PROGRAMMING SEMINARS FOR DEVELOPING NATIONS

Major TC2 Initiative Planned

by Dr. Roger deBry (USA) *

IFIP's Technical Committee on Programming (TC2) has undertaken a significant new experiment, which will bring a series of state-of-the-art seminars on programming topics to developing regions of the world. In 1986, IFIP's Activity Development Board made an appeal to the TCs to come up with ideas to support the development of informatics in these regions. Prof. Erich Neuhold (D), chairman of the Working Group on Formal Description of Programming Concepts (WG2.2), and Prof. Robert Meersman (NL), chairman of WG2.6 on Database, responded to this appeal with proposals for a series of seminars to be held in Latin America and in Asia on subjects from their WGs.

These seminars will be significantly different from typical IFIP conferences, symposia, and other technical meetings, which are devoted to advancing their fields. These TC2 state-of-the-art seminars are dedicated to bringing current information about developing fields to developing countries. It is anticipated that the two seminars will be repeated in other developing countries in the near future. A further benefit of the seminars will be derived from their lecture notes, which will be published in the form of state-of-the-art reports. It is anticipated that these will be extensively used throughout the world.

* IFIP Newsletter correspondent for TC2

continued on page 3

Details Announced

Many details about IFIP Congress '89, IFIP's premier event, have been announced recently by the Program and Organizing Committees. Congress '89, the 11th World Computer Congress, will take place 28 August-1 September 1989 in San Francisco. (An article in the December 1987 IFIP Newsletter, on page 5, presented preliminary information.)

The list of invited speakers is now complete. It comprises "superstars" from the world of information processing, including a Nobel laureate. There are 37 invited speakers from 13 countries, with the largest number coming from the U.S.A., Federal Republic of Germany, France, and Switzerland. "Respondents" have been invited to present different viewpoints following each talk. These experts, too, will lend excitement to the Congress. The invited speakers, the titles of their talks, and the respondents are listed here:

- Fundamental Tools
  - J.W. de Bakker (NL): Designing Concurrency Semantics / V.E. Kotov (SU)
  - G. Jager (CH): Proofs as Advanced and Powerful Tools / M.E. Stickel (USA)
  - L. Lovász (H): Designing Faster Algorithms for Hard Problems / R.M. Karp (USA)
  - S. Micali (I): Power of Randomization

- Languages and Operating Systems
  - K. Ueda (J): Parallelism in Logic Programming / M. Dincbas (D)
  - D. Maier (USA): Object-Oriented Databases / L. Rowe (USA)

continued on page 6
THE COMPUTER SOCIETY OF INDIA

by Maj. Gen. A. Balasubrahmanian *

The Society conducts its operations through various geographical (4 Regions) and technical (8 Divisions) groups. The Divisions are: Hardware, Software, Scientific Applications, Business Applications, Data Communications, Education, Data Security, and Microcomputers. The CSI’s principal activity centres are the 35 Chapters, located in towns across the country. There are also 13 branches for Student Members.

Activities
One of the main activities of CSI is the Annual Convention. Twenty-three Conventions have been held in 10 cities, since 1965. The numbers of participants reach well over 2000. Apart from technical sessions, tutorials and panels, another principal feature has been the Exhibition. The latest Exhibition, during CSI88, had over 100 exhibitors from the country participating. The CSI has endeavoured to bring into focus problems of national purport through adoption of appropriate themes for the Conventions. The logo for CSI88, reproduced below, attempts to depict the Tower of Babel within the Indian sub-continent: 16 major regional languages, 10 different scripts, 67 educational languages, and several hundreds of mother-tongues, through which all information flows.

The CSI Communications is the monthly medium of communication between CSI and its members. Computer Science and Informatics Journal is a half-yearly publication which contains reviewed articles of theoretical interest, case studies of successful applications of national relevance, and reviews of books and journals.

CSI started conducting the National Standard Test for Programming Competence in 1975. A Directorate of Education was set up in 1985, and a number of modules, such as Systems Analysis and Design, Data Communication, OS, and DBMS, are being brought under the National Standard Test scheme, which aims at ensuring a minimum level of professional competence, especially amongst those without university background.

Student activities have been encouraged through the student branches as well as Student Paper Contests at the Annual Conventions. National Student Conventions have been annual events since 1985.

Through the initiatives of Prof. Narasimhan, the CSI has been in close liaison with IFIP, from its inception in 1965, when observers from India attended the IFIP Council meeting. Since 1974, when CSI became a member of IFIP, CSI has organised many IFIP sponsored events and was host for the 1978 IFIP Council meeting in Bombay.

CSI and Government Policies
The CSI has always provided an open forum for frank exchange of opinions amongst the members and also between members and the policy makers in Government. CSI has met with Committees of the Government of India, and committees of CSI have also met with Government Departments on major policy matters. CSI is also closely associated with the Bureau of Indian Standards.

CSI has taken on projects beyond the normally understood roles of professional bodies. The project relating to Computers for the Blind, led by Prof. P.V.S. Rao (CSI President 1980-82), could be the forerunner of many more challenges that a socially-conscious professional group such as CSI would be involved in.

CSI President Mr. Hemant Sonawala and the CSI fraternity heartily welcome IFIP President Mr. Ashley Goldsworthy (AUS) and the General Assembly to India!
PARTIAL EVALUATION AND MIXED COMPUTATION

TC2 Workshop Held in Denmark

A Workshop on Partial Evaluation and Mixed Computation was held 18-24 October 1987 in Gammel Avernaes, Denmark by IFIP's Technical Committee on Programming (TC2). Sixty-eight participants from 14 countries attended, including seven from the Soviet Union. This is believed to be the first international gathering of specialists in the field.

The significance of this relatively new area of study was outlined by Prof. Dr. Neil Jones (DK) in the Scientific Foreword to the proceedings, which will be published by Elsevier/North-Holland shortly. Part of the Foreword is quoted here:

The idea expressed by the terms partial evaluation, mixed computation or program specialization (PE for short) appears to be one whose time has come. After pioneering work by McCarthy, Lombardi, Futamura and others, and important early work in the U.S.S.R., Sweden and the U.S.A., the full potential and importance of PE is beginning to be realized, and in recent years much PE-related activity is seen in many places in the world. Fundamental concepts and techniques are now beginning to be understood and realized independently in different places—a sure sign that a significant body of ideas is emerging.

In the large, the goal of PE is to construct, when given a program and some form of restriction on its usage (e.g., knowledge of some but not all of its input parameter values), a more efficient new or "residual" program that is equivalent to the original program when used according to the restriction. Compiling and compiler generation are but two of its many applications. PE is, thus, a form of program transformation, but with a greater emphasis on purely automatic methods than traditional program transformation.

It is still a very young field of endeavour, though, with as yet unstabilized terminology, techniques, algorithms and even basic assumptions.

Prof. Dines Bjørner (DK), who was International Program Committee (IPC) chairman of IFIP Congress '86, served as chairman of both IPC and Organizing Committee of this TC2 Workshop, as well as editor of the proceedings, along with Prof. Andrei Ershov (SU) and Prof. Jones.

Prof. Ershov, who wrote seminal papers in this field, delivered the opening keynote speech, in which he described the evolution of PE, from his perspective. In the address, he described how certain insights came on a single day: *

The Excitement of Discovery

The most exciting feeling was a clear vision that mixed computation explains and integrates everything: code generation, compilation and compiler construction, a variety of compilation schemes, many ad hoc optimizations (constant propagation, procedure integration, loop unrolling, dead code elimination, and loop unloading), not to speak of casing, compile time facilities, etc. Outside of the field of compilation, mixed computation embraces all issues of program specialization and adaptation, deriving ad hoc algorithms from universal ones, simplifying modular systems, and fighting overhead and redundancy wherever they appear.

I wish that everybody in the audience could experience, if only once in a lifetime, such an overwhelming feeling, when one day of thinking provides you with a work plan for many years.

Prof. Ershov concluded with a common "complaint" of those who do basic work:

I was happy to realize that my work was useful, intensively referred and cited. But very recently I found several publications in which the concept was taken for granted without any references to sources. We are only human, and, having painfully overcome my own ignorance, I jealously felt myself obsolete and dead, my ashes gradually dissolving in the quiet waters of the Ganges. But, a few minutes later, a saving thought came to my mind: that there is no higher award for a scientist than to have his notion become an anonymous, general commodity. I cannot inhibit this thought and only insist that it should be shared by all the pioneers and prophets of partial evaluation and mixed computation.

