IFIP newsletter
International Federation for Information Processing

Editor:
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HAPPY ANNIVERSARY IFIP!

INTERACT '84

*by Dr. John Thomas (USA) **

INTERACT '84, the First IFIP Conference on Human-Computer Interaction, was held in London 4-7 September 1984, organized by the IFIP Task Group on Human-Computer Interaction. Prof. Brian Shackel (GB), chairman of that group, was chairman of both the organizing and program committees.

About 600 participants heard 153 papers encompassing a broad spectrum

* Dr. Thomas, who presented a paper on speech synthesis at INTERACT '84, does research in problems of human-computer interaction.

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ANNIVERSARY PROGRAM

26 March (Tuesday)
6:00 p.m. - **State Reception**

27 March (Wednesday)
9:00 a.m. - Opening Ceremony
10:00 a.m. - H.D. Huskey: *An Assessment of the Conception and the Position of Information Processing* (discussant: N. Bjørn-Andersen)
10:45 a.m. - coffee break
11:15 a.m. - T. Kitagawa: *Man and Machine Viewed from Different Cultural Backgrounds* (discussants: A. Ershov, R.W. Rector)
12:10 p.m. - K. Ando: *The Future of IFIP*
12:45 p.m. - End of morning program
2:30 p.m. - H. Zemanek: *Must We Do Everything? Sense and Nonsense in Information Processing* (discussant: G. Sacerdoti)
3:15 p.m. - G. Amdahl: *Better Performance at Lower Costs: Are There Limits to the Evolution of Hardware?* (discussant: P. Renard)
4:00 p.m. - coffee break
4:30 p.m. - B. Gilchrist: *Computer Technology—Computer Industry* (discussant: J. Diebold)
5:15 p.m. - H. Mills: *Management and Performance of Software* (discussant: M. Broy)
6:00 p.m. - End of afternoon program
8:00 p.m. - Banquet **(I.** Auerbach, speaker)

28 March (Thursday)
6:30 p.m. - Civic Reception

Twenty-five years ago **IFIP** was born. In 1957, the Joint Computer Committee (the predecessor of the American Federation of Information Processing Societies) sent a memorandum to the United Nations Educational, Scientific and Cultural Organization (Unesco) suggesting that Unesco organize an international conference on information processing. As a result, the International Conference on Information Processing took place in Paris in June 1959. Two thousand conferees attended. While in Paris, representatives of 18 national technical societies reviewed plans for an international federation: **IFIP.** Statutes were approved and subsequently ratified by 13 national technical societies, and **IFIP** came into official existence in January 1960. The first meeting of the General Assembly was held that June in Rome, and officers were elected: Mr. Isaac Auerbach (USA), president; Dr. Alwin Walther **(D),** vice-president; and Dr. Ambrose Speiser (CH), secretary-treasurer.

Thus was **IFIP** born. That birth will be celebrated 26-28 March in Munich. The celebration will feature a public symposium on 27 March at the Technical University. A state reception, a banquet, and a civic reception are also included in the festivities, to recognize those who played important roles in **IFIP's** past and those currently active. (For more details, see the article "25th Anniversary Celebration" on page 3 of the December 1984 *IFIP Newsletter.)* The anniversary events will take place during the **IFIP** Council meeting in Munich 25-29 March. ■

TWENTY-FIVE YEARS AGO

First IFIP officers: Dr. Ambrose Speiser (CH), secretary-treasurer; Mr. Isaac Auerbach (USA), president; Dr. Alwin Walther (D), vice-president

At first IFIP General Assembly meeting (1960) in Rome: Prof. H. van Wijngaarden (NL), Prof. B. Langefors (S), Prof. M. Wilkes (GB), Prof. H. Yamashita (J), Mr. I. Auerbach (USA), Dr. A. Speiser (CH), Dr. A. Walther (D), Prof. J. Santesmares (E), Prof. P Laasonen (SF), Prof. M. Linsman (B), Mr. N. Bech (DK), Prof. L. Lukaszewicz (PL)

National Abbreviations Used in Newsletter

A	Austria	F	France	P	Portugal
AUS	Australia	GB	United Kingdom	PL	Poland
B	Belgium	GR	Greece	PRC	China
BG	Bulgaria	I	Italy	S	Sweden
CDN	Canada	IND	India	SF	Finland
CH	Switzerland	IRL	Ireland	SU	USSR
D	Fed. Rep. of Germany	J	Japan	USA	USA
DK	Denmark	NL	The Netherlands	ZA	South Africa
E	Spain				

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The Secretariat can also answer inquiries about IFIP.

