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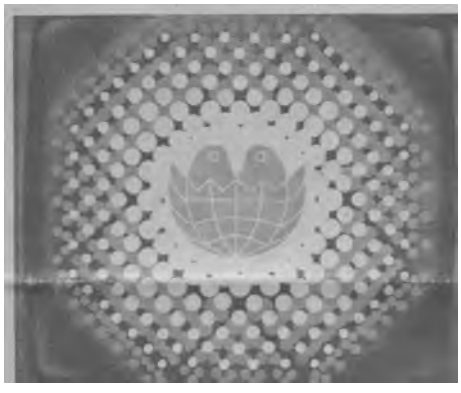
CHILDREN
IN THE INFORMATION AGE



*by Ute Brauer (D) **

The Second International Conference on *Children in the Information Age* was held 19-23 May, exactly two years after the first one, in Sofia. This time the emphasis was on "Opportunities for Creativity, Innovation and New Activities." More than 400 people from 44 countries attended.

The congress was sponsored by IFIP, the United Nations Economic, Scientific and Cultural Organization (Unesco), other international organizations, and several Bulgarian institutions. At the opening session, the International Program Committee chairman (and vice-president of **IFIP)** Acad. Blagovest Sendov (BG) offered to organize such an international congress every two years in Bulgaria.

Highlights of the scientific program were the three keynote speeches:

TC3 correspondent

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FIRST IFIP SEMINAR IN CHINA

Introducing Computer-Aided Techniques

Beijing was the site of the first technical meeting **IFIP** has ever held in China. IFIP's Technical Committee on Computer Applications in Technology (TC5) organized this event, a Seminar on *Introducing Computer-Aided Techniques in Manufacturing, Engineering, and Management* (SICATMEM '87), which took place 1-3 April.

This Seminar might well serve as a paradigm of **IFIP** meetings in developing countries, which serve both to advance the state of the art in a technical area and bring in experts for the benefit of the local information processing professionals. Two thirds of the 81 registrants were from China; the rest were from 17 other countries. Eighteen papers, approximately half by Chinese authors, were presented. Prof. Qiangnan Sun (PRC) headed the national Program Committee that selected the Chinese papers; TC5 chairman Prof. Asbjørn Rolstadås (N) headed the International Program Committee that chose the remaining papers. Several of the papers by non-Chinese authors were written by members of TC5. Eight of the non-Chinese registrants were invited by Chinese universities and technical institutions to be guest lecturers before or after the Seminar.

Prof. Sun also served as chairman of the Organizing Committee.

Proceedings of the Seminar, edited by Profs. Sun and Rolstadås, were published as a special issue of *Computers in Industry,* the international journal of TC5 (vol. 8, nos. 2 & 3). In an editorial in that publication, Prof. Sun, who is China's representative to TC5, stressed the importance of the Seminar: *

> The TC5 Seminar was the first technical activity organized by a Technical Committee of **IFIP** in China. Chinese Scientists and engineers urgently need to know more about what is happening in the world; at the same time, they earnestly hope that more foreign scientists and engineers will become acquainted with China. Thanks to *Computers in Industry,* we are privileged to disseminate the papers presented at the seminar and to have the occasion to introduce computers in

* 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; changes of address; and new publications. The Secretariat is the clearinghouse for all such information; it will forward it to the *Newsletter.*

THE JOHN VON NEUMANN COMPUTER SOCIETY

by Dr. Peter Kovács (H) *

The John von Neumann Computer Society was formed in 1975. Its founding was made possible by the dynamic development of the Hungarian computer industry and the utilization of computer technology. At that time, Hungary started to manufacture computers and introduced specialist training in schools and universities. The utilization of the computer in industry, commerce, finance, and public administration also began at that time.

The Society's members are systems analysts, programmers, and maintenance engineers, working at universities, research institutes, and in industry. Its membership has topped the 8,000 mark—a significant figure, considering the number of people working in the field and the population of Hungary.

The John von Neumann Computer Society is a professional organization, one which groups computer technologists into Working Groups (WGs) primarily on the basis of specialties. The development of the organization reflects the developmental process of Hungarian computer technology. Initially, the Society's hardware and software sections played the most important role. Their members participated primarily in training the experts required to build and use computers. Subsequently, WGs emerged that were involved in organizing information systems. These groups specialized in different fields of utilization. The WG for company-level industrial utilization and the section handling public administration function as independent organizational units. In addition, experts specializing in operational research, the use of computer technology in medical care, and in technology also constitute separate WGs.

A steering committee, with Dr. Balint Domolky as chairman, heads the Society. The work of the leadership is supervised by the General Assembly, which holds a regular annual session that usually coincides with a computer technology congress.

Active in IFIP

The John von Neumann Computer Society is highly active in the international computer technology field—first and foremost in **IFIP,** to which it has belonged since 1975. There is a Hungarian representative in every **IFIP** Technical Committee, and we find highly qualified Hungarian experts in many WGs. The Society regards as one of its important tasks the encouragement of cooperation in the field of computer technology among the Socialist countries and, accordingly, holds several regional conferences every year.

Presently, the Society's greatest task is organizing the 1987 **IFIP** General Assembly, an occasion the Hungarian hosts would like to use to present the achievements and problems of Hungarian computer technology to their foreign guests. Immediately following the General Assembly, the Hungarian organizers are staging the **IFIP** Working Conference on *Governmental and Municipal Information Systems.*

The John von Neumann Computer Society brings together academic scholars and practical experts. The significant research accomplishments of Hungarian software in recent years (for example, the development of the Mprolog language) laid down the foundations for the expansion of practical utilization. At present, the widespread utilization of computer technology is regarded as the principal task. In connection with supporting the more intensive involvement of practical experts in the government's computer technology programme, the Society has invited experts highly experienced in network development, artificial intelligence, and organizing information systems to lectures and discussions.

In sum, we may say that the John von Neumann Computer Society lives up to the wide-ranging scientific activity of the man from whom it has taken its name and strives to effectively cultivate information science. ▬

* HIP trustee and GA representative of Hungary

NEW IFIP BULLETIN AVAILABLE

The 20th edition of the ***IFIP*** *Information Bulletin* has just been printed and distributed. It contains a wealth of information about **IFIP,** including lists of members, officers, committees, and publications. Copies are available from the **IFIP** Secretariat, whose address can be found in the masthead on this page.•

DEVELOPING COUNTRIES SUPPORT COMMITTEE ACTIVITY IN EUROPE

by Prof. Angel Alvarez Rodriguez

[Typically, IFIP's Developing Countries Support Committee (DCSC) has not been active in Europe but has restricted its work to other continents. At the March meeting of the DCSC in Singapore, however, the question of DCSC activities in Europe was discussed. Prof. Angel Alvarez Rodriguez, Spain's representative to the GA, presented the following memorandum.]

It is not easy to see where the DCSC can be of help to the European countries. As a matter of fact, most European countries hardly qualify as "developing." But there are "developing" traits in the way informatics is being considered in some of those countries. In some nations, the situation is one of an "advanced consumer," where the fact that large sums of money are spent on computers and software does not necessarily mean that education and local development in informatics is beyond a rather basic level.