Prof. Ershov noted, "...the scientific activity in PE and MC gained momentum necessary for further steady development...in the near future we might witness some continuation of IFIP activity in the field." Prof. Bjørner informed the IFIP Newsletter, "Overlapping groups of participants are now actively engaged in preparations for (1) a follow-on Symposium on Partial Evaluation and Mixed Computation and (2) a European Common Market ESPRIT II Basic Research Action Project ('Semantique')."
Major IFIP Event Planned for Australia

by Prof. Robert Lewis (GB) *

IFIP's Technical Committee on Education (TC3) announces the publication of *Information and Education*, an anthology of papers selected from TC3 publications since the establishment of TC3 in 1963. The book, edited by Dr. E. Donovan Tagg (GB) and me, was published by Elsevier in July, at the time of the twenty-fifth anniversary celebration of TC3 in Lausanne. It is about 750 pages long and contains approximately 100 papers and extracts from reports. The majority are drawn from the proceedings of World and Regional Conferences and Working Conferences.

The anthology is made up of 10 sections, the first being an outline history of TC3:
- The Impact on Society
- Developing Countries
- Information Technology Literacy
- Computers in Support of Learning
- The Impact of Computers on the Curriculum
- The Role of Programming
- Teacher Education
- The Provision of Hardware Resources
- Computer Science Curriculum

Each section contains papers selected to illustrate the changing perspective of contributors over the period since the first World Conference on Computers in Education in 1970. There are large (full papers) and small (panel contributions) papers from 150 authors, and all TC3 publications are represented.

The anthology contains a foreword by the president of IFIP and a preface from the chairman of TC3. The history of TC3 has been prepared from contributions of past chairmen.

* editor of many IFIP proceedings, and recipient of the IFIP Silver Core award

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**NATIONAL ABBREVIATIONS USED IN NEWSLETTER**

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**Who's Who in IFIP: MR. JAMES FINCH**

IFIP trustee Mr. James Finch is a computer systems consultant specializing in data processing security. He currently is Managing Director of Cerebrus Computer Security, which provides computer security consulting services in North America and overseas.

Mr. Finch was born in Toronto, graduated from the University of Toronto in 1955, and began his professional career working for large corporations. In 1967 he left industrial employment to found a computer services organization. In 1974 he became deeply involved in the study of computer fraud and abuse and has specialized in consulting in this area ever since. In addition to computer security, he consults for industry and government on policy development and strategic planning, mostly related to Management Information Systems.

He is a member of a number of professional societies, including the Canadian Information Processing Society (CIPS). He has served CIPS as president and in many other capacities. In particular, he organized the CIPS National Seminar on EDP Security and Audit for 1978-79, and in 1980 he was the founding chairman of the CIPS Toronto Special Interest Group on Security. In May, CIPS honored him as the first recipient of the CIPS Contribution Award. The citation noted his being "...widely recognized for years of substantial efforts."

Mr. Finch’s earliest contact with IFIP came when he served as Organizing Committee chairman for IFIP Congress '77, in Toronto. He has served as CIPS representative to IFIP since 1980. His roles in IFIP have been varied. He was trustee from 1980 to 1986 and was elected trustee again in 1987. He is chairman of the Congress Site Evaluation Committee and the Congress Guidelines Committee and a member of several other committees. He serves as Cognizant Officer for the Technical Committees on Data Communication (TC6) and Computer Systems Technology (TC10).

Mr. Finch was instrumental in founding the Technical Committee on Security and Protection in Information Processing Systems (TC 11) and served as International Program Committee chairman of its first conference: IFIP/Sec'83, which was held in Stockholm. Presently, he is chairman of the Working Group on Security Management (WG11.1).

Mr. Finch and his wife Pat are the parents of 5 children (ages 20 to 32) and the grandparents of 3 children. In their spare time, they sail and race their 28 ft. (8.5 m.) boat. They also enjoy skiing and traveling.

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**NETWORK INFORMATION PROCESSING SYSTEMS**

by Prof. Dr. Kiril Boyanov (BG) *

A Symposium on Network Information Processing Systems, sponsored by IFIP’s Technical Committees on Data Communication (TC6) and Information Systems (TC8), was held in Sofia 9-12 May. Nearly 200 registrants from 22 countries heard the two invited papers and 44 submitted papers that were presented (chosen from 93 submitted papers). Selected papers from the Symposium will be published by Elsevier/North-Holland.

The first plenary paper, on Integrated Services Digital Networks (ISDNs) was delivered by Dr. Ronald Uhlig (USA), chairman of TC6. He presented an analysis of the development of communication-oriented computers and the future of ISDN. The second plenary paper, Computer Networks for Information Systems, was presented by Dr. Dipak Khakhar (S). He examined questions related to building communication links in information networks and described the necessity for developing functional standards. Information was presented about the status of these standards.

A panel discussion treated three basic subjects: ISDNs, Local Area Networks (LANs), and Office Automation. As to the choice between ISDN and LAN, two opinions were given. One, backed by Dr. Uhlig, was that the future belongs to ISDN, with a cost only 20% higher than LAN, in the U.S.A. The other point of view, supported by Prof. Andre Danthine (B), former chairman of TC6, was that ISDN is too expensive and does not ensure a sufficient bandwidth. According to him, the cost would be about 50% higher than for LAN, bearing in mind that the bandwidth proposed for ISDN is not sufficient. He underlined the necessity for workstations to be more intelligent and to use less communication, but with more purpose. He expressed the opinion that with ISDN, the interface was very well defined, as opposed to the services. All speakers predicted an increase of bandwidth requirements in the next five years.

Another question debated was who should be the leading force for defining standards—users or industry. The unanimous opinion was that the latter would play the leading role—first, because they have a forceful standpoint, and second, because the users are not able to state their wishes clearly.

The Symposium was closed by Prof. Kiril Boyanov (BG), chairman of the International Program Committee, who presented a short analysis of the work described.

*I representitive to TC8 from Bulgaria
NEWSLETTER SIZE INCREASED

Dear Reader:

In March, the IFIP Council voted to allocate a page of each issue of the IFIP Newsletter to Elsevier/North-Holland for the purpose of promoting IFIP publications. In addition, the Council agreed to have a sheet of advertisement for Elsevier enclosed with the Newsletter in return for which Elsevier would continue to print the Newsletter free of charge. Further negotiations have resulted in the present format: 16 pages, two of which promote IFIP publications, and a loose sheet of Elsevier advertising.

You may recall that the Newsletter started as an 8-page publication five years ago, expanded to an occasional 12-page issue a year later, and has been a 12-page publication since December 1986. In this first 16-page issue, we have printed the Calendar of Events on two pages, thereby increasing the number of events included. We have increased the type size of the Changes in IFIP and similar material, so you no longer need a magnifying glass to read it. We have added almost no additional text.

Now we would like to hear what you think about the changes. Does the increased size discourage you from reading the entire Newsletter? Please let us know.

The first submitted papers have been received by the International Program Committee. For further information about submitting papers, which are due by 1 November, see the Calls for Papers column on page 13.

Panel Sessions

Panel sessions are being organized for each of the "tracks" listed above. The panel titles and the names of the organizers will be printed in a future issue of the IFIP Newsletter.

In addition to invited speaker, panel, and submitted paper sessions, there will be sessions in which speakers from the European Community, Japan, U.S.S.R., and U.S.A. describe the world's major computer research and manufacturing facilities in the world, offer unparalleled opportunities for attendees to see, firsthand, the American information processing industry. Technical visits to manufacturing facilities and research laboratories before and during the Congress will supply a stimulating supplement to the technical program for Congress delegates.

Finally, an extensive social and sightseeing program will help delegates and guests experience the excitement and beauty of San Francisco and the surrounding area. Wine tastings in the Napa Valley, cruises on the Bay, and drives along the beautiful Monterey Peninsula are just a few of the opportunities to explore the cultural, historic, and scenic highlights of the San Francisco area.
STAFF CHANGE AT SECRETARIAT

by Mme. Gwyneth Roberts (CH) *

Me. Lorna Goerg, member of the IFIP Secretariat staff since June 1987, was recently forced to cease all professional activity, for family reasons. We thank her most sincerely for her services and wish her complete serenity.