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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.*

MODELLING PRODUCTION MANAGEMENT SYSTEMS

*by Dr. Peter Falster (DK) **

Simulation played a central role in many papers presented at the recent IFIP working conference on *Modelling Production Management Systems*. This conference, held in Copenhagen 29-31 August 1984, was sponsored by the IFIP Working Group on the Automation of Production Planning and Control (WG5.7). It attracted 33 Europeans and Japanese; 15 papers were presented. The proceedings, edited by Dr. Peter Falster and Dr. R.B. Mazumder (CH), will be published by Elsevier Science Publishers (North-Holland) soon.

Simulation is having a rebirth as an important tool in the design phase of manufacturing systems. Doubt was expressed concerning whether it could also be used in the operation of a factory—for shop floor control.

A belief was voiced that artificial intelligence will play an important role in future production management systems. The question is whether expert systems will be used for such a complicated problem as sequencing and scheduling.

Complexity was also an important topic, and many papers proposed simplifying system design. We saw hypotheses about what should be the basic production management building blocks. Another central concept in many papers was the idea of a tool box of simple tools (e.g., for scheduling and simulation) which can be used by the end-user. Such tools, combined with colour graphics, will have an impact on future software systems for production management.

Delegation of responsibility to the user, especially when we talk about system design, was a central issue. However, there was no agreement on the proper degree of delegation. ■

* chairman of WG5.7 and the working conference Program Committee

TC5 DESCRIBED

Mr. Graham Morris (GB), IFIP trustee and Public Information Committee chairman, announces the publication of an article, *Computers in Industry,* about IFIP's Technical Committee on Computer Applications in Technology (TC5). This is the latest article in a series about IFIP's committees written by Mr. Kenneth Owen (GB), a noted journalist. It covers TC5's aims and activities, as well as the TC5 Working Groups.

Copies are available from the IFIP Secretariat, whose address can be found in the masthead on page 2 of this Newsletter. ■

INTERACT '84 continued from page 1

of interests. Sixteen of the papers were on novel I/O, including seven on speech I/O. Another ten papers dealt with methods of evaluating interfaces, and twenty-one with how to design systems that are ergonomically sound. Other papers dealt with topics in the broad area of artificial intelligence, including adaptive systems, software development tools, and expert systems. Still others discussed electronic mail systems, social issues, training, and visual display units. There were also a number of empirical studies comparing various options for menus, command interfaces, and language design. The majority of these studies were done in laboratories. This conference had a greater proportion of studies of real users doing real work than most previous conferences in the area of human-computer interaction.

Difficulties with Limited Studies

One paper reported on both laboratory and field experiments done with speech recognition devices and demonstrated some of the difficulties that can come from too readily extrapolating from limited laboratory studies. Another study compared assessments by human factors researchers and actual user performance. It concluded that in this case (a document processor) the two procedures give overlapping but somewhat different types of information. User testing pointed up more specific problematic details, while the experts "provided a more integrated overview and hypotheses concerning the sources of problems."

Several studies emphasized the need for developers of new technology (e.g., voice I/O) to carefully study the structure of the dialogue for their particular application, using real users. Not only does the dialogue affect ease of learning and ease of use; it also affects the required sophistication of the technology.

Acceptability Factors

There are a large number of factors that affect the ultimate acceptability of a computer system. These were discussed in a sequence of nine papers and a final panel dealing with *Behavioral issues in the system development cycle.* Emphasis was placed on attempting to give an accurate account of how people tried to ensure good human factors in real products, what actually happened, and what they learned from their experience. In fact, the papers are well worth reading for anyone interested in technology transfer, apart from any specific interest in human factors. These papers describe in fair detail the difficulties experienced in attempting to develop systems with good human factors.