Therefore, perhaps the most important area where **IFIP** could be of help to these countries is education in informatics as well as use of computers in education. A related aspect, also very important, could be the integration of the small scientific communities of these countries in well established international groups. As a result, three specific areas where **IFIP** experience could be of help have been identified:

a. Ease participation of national scientists in **IFIP's WGs.** Membership in **IFIP** WGs is usually by invitation. This method of admission both guarantees the highest professional standards among the members of the WGs and allows the development of strong, well established working ties. The scientists of the countries concerned find it unusually difficult to be recognized by their peers in **IFIP** WGs as individuals of sufficient professional status to be invited to become part of WGs. Not only are they usually forced by their circumstances to be rather disconnected from the international groups, but they also lack basic resources such as time, communication infrastructure in general, and fruitful relations with local scientific groups—most of the times nonexistent. Therefore, their chances of being spotted by **IFIP** specialists as individuals of sufficient professional status to become members of WGs are close to nil. A special effort should be made by the **IFIP** WGs to integrate them.

b. Favour the hosting of **IFIP** scientific meetings in these countries. To hold scientific events within these countries seems a good way to raise local support for science in general and informatics in particular. One has to remember that many of these countries count on pretty good infrastructure in terms of lodging and other convention facilities, for they are usually developed in general economic aspects. Therefore, there are no risks of problems due to lack of appropriate local organization or support facilities.

c. Conduct advanced courses on specific information topics. A set of topics of interest to these countries should be identified. Then, prestigious **IFIP** members familiar with these topics should be contacted to prepare short courses on them. These courses could be offered on a non-profit basis (nevertheless, the speakers would receive honoraria), to be included within the usual courses the different **IFIP** national societies hold. As long as some of the topics of interest might be common to different countries, the same course could be taught at several countries at different times. This could easily be a tremendous advantage for the prospective lecturers to develop interest in the programs.

As a final note, it is important to realize that none of the three ideas for cooperation put forward here would require any money from **IFIP—only IFIP's** knowledge and experience.

IPSJ APPOINTS ANDO

The Information Processing Society of Japan recently announced the formation of an International Relations Committee to further academic and cultural relationships and to stimulate further information exchange in the field of information processing, between this national society and international bodies. Dr. Kaoru Ando, **IFIP's** past-president and Japan's representative to **IFIP,** was appointed as the first chairman of this Committee.

CAPE'89 PLANNED FOR TOKYO

Computer Applications in Production and Engineering

IFIP's Technical Committee on Computer Applications in Technology (TC5) recently announced plans for the Third International Conference on Computer Applications in Production and Engineering (CAPE'89), to be held in Tokyo in October 1989. The CAPE Conferences are intended to identify and encourage research, development, and applications of computer hardware and software technologies that will improve manufacturing activities like specification, planning, design, production, control, and quality assurance. The previous CAPE Conferences were held in Amsterdam in 1983 and Copenhagen in 1986. (See the article about CAPE'86 on page 4 of the September 1986 *IFIP Newsletter.)*

Computer Applications in Technology have spread widely in industry, and a high level of manufacturing automation has had substantial effects on engineering and social aspects of production. Automation technology has matured sufficiently to produce some changes in ideas and paradigms about the role of human beings and information processing technology in engineering and production. It is worthwhile to consider the new paradigms and future innovations in manufacturing technology foreseen for the coming century. Therefore, the principal objective of the Conference is to provide an international forum to promote and further understand current and future research and development in Computer-Aided-Design (CAD), Computer-Aided-Manufacturing (CAM), Computer-Aided-Engineering (CAE), Computer-Integrated-Manufacturing (CIM), and Production Management (PM) systems. Emphasis will also be placed on the specification, documentation, and operation of such systems.

A considerable part of the conference will be devoted to novel production and engineering technologies, integration and distribution, advanced industrial application systems and the impact of advanced concepts and technologies on CAD, CAM, CAE, CIM, and PM.

The International Program Committee is led by Prof. F. Kimura (J), and the Organizing Committee by Dr. Masanori Ozeki (J). A call for papers will be issued in February 1988.

Who's Who in IFIP: PROF. PING-XIN GUO

Prof. Ping-Xin Guo, IFIP trustee since 1983 and China's representative to the General Assembly since 1980, was born in Wu-Han China in 1918. After receiving the Bachelor of Engineering degree from Central University, he worked as an electronics engineer until 1954.

In 1954, he was appointed director of the Science and Technology department of the Administration of Electronics Industry and was responsible for the project that developed the first computer in China. In 1963, he was appointed vice-director of the Science and Technology department of The Ministry of Electronics Industry responsible for computers. In 1976, he became vice-director of State Administration of the computer industry.

He is presently managing a long-term project for Chinese character information processing, involving word processing systems, high speed information retrieval, and laser type setting. For the latter system, successfully in use for newspaper and book publishing, the project won the government's first level prize for science and technology. Prof. Guo is continuing development of the Chinese character recognition system.

He also led and established the design and manufacture of micro-computer systems in China. He has established China's nation-wide information service enterprises, including software companies. In 1985 he was appointed chairman of the Computer Science and Technology committee of the Ministry of Electronics Industry. He is also a visiting professor of Beijing University. Prof. Guo has written many papers and books on computer science and technology.

In addition to his regular work, he is the director of the board of the Chinese Institute of Electronics, vice-president of the Chinese Computer Society, and president of the Chinese Medical Information Association. Within **IFIP,** Prof. Guo serves as trustee and chairman of the Admissions Committee.

Prof. Guo and his wife Shi-Qiong, who is responsible for Medical Electronics in The Ministry of Electronics Industry, live in Beijing with their two children, both software engineers. His favorite pastimes are music and traditional Chinese sports and exercise.

CHINA SEMINAR cont. from page 4

In recent years, due to the policy ***domestically, make the economy active; internationally, open to the world,*** China's computer technology has advanced significantly from its original basis, by applying new foreign technologies.

The policy of developing families of computers has promoted the progress of computer technology in China. All computer families are equipped with system software and application software. Also, tens of peripheral equipment projects were undertaken to tackle key technical problems.

The paper goes on to discuss research and development in Chinese character information processing and other areas. Applications in technological modernization of conventional industries, management, energy savings, and transportation are also discussed. Finally, the paper concludes as follows:

The above brief introduction of the general status of computer technology and application in China shows that:

1. After 30 years' development, the computer industry in China has advanced significantly. An initial computer industry complex has been formed.

2. The policy "growing through applications" is fruitful.

3. There is still a long way to go to reach an advanced international technical level. Besides China's own efforts, technical exchanges and cooperation with developed countries and learning and importing sophisticated international technologies are also necessary.

AUERBACH HONORED

Mr. Isaac Auerbach (USA), **IFIP's** first president and an Honorary Member, was recently elected national president of the American Associates, Ben-Gurion University of the Negev and a member of the University's Board of Governors.

The University, located in Beersheva, Israel, has an enrollment of 6 000 students. It is noted for its pioneering work in desert agriculture, its outreach programs in Negev development towns, and its community-oriented medical school.

Mr. Auerbach is president of Auerbach Consultants, which provides information systems and managament consulting to industrial and commercial clients.

National Abbreviations Used in Newsletter

A	Austria	GB	United Kingdom	PRC	China
AUS	Australia	**H**	Hungary	RA	Argentina
B	Belgium	I	Italy	S	Sweden
BG	Bulgaria	IRL	Ireland	SEARCC	South East Asia Regional Computer Confederation
CDN	Canada	J	**Japan**	SU	U.S.S.R.
CH	Switzerland	N	Norway	TN	Tunisia
D	Fed. Rep. of Germany	NL	The Netherlands	USA	U.S.A.
DK	Denmark	P	Portugal	ZA	South Africa
E	Spain	PL	Poland		
F	France				

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?***
- articles about Technical Committees

National Member Society: CHINESE INSTITUTE OF ELECTRONICS

The Chinese Institute of Electronics (CIE), established in 1962, is the Member of **IFIP** representing the People's Republic of China. It is a large (13 000 members), nation-wide organization, concerned with electronic science and technology. CIE operates under the direction and with the financial support of the Chinese National Association of Science and Technology as well the Ministry of Electronics and other related departments. Dr. Sun Jin-Ren is it's president.