Mme. Ruth Lawson, a colleague of mine from Public Relation days and a friend for many years, succeeded Lorna as of 1 July. Ruth is Swiss-German, with a complete command of the English and French languages, and is well acquainted with IFIP, as she has often helped me out, as a friend, with Annual Report work, Newsletter mailings, etc. etc. In her latest professional activity, of over six years, Ruth shared responsibility for the production and distribution of the World Information Bulletin, German language news releases of the Lutheran World Federation; she also performed various associated tasks.

We know IFIP people will appreciate her very sunny, conscientious and devoted character.

* Administrative Manager of IFIP Secretariat

CHANGE IN IAPR CONFERENCE

The International Association for Pattern Recognition (IAPR), an Affiliate Member of IFIP, announces that the 9th International Conference on Pattern Recognition will be held in Rome 14-17 November 1988. This is a change of date and location. The program, which consists of some 200 technical papers and 100 poster presentations, has been organized into 4 parallel tracks.

For further information, one may contact either

Prof. Stefano Levialdi
Dipartimento di Matematica
Universita’ di Roma
Piazzale Aldo Moro 2
00185 Roma, Italy
tel. (39) (6) 4991-3249 or -3250
tele. 613355 INFN ROM
fax: (39) (6) 495-7697

or

Prof. Herbert Freeman
CAIP Center, CN-1390
Rutgers University
Piscataway, NJ 08855-1390, U.S.A.
tel: 1 (201) 932-3443
tele: 650247820 mci
fax: 1 (201) 932-4775

COMPUTER HARDWARE DESCRIPTION LANGUAGES

The Ninth International Symposium on Computer Hardware Description Languages and their Applications (CHDL ’89) is to be held 19-21 June 1989 in Washington, D. C. Sessions at the Symposium will focus on hardware description languages and their use for synthesis, simulation, verification, and testing, and as parts of design systems. Emphasis will be on the challenges in these areas in the years ahead, and how coming changes will influence future CHDLs.

The Symposium is held every other year and is sponsored by IFIP’s Technical Committee on Computer Systems Technology (TC10), in cooperation with the Association for Computing Machinery (ACM) and the Computer Society of the Institute of Electrical and Electronics Engineers (IEEE).

“This Symposium is returning to the U.S. after meetings in Tokyo and Amsterdam. By holding this year’s meeting the week before the Design Automation Conference in Las Vegas, we hope to attract an international range of speakers and attendees,” said Dr. John Darringer (USA), this year’s general chairman. “The use of hardware description languages is expanding to the extent that standard interchange languages at various levels are being adopted. We want to assemble the best work in this area at the Symposium.”

For more information, contact

Dr. John A. Darringer
CHDL ’89 Chair
IBM Research Division, P.O. Box 218
Yorktown Heights, New York 10598, U.S.A.
tel. 1 (914) 945-1018

or

Prof. Dr. Franz J. Rammig
CHDL ’89 Program Chair
University of Paderborn
D-4790 Paderborn, Fed. Republic of Germany
tel. 05251-602069

HUMAN-COMPUTER COMMUNICATION

IfIP’s Working Group on Computer System Interfaces (WG2.7) is planning its next Working Conference for September 1989 in California. The title will be Foundations of Human-Computer Communication. The organizers want a broad spectrum of participants who can provide insights into the problems of human-computer communication and the management of these problems.

Topics will include
• interface design—examples of system interface designs that advance the state of the art
• interface design tools and techniques—tools and techniques that advance the technology of human-computer interaction, including:
  • -user interface tool kits
  • -adaptive systems
  • -intelligent interfaces
• aspects of distributed systems that bear upon the user interface, including:
  • -cooperative work
  • -user perceptions of distribution
• user models—models of user characteristics, performance, and perception

For further information, contact

Prof. Dr. C. Unger
Fachbereich Mathematik and Informatik
Fern-Universitat Gesamthochschule
Feistrasse 140

MANUFACTURING SYSTEM DESIGN

The International Working Conference on Modeling and Simulation for Optimization of Manufacturing Systems Design will provide an international exchange of experience about the outstanding developments in the comprehensive integration of the functions and activities (including people) within a manufacturing enterprise. Sponsored by IFIP’s Working Group on Computer-Aided Manufacturing (WG5.3), it will be held 8-10 November 1989 in Tempe, Arizona, U.S.A. It will bring into focus critical issues, strategies, and decisions that go into the selection and design of manufacturing systems. Attendees—both academics and practitioners—will share the latest results of research and practice in this area, as well as assess future trends.

Participation in the Conference will be by invitation only and limited to 60, with a maximum of 15 paper presentations. For further information, contact the International Program Committee chairman:

D.L. Shunk, Director
Center for Automated Eng. and Robotics
Arizona State University
Tempe, Arizona 85287, U.S.A.
New technology has a double-sided effect on the work of women. The use of computers in many routine administrative and clerical jobs severely threatens and reorganizes women’s jobs and the role of women in the workplace. At the same time, computer-based technology is creating new jobs which might improve women’s opportunities on the labour market. In order to broaden knowledge in an international context, IFIP’s Working Group on Computers and Work (WG9.1) organized, from April 27 to 29, the third International Conference on Women, Work, and Computerization (WWC). This time, the Netherlands was the host country, where the debate held during the two former Conferences, in Italy (1984) and Ireland (1986), was continued.

The Conference comprised two parts, one plenary day and a two-day workshop. The Conference was attended by delegates from 22 countries. Ninety percent of the participants were women.

Third World Participants

At this Conference, a special place was given to participants from third world countries. Four women—two researchers, a computer professional and a trade-unionist—from the Philippines, Singapore and Mexico accepted the invitation of the Organizing Committee to attend the Conference. A special, plenary meeting was devoted to their views on technological developments in their countries and its impact on the position of women in the labour market.

On the plenary day, which was attended by 300 participants, keynote speeches were given by five guest speakers. The first presentation was given by Saskia van den Hoek (NL). Her conclusion was that special training courses in information technology for women are very stimulating and a great help for women with outdated education or working experience to find jobs. Because of rapid changes in computer-related occupations, permanent training and retraining, however, is a necessity. Van der Hoek warned that training needs to be accompanied by initiatives like affirmative action.

The second guest speaker was Judith Gregory (USA), who discussed the role of the trade-unions in the United States in relation to the use of computer technology. Although trade-union membership is only 17% in the United States, female membership is increasing rapidly. This has resulted in a greater concern within the unions about women’s issues. One of the great dangers Gregory foresaw, was the increase of “computer monitoring” of individual workers. It is estimated that already productivity is being recorded for 20-40% of office workers.

In a clear and comprehensive way, Kari Thoresen (N) explained her plea that systems should be developed as a “tool” for the user, who keeps responsibility for decision-taking.

Organizational Changes

Ursula Huws (GB), the fourth speaker, pointed to the linkages between technological and organizational change such as decentralization, flexible labour contracts and an increase of sub-contracting. The geographical re-allocation of work was considered, not only within the industrialised countries, but between the first and the third world as well. This was illustrated with examples from the textile-industry, in which big parts have been re-allocated from developing countries to the poor, urban areas in London.

The last speaker of the day was Cynthia Cockburn (GB). She dealt with the question of why women have been invisible or even absent in the history of technology.

At the end of the day, Boel Carlsson (S), one of the organizers of the first and second WCCs, summarized the strategies mentioned during the day, which women can use to improve their position on the labour market.

The speeches of the first day set the tone for the two-day workshop of the second part of the Conference. One hundred forty people took part in the workshops, which were aimed at taking an in-depth look at issues connected with the theme of the Conference. The Organizing Committee had received more than 60 abstracts, of which 30 were selected. These 30 papers were used as starting points for the discussions in the workshops. The authors gave short explanations, and special referees were asked to comment on the papers. The proceedings of the Conference will be published by Elsevier/North-Holland by the end of the year.

The general opinion of the participants was that the debate and discussions in the workshops were very fruitful. This, together with the big interest in the Conference and the increased number of participants, demonstrated the importance of the theme. It was decided to organize a fourth international Conference in 1990, for which one of the Scandinavian countries will be host.
of honor and welcomed the delegates. From his point of view, advanced technologies and robots do not necessarily bring only benefit to society but also cause unemployment, particularly within the age group of 20 to 25.

Mr. Barrie Sherman (UK) delivered the first keynote address, in which he stated that although our society is going through the "second industrial revolution," technology changes but the institutions governing our lives remain static. This leads to conflicts, stresses, and strains within society. Mr. Sherman said: "Within manufacturing industries, robots and carrying systems will diminish the need for human labor."