During the final panel discussion, it was pointed out that many of the important computer systems of today (e.g., UNIX, VNET) were not created with normal development cycles and therefore did not go through the processes of market research, careful design with human factors input, prototyping and testing, and field evaluation. In such cases, the only hope of influencing such systems to have "better" human factors than they otherwise would is to ensure that computer scientists have some broad training and sensitization to human factors so that they will realize early that what is "obvious" to them after two years of working on a system will not be obvious to the average end-user.

The conference proceedings have been published by Elsevier Science Publishers (North-Holland). ■

Who's Who in IFIP: MR. GEORGE GLASER

Mr. George Glaser (USA) is IFIP's senior vice-president. He was first appointed US delegate to IFIP in 1980, elected a trustee in 1981, and elected to his present post in 1982.

He began his working career as a laborer in a steel mill at the age of 17. He received his BS in Electrical Engineering from the University of Notre Dame and subsequently studied business administration at the University of New Mexico. After his university education, he worked as a design engineer, field test engineer, systems analyst/programmer, product planner, and product manager (digital magnetic tape units).

In 1961 he joined an international management consulting firm, where he served as a consultant in a wide variety of industries. In 1973 he began consulting independently. In 1977 he was one of the founders, president, and chief executive officer of a supplier of speech recognition systems. In 1981 he incorporated his consulting firm as George Glaser, Inc. Most of his client work for large companies in recent years has been in the area of project management, including the planning and construction of facilities and software systems.

Mr. Glaser has written numerous articles in professional journals and trade publications (and made even more appearances as a public speaker) on such subjects as project management, economics modeling, the management of data processing, and speech recognition.

He has been active in professional society affairs for 25 years. He started as a sign painter for the 1960 Fall Joint Computer Conference and went on to become General Chairman in 1966. He served two terms as president of the American Federation of -InformationProcessing Societies and chairman of its board of directors. He has also been active in the Association for Computing Machinery (ACM), serving as treasurer, council member-at-large, and as chairman of ACM's Special Interest Group for Business Data Processing.

The father of two sons and one daughter and the grandfather of two girls, Mr. Glaser lives in Los Altos, California with his wife Karen Duncan. ■

OFFICE AUTOMATION SYMPOSIUM

*by Prof. Kiril Boyanov (BG) **

An International Symposium, *Network in Office Automation,* sponsored by IFIP's Technical Committee on Data Communication (TC6), was held in Sofia, Bulgaria 25-29 September 1984. The symposium was organized by the Bulgarian Academy of Sciences, the IZOT State Economic Corporation, and the Software Products and Systems Corporation of the Ministry of Machine Building. The three chairmen of the Organizing Committee were IFIP vice-president Acad. Blagovest Sendov (BG), Mr. Ivan Tenev (BG), and Mr. Rashko Angelinov (BG). Prof. Kiril Boyanov (BG) was Chairman of the Program Committee. The proceedings, edited by Prof. Boyanov, will be published by the Elsevier Science Publishers (North-Holland).

The Symposium was opened by Dr. St. Dimitrov (BG), vice president of the Software Products and Systems Corporation, and the opening session was addressed by **IFIP** trustee Acad. Anatol Dorodnicyn (SU) and **IFIP** Honorary Member Prof. Heinz Zemanek (A). Thirty-seven papers and fifteen short contributions comprised the program, and 279 scientists from eighteen countries participated. The majority of the papers were concerned with the implementation of new types of integrated office systems based on local area networks (LANs), new types of communication media for LANs, personal computer networks, standardization of higher-level protocols for LANs, software systems and databases, and analysis of network architectures and efficiency.

Social Effects

An interesting panel discussion on *The Office in the Next Ten Years* was held during the Symposium, moderated by Prof. Dines Bjørner (DK). It was noted that the basic problems of the social effects of office automation should be solved in parallel with the problems of implementing hardware. The participants agreed that the psychological and social problems are of a much more complex and difficult nature and will be solved more slowly than the technological ones, and that these problems must be solved now and not in ten years. Among the other themes discussed were "Centralized and Decentralized Integrated Office Systems," and "Man-Machine Dialogue (Menu or Speech)."