Twenty-eight professional societies come under the umbrella of CIE, including three working in the computer area: the Computer Engineering and Application Society, the Chinese Medical Information Association, and the Information Theory Society, which have memberships totaling about two thousand. (The Chinese Computer Federation previously belonged to CIE, but it is presently an independent society. However, it maintains ties with CIE.) Regional chapters of CIE exist in most provinces, municipalities, or autonomous regions.

All professional societies and regional chapters of CIE hold technical discussions, seminars, and conferences. CIE also sponsors the attendance of Chinese scientists and engineers at international conferences, and it invites foreign scientists and engineers to participate in academic and technical exchanges in China. It also organizes many international conferences in various disciplines throughout China.

Within the computer area, 11 different publications are produced by CIE, ranging from a Chinese translation of excerpts from the U.S. periodical *Computer World* augmented by local and personal news, with an distribution of 500,000 , to the quarterly *Computer Standards Review,* with a distribution of 4000.

CIE became a member of **IFIP** in 1979. The 1983 **IFIP** Council Meeting was held in Beijing, and **IFIP's** Technical Committees plan seminars and working conferences to be held in China in 1987 and 1988. In addition, the International Medical Informatics Association of **IFIP** (IMIA), held it's most recent council meeting in Beijing, and plans are under way for the next of IMIA's triennial conferences, MEDINFO '89, to be held there. CIE's representative to the **IFIP** General Assembly, Prof. Ping-Xin Guo, an **IFIP** Trustee, says that CIE looks forward to increased collaboration with **IFIP.**

CHINA SEMINAR cont. from page 1

Chinese industry to an international reading audience.

The range of computer applications has grown rapidly in recent years. There were only a few hundred applications in 1980, but by the end of 1985, the number reached 15,000.

History of Computers in China

The keynote paper of the Seminar, *General Review of Computer Technology and Application in China,* was written by Prof. Ping-Xin Guo, China's representative to **IFIP,** and Prof. Sun. In it, they present a history of information processing in China. Parts of it are quoted here: *

In June 1986, a meeting was held in Beijing to commemorate the 30th year of computer development in China. As China's computer industry has entered its fourth decade, we would like to give a general review of computer technology and applications in China.

The history of the computer industry in China comprises three periods:

1956-1971: Initial Period

In this period, work began by our copying foreign models and evolved to our designing by ourselves. Computer systems of three generations—vacuum-tube, transistorized, and integrated-circuit—were manufactured. Research and development, education, hardware manufacture, and component production grew up.

The computer industry advanced rapidly, characterized by a variety of models, small production lots, and narrow fields of application. The main users were military and research organizations. The main fields of application were complicated calculations for aerospace, nuclear energy, etc.

1972-1979

This period marked the transformation from research to industrial development. In this period, the scope of computer applications was extended to process control, automatic testing, data processing, information management and retrieval, CAD, etc., but still in limited areas. Most machines were installed in research institutes and universities. The number of installed computers amounted to only 2000.

1980 to the present

This is a new period for computer production and application. The policy is "growing through applications" and to start China's computer industry complex.

In this period, radical change has occurred in computer production and application. The direction of research has changed from hardware-product-oriented to system-oriented. The style of industrial production has changed from assembly of parts and components to domestic manufacture. The fields of application have changed from research, defense, and a few industries to the entire society.

By the end of 1985, the number of organizations taking part in computer research, production development and technical service amounted to over 250, and the total number of staff and workers to over 100,000. Seven thousand mainframes and minicomputers had been installed, as well as 130,000 microcomputers.

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* IFIP

FAST PROTOTYPING

WG10.5 Holds VLSI Workshop in Grenoble

One of the "hot" topics in very large scale integration (VLSI) is *fast prototyping—techniques* for the speedy design, manufacturing, and testing of VLSI circuits. The goal of those working in this field is to produce "silicon within one month," perhaps faster. IFIP's Working Group on VLSI (WG10.5) held a Workshop on *Fast Prototyping* in Grenoble 17-19 March. One hundred twelve participants met to explore the state of the art and view the future of this important area. Some 47 papers were presented. Twenty-three of these will appear in a book edited by the chairpersons of the Workshop, Prof. Gabriele Saucièr (F), Dr. Eilen Read (GB), and Dr. Jacques Trilhe (F), to be published by North-Holland at the end of this year.

One of the papers presented in Genoble contained a fine summary of the field of fast prototyping. Parts of this paper, *State and Future Trends of Fast Prototyping* by Dr. Francois Boulitrop (F), are quoted here: *

> The integrated circuit (IC) industry can be split into two categories: standard products and application specific products. The standard products are designed by the IC manufacturer and go through mass production. They are described in the manufacturer's list of products and are available off the shelf. The customer chooses, according to his needs, the proper ICs from the list of standard products available on the market.
>
> If the part he is looking for is not available, he will go for an application specific IC (ASIC). The functionality and the specifications of an ASIC are defined by the customer. In most cases, part of the design is produced by design teams of the customer. In the 5 coming years the ASIC market is expected to be the fastest growing field in the semiconductor industry, with up to 25% average annual growth rate.

Need for Short Delays

There is an increasing demand from integrated circuits users for short design and manufacturing times. This demand is mainly due to a larger use of ASICs when system manufacturers are designing new products and to the highly competitive and fast changing electronics market. The standard IC manufacturer needs fast prototyping of new designs in order to shorten development time and to be among the first on the market with a new product. U.S. ASIC customers rank fast prototyping among the most important criteria when selecting a vendor.

Two approaches have commonly been used for fast prototyping: the gate array, and the standard cell. The gate array approach is a compromise between standard products and ASIC handcrafted products. The starting point is a base wafer which is available off the shelf. In conventional CMOS gate arrays, transistors are aligned in rows separated by channels reserved for routing [interconnections—Ed.]. Since the location and geometry of the transistors are predefined [and only the routing is specified by the customer—Ed.], performance and density are degraded compared to standard cells. Design and custom manufacturing is simplified; therefore, cost and manufacturing times of low volume production (less than 5000 parts) are lower for gate arrays than for standard cells.

On the other hand, standard cells have the flexibility to use optimized location and geometries of transistors. (Standard cells are pre-specified library units which allow the designer to use a building-block approach to generate his circuit.) This can be achieved without the time and workload of full custom ICs, since this transistor layout is done only once by the IC vendor when designing the library. This yields higher performance and design density than for gate arrays. However, performance is lower than full custom designs, because the designer has to choose within the existing library. The standard cell approach requires a full set of masks and a full manufacturing cycle time. This trade-off between initial cost and higher performance favors the standard cell approach for high performance applications and medium volume production (between 5000 and I 20 000 parts), *I*where I the higher initial cost is paid back by a lower production cost.

