-Grand, France	**IFIP** WG7.6
Workshop on *MIS Research*	2-4 Jun 96	Philadelphia, PA, U.S.A.	**IFIP** WG9.2
Workshop on *Applied Mathematics: Shape Analysis and Boundary Control*	12-14 Jun 96	Sophia Antipolis, France	**IFIP** WG7.3 et al.
Sixth Conf. on *Information Network and Data Communication — INDC 96*	17-19 Jun 96	Trondheim, Norway	**IFIP** TC6, ICCC
Intl. Conf. on *Architectures and Design Methods for Balanced Automation Systems — BASYS '96*	17-19 Jun 96	Lisbon, Portugal	EC, **IFIP** WG5.3, IEEE CS
Third Workshop on *Stochastic Optimization: Numerical Methods and Technical Applications*	17-20 Jun 96	Neubiberg/Munich Ger.	**IFIP** TC7, WG7.7; GAMM; UniBw Munich
Asia Pacific Conf. on *Human-Computer Interaction — APCHI '96*	26-28 Jun 96	Singapore	**IFIP** TC13 ITI
Work. Conf. on *Information and Communication Technology: Supporting Change in Teachers Education*	30 Jun - 5 July 96	Kfar Blum, Israel	**IFIP** TC3, WG3.I & 5
Thirteenth *IFAC World Congress '96*	30 Jun - 5 Jul 96	San Francisco, CA, U.S.A.	IFAC
Work. Conf. on *Education and Informatics*	I–5 Jul 96	Moscow, Russia	**IFIP** TC3/WG3.3 UNESCO
Work. Conf. on *Place of Information Technology in Management Education*	8-12 Jul 96	Melbourne, Australia	**IFIP** WG3.4 Deakin U.
Fourteenth *IFORS World Congress*	8-12 Jul 96	Vancouver, B.C., Canada	IFORS

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IFIP Congress '96 — 14th World Computer Congress	2-6 Sep 96	Canberra, Australia	**IFIP**
IFIP Congress '98 — 15th World Computer Congress	23-29 Aug 98	Vienna, Austria, and Budapest, Hungary	**IFIP**
I **FIP** Congress 2000 — 16th World Computer Congress	Sep 2000	Beijing, China	**IFIP**

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