Attention was attracted by the assertion that the paper-work industry is the only industrial branch never to have suffered a crisis. Another highlight of the discussion was the opinion that the existing office automation systems only promote bureaucracy; hence the question arises whether bureaucracy should be considered more dangerous in its present-day form, or in its electronic future. It was pointed out that changes will be inevitable in many traditional spheres such as education (especially in the education of children), economy, and state control.

A tour to the Plovdiv International Fair was organized for participants, who saw computers and other devices produced in Bulgaria and other Socialist countries.

The Symposium was closed by Prof. Boyanov, who briefly analysed the proceedings of the Symposium and wished all participants further success in their scientific aspirations. ■

* Program Committee chairman of the Network in Office Automation Symposium

ROLE OF PROGRAMMING IN TEACHING INFORMATICS

TC3 Working Conference

A working conference on *The Role of Programming in Teaching Informatics* was held in Paris 7-9 May 1984, sponsored by IFIP's Technical Committee on Education (TC3). Forty-four participants from seventeen countries attended.

Prof. Jacques Arsac (F) served as chairman of both the Program Committee and the Organizing Committee. Prof. Michael Griffiths (F) and Dr. Donovan Tagg (GB) edited the proceedings, which have been published by Elsevier Science Publishers (North-Holland).

Three speakers presented computer science curricula currently followed or planned for their universities: Prof. Sidney Michaelson (GB), Prof. Michel Sintzoff (B), and Prof. Sten-Ake Tärnlund (S). Uppsala University's curriculum, discussed by Prof. Tärnlund, has been offered for the past three years. It is unusual in its stress on logic programming and artificial intelligence.

Said Tärnlund, "Theory and practice have changed drastically, and new methodologies, new languages, and new application areas have emerged. By taking advantage of new techniques, one can understand computer science from a smaller vocabulary, which tends to make a science more systematic. It should be possible to give the student a deeper understanding of fundamental theoretical and practical problems.

"For example, an early introduction to logic programming gives a student a clear understanding of some aspects of programming, as well as an introduction to logic itself. After further courses on logic programming, logic, and algebra, a student can understand such fundamental computer science areas as program correctness, program specification, and program transformation. Moreover, a student can then start to understand and solve such practical problems as writing systems programs, interpreters, and compilers.

"With this background, a student can also begin studies of interesting and fundamental artificial intelligence problems like knowledge representation and reasoning and can quickly write expert systems."

Prof. Arsac delivered the keynote address, *Teaching Programming,* in which he raised serious questions about what should be taught in the way of programming. Excerpts from his speech follow.*

Writing Correct Programs

10000 years ago (in binary notation) programming was a simple activity. The main steps in programming were:
- *drawing a flowchart*
- *coding the program*
- *testing and debugging.*

Teaching programming was simple. The main part of the course was the description of a programming language. We were giving FORTRAN or COBOL or ALGOL programming courses. Anyone having written several programs in a given language was able to teach "programming."

I put as an axiom (and you may not agree with me) that the main issue in programming is program correctness. Thus, the main activity in programming will be the design of a correct program to solve a problem, and being able to say why the program solves the problem, and how.

Every programming teacher has to face a terrible difficulty. He has to convince each student that he can, and may write only correct programs. Nevertheless, experience shows that there is always some bug in a program. Therefore, you must accept that the students "debug" their programs. From this point, how can you prevent students from coming back to empirical programming?

You will have to develop good qualities of style. If I was able to teach programmers how to think, I would do that. This is my main interest in teaching programming, and the reason why I am so anxious to see this teaching take place in schools. Through programming practice, we are contributing to the general goal of education: teach children how to think.

Another provocative paper was presented by Prof. Sidney Michaelson (GB). In *The Role of Practical Work in the Teaching of Programming,* he called attention to other problems. Following are selections from his paper.*

Learning by Doing

Much attendance at conferences has taught me that discussions of teaching are only too likely to fit Rubaiyat 27 of Omar Khayam:—

> Myself when young did eagerly frequent
> Doctor and Saint, and heard great Argument
> About it and about: but evermore
> Came out by the same Door as in I went.

Attitudes to teaching and its methodology are beliefs, articles of faith.