Mr. Israel Meidan (IL) was the second keynote speaker, and he presented a slightly different approach concerning the impact of advanced technology on industry, stating that there has been no significant change in the relative share of capital and labor in the production function. This type of change does not affect the quantity of labor required; it only affects the characteristics of the labor.

The general conclusion reached by Prof. Harold Sackman (USA), chairman of TC9, was that AI and robotics tend to accelerate existing trends in positive and negative social impacts of computers that have long been documented prior to the current efflorescence of AI. In particular, AI and robotics developments tend to exacerbate the ever-growing gap between the information rich and information poor at international, national, regional, institutional and individual levels.

Effects of Computer Intelligence

Mr. Yosef Regev (IL) raised the question, What will be the outcome if we do succeed in giving computers and robots the gift of intelligence? His response was very skeptical about the capability of AI and expert systems to see the whole picture and take into account more things than human beings can.

Prof. Menachem Rosner (IL) presented some findings of research carried out on the introduction of high-tech into kibbutz society. Introduction of robots led, in many plants, to an increase in the autonomy of different sub-units; due to the relatively high level of participation and limited hierarchy, only small organizational changes will be needed to adopt the new conditions.

All the speakers at the panel expressed their hopes that new technologies will improve our lives and make the world better and more human. The real challenge is to use the technologies in an appropriate way—not to impose them. The challenge should be to help poor children and families rather than to provide more for those who already have.

FIP's Technical Committee on the Relationship between Computers and Society (TC9) held its annual meeting in Namur, Belgium June 4 and 5. A major issue was the updated Long Range Plan, which aims at strengthening the awareness, among professionals and the public, of the relationship between information and communication technology and society. Progress reports for several planned Working Conferences (WCs) were also presented.

At the debriefing for the very successful third WC on Women, Work and Computerization, it was reported that the next WC in this series is planned for 1990 in one of the Scandinavian countries. For the time being, a subgroup on Work, Women and Computerization will be set up within the Working Group on Computers and Work (WG9.1), but the establishment of a new WG is under consideration.

TC9 approved the proposal for a new WG (9.3) on Home-Oriented Informatics and Telematics. This activity resulted from the WC on Social Implications of Home Interactive Telematics in June 87. Upon the formal approval by the General Assembly, which is expected at the GA meeting in September in New Delhi, further information about WG9.3 will be given in this newsletter. Other new WGs being planned for the near future are Applications and Implications of AI Systems and the Impact of Information Systems in Developing Countries. Furthermore, WG9.2 on Social Accountability will set up a Task Group on Computers and the Law to create a WG on this subject.

Following immediately after the TC9 meeting was the WG9.2 WC (6-9 June) aimed at discussing and completing a students' textbook, Report from Namur: Landscapes for an Information Society. Members of WG9.2 and authors of the textbook, which deals with the social accountability of computing and telecommunications, had three days of exciting and inspiring discussions, which, no doubt, will be reflected in the final product. A more detailed report will be submitted for the next IFIP Newsletter.

MEDINFO 89 PLANNED FOR BEIJING

The sixth World Congress on Medical Informatics (MEDINFO 89) will be held in Beijing 16-20 October 1989. This Congress, sponsored by the International Medical Informatics Association of IFIP (IMIA), will cover all aspects of health care computing from countries and regions the world over.

The technical program will consist of lectures, demonstrations, workshops, Meet the Expert sessions, tutorials, and video presentations. In addition, there will be technical and commercial exhibits, vendor demonstrations, visits to universities, hospitals, research institutions, and libraries. Participants will also be able to learn about traditional Chinese medicine and health care delivery in China.

The opening ceremony will be held in the Great Hall of the People.

Contributions to the MEDINFO 89 program, due 10 January 1989, are solicited in the following four categories:
- Research Papers
- Descriptive Papers—descriptions of innovative systems of general interest
- Opinion Review or Analytical Papers—reviewing topics or analyzing trends in the field
- Scientific Demonstrations—summaries of systems suitable for demonstration at the Congress

The Scientific Program Committee is headed by Dr. Phil Manning (USA); the Organizing Committee is headed by Mr. Ouyang Zhineng (PRC).

For further information, see the Calls for Papers column on page 13.
Even though speed, density, and cost of computer components are continually improving, the demands of some computer users for more and faster computation have yet to be met. The use of large numbers of computers (even in the thousands) working in parallel to solve massive problems is one approach. In order to advance the state of the art, IFIP's Working Group on Software/Hardware Interrelation (WG10.3) held a Working Conference on Parallel Processing 25-27 April in Pisa, attended by 75 participants. International Program Committee chairman Prof. Michel Cosnard (F) described the scope of the Conference in the preface to the proceedings:

The Conference on Parallel Processing addressed recent and important issues in the design of closely coupled computer systems. The emphasis was put on architectures with parallelism, local memory and message-passing communication mechanisms.

New parallel algorithms were described in various fields of applications: matrix computations, combinatorics, image processing, dynamic programming, and symbolic computations. The performance of these algorithms were compared on various existing parallel computers. New parallel architectures, including systolic arrays, were presented.

Models of parallel computations—Petri Nets, statistical modeling, and distributed algorithms—were also addressed, in order to evaluate the performance of parallel computer systems or to validate and prove parallel programs.

**Difficult to Use**

The difficulty in efficiently using the parallel processing systems that have been developed up to now were underscored by Dr. Kemal Ebecioglu (USA) in the introduction to his paper describing a novel architecture:

It appears that a certain amount of the inherent parallelism in ordinary programs is fine-grain; in fact, fine-grain parallelism often appears to be the only type of parallelism available in a large body of non-scientific programs. Unfortunately, the major trends in parallel architecture are not geared toward exploiting such irregular fine-grain parallelism. They tend to work well on an important but limited class of scientific problems but fail to achieve speedup on problems that do not belong to their domain. For example, a typical scientific supercomputer reduces to a uniprocessor on program segments where vectorization is not possible.

The problem of transforming ordinary programs to run on Multiple Instruction Stream–Multiple Data Stream (MIMD) multiprocessor architectures has also received much attention, and while a speedup by a factor of thousands appears to be possible for certain scientific problems with a large degree of inherent parallelism, the speedup results with non-numerical algorithms have not been very promising.

It should be noted that techniques of program restructuring for parallel processors are best capable of exploiting the coarse grain parallelism in scientific code, which does not seem to be common in non-numerical code. While there is a modest amount of fine-grain parallelism in non-numerical programs, practical MIMD architectures cannot exploit it well, because even a few cycles of communication overhead can cause the speedup to be much less than ideal.

The bulk of the paper was devoted to a description of a computer designed to achieve good performance on both parallel scientific and sequential non-numerical applications.

**Hardware Monitoring**

Another paper called attention to the problem of debugging and monitoring the performance of a massively parallel computer system with perhaps thousands of processors. The following excerpts are taken from the paper *Hardware Instrumentation Techniques for Multiprocessors* by Dr. Thomas Bernmerl (D) and Mr. Josef Haunerdinger (D):

Very limited possibilities are at hand for looking at the dynamic behavior of parallel computers and their software. No adequate tools are available for debugging, performance analysis, testing and visualization of executing programs.

The aspect of timing is very important when executing concurrent parallel programs. The main reason for this concern with timing is the asynchronism of parallel programs. Therefore, a nonintrusive instrumentation technique is indispensable for monitoring parallel programs. This means that the instrumentation of the parallel program and the multiprocessor must not be allowed to slow down program execution. Because of this necessity, one major objective during the development of our tool environment was the design and implementation of a hardware monitor for parallel programs. One hardware monitor is placed in each node of the microprocessor.

Today, almost all 32-bit, high-performance microprocessors contain structures for increasing the execution speed. These structures include multiple-stage pipelines (prefetch queues), cache memories and on-chip memory management units (MMU). All cause difficult problems during hardware monitoring of these microprocessor chips.

With pipelining and cache memories, the internal processor state is not always reflected at the processor pins. This sometimes introduces inaccuracy during the evaluation of events. The disabling of the on-chip cache memory during monitoring is not the appropriate strategy, because this slows down program execution and leads to an intrusive instrumentation technique.

An external hardware monitor for a microprocessor with on-chip MMU is only able to trigger on physical addresses. This increases the complexity of the tool’s software, because a translation of virtual addresses into physical addresses has to be done, in addition to the translation of symbols to virtual addresses.