Yesterday, design engineering used mainly standard ICs with small scale integration (SSI) or medium scale integration (MSI) functions, which were placed and routed on a custom design circuit board. Today, design engineering, thanks to the gate arrays or standard cells approach, uses cell libraries which provide these SSI and MSI functions. These cells are placed and routed on a single chip in order to provide random logic. Now, most ASIC vendors provide some large scale integration (LSI) functions such as static random access memory (SRAM), read-only memory (ROM), programmable logic arrays (PLAs), or microprocessor cores (e.g., bit-sliced data paths plus microcontrollers). Designers use workstations or terminals connected to a mainframe, and they either work inhouse, at IC vendors' design centres or at independent design centres. In this approach, no layout at the transistor level is made by the customer. This provides rather short design times, but density and performance are not optimised.

Silicon Compilation

A new generation of CAD tools supporting silicon compilation started to spread into design rooms in the past year. These tools allow the IC vendor to provide his customers with parametrable and somewhat "technology independent" cells.

New simulators will allow fast checking of high complexity designs with good reliability. Place and route tools will provide automatic and interactive "floor planning" and routing for designs with complexity above a million transistors. Silicon compilation will also provide assisted, then automated, test design. Power bus routing should also be automated. Input/output pads and buffers will be automatically laid out by the silicon compiler. Also package selection and wiring diagrams for the automatic wiring machines will be provided.

Technology independence will ultimately allow the customer to have parts with improved performance from the next technology generation of the IC vendor at a minimum redesign cost. This should also provide quicker and cheaper transfer of designs from gate arrays to custom products.

The following generation of CAD tools will support description of complex systems. Tools based on Artificial Intelligence will provide circuit description capabilities at a behavioural level. Ultimately the ideal design tool should allow completely automatic design from a behavioural description down to mask generation.

These new CAD tools and libraries will permit design efficiency close to ten thousand transistors per man per day. Development of this working environment will require heavy investments. This design environment will allow design of one million transistor ICs within 2 weeks. ■

* n IFIP

Social Implications of Home Interactive Telematics was the title of an **IFIP** Working Conference held in Amsterdam 24-27 June. The event was organized by the Technical Committee on the Relationship between Computers and Society (TC9) and the Netherlands Society for Informatics. Over 100 participants from 18 countries attended.

Drs. Felix van Rijn (NL) served as general chairperson as well as chairperson of the International Program Committee and the Organizing Committee. He and Dr. Robin Williams (GB) edited the proceedings, which will be published by North-Holland in the second quarter of next year.

The mayor of Amsterdam, Dr. Ed van Thijn, delivered an introductory address and welcomed the delegates. During plenary sessions, keynote speakers provided input for discussions inside working groups whose sessions followed. Topics addressed were—Impacts on Households, Infrastructure, Telework, New Services, Tele-Education, Civil Bureaucracy, Metering and Control, Telemedicine, and Consumers' Influence.

One of the themes that attracted much attention was that of "Telework." (The greatest interest, however, was shown for "New Services.") In their paper *Work-Psychological Aspects of Telework,* Dr. Christian Katz and Prof. Dr. Eberhard Ulich (CH) defined telework as "work activity performed physically removed from the location of the employer through the aid of a computer, and transported by means of telecommunications." They continued: *

> Two principally different forms of telework can be distinguished:
>
> *Individual Telework:* In this form of telework, also called "electronic outwork," the employee works at home and is in connection with the employing firm through the use of the computer.
>
> *Collective Telework:* In this form of telework, the employee works together with other persons in an office near his home. We distinguish here between neighborhood offices and satellite offices. In a neighborhood office or center, we find employees who live in the same section of a city or in the same neighborhood and who work for their own different employers. Satellite offices are external branches of one firm for its employees living nearby.
>
> The following aspects must also be taken into consideration:
>
> • telework exclusively, or telework in combination with work at the main office of a firm
>
> • whether the worker has a conventional salaried position or is working under an outworker or service contract

Mr. James Anderson (GB) discussed a number of the issues concerned with telework in a paper entitled *Situating Telework: Some Ideological, Political and Economic Aspects of "New Homeworking,"* parts of which are quoted here. *

New homeworking (NHW) involves at one and the same time the economics of production, the control of the labour process, household organization and the dynamics of home life. NHW, like information technology (IT) in general, is often associated with the image or promise of the "good life" which combines the best of "city and country," a "flexitime" of working hours being complemented by a "flexiplace" of home location.

NHW is not a unified phenomenon, nor is it entirely new. Although frequently referred to as "telework" or "telecommuting," the majority of cases of NHW, so far at least, do not involve a telecomm link to an office computer. Often the telecomm element in NHW amounts to nothing more than talking over the phone, and non-verbal information is transported to and from the home by nothing more exotic than the postal service.

In some cases, NHW is part of a management experiment, involving the transformation of permanent employees into self-employed sub-contractors. Such experimentation—intended to reduce costs, increase productivity, and/or retain the services of people with scarce skills who would otherwise not be available—is perhaps most common in the computer industry itself. This is partly because of familiarity with IT, partly because the industry is experiencing rapid changes and has suffered chronic skill shortages, and also partly because well-publicized experiments in NHW may increase "outside" demand for computer industry products.

Like IT in general, NHW has spawned sharply conflicting forecasts about the likely nature and time-scale of its impact on work processes, on households, on social life, and on the spatial structure of cities.

There is an optimistic vision in which NHW makes big city offices largely obsolete, their occupants replaced by or transformed into new homeworkers "telecommuting" from "electronic cottages." This is the language popularized by Alvin Toffler, thought-provoking prophet of the "third-wave," which according to him is right now in the process of transforming or replacing our "second wave" industrial society, and doing so with crucial help from IT. Typically, in this vision, NHW involves a large section of the work-force, and it constitutes a revolutionizing of work and home life.

The alternative, pessimistic vision—"bad dream" might be a more appropriate term—is at least equally plausible. Here the "new homeworker," usually a woman, shares many of the problems associated with the "sweated labour" of the "old homeworker," also generally a woman, in industries such as clothing, albeit the "new homeworker" would have more modern equipment and perhaps a higher income. The "new homeworker" is more likely to be estranged from the social life of the existing office workplace and to work in isolation, including isolation from the rest of her or his household, except perhaps for small children or other dependents. Some pessimists think that because of its negative features, NHW will remain relatively unimportant and will only involve a small proportion of the workforce.

In all probability, the future will prove to be highly differentiated for different groups and in different situations, with NHW a matter of "liberation" for some and "alienation" for others. Indeed "new homeworkers" may well experience *both* of these contradictory sides of NHW, though in widely varying proportions.

continued on page 9

* C) IFIP

INFORMATICS AND THE TEACHING OF MATHEMATICS

WG3.1 Holds Working Conference

*by Ute Brauer (D) **

The IFIP working group on Informatics Education at the Secondary Education Level (WG3.1) held its second Working Conference on *Informatics and the Teaching of Mathematics* in Sofia from May 16 to 18.

There were two reasons to go to Bulgaria at this time. First, it was 10 years after the famous Varna conference of WG3.1 on the same subject, which took place in Varna, Bulgaria in September, 1977. (The proceedings of the Varna conference, which are still worth reading, are available from North-Holland.) The second reason was to combine this Working Conference with the second International Conference on *Children in the Information Age.* See page 1.) There were more than 50 participants from 19 different countries, among them 16 of the 35 members of WG3.1 and 10 persons who had been at the Varna conference.

Peter Bollerslev (DK), the chairman of WG3.1 and vice-chairman of IFIP's Technical Committee on Education (TC3), chaired a well-selected International Program Committee of very experienced and active educators and scientists. During the conference, Mr. Bollerslev provided a problem-free environment for hard work. The local organisation was done in an excellent way by Blagovest Sendov, Todor Boyanov and Boyan Penkov.