It is my belief that people learn best by doing. I believe that this is true for all subjects, but especially for branches of engineering. And in case some of you believe that Computer Science really is a science in the English sense, I say that it is quite clearly a new branch of engineering, for its intention is to study the design, manufacture, use, performance and maintenance of an artifact, the computing system. Programming is a major component of this engineering discipline.

How can we teach all this? We don't know how we ourselves do much of it. We learned a lot of it during the process of growing up, unconsciously. The only way we have of educating students in these skills is to give them the right ambience in which to grow up. We make the student join the workshop as an apprentice. He sweeps the bench while his betters handle the tools. He sees how his masters tackle things, their trials and their errors. He is given simple jobs to do, appropriate to his understanding. His knuckles are rapped when he does the wrong thing; when he gets things right he is given encouragement, even if it be but a surly-sounding grunt. And then we certify him as a passed journeyman and send him off on his wanderjahre.

We teach him such things as are appropriately taught by formal methods, but there is a great deal that he has to learn that we do not know about explicitly. This he has to learn by doing. That is the role of practical work. It takes a lot of practical work to educate a skilled craftsman, to give him the beginnings of that intuition about his materials and methods that he will continue to develop throughout his working life. ■

* *IFIP*

INFORMATICS AND TEACHER TRAINING

WG3.1 Working Conference

IFIP's Working Group, on Informatics Education at the Secondary Education Level (WG3.1) organized a working conference on *Informatics and Teacher Training* 16-20 July 1984 in Birmingham. Twenty-four papers were presented to 66 registrants. Brian Samways (GB) was chairman of the Organizing Committee, and David Tinsley (GB) served as chairman of the program committee. The proceedings, edited by Frank Lovis (GB) and Donovan Tagg (GB), have been published by Elsevier Science Publishers (North-Holland) under the title *Informatics and Teacher Training.*

The keynote address was presented by Tinsley, a member of WG3.1 for fifteen years. He reviewed past accomplishments of the working group and its present concerns. Excerpts from his address, contained in the proceedings, follow.*

The theme of our working conference is informatics and teacher training, a topic about which **IFIP** *has been concerned since the establishment of this Working Group (WG). At first, the need was for a forum and an information source for the few enthusiastic pioneers in secondary schools who had seen the potential of the computer in the educational process. Sufficient interest was aroused within* **IFIP** *member countries that by 1970 a key World Conference on Computer Education was held in Amsterdam during which this WG played both an organisational and a developmental role.*

World Conferences

The 1970's saw a dramatic growth in the development of secondary school computing and **IFIP** *responded by creating a wider forum for discussion between experts of the content and practise of educational computing. The World Conferences at Marseilles in 1975 and in Lausanne in 1981 showed how interest and resources had expanded in most countries.*

So why have we chosen the theme of teacher training for this particular conference when so much has already been done by the WG? Simply because we regard teacher education as **the** *fundamental issue in the development of informatics at both primary and secondary level and we believe that we must continue regularly to review our theories and practice in this important field.*

Key Considerations

I have listed five phrases which are relevant to this conference:

"teachers need time,"
"concepts not hardware,"
"not invented here,"
"who teaches the teachers of teachers?" and
"students know more than teachers."

Teachers need time *to become sufficiently familiar with information processing before they can feel confident enough to conduct a class. Unfortunately there are insufficient opportunities for teachers to stand back from the routine of their professional activities to prepare adequately for the adoption of a new and rapidly developing curriculum. In the rush to bring our schools "up to date" by the installation of the latest product from the computer manufacturer, we often forget that the philosophy and practice of teaching informatics are still being formed and that teachers lack the background which is normal in more traditional subject areas. At present, teachers have to rely on their own initiatives and on the many in-service courses which are being organised to support the expansion of informatics courses within the school curriculum.*

Concepts not hardware *is a theme which* **IFIP** *has continually addressed within the WG which has organised this conference. A study of the algorithm, an understanding of automation and a sympathy for the effect of new technology on the lives of individuals and whole communities—all are matters which can lay claim to a key place in the education of the whole person.*