Solutions for these problems in hardware monitoring of high-performance microprocessors are bondout chips or an integration of the monitor circuits into the processor chips.

The authors described a monitor system consisting of hardware and software which could effectively monitor system performance without significantly affecting it.

Proceedings of the Conference, edited by Prof. Cosnard, Prof. Michael Barton (GB), and Prof. Marco Vanneschi (I), will be published by Elsevier/North-Holland later this year.
Computers in Education
Proceedings of the IFIP TC3 1st European Conference on Computers in Education (ECCE 88), Lausanne, Switzerland, 24-29 July 1988
edited by F. Lovis and E.D. Tagg
1988 xxiv + 690 pages
Price: US $131.50/Dfl. 225.00
ISBN 0-444-70483-3
Past and future changes in teaching methods resulting from the use of computers in the classroom are the main concerns of this volume. Among the aspects considered are: the teaching of specific subjects (e.g. Mathematics), social and psychological aspects, learning difficulties, the uses of modelling and simulation in the classroom, language teaching, and national curricula. The 115 invited and contributed papers are from both Western and Eastern Europe.

Informatics and Education
An Anthology of Papers Selected from IFIP TC3 Publications since the Establishment of TC3 in 1963
edited by R. Lewis and E.D. Tagg
1988 750 pages
Price: US $39.50/Dfl. 250.00
The educators and computer professionals in TC3 are involved with both perspectives on the subject, i.e. the role of information technology in supporting education, and the educational needs of an informatics society.
This anthology, a selection of papers from the last twenty-five years, is arranged in ten sections. Each section covers a particular aspect of Informatics and Education, aiming to be:
- characteristic of contributions in that domain
- illustrative of the changes in technology and perception
- indicative of the various cultural and economic concerns.
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US $ prices are valid only in the USA and Canada. In all other countries the Dutch Guilder (Dfl.) price is definitive. Customers in The Netherlands, please add 6% BTW. In New York State, please add applicable sales tax. No postage will be added to prepaid book orders. All prices are subject to change without prior notice.

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CALLS FOR PAPERS

IFIP/ICCC International Conference Integrated Services Digital Networks (ISDN) in Europe
25-27 Apr 89, The Hague
papers due: 15 Sep 88
contact: Secretariat, ISDN in Europe
Ms. Marijke Newman-van Aalderen
IBM Nederland N.V.
Johan Huizingalaan 265
1066 AP Amsterdam, The Netherlands

TC5 Third Intl. Conf. on Computer Applications in Production and Engineering—CAPE'89
2-5 Oct 89, Tokyo
abstracts due: 30 Sep 88
c/o Conference Secretariat—CAPE'89
Business Cent. for Academic Societies Japan
2-40-14, Hongo Bunkyo-ku
Tokyo Japan, 11331, Japan
tel. 03-817-5831, fax: 03-817-5836 Int'l
telex: 0 272268 BCJSP J

TC9 Working Conf. on Shaping Organizations, Shaping Technology—SOST 89
3-5 May 89, Sydney
papers due: 30 Sep 88
contact: Roger Clarke
Programme Chairman SOST 89
Dept. of Commerce
Australian National Univ.
Canberra Act 2601, Australia
tel. +61.62.493666 (ANU)
+61.62.886916 (home)
fax: +61.62.480026, telex: AA62760

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

Council
General Meeting 17-18 Sep 88
Milwaukee, WI 53233, U.S.A.
tel. (414) 224-7338
Bitnet: 6621KAIS@MUCSD

Fourteenth IFIP Conf. on System Modelling and Optimization
3-7 Jul 89, Leipzig, G.D.R.
abstracts due: 15 Dec 88
contact: Dr. K. Tammer
Leipzig Univ. of Technology
Dept. of Math. and Informatics, PF 66
Leipzig, 7030, G.D.R.

Sixth IFAC/IFIP/IFORS/IMACS Symposium on Information Control Problems in Manufacturing Technology
29 Sep-1 Oct 89, Madrid
draft papers due: 15 Dec 88
contact: INCOM'89
E.T.S. Ingenieros Industriales
Po. Castellana, 80
28006 Madrid, Spain
tel. (1)-261.69.89
telex: 46854 LCOE
tel. (1)-261.86.18

TC5/WG5.3 Working Conf. on Computer-Integrated Quality Systems in CIM Systems
20-23 Jun 89, Beograd, Yugoslavia
abstracts due: 15 Dec 88
contact: Mr. Vidosav Majstorovic
Fachbereich Informatik
Schulterstrasse 70
2000 Hamburg, F.R.G.
tel. +49.40.4123-4158/-4162
fax: +49.40.4123-2449

TC9 Working Conf. on Desktop Information Technology
2-4 Jun 89, Ithaca, NY, U.S.A.
papers due: 28 Nov 88
contact: Kate M. Kaiser
College of Business
Marquette University

FUTURE IFIP MEETINGS

TC2
Jan 89
Grenoble

WG2.1
9-13 Jan 89
Grenoble

WG2.2
21-26 Aug 89
Palo Alto

WG2.7
1st quarter 89
San Francisco

WG3.5
1st quarter 89
Kyoto

TC5
16-19 May 89
Tokyo

TC6
9 May 89
U.K.

TC7
7-8 Oct 88
Napa Valley, CA, U.S.A.

TC8
8 Sep 90
Barcelona

TC11
end of Aug 89
Tokyo

WG11.1
second half of 88
Europe

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

IMIA
General Meeting
17-18 Sep 88
Milwaukee, WI 53233, U.S.A.
bitnet: 6621KAIS@MUCSD

Sixth World Cong. on Medical Informatics—MEDINFO 89
16-20 Oct 89, Beijing
papers due: 10 Jan 89
contact: Phil. R. Manning, M.D.
Chairman, Sci. Prog. Comm. MEDINFO 89
1975 Zonal Ave., KAM 317
Los Angeles, CA 90033, U.S.A.
tel. (213) 342-9370
Bitnet: Manning at USCVM

TC10/WG10.5 International Conf. on Very Large Scale Integration—VLSI 89
16-18 Aug 89, Munich
papers due: 15 Jan 89
contact: (for Europe and Africa)
Prof. G. Musgrave
Brunel University
Uxbridge, Middlesex UB8 3PH, U.K.
or (for The Americas)
Prof. Carlo H. Sequin
Dept. of Elec. Eng. and Computer Sciences
Univ. of Calif., Berkeley, CA 94720, U.S.A.

TC9 Working Conf. on Opportunities and Risks in Artificial Intelligence Systems—ORAIS 89
17-20 Jul 89, Hamburg
position papers due: 31 Jan 89
contact: K. Brunstein
Fachbereich Informatik
Hamburg Univ.

continued on page 14
NEW APPOINTMENTS

GA MEMBER
Representative for Ireland: Mr. Dudley Dolan
Beecon (Ireland) Ltd.
Dundrum Castle
Dundurn
Dublin 16, Ireland
tel. 353 (1) 985934
fax: 353 (1) 987454
(succeeding Mr. Owen M. Dalton)

TC AND WG OFFICERS
The following two people have been announced to succeed the current TC5 and TC 11 chairmen following the New Delhi Council and GA meetings:
TC5 Chairman: Mr. Marco Tomljanovich
ITALCAD
Business Development
Via I verigo 6
1-20151 Milan, Italy
tel. 39 (2) 33400150
fax: 39 (2) 3012388
(succeeding Prof. A. Rolstadås after 1988 GA)
TC11 Chairman: Dr. W. J. Caelli
21 Castle Hill Drive
Nerang, Qld. 4211, Australia
tel. 61 (7) 5560911
fax: 61 (7) 5350599
telex: as 43943
(succeeding Mr. P. Hoving after 1988 GA)
TC11 Secretary: Mr. D. T. Lindsay
30 The Dole
Impington
Cambridge CB4 4PL, U.K.
tel. 44 (0734) 854441
fax: 44 (0734) 854327/8

WG7.4 Chairman: Prof. M. Padberg
Dept. of Statistics and Operations Research
Graduate School of Bus. Admin.
New York University
40 West 4th St.
Tish Hall, 5th Floor
New York, NY 10003, U.S.A.
tel. 1 (212) 598-3221