The scientific program consisted of 4 plenary sessions, 17 papers grouped into four areas (covering a wine range, from scientific developments in informatics and university mathematics to concrete teaching projects in schools and from pedagogics to practical problems of computer use), and 4 discussion groups.

* TC3 correspondent

Opening Lecture by Acad. Sendov

The plenary sessions were as follows:

1. The opening lecture was given by Acad. Blagovest Sendov (BG). His message was that the educational strategy in the information age should be based on the hypothesis that the objectives (not only the methods) of education have changed, since the computer should be considered as an extension of the human brain. In accordance with this idea, a practical experiment was started in several schools in Bulgaria in 1979 by BI. Sendov, B. Penkov and others. This new kind of education integrates informatics into all other subjects, not primarily as additional content but mainly as another way of looking at and dealing with the traditional subjects of the school curriculum.

2. Tom J. van Weert (NL) gave an overview of the results of the Varna conference and the development of "Informatics and the Teaching of Mathematics" since then and presented a case study on mathematics in British secondary education. One of his conclusions was that perhaps new mathematical conceptual models are needed in order to fulfil the needs of informatics.

3. The outcome of the discussion groups was presented.

4. Mr. Bollerslev closed the conference by summing up the main points. He hinted particularly that the lower secondary level should be considered more deeply in the future.

The four discussion groups comprised two on "The representation of concepts and relationships (as part of the thinking process) and problem solving in mathematics and informatics" and two on "The role and potential of software tools in the teaching and learning of mathematics."

This arrangement of the program permitted most of the participants not only to contribute to the intensive and very lively discussions after each presentation but also to fill a role, as a session chairman or rapporteur, and therefore feel responsible for the success of the meeting, with the consequence that we really had a working conference.

All papers, as well as discussions and the results from the discussion groups, have already been edited by Frank Lovis (GB) and David Jonson (GB) and will appear as a North-Holland publication in 1987.

Due to the interesting presentations, the excellent working conditions and the very good, stimulating and family-like atmosphere, this Sofia conference was even more successful and fruitful than the Varna conference; therefore, one should hope that the third WG3.1 Working Conference on Informatics and Mathematics will be held a little sooner than 10 years from now. ■

CHILDREN continued from page 1

At the opening, we listened to Seymour Papert (USA), who dealt with the problem of children in the information age from the viewpoint of an educator with a lot of practical experience. He expressed his "constructionist" approach by stating, "Our duty is not to predict the future but to make it...Give children a sense of empowerment...Knowledge is not transmitted in a pipeline; it is constructed in every individual again." He exemplified this by a vivid presentation of his experiences on how children work with LOGO and LEGO-LOGO.

Dines Bjørner (DK), who was chairman of the International Program Committee for IFIP Congress '86, in his speech, handled the task of curriculum design for the information age from the position of a software designer. He presented a proposal for a very interesting, systematic, science-oriented informatics curriculum for secondary school education, which was recently elaborated, under his guidance, in Denmark and which deserves more consideration and evaluation.

The closing session started with a lecture by an eminent scientist engaged in reforming school education: Andrei Ershov spoke on "School Informatics in the U.S.S.R.—from Literacy to Culture." He gave a detailed description of the philosophy behind and the historical development of the ideas and their practical realization; in particular, he pointed to the enormous amount of activity and progress during the last few months.

The main part of the scientific program consisted of 13 invited lectures given in plenary sessions and about 70 papers presented in parallel working sessions, grouped into three streams:

continued on page 9

CHILDREN continued from page 8

Towards New Meaning of Literacy
Informatics in and out of School
Educational Theory and Knowledge-Based Systems,

such that the whole scientific program covered a very broad spectrum.

Intensive Discussions

The presentations stimulated a lot of questions and remarks throughout the week, not only immediately after the lectures. During the conference there was a very intensive exchange of knowledge and ideas.

Since changes in education are especially critically observed by the general public, it was a good idea that the conference included discussions of the social impact of computers in three debates on the often stated negative arguments:

1. Computers Reduce Interpersonal Skills
2. Information Technology Widens the Gaps
3. Knowledge-Based Systems Damage Schools

The results of these debates served as input to a plenary panel discussion on "Opportunities for Creativity, Innovation and New Activities."

A selection of the papers presented will soon be published by Pergamon Press.

Other Events

Several events were combined with the conference:

- an exhibition of school computers, educational software, robotics equipment for schools, and other media for teaching and learning
- the **IFIP** WG3.1 Working Conference on *Informatics and the Teaching of Mathematics* (See page 8.)
- a preparatory meeting of experts for the 1989 Unesco congress on *Informatics in Education*
- a session of the bureau for the Unesco Intergovernmental Informatics Programme **(IIP)** (See the article on page 10 of the June 1987 ***IFIP*** *Newsletter.)*
- a working session of editors of journals and magazines specializing in informatics in education, who recommended
  - having such a meeting regularly combined with the conference on *Children in the Information Age*
  - organizing in Bulgaria a free repository of journals and magazines on "Informatics in Education"
- an international competition on programming for young persons, in which 28 secondary school students from Czechoslovakia, the Federal Republic of Germany, Hungary, Romania, U.S.S.R. and Bulgaria participated. Within the four hours of working time, some participants displayed original approaches and even produced complete solutions to rather involved problems related to real-life applications.

Since it was a congress on *children* in the information age, two children (one was a Bulgarian boy and the other, from Romania, was one of the youngest participants of the competition) gave addresses at plenary sessions.

Because of the success of the meeting, and since there is a considerable need for information exchange, scientific discussions, personal contacts and cooperation in the rapidly developing area of informatics and education, a recommendation made in the closing session proposed to accept Acad. Sendov's offer to hold a similar conference in 1989, in order to strengthen the interaction between East and West and to have an open forum for the exchange of ideas and experiences on new ways and forms of education. ■

HOME TELEMATICS cont. from p. 7

Mr. Anderson also touched on major differences among surveys tabulating the current extent of NHW and projecting the future, as well as the relationship of NHW and current economic trends.

During the Conference, Drs. van Rijn presented a concept for a new **IFIP** Working Group (WG) on Home-Oriented Informatics and Telematics, including aims and scope and an activity plan. The delegates supported this concept, which was subsequently presented to TC9 at its meeting in Amsterdam immediately after the Conference. TC9 agreed to elaborate this concept into a formal proposal to be presented to TC9 at its next meeting, in June 1988 in Namur, Belgium. The first preparatory WG meeting will be held at the end of November in Wageningen, The Netherlands. Anyone interested in such a WG is encouraged to contact—

Drs. Felix van Rijn
Ruysdaelkade t.o. 225
1072 BA Amsterdam, The Netherlands
tel. + 31 20 641342/620681
telex 10761 NL OMEGA ■

FRED MARGULIES MEMORIAL WORKSHOP

[The following article appeared in the June 1987 IFAC Newsletter. *Prof. Margulies (A) played an important role in* ***IFIP.*** *His obituary was printed in the June 1986* **IFIP** Newsletter.]

A Memorial Workshop will be held in Laxenburg near Vienna on October 2, 1987, to commemorate the 70th birthday of Prof. Fred Margulies, the late IFAC Secretary, one of the outstanding specialists on the interdependence between society and new technologies.

The workshop will be sponsored by several Austrian authorities and organized by the IFAC Secretariat. Well known scientists from Austria and abroad were invited to give lectures on social effects of automation.