We heard from Professor Jacques Hebenstreit in 1973 that we were in danger of producing a generation of "FORTRAN idiots". Fortunately the "top down" languages of the 1980's have enabled teachers to concentrate on the development of problem solving techniques in their students.

not invented here *syndrome is a particular worry in this regard. Whilst it is an exciting challenge to teachers to develop their own teaching material and for groups of teachers to prepare new courses within workshops, there are dangers if the local leaders of these groups have no access to the work of pioneers who have passed through their early love affair with the computer and have started to reflect on whether computer based education really does create a better environment for learning.*

It is, I would maintain, a crucial responsibility of those of us who can benefit from a workshop such as this to take back and promulgate good practice and to persuade those with governmental and financial responsibility that not only do teachers need time but so also do the teachers of teachers and the **teachers of teachers of teachers.** *This is where a professional body such as* **IFIP** *can point the way and provide an independent forum for the debate of uncomfortable ideas. Local professional associations can also do much to promote a healthy scepticism of current curriculum arrangements and can alert all concerned with teaching to the danger of being overwhelmed by a rapidly changing technology.*

Finally I would propose that we must ensure that teachers do not prevent students from learning. It is evident that **student often know more than their teachers** *about advances in new technology. They have fresh minds which can adapt rapidly to the advent of new tools and techniques. Perhaps teachers now have the chance to break through with individualised learning and become true conductors of learning. We must not, however, underestimate the difficulty which the majority of teachers will face if such a change comes about. To relax and work alongside students who may know more than you requires great confidence and skill. For some teachers this is too democratic a process and unacceptable as a system of education.*

I trust that my scepticism will help you to remain critical and that we can all benefit from professional debate on the merits of our current practice. Through such exchange comes real progress. ■

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CHANGES IN IFIP

NEW APPOINTMENTS

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Dr. F. Saltor Soler, Spain
(succeeding G. Cuevas)

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CALLS FOR PAPERS

Conference on OR **Models on Microcomputers**
sponsor: IFORS
Sep 25-27, 1985, Lisbon, Portugal
abstracts due: Mar 85
contact: Prof. J. Dias Coelho,
Faculdade de Economia, Campo
Grande, 185, 1700 Lisbon, Portugal

5th Symposium on **Information Control Problems in Manufacturing Technology: Robotics and Flexible Manufacturing Systems**
sponsors: IFAC/IFIP/IMACS/IFORS
Apr 22-25, 1986, Yerevan, USSR
abstracts due: 1 Apr 1985
notification of acceptance:
15 Sep 1985
full papers due: 1 Nov 1985
contact: O.C. of V Symposium of ICPM]
(Robotics and FMS), Nat. Committee of
USSR on Automatic Control,
65, Profsoyuznaya Str., Moscow, 117342
USSR

5th Conference on Dynamic Modelling and **Control of National Economics**
sponsors: IFAC/IFORS/IFIP/IEEE/
World Bank/IIASA/UNIDO
June 17-20, 1986, Budapest, Hungary
abstracts due: 30 Apr 1985
final papers due: 15 Oct 1985
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NEW IFIP PUBLICATIONS*

CONFERENCE PROCEEDINGS

Education for System Designer/User Cooperation,
Proceedings of the IFIP TC 3/TC 9
Working Conference,
Salzburg, Austria, Apr 1983
(U. Briefs, E.D. Tagg, Eds.)

Methodologies for Computer System Design,
Proceedings of the **IFIP** WG 10.1
Working Conference,
Lille, France, Sep 1983 •
(W.K. Giloi,B.D. Shriver, Eds.)

Optimization in Computer-Aided Design,
Proceedings of the IFIP WG 5.2 Working Conference,
Lyon, France, Oct 1983
(J.S. Gero, Ed.)

Concurrent Languages in Distributed Systems,
Proceedings of the IFIP WG 10.3 Workshop, Bristol, U.K. Mar 1984
(G.L. Reijns, E. Dagless, Eds.)

Protocol Specification, Testing and Verification, IV,
Proceedings of the IFIP WG 6.1
Fourth International Workshop,
Columbia University, New York, NY,
USA, Jun 1984
(Y. Yemini, R. Strom, S. Yemini, Eds.)