WG7.4 Secretary: Ing. A. Sassano
I.A.S.I. CNR
voie Manzoni 30
1-00185 Rome, Italy
tel. 39 (6) 770081
fax: same number

TC AND WG MEMBERS

TC2: Dr. P. Shoval (IL)

TC3: Prof. Y. Give’on, (IL)
(succeeding B.Z. Barta)

WG5.7: Dr. L.F. Escudero (E)

WG5.10: Silvia Ansaldi (I)
Carlos Astaeus (E)
Miklos Bãthor (H)
Pete Bond (USA)
Pete Bruncet (E)
Niels Jorgen Christensen (DK)
Rae A. Earnshaw (GB)
Giorgio Faconti (I)
Bianca Falcidiano (I)
Juan Flaquero (E)
Georges G. Grinstein (USA)
F.R.A. Hopgood (GB)
Lars Kjaldahl (S)
Gergely Krammer (H)
Gerardo Leon Lastra (MEX)
Leo Pini Magalhaes (BR)
Martti Mântylä (SF)
Laura Molteco (I)
S.P. Mudar (IND)
Piero Musaio (I)
Franco Pallavicini (I)
Jûris Reinfelds (AUS)
Yogesh N. Schinde (IND)
Zesheng Tang (PRC)
Peter Willkirchen (D)

TC6: Dr. C. Sattler (DDR)
(succeeding H.W. Meier)
Mr. G. Sharon (IL)
(succeeding D. Biran)

WG7.4: Prof. E. Balas (USA)
Prof. M. Balinski
Prof. M. Conforti (USA)
Prof. G. Cornuejos (USA)
Prof. H. Crowder (USA)
Prof. B. Fleischman (D)
Prof. G. Gallo (I)
Prof. B.L. Golden (USA)
Prof. M. Grotechel (D)
Prof. P. Hammer (USA)
Prof. E. Johnson (USA)
Prof. B. Korte
Prof. M. Lucertini (I)
Prof. G.L. Nemhauer (USA)
Prof. S. Pallottino (I)
Prof. U. Pape (D)
Prof. W. Pulleyblank (CDN)
Prof. M.R. Rao (USA)
Ing. G. Rinaldi (I)
Prof. L. Schrage (USA)
Prof. S. Tamir (USA)
Prof. P. Toth (I)
Prof. L. Trotter
Prof. C. Vercellis (I)
Prof. S. Walukiewicz (PL)
Prof. L.A. Wolsey (B)

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fax: 44 (1) 731 363 2

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Mr. James Finch
fax: 1 (416) 251-5862

GA Representative for Norway:
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Van Driemstraat 184
1013 CP Amsterdam, The Netherlands
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fax: 31 (20) 203669

CORRECTION
Individuals mentioned as new members of WG2.3 in the June IFIP Newsletter are new members of WG2.4

IFIP PUBLICATIONS AVAILABLE

New IFIP workers should be aware of the availability of the following IFIP publications from the IFIP Secretariat:
Information Bulletin
Statutes and Bylaws
Standing Orders
What is IFIP?
6-Year Plan (list of planned IFIP events)
## CALENDAR OF EVENTS
(continued from page 16)

