IFIP newsletter
International Federation for Information Processing

Editor:
Dr. Jack L. Rosenfeld

Distributed by
IFIP Secretariat

Vol. 8, no. 4, December 1991

GENERAL ASSEMBLY MEETS IN ZIMBABWE

Rolstadås President-Elect

The first **IFIP** General Assembly (GA) to be held in Africa met 4-6 September in Harare, Zimbabwe and took a significant number of major steps. A new category of membership was conceived, the site for **IFIP** Congress '96 was selected, three new members were admitted, the International Program Committee chairman for Congress '94 was named, mechanisms for sharing 'W orking Groups between Technical Committees (TCs) as well as between **IFIP** and Affiliate Members or sister Federations were devised, honors were bestowed, new officers were elected, and the formation of new Working Groups was approved. As usual, the GA was preceded by two days of meetings of the Technical Assembly (TA), the Council, and other **IFIP** bodies.

Mr. Lawrence *Gudza,* president of the Computer Society of Zimbabwe, welcomed the GA to Harare. He pointed out the small size of the country (population 9 million) and the importance of the services sector of the economy. He outlined the history of the Society and of the efforts to establish an African Regional Computer Confederation (which was later admitted to **IFIP** by the GA).

continued on page 9

GREETINGS

At this time of holidays and the new year, we send greetings to all our **IFIP** friends and wish you joyful holidays and a year of health, happiness, and peace.

ASSOCIATE