Modelling **Production Management Systems,**
Proceedings of the IFIP WG 5.7
Working Conference,
Copenhagen, Denmark, Aug 1984
(P. Falster, R.B. Mazumder, Eds.)

Computer Security: A Global Challenge,
Proceedings of the IFIP TC 11
Conference on IFIP/Sec '84,
Toronto, Ontario Canada, Sep 1984
(J.H. Finch, E.G. Dougall, Eds.)

Networks in Office Automation
Proceedings of the IFIP TC 6
International In-Depth Symposium
Sofia, Bulgaria, Sep 1984
(K.L. Boyanov, Ed.)

Role of Informatics **in Health Data Coding and Classification Systems,**
Proceedings of the IFIP/IMIA WG 6
International Working Conference,
Ottawa, Ontario Canada, Sep 1984
(R. Côté, D.J. Protti, J.-R. Scherrer, Eds.

Data Communications in the **ISDN Era,**
Proceedings of the IFIP TC 6
1st International Conference,
Tel-Aviv, Israel, Mar 1985
(Y. Perry, Ed.)

Information Systems Theoretical and **Formal Aspects,**
Proceedings of the IFIP WG 8.1
Working Conference,
Barcelona, Spain, Apr 1985
(A. Sernadas, J. Bubenko, Jr.,
A. Olive, Eds.)

JOURNALS

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

Information & Management, The International Journal of Information Systems Applications
ten issues per year

Microprocessing and Microprogramming, The Euromicro Journal
ten issues per year

Computer Networks, The official Journal of the International Council for Computer Communications
ten issues per year

Computers & Security, The International Journal of IFIP TC 11
four issues per year

Pattern Recognition Letters, The Journal of the International Association for Pattern Recognition
six issues per year