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<th>Event</th>
<th>Date</th>
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<tr>
<td>Work. Conf. on <strong>Computer-Integrated Quality Systems in CIM System</strong></td>
<td>20-23 Jun 89</td>
<td>Beograd, Yugoslavia</td>
<td>TC5/WG5.3</td>
</tr>
<tr>
<td>Fifth Symp. on <strong>Control of Distributed Parameter Systems</strong></td>
<td>26-29 Jun 89</td>
<td>Pergignan, France</td>
<td>IFAC/IFIP/IMACS/INRIA</td>
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<tr>
<td>Sixth Symp. on <strong>Dynamic Modelling and Control of National Economies</strong></td>
<td>27-29 Jun 89</td>
<td>Edinburgh</td>
<td>IFAC/IFIP/IFORS/IEEE</td>
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<tr>
<td>Sixteenth Workshop on <strong>Reliable Computing and Fault Tolerance</strong></td>
<td>Jun 89</td>
<td>Urbana, IL, U.S.A.</td>
<td>TC10/WG10.4</td>
</tr>
<tr>
<td>Fourteenth General Conf. on <strong>System Modelling and Optimization</strong></td>
<td>3-7 Jul 89</td>
<td>Leipzog, G.D.R.</td>
<td>TC7/LUT/ASG/MSG</td>
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<tr>
<td>Work. Conf. on <strong>Opportunities and Risks of A.I. Systems-OARIS ’89</strong></td>
<td>17-20 Jul 89</td>
<td>Hamburg</td>
<td>TC9/GIS</td>
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<tr>
<td>Work. Conf. <strong>VLSCI 89</strong></td>
<td>16-18 Aug 89</td>
<td>Munich</td>
<td>TC10/WG10.5</td>
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<tr>
<td>Work. Conf. on <strong>Engineering for Human-Computer Interaction</strong></td>
<td>21-25 Aug 89</td>
<td>Napa Valley, CA, U.S.A.</td>
<td>TC2/WG2.7</td>
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<tr>
<td>IFIP Congress ’89-11th World Computer Congress</td>
<td>28 Aug-1 Sep 89</td>
<td>San Francisco</td>
<td>IFIP</td>
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<tr>
<td>Work. Conf. on <strong>Concepts and Characteristics of Fifth Generation Computers</strong></td>
<td>Aug 89</td>
<td>Ann Arbor, MI, U.S.A.</td>
<td>TC7/WG7.1</td>
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<td>Work. Conf. on <strong>Stochastic Programming</strong></td>
<td>Aug 89</td>
<td>Xian, P.R.C.</td>
<td>IFAC/IFIP/IEA/IFORS</td>
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<tr>
<td>Fourth Intl. Conf. on <strong>Man-Machine Systems (MM5/89)</strong> Analysis, Design and Eval.</td>
<td>12-14 Sep 89</td>
<td>Genoa</td>
<td>IFAC/IFIP</td>
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<tr>
<td>Workshop on <strong>Decisional Structures in Automated Manufacturing</strong></td>
<td>18-21 Sep 89</td>
<td>Paris</td>
<td>IFAC/IFIP/AFCE</td>
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<tr>
<td>Symp. on <strong>Control, Computers and Communication in Transportation</strong></td>
<td>19-21 Sep 89</td>
<td>Madrid</td>
<td>IFAC/IFIP/IMACS</td>
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<tr>
<td>Sixth Symp. on <strong>Information Control Problems in Manufacturing Technology</strong></td>
<td>29-1 Oct 89</td>
<td>Luxemburg, Austria</td>
<td>WG5.2</td>
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<tr>
<td>Work. Conf. on <strong>Human Factors in CAD</strong></td>
<td>Sep 89</td>
<td>Santa Monica</td>
<td>TC2/WG2.5/IEEE</td>
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<tr>
<td>Conf. on <strong>Computer Arithmetic-Arith 9 Sept 89</strong></td>
<td>2-5 Oct 89</td>
<td>Tokyo</td>
<td>TCS/IPS</td>
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<tr>
<td>Sixth World Congress on <strong>Medical Informatics-MEDINFO 89</strong></td>
<td>16-20 Oct 89</td>
<td>Beijing</td>
<td>IMIA/CMI</td>
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<tr>
<td>Work. Conf. on <strong>An In-Depth Analysis of Information System Concepts</strong></td>
<td>18-20 Oct 89</td>
<td>Namur, Belgium</td>
<td>TC8/WG8.1/FRISCO</td>
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<td>Intl. Workshop on <strong>Industrial Computer Systems</strong></td>
<td>30 Oct-2 Nov 89</td>
<td>W. Lafayette, IN, U.S.A.</td>
<td>Purdue/TC5/WG5.4</td>
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<td>Work. Conf. on <strong>The Next Decade in Information Systems Development Environments</strong></td>
<td>Oct 89</td>
<td>Israel</td>
<td>TC/GWG.8</td>
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<td>Open Conf. on <strong>Information Systems</strong></td>
<td>Oct 89</td>
<td>Ljubljana</td>
<td>TC9/A.E.S.</td>
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<td>Work. Conf. on <strong>Modeling and Simulation for Optimization of Manufacturing Systems Design and Application</strong></td>
<td>8-10 Nov 89</td>
<td>Temp. AZ, U.S.A.</td>
<td>TC5/WG5.3</td>
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<td>Intl. Symp. on <strong>Skill-Based Automated Manufacturing</strong></td>
<td>15-17 Nov 89</td>
<td>Vienna</td>
<td>IFAC/IFIP/IMACS</td>
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<td>Work. Conf. on <strong>Strategic Information Management</strong></td>
<td>89</td>
<td>7</td>
<td>WG8.3</td>
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<tr>
<td>Seventeenth Workshop on <strong>Reliable Computing and Fault Tolerance</strong></td>
<td>Feb 90</td>
<td>Amsterdam</td>
<td>TC10/WG10.4</td>
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<tr>
<td>Workshop on <strong>Knowledge-Based System Design Tools</strong></td>
<td>Mar 90</td>
<td>Israel</td>
<td>TC2/WG2.2 &amp; 2.3</td>
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<tr>
<td>Work. Conf. on <strong>Programming Concepts and Methodology</strong></td>
<td>Mar 90</td>
<td>W. Lafayette, IN, U.S.A.</td>
<td>Purdue/TC5/WG5.4</td>
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<td>Intl. Workshop on <strong>Industrial Computer Systems</strong></td>
<td>23-26 Apr 90</td>
<td>Helsinki</td>
<td>TC11</td>
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<tr>
<td>Seventh Intl. Conf. on <strong>Computer Security-IFIP/Sec’90</strong></td>
<td>23-25 May 90</td>
<td>Budapest</td>
<td>T6/GJV/Neumann</td>
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<tr>
<td>Conf. <strong>CONFNET’90</strong></td>
<td>May 90</td>
<td>Finland</td>
<td>TC8</td>
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<tr>
<td>Work. Conf. on <strong>Social Communication and Information Systems</strong></td>
<td>Jun 90</td>
<td>Newcastle</td>
<td>TC10/WG10.4</td>
</tr>
<tr>
<td>Eighteenth Workshop on <strong>Reliable Computing and Fault Tolerance</strong></td>
<td>Jun 90</td>
<td>Sydney, Australia</td>
<td>TC3</td>
</tr>
<tr>
<td>Fifth World Conf. on <strong>Computers and Education-WCCE 90</strong></td>
<td>Jul 90</td>
<td>Helsinki</td>
<td>TC5/WG5.7</td>
</tr>
<tr>
<td>Fourth Intl. Conf. on <strong>Advances in Production Management Systems-APMS’90</strong></td>
<td>20-22 Aug 90</td>
<td>Spain</td>
<td>TC5/FESI</td>
</tr>
<tr>
<td>Conf. <strong>IBERICOM’90</strong></td>
<td>Sep 90</td>
<td>W. Lafayette, IN, U.S.A.</td>
<td>Purdue/TC5/WG5.4</td>
</tr>
<tr>
<td>Intl. Workshop on <strong>Industrial Computer Systems</strong></td>
<td>8-11 Oct 90</td>
<td>Spain</td>
<td>TC6/G6.5</td>
</tr>
<tr>
<td>Symp. on <strong>International Computer Message Systems</strong></td>
<td>Oct 90</td>
<td>Amsterdam</td>
<td>TC5/WG5.2-3/4/7/8</td>
</tr>
<tr>
<td>Work. Conf. on <strong>Formal Product Information</strong></td>
<td>Oct 90</td>
<td>C.S.S.R.</td>
<td>TC5/WG5.3</td>
</tr>
<tr>
<td>Work. Conf. on <strong>design Methodology in Manufact. Systems and the Human Role</strong></td>
<td>90</td>
<td>Dublin</td>
<td>TC9</td>
</tr>
<tr>
<td>Fourth Conf. on <strong>Human Choice and Computers</strong></td>
<td>90</td>
<td>Scandinavia</td>
<td>TC9/WG9.1</td>
</tr>
<tr>
<td>Work. Conf. on <strong>Women, Work and Computerization</strong></td>
<td>90</td>
<td>Darmstadt, F.R.G.</td>
<td>TC5/WG5.2</td>
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<tr>
<td>Workshop on <strong>Women, Work and Computerization</strong></td>
<td>15-18 Apr 91</td>
<td>W. Lafayette, IN, U.S.A.</td>
<td>Purdue/TC5/WG5.4</td>
</tr>
<tr>
<td>Intl. Workshop on <strong>Industrial Computer Systems</strong></td>
<td>18-21 Sep 89</td>
<td>Europe</td>
<td>TC10/WG10.2.</td>
</tr>
<tr>
<td>Tenth Intl. Symp. on <strong>Computer Hardware Description Languages and Their Applications-CHDL 91</strong></td>
<td>Apr 91</td>
<td>Stockholm</td>
<td>TC5/WG6.1/SICS</td>
</tr>
<tr>
<td>Tenth Work. Conf. on <strong>Protocol Specification, Testing and Verification</strong></td>
<td>May 91</td>
<td>Finland</td>
<td>TC5/FIPA</td>
</tr>
<tr>
<td>Work. Conf. on <strong>Collaborative Work, Social Communication and Information Systems Theories, Methods, Tools and Impacts</strong></td>
<td>Jun 91</td>
<td>Edinburgh</td>
<td>TC10/WG10.5</td>
</tr>
<tr>
<td>Work. Conf. <strong>VLSCI 91</strong></td>
<td>Aug 91</td>
<td>W. Lafayette, IN, U.S.A.</td>
<td>Purdue/TC5/WG5.4</td>
</tr>
<tr>
<td>Intl. Workshop on <strong>Industrial Computer Systems</strong></td>
<td>Oct 91</td>
<td>London</td>
<td>IEEE/IFIP</td>
</tr>
<tr>
<td>Intl. Conf. on <strong>Computing in the 21st Century</strong></td>
<td>91</td>
<td>Bordeaux</td>
<td>TC5 et al.</td>
</tr>
<tr>
<td>Fourth Intl. Conf. <strong>CAFE 91-Computer Applications in Production and Engineering</strong></td>
<td>6-9 Apr 92</td>
<td>W. Lafayette, IN, U.S.A.</td>
<td>Purdue/TC5/WG5.4</td>
</tr>
<tr>
<td>Intl. Workshop on <strong>Industrial Computer Systems</strong></td>
<td>31 Aug-4 Sep 92</td>
<td>Madrid</td>
<td>IFIP</td>
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<tr>
<td>IFIP Congress ’92-12th World Computer Congress</td>
<td>92</td>
<td>Japan</td>
<td>TC5/WG5.3/IFAC</td>
</tr>
<tr>
<td>Eighth Conf. on <strong>Software for Discrete Manufacturing-PROLAMAT 92</strong></td>
<td>Aug 93</td>
<td></td>
<td>TC10/WG10.5</td>
</tr>
</tbody>
</table>