For further information please contact the IFAC Secretariat:

Schlossplatz 12
A-2361 Laxenburg, Austria ■

MR. JOSEPH ROGERS

We note with sadness the death of Mr. Joseph Rogers (USA), in December 1986, in a private plane crash. Mr. Rogers represented the International Federation of Associations of Computer Users in Engineering, Architecture and Related Fields (FACE), an Affiliate member of **IFIP,** at the **IFIP** General Assembly in Dublin in August 1986. He was Vice-President/Treasurer of FACE and would have been endorsed as President at the FACE General Assembly in March 1987.

Mr. Rogers recognized early the importance of the use of computers in Civil Engineering applications and was one of the founders of FACE. At the time of his death, he was active in a multitude of enterprises involving Civil Engineering, computers, the construction industry, and investments.

INTERNATIONAL ASSOCIATION FOR PATTERN RECOGNITION

The International Association for Pattern Recognition (IAPR), an Affiliate member of **IFIP,** has announced the dates and locations of future International Conferences on Pattern Recognition (ICPRs). The ninth ICPR will be held in Beijing in October 1988, under the chairmanship of Prof. Tong Chang (PRC). For information, one may write-

9ICPR Secretariat
Chinese Association of Automation
P.O. Box 2728
Beijing, China

The tenth ICPR will be held in Atlantic City, in June 1990. Prof. Herbert Freeman (USA), who is IAPR's representative to **IFIP,** will be the chairman.

The IAPR Governing Board has established the King-Sun Fu Award, to be awarded biennially to an individual for his or her outstanding contributions to the field of pattern recognition. The award honors the memory of Prof. Fu, IAPR's first president, whose obituary was printed in the September 1985 ***IFIP Newsletter,*** page 9.

The IAPR officers are: president, Dr. Pierre Devijver (B); vice-presidents, Prof. Per-Erik Danielsson (S) and Martin Levine (CDN); secretary, Prof. Michael Duff (GB); and treasurer, Prof. Freeman.

IAPR has concerns about its large, biennial conferences similar to **IFIP's** concerns regarding its Congresses. (See the discussion of **IFIP** Congress '86 on page 2 of the December 1986 ***IFIP Newsletter.)*** Prof. Michael Duff (GB), IAPR secretary, analyzed the quandary IAPR faces in an article in a recent *IAPR Newsletter.* Because of its relevance to **IFIP,** parts of this article are reprinted here.

Future of Large Congresses

> Do we still want large, multiple parallel session conferences in the traditional pattern of the Association's major biennial event? The choice is certainly not as simple as it may seem on the surface. On the one hand, there would seem to be good arguments supporting the view that a large, international organisation should meet at least occasionally in some way which brings together a substantial fraction of the membership; on the other hand, the sheer size of the group involved forces the meeting to be held in large, impersonal surroundings and makes social functions, such as the Conference Banquet, too large to be particularly enjoyable.
>
> Parallel sessions are a mixed blessing. In theory, one has the choice between concentrating on ones own special interests (and therefore, mixing with familiar colleagues) and, alternatively, broadening horizons by deliberately attending 'foreign sessions.' **In** practice, it doesn't seem to work that way since specialist interests tend to be thinly catered for and the 'broad' approach requires too high a level of personal organisation and careful timing to be really practicable.
>
> Various alternative proposals have been made. One possibility which is being considered is to select a few large topic areas and to structure the ICPR as an 'umbrella' for three or four otherwise separate conferences. These would differ from the more familiar parallel sessions in that attempts would be made to keep apart each of the groups of participants which would then be more coherent in themselves, although visits to other conferences would not be ruled out. No attempt would be made to co-ordinate individual programmes with the others and it would not necessarily follow that all the conferences would be co-located. It might even be possible to offer some workshops in the same general geographical area and at about the same time as the main meetings, so that participants could attend a specialist workshop as well as the less specialised conference.
>
> Another possibility would be to abandon the idea that IAPR should attempt to meet as a body and instead to concentrate on actively sponsoring a wider range of nationally organised events in many different countries. On the whole, one would expect these meetings to be smaller and easier to mount. The Association would then devote its energies to publicising the events and to giving help in selecting speakers, refereeing, publishing proceedings, funding, and so on. ■

INTERNATIONAL COUNCIL FOR COMPUTER COMMUNICATION

The Ninth International Conference on Computer Communication, the major biennial conference of the International Council for Computer Communication (ICCC), an Affiliate Member of **IFIP,** will be held 30 October-3 November 1988 in Tel Aviv.

The ICCC has had such great success in holding its executive committe meetings by teleconference that it held its 1987 Annual Meeting on 22 April by teleconference among 4 sites: Washington, London, Sydney, and Melbourne. The result was so successful that ICCC plans to expand this process in the future.

Prof. Philip Enslow **Jr.** (USA), president of ICCC and its representative to **IFIP,** recently addressed the following to the ICCC membership:

> Our organization has grown from a small tightly knit group of Governors who knew each other personally and kept in close touch with each other, to a truly international organization of approximately 80 Governors, many of whom know each other only from the curricula vitae provided during the election process. Now, more than ever, we must recognize the truism that, "the ICCC is its Governors."

A recent issue of the *ICCC Newsletter* discussed the problem of the high quality of many conferences not being reflected in the attendance figures:

> Among the reasons suggested for the disappointing attendance are: worldwide recession in the computer industry; large decrease in company or university support of travel, in general, and international travel specifically; the escalating cost of registration fees and related conference costs; and the proliferation of the number of conferences, seminars, symposia, and the like. The latter reason is more than verified by taking stock of the sheer quantity of "unsolicited offerings" one receives in the mail.

This ICCC concern is identical to **IFIP's** concern with **IFIP** Congress attendance. (See the discussion of this problem on page 2 of the December **1986** ***IFIP Newsletter.)*** ■

FUTURE IFIP MEETINGS

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

GA	30 Aug-4 Sep 87	Budapest
Council	29 Feb-4 Mar 88	Auckland, New Zealand
GA	5-9 Sep 88	New Delhi
GA	last week Aug 89	San Francisco

TECHNICAL COMMITTEE AND WORKING GROUP MEETINGS*

WG2.1	Jan or Mar 88	Rome
WG2.3	9-13 Nov 87	Habay-la-Neuve, Belgium
WG2.4	28 Sep-2 Oct 87	Tokyo
WG2.7	5-9 Oct 87	Newport, Rhode Island
TC3	21-23 Jul 88	Lausanne
WG3.1	24-29 Jul 88	Lausanne
TC5	13 Jun 88	Dresden
WG5.3	18 Oct 87	Tokyo
TC6	8-12 Sep 87	Harare and Victoria Falls, Zimbabwe
TC7	Sep 87	Tokyo
TC11	Oct 87	near Vienna
WG11.4	1 Sep 87	Zug, Switzerland

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

IMIA

General Meeting	17-18 Oct 87	Buenos Aires

CALLS FOR PAPERS

WG8.2 Conference on Information Resource Management
3-5 May 88, Noordwijkerhout, The Netherlands
papers due: 15 Sep 87
contact: Prof. dr. Henk G. Sol
Information Systems Group
Delft University of Technology
P.O. Box 356
2600 AJ Delft, The Netherlands

WG5.3 7th Conference on Software for Discrete Manufacturing—PROLAMAT 88
14-17 Jun 88, Dresden, G.D.R.
papers due: 15 Sep 87
contact: Prof. Kochan
Technische Universitat Dresden
Sektion Fertigungstechnik
and Werkzeugmaschinen
PROLAMAT 88
Mommsenstrasse 13
Dresden, Dem. Rep. of Germany 8027
tel. 463 3339
telex 022 78