* published by Elsevier/North-Holland in 1985, unless otherwise noted

CALENDAR OF EVENTS

Event	Date	Location	Organized by
IFIP 25th Anniversary Symposium	27 Mar 85	Munich, FRG	IFIP
Work. Conf. on *Decentralized Production Management Systems*	28-29 Mar 85	Munich, FRG	WG 5.7
Open Conf. on *Parallel Computing Techniques - CONPAR 85*	Mar 85	Hungary	TC10/JvNS (VEE)
Work. Conf. on *Theoretical amd Formal Aspects of Information Systems*	16-18 Apr 85	Barcelona, Spain	WG 8.1
10th World Congress on *New Measurement Technology to Serve Mankind - IMEKO '85*	22-26 Apr 85	Prague, CSSR	IMEKO
Workshop on *Geometric Modelling*	Apr 85	UK	WG 5.2
Workshop on *Technology Independent Design (Rules)*	Apr 85	France	WG 10.5
Intl. Symposium and Work. Conf. on *Nursing Use of Information Science and Computers*	1-8 May 85	Calgary & Banff, Canada	IMIA
Conference: *Telematica 85*	27-30 May 85	Rio de Janeiro, Brazil	TC6/SUCESU
Work. Conf. on *Computerized ECG Analysis - Towards Standardization*	2-5 Jun 85	Brussels, Belgium	IMIA
Work. Conf. on *Human-Computer Communications in Health Care*	10-14 Jun 85	Stockholm, Sweden	IMIA
6th Intl. Conf. on *Software for Discrete Manufacturing - PROLAMAT 1985*	11-13 Jun 85	Paris, France	WG 5.3/IFAC
Work. Conf. on *Problem Solving Environments for Scientific Computing*	17-21 Jun 85	Sophia-Antipolis, France	WG 2.5
4th Scandinavian Conference on *IMAGE Analysis*	18-20 Jun 85	Trondheim, Norway	IAPR
Work. Conf. on *Pattern Recognition in Practice, II*	19-21 Jun 85	Amsterdam, NL	IMIA
Symposium on *Automation for Safety in Shipping and Offshore Petroleum Operations - ASSOPO '85*	25-27 Jun 85	Trondheim, Norway	WG 5.6/IFAC
Seminar on *CAD/CAM/CAE for Industrial Progress*	29-30 Jun 85	Bangalore, India	WG 5.2 & 5.3
15th Intl. Conf. on *Fault Tolerant Computing*	Jun 85	Ann Arbor, MI, USA	TC10/IEEE
4th World Conf. on *Computers in Education - WCCE'85*	29 Jul-2 Aug 85	Norfolk, VA, USA	TC3
3rd Symposium on *CAD in Control and Engineering Systems*	31 Jul-2 Aug 85	Lyngby, Denmark	IFAC/IFIP TC5 co sp.
Workshop on *Theoretical Computer Science & VLSI Design*	Jul 85	Edinburgh, UK	WG 10.5
11th IMACS World Congress - *System Simulation & Scientific Computation*	5-9 Aug 85	Oslo, Norway	IMACS
3rd Intl. Conf. - *IFIP/SEC'85*	12-15 Aug 85	Dublin, Ireland	TC 11
11th Intl. Conf. on *Very Large Data Bases - VLDB 85*	21-23 Aug 85	Stockholm, Sweden	VLDB/TC2
Intl. Conf. - *VLSI 85*	26-28 Aug 85	Tokyo, Japan	WG 10.5
Work. Conf. on *The Use of Computers in Teaching Mathematics in Developing Countries*	26-30 Aug 85	Yamoussoukro, Ivory Coast	TC3/ICMI
Joint 2nd Conf. on *Advances in Production Management Systems* and 7th Conf. of the Intl. Compcontrol Committee *Conputer Applications in Production Management and Engineering - APMS-COMPCONTROL 85*	27-30 Aug 85	Budapest, Hungary	WG 5.7/CAEB
7th Intl. Symp. on *Computer Hardware Description Languages & their Applications - CHDL 85*	29-31 Aug 85	Tokyo, Japan	TC10/WG10 .2
3rd Conf. on *Human Choice & Computers - HCC3*	2-5 Sep 85	Stockholm, Sweden	TC 9
12th General Conf. on *Systems Modelling & Optimization*	2-6 Sep 85	Budapest, Hungary	TC7/IFORS/ Hung.Acad.Sci.
11th Symposium on *Microprocessing & Microprogramming EUROMICRO 85*	3-6 Sep 85	Brussels, Belgium	EUROMICRO
Work. Conf. on *Environments to Support Information Systems Design Methodologies*	4-6 Sep 85	Bretton Woods, USA	WG 8.1
2nd. Conf. on *Analysis, Design and Evaluation of Man-Machine Systems*	10-12 Sep 85	Varese, Italy	IFAC/IFIP/ IFORS/IEA
First *Pan Pacific Computer Conference*	10-13 Sep 85	Melbourne, Australia	ACS/IFIP
5th Intl. Conf. On *Computer Applications in the Automadon of Shipyard Operation and Ship Design - ICCAS '85*	16-20 Sep 85	Trieste, Italy	WG 5.6/IFAC
7th Intl. Conf. on *Digital Computer Applications to Process Control*	17-20 Sep 85	Vienna, Austria	IFAC/TC5
Int. Seminar on *Computer Networking and Performance Evaluation*	18-20 Sep 85	Tokyo, Japan	WG 7.3
Work. Conf. on *The Future of Command Languages*	23-27 Sep 85	Rome, Italy	WG 2.7
Conf. on *OR Models on Microcomputers*	25-27 Sep 85	Lisbon, Portugal	IFORS
Work. Conf. on *Office Systems .*	30 Sep-4 Oct 85	Finland	TC 8/FIPS
Work. Conf. on *Computer Aided Decision Making*	30 Sep-4 Oct 85	Prague, CSSR	IMIA
Work. Conf. on *The Theory of Design*	1-3 Oct 85	Tokyo, Japan	TC 5
Conf. on *Services Conveyed by Computer Networks - COMNET 85*	1-4 Oct 85	Budapest, Hungary	TC 6
13th Workshop on *Real Time Programming*	7-8 Oct 85	West Lafayette, USA	IFAC/IFIP
IFIP 86 - 10th World Computer Congress	1-5 Sep 86	Dublin, Ireland	IFIP
IFIP 89 - 11th World Computer Congress	28 Aug-1 Sep 89	San Francisco, U.S.A.	IFIP