Please see page 13 for schedule of IFIP administrative meetings.
The IFIP Secretariat can furnish details of most of the events listed.
### Calendar of Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Location</th>
<th>Organized by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourteenth Intl. Conf. on Very Large Data Bases</td>
<td>29 Aug-1 Sep 88</td>
<td>Los Angeles</td>
<td>VLDB/IFIP</td>
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<tr>
<td>Seminar on Managing Complexity in Software Engineering</td>
<td>7-9 Sep 88</td>
<td>Freiburg, F.R.G.</td>
<td>TC5/WG5.4</td>
</tr>
<tr>
<td>Work. Conf. on Stochastic Systems: Filtering and Optimization</td>
<td>12 Sep 88</td>
<td>Warsaw</td>
<td>TC7/WG7.1</td>
</tr>
<tr>
<td>Work. Conf. on Computerized Natural Medical Language Processing</td>
<td>12-15 Sep 88</td>
<td>Geneva</td>
<td>IMIA/WG6</td>
</tr>
<tr>
<td>Sixth Intl. Cong. on Computer Applications in the Automation of Shipyard Operation and Ship Design—ICAS'88</td>
<td>13-16 Sep 88</td>
<td>Shanghai</td>
<td>TC5/WG5.6/CSNAME/IFAC</td>
</tr>
<tr>
<td>Conf. on Modelling Techniques and Tools for Computer Performance Evaluation</td>
<td>15-17 Sep 88</td>
<td>Mallorca</td>
<td>IFIP/ACM/IEEE/AFCET</td>
</tr>
<tr>
<td>Work. Conf. on Geometric Modelling</td>
<td>18-22 Sep 88</td>
<td>New York</td>
<td>TC5/WG5.2</td>
</tr>
<tr>
<td>Work. Conf. on Design Methodologies for VLSI and Computer Architectures</td>
<td>19-21 Sep 88</td>
<td>Pisa</td>
<td>TC10</td>
</tr>
<tr>
<td>Work. Conf. on Computerized Assistance during the Information Systems Life Cycle—CRIST'88</td>
<td>19-22 Sep 88</td>
<td>Egham, Surrey</td>
<td>TC8/WG8.1</td>
</tr>
<tr>
<td>Second Workshop on Intelligent CAD</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Work. Conf. on Reliability and Optimization of Structural Systems</td>
<td>26-28 Sep 88</td>
<td>London</td>
<td>TC7/WG7.5</td>
</tr>
<tr>
<td>Work. Conf. on Knowledge-Based Systems on Test and Diagnosis</td>
<td>27-29 Sep 88</td>
<td>Grenoble</td>
<td>TC10/WG10.5</td>
</tr>
<tr>
<td>Workshop on Experience with the Management of Software Projects</td>
<td>27-29 Sep 88</td>
<td>Sarajevo, Yugoslavia</td>
<td>IFAC/TC5</td>
</tr>
<tr>
<td>Work. Conf. on Medical Informatics in Primary Care</td>
<td>Sep 88</td>
<td>Oxford, England</td>
<td>IMIA</td>
</tr>
<tr>
<td>Seminar on Formal Description of Programming Concepts</td>
<td>Sep 88</td>
<td>Buenos Aires</td>
<td>TC2/WG2.2/DCSC</td>
</tr>
<tr>
<td>Intl. Workshop on Industrial Computer Systems</td>
<td>3-9 Oct 88</td>
<td>W. Lafayette, IN, U.S.A.</td>
<td>Purdue/TC5/WG5.4</td>
</tr>
<tr>
<td>Symp. on Robot Control—SYR000'88</td>
<td>5-7 Oct 88</td>
<td>Karlsruhe, F.R.G.</td>
<td>IFAC/IMACS/IFIP</td>
</tr>
<tr>
<td>Work. Conf. on Database Security</td>
<td>5-7 Oct 88</td>
<td>Kingston, Ontario</td>
<td>TC11/WG11.3</td>
</tr>
<tr>
<td>Work. Conf. on Message Handling and Distributed Application Systems</td>
<td>10-12 Oct 88</td>
<td>Costa Mesa, CA, U.S.A.</td>
<td>TC6/WG6.5</td>
</tr>
<tr>
<td>Fourth Symp. on System Analysis Applied to Management of Water Resources</td>
<td>11-13 Oct 88</td>
<td>Rabat</td>
<td>IFAC/IFIP/IFORS/IAHR</td>
</tr>
<tr>
<td>Conf. on VME Bus in Research</td>
<td>11-13 Oct 88</td>
<td>Zurich</td>
<td>TC5/CERN/WG5.4</td>
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<tr>
<td>Work. Conf. on Impact of Information Systems in Developing Countries</td>
<td>24-26 Oct 88</td>
<td>New Delhi</td>
<td>TC9/TC8/CSI</td>
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<tr>
<td>Workshop on Techniques and Algorithmic Complexity of Simulation</td>
<td>Oct 88</td>
<td>Udine, Italy</td>
<td>TC10/WG10.2</td>
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<tr>
<td>Work. Conf. on Safety-Related Comps. in an Expanding Market—SAFECOMP'88</td>
<td>9-11 Nov 88</td>
<td>Fulda, F.R.G.</td>
<td>IFAC/IFIP/TC5/WG5.4</td>
</tr>
<tr>
<td>Workshop on Concepts and Characteristics of Declarative-Based Environments</td>
<td>Nov 88</td>
<td>Budapest</td>
<td>TC10/WG10.1</td>
</tr>
<tr>
<td>State-of-the-Art Seminar on Database Principles and Practice</td>
<td>Dec 88</td>
<td>Bombay</td>
<td>TC2/WG2.6</td>
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<tr>
<td>Work. Conf. on Data Semantics—DS-3</td>
<td>88-72</td>
<td>Beijing</td>
<td>WG2.6</td>
</tr>
<tr>
<td>Work. Conf. SEACOMM'88</td>
<td>11-13 Jan 89</td>
<td>Singapore</td>
<td>TC6/SEARCC</td>
</tr>
<tr>
<td>Second Intl. Workshop on Artificial Intelligence in Economics and Management</td>
<td>Feb 89</td>
<td>Singapore</td>
<td>ISS/IFIP/IFAC/SEARCC</td>
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<tr>
<td>Fifteenth Workshop on Reliable Computing and Fault Tolerance</td>
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<td>TC10/WG10.4</td>
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<tr>
<td>Conf. on Data Communication</td>
<td>Mar 89</td>
<td>Israel</td>
<td>TC6</td>
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<tr>
<td>Work. Conf. on Visual Database Systems</td>
<td>3-7 Apr 89</td>
<td>Tokyo</td>
<td>TC2/WG2.6</td>
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<tr>
<td>Intl. Workshop on Industrial Computer Systems</td>
<td>17-20 Apr 89</td>
<td>W. Lafayette, IN, U.S.A.</td>
<td>Purdue/TC5/WG5.4</td>
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<tr>
<td>Intl. Conf. on Integrated Services Digital Networks—ISDN'89</td>
<td>25-27 Apr 89</td>
<td>The Hague</td>
<td>TC6/ICCC</td>
</tr>
<tr>
<td>Work. Conf. on Distributed Computing</td>
<td>Apr 89</td>
<td>Victoria, Canada</td>
<td>IMIA</td>
</tr>
<tr>
<td>Work. Conf. on Medical Informatics: Educational Issues and Trends</td>
<td>Apr 89</td>
<td>Sydney</td>
<td>TC9/ACS</td>
</tr>
<tr>
<td>Work. Conf. on Shaping Organisations, Shaping Technology—SOST'89</td>
<td>3-5 May 89</td>
<td>Barcelona</td>
<td>TC5/WG5.7</td>
</tr>
<tr>
<td>Work. Conf. on Design, Implementation and Opr. of Databases for Production A gr.</td>
<td>10-12 May 89</td>
<td>Berlin, G.D.R.</td>
<td>IFAC/IFIP</td>
</tr>
<tr>
<td>Sixteenth Workshop on Real-Time Programming</td>
<td>16-19 May 89</td>
<td>Boston</td>
<td>TC6/WG6.6</td>
</tr>
<tr>
<td>Intl. Symp. on Integrated Network Management</td>
<td>22-24 May 89</td>
<td></td>
<td>TC6/WG6.6</td>
</tr>
<tr>
<td>Ninth Work. Conf. on Protocol Specification, Testing and Verification</td>
<td>May 89</td>
<td>Belgium or Netherlands</td>
<td>TC6/WG6.1</td>
</tr>
<tr>
<td>Intl. Symp. on Urban Data Management</td>
<td>May 89</td>
<td>Lisbon</td>
<td>UDSM/TC8</td>
</tr>
<tr>
<td>Tenth Tunisian-French Computer Science Seminar</td>
<td>May 89</td>
<td>Ariana, Tunisia</td>
<td>ENSI/TC2</td>
</tr>
<tr>
<td>Workshop on Advances in Geometric Modelling</td>
<td>May 89</td>
<td>Berlin, F.R.G.</td>
<td>TC5/WG5.2</td>
</tr>
<tr>
<td>Work. Conf. on Desktop Information Technology</td>
<td>2-4 Jun 89</td>
<td>Ithaca, NY, U.S.A.</td>
<td>TC8/WG8.2</td>
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<tr>
<td>Work. Conf. on CAD Systems Using A.I. Techniques</td>
<td>6-7 Jun 89</td>
<td>Tokyo</td>
<td>TC10/WG10.2</td>
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<tr>
<td>Work. Conf. on Educational Software at Secondary Level to be Used in and out of School</td>
<td>18-22 Jun 89</td>
<td>Reykjavik</td>
<td>TCG/WG3.1</td>
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<tr>
<td>Ninth Intl. Symp. on Computer Hardware Description Languages and Their Applications—CHDL 89</td>
<td>19-21 Jun 89</td>
<td>Washington</td>
<td>TC10/WG10.2</td>
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**IFIP Congress '89-11th World Computer Congress**

28 Aug-1 Sep 89 San Francisco  
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**IFIP Congress '92-12th World Computer Congress**

31 Aug-4 Sep 92 Madrid  
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