TC6 and TC8 Symposium on **Network Information Processing Systems'88**
9-13 May 88, Sofia
papers due: 1 Oct 87
contact: Prof. K. Boyanov
IFIP TC6 and TC8 Symposium'88
Bulgarian Academy of Sciences
Center of Informatics and Computer Technology
acad. G. Bontchev str., bI. 8
1113 Sofia, Bulgaria
telex 22628 banmat bg
or 23149 sps bg

TC3 Symposium ECCE '88—European Conference **on Computers in Education**
24-29 Jul 88, Lausanne
papers due: 30 Oct 87
contact: EECE 1988
Prof. Bernard Levrat
Centre Universitaire d'Informatique
12 rue du Lac
1207 Geneva, Switzerland

First European Conference **EURINFO '88: Information Technology for Organisational Systems**
16-20 May 88, Athens
papers due: 31 Oct 87
contact: The Programme Committee Chairman
EURINFO'88
Commiss'n of the Europ'n Communities, A25 3/8
200, Rue de la Loi
B-1049 Brussels, Belgium
tel. 00-32-2-2351942
telex: 21877 comeu b
telefax: 00-32-2-2356502

TC2 and TC8 Working Conference on **The Role of Artificial Intelligence in Databases and Information** Systems
4-8 Jul 88, Guangzhou (Canton)
papers due: 2 Nov 87
contact: (Europe)
Robert Meersman
INFOLAB, K.U. Brabant
P.O. Box 90153
5000 LE Tilburg, The Netherlands
(North America)
Chen-ho Kung
Dept. of Computer Science
University of Iowa
Iowa City, Iowa 52242, U.S.A.

WG8.3 Working Conference on Organisational **Decision Support Systems**
20-22 Jun 88, Villa Olmo, Como, Italy
papers due: 10 Nov 87
contact: Prof. Dr. Andrew M. McCosh
Dept. of Business Studies
50 George Square
Edinburgh EH8 9JY, Scotland

WG6.1 Eighth International Symposium on **Protocol Specification, Testing, and Verification**
7-10 Jun 88, Atlantic City
papers **due:** 15 Jan 88
contact: Sudhir Aggarwal
AT&T Bell Laboratories
Rm 2C-180
600 Mountain Ave.
Murray Hill, NJ 07974, U.S.A.
tel. 1 (201) 582-6095
or
Krishan Sabnani
Rm 3D-434
(same address)
tel. 1 (201) 582-5740

IFIP-IFAC Sixth International Conference on **Computer Applications in the Automation of Shipyard Operation and Ship Design (ICCAS 88)**
15-19 Sep 88, Shanghai
papers **due:** 1 Apr 88
contact: The International Programme Committee, ICCAS 88
Shanghai Corporation of Shipbuilding Industry
9 Zhong Shan Dong 2 Lu
Shanghai, P.R. China ■

CHANGES IN IFIP

The 20th edition of the ***IFIP Information Bulletin*** has just been published. Following are two corrections to the ***Bulletin*** and several changes that have been received since the ***Bulletin*** was printed.

Add to the list of **IFIP** committees: Specialist Group Committee, Bl. Sendov, chairman

NEW APPOINTMENTS

TC AND WG OFFICERS

WG3.1 Vice-Chairman
Mr. T. van Weert
Dept. of Computer Science
University of Nijmegen
Toernooiveld 1
6525 Ed Nijmegen, The Netherlands

The two acting co-chairmen of WG6.6 have been confirmed as co-chairmen.

TC AND WG MEMBERS

TC2 Dr. A Mili (TN)
WG2.2 Dr. A. Ferchichi (TN)
WG2.3 Dr. A. Mili (TN)
WG2.7 Dr. M.S. Ouerghi (TN)
WG3.1 Ms. H. Azinian (RA)
Mr. H. Christiaen
Mr. **B.** Cornu
WG3.4 Mr. K. Nagy
TC6 Prof. J. Riera (E)
(succeeding G.L. Lavandera)
TC8 Dr. F. Mili (TN)
WG8.3 Dr. F. Mili (TN)
TC10 Dr. A. Jaoua (TN)
WG10.2 Prof. F. Anceau (F)
Prof. W. Grass **(D)**
Dipl. Ing. F. Klaschka (D)
Dr. A. Pawlak (PL)
WG10.4 Dr. A. Jaoua (TN)

TELEX CHANGE

GA **Member from SEARCC**
Mr. Robert Iau (Singapore)
telex 39988 issnus rs

NEW IFIP PUBLICATIONS*

CONFERENCE PROCEEDINGS

New Technologies for Production Management
Procs. of the **IFIP** WG5.7 Working Conf.
Tokyo, Oct 86
Yoshikawa , Burbidge, Eds.

Problem Solving Environments for Scientific Computing
Procs. of the **IFIP** WG2.5 Working Conf.
Sophia-Antipolis, France, Jun 85
Ford, Chatelin, **Eds.**

JOURNALS

Computers in Industry, The International Journal of **IFIP** TC5
six issues per year

Computers and Security, The International Journal of **IFIP** TC 11
four issues per year ■

** published by Elsevier/North-Holland in 1987*

BOBILLIER ELECTED HONORARY MEMBER

As this issue of the ***IFIP*** *Newsletter* went to press, word was received that Prof. Pierre Bobillier (CH), president of **IFIP** from 1977 to 1983, was elected an Honorary Member of **IFIP.** Further information will be given in the December *Newsletter.*

CALENDAR OF EVENTS

Event	Date	Location	Organized by
Thirteenth IFIP Conf. on *System Modelling and Optimization*	31 Aug-4 Sep 87	Tokyo	TC7/IFORS
Second Intl. Conf. on *Human-Computer Interaction-INTERACT 87*	1-5 Sep 87	Stuttgart	IFIP/INTACT/GI
Work. Conf. on *Diagnostic and Preventive Maint. Strategies in Manufac. Systs.*	1-4 Sep 87	Dubrovnik	WG5.3
Intl. Conf. *AFRICOM'87-Towards the 21st Century Planning for Information - Communication in Developing Countries*	8-10 Sep 87	Harare, Zimbabwe	TC6/CSZ/ ARCC
Work. Conf. on *Governmental and Municipal Information Systems*	8-11 Sep 87	Budapest	TC8/JvNSCS/HCSO/ Unesco
Conf. on *Functional Programming*	14-16 Sep 87	Portland, OR, U.S.A.	TC2/ACM
Intl. Conf. on *Coping with Computer-Age Vulnerability*	28-30 Sep 87	Amsterdam	TC9/NGI
Intl. Workshop on *Techniques and Algorithmic Complexity of Simulation*	Sep 87	Torino, Italy	WG10.2
Work. Conf. on *Distributed Processing*	5-7 Oct 87	Amsterdam	WG10.3
Workshop on *Intelligent CAD*	6-8 Oct 87	Boston	TC5/WG5.2
Intl. Workshop on *Industrial Computer Systems*	12-15 Oct 87	W. Lafayette, IN, U.S.A.	Purdue/TC5/WG5.4
Workshop on *Partial and Mixed Computation*	18-24 Oct 87	Ebberup, Denmark	TC2/DDC
Work. Conf. on *Smart Card 2000*	19-20 Oct 87	Laxenburg, Austria	TC11/WG11.6
Work. Conf. on *Software for Factory Automation*	19-21 Oct 87	Tokyo	WG5.3/IFORS
Work. Conf. on *Computers and the Law: A Technologist's Guide Through Legal Pitfalls and Pathways*	21-23 Oct 87	Santa Monica, U.S.A.	TC9
Work. Conf. on *Vocational Training for Informatics*	Oct 87 ?		WG3.4
Workshop on *Local Area Network Management*	Oct 87 ?	Zurich	TC6/WG6.4A
Work. Conf. on *Computer System Design Methodologies*	Oct 87	Manchester, UK	TC10/WG10.1
Symp. on *Achieving Safety and Reliability with Computer Systems*	11-12 Nov 87	Manchester	BSRS/TC5/WG5.4
Intl. Workshop on *Tool Integration and Design Environments*	26-27 Nov 87	Paderborn, F.R.G.	TC10/WG10.2
Workshop on *Process and Design for 3D Chips*	Nov 87		WG10.5
Conf. on *Training for Tomorrow*	Nov 87	U.K.	TC5/IEE/IFAC
Intl. Symp. on *Computer Performance Modelling, Measurement and Evaluation-PERFORMANCE '87*	7-9 Dec 87	Brussels	WG7.3/ITC/FNRS
Work. Conf. on *The Social Implications of Robotics & Advanced Indus. Automation*	13-17 Dec 87	Eilat, Israel	TC9/IIPA
Work. Conf. on *Computers as Tools for the Teacher-New Dimensions for the Teaching Profession*	87		WG3.3
Workshop on *Human Factors in CAD*	87 ?	The Netherlands	TC5/WG5.2
Work. Conf. on *Large Scale Computation in Science and Engineering*	87 ?	Dublin	TC7
Work. Conf. on *Impact of Information Systems in Developing Societies*	Jan 88	Ahmedabad, New Delhi	TC9/TC8
Work. Conf. on *Teleteaching'88*	Jan 88	Bangkok	TC3
Work. Conf. on *People. Society and Computing Landscapes*	Jan 88 ?	Namur, Belgium	TC9/WG9.2
Intl. Conf. on *Informatics for Health*	15-21 Feb 88	Havana	MPH/IMIA
Workshop on *Concepts and Characteristics of Declarative-Based Environments*	Feb 88		WG10.1
Intl. Symp. on *Information Systems as a Resource for Management*	29 Feb-2 Mar 88	Sydney, Australia	TC8/WG8.3/ACS
Work. Conf. on *Info. Technology Mgt. for Productivity & Strategic Advantage*	7-8 Mar 88	Singapore	TC8/NUS
Intl. Seminar on *Digital Communications*	8-10 Mar 88	Zurich	ETH/TC6/IEEE/IEE
Working Seminar on *Information Networks & Data Communications (INDC-88)*	14-17 Mar 88	Copenhagen	TC6/SDF/SSI
Intl. Conf. on *Contribution of Artificial Intelligence to Manufacturing System*	15-17 Mar 88	Bordeaux	ADESO/TC5/WG5.3
Work. Conf. on *Computational Issues in Combinational Optimization*	Mar 88	Capri	TC7
Work. Conf. on *Artificial Intelligence, Data Bases and Information Systems*	4-8 Apr 88	Guangzhou, China	WG2.6/WG8.1
Intl. Workshop on *Industrial Computer Systems*	18-21 Apr 88	W. Lafayette, IN, U.S.A.	Purdue/TC5/WG5.4
Symp. on *Software for Computer Control-SOCOCO 88*	26-28 Apr 88	Johannesburg	IFIP/IFAC
Work. Conf. on *Parallel Computing: Algorithms, Languages and Architectures*	Apr 88	Pisa	TC10/WG10.3
Symp. on *Network Management*	Apr 88	U.S.A.	TC6/WG6.6
Work. Conf. on *Fourth Generation Language in Health*	Apr 88	Amsterdam	IMIA
First Intl. Conf. on *Information Resource Management*	3-5 May 88	Noordwijkerhout, NL	TC8/WG8.1/DUT
Intl. Symp. on *Network Information Processing Systems'88*	9-13 May 88	Sofia	TC6/TC8
Work. Conf. *Towards New Hospital Information Systems*	14-18 May 88	?, The Netherlands	IMIA
Intl. Conf. *EUR INFO 88: Information Technology for Organisational Systems*	16-20 May 88	Athens	
Work. Conf. on *Hardware and Software for Real-Time Process Control*	16-23 May 88	Warsaw	TC5/WG5.4
Fifth Intl. Conf. *IFIP/Sec'88: Computer Security in the Age of the Global Village*	19-21 May 88	Brisbane, Australia	TC11/ACS
Fifteenth Intl. Workshop on *Real Time Programming*	25-27 May 88	Valencia	IFAC/IFIP
Work. Conf. on *The Information Systems Research Arena in the Nineties*	May 88	Ithaca, NY, U.S.A.	TC8/WG8.2
Work. Conf. on *Optimization of Stochastic Systems*	May 88	Budapest	TC7
Eighth Intl. Symp. on *Protocol Specification, Testing, and Verification*	7-10 Jun 88	Atlantic City	WG6.1/AT&T-BL
Eighth Intl. Conf. on *Analysis, Design and Evaluation of Man-Machine Systems-MMS 88*	14-16 Jun 88	Oulu, Finland	IFAC/IFIP/ IFORS/IFA
Seventh Intl. Conf. on *Software for Manufacturing-PROLAMAT 88*	14-17 Jun 88	Dresden, G.D.R.	WG5.3/IFAC
Work. Conf. on *Organizational Decision Support Systems*	20-23 Jun 88	Como, Italy	TC8/WG8.3
Work. Conf. on *Computer in Nursing*	22-27 Jun 88	Dublin	IMIA/WG8
Work. Conf. on *Methodological Approches to Medical Technology Assessment*	Jun 88	Montpellier, France	IMIA
Work. Conf. on *The Role of Artificial Intelligence in Data Bases and Info. Systs.*	4-8 Jul 88	Canton, China	WG2.6/WG8.1
European Conf. on *Computers in Education-ECCE'88*	25-29 Jul 88	Lausanne	TC3/SCS
Work. Conf. on *Mathematical Software for Asynchronous Computation*	16-20 Aug 88	Palo Alto, CA, U.S.A.	WG2.5/IEEE
Intl. Conf. on *CAD/CAM and Technology Transfer to Latin America: Application of Computers to Engineering Design, Manufac. & Mgt. in Latin America*	22-26 Aug 88	Mexico City	TC5
Work. Conf. on *Knowledge-Based Production Management Systems*	23-25 Aug 88	Galway, Ireland	WG5.7
Joint Conf. on *Open Communication Systems for Applications in Office and Manufacturing*	Aug 88	Vienna	TC5, 6, & 8/WG8.4/ GI/OCG
Work. Conf. on *Management Aspects of Information System Development*	Aug 88	Noordwijkerhout, NL	TC8/WG8.2
Work. Conf. on *Computerized Natural Medical Language Processing for Knowledge Representation*	12-15 Sep 88	Geneva	IMIA/WG6
Sixth Intl. Conf. on *Computer Applications in the Automation of Shipyard Operation and Ship Design-ICCAS'88*	15-19 Sep 88	Shanghai	CSNAME/IFIP/ WG5.6/IFAC
IFIP 89 - 11th World Computer Congress	28 Aug-1 Sep 89	San Francisco	IFIP

Please see page 11 for schedule of IFIP administrative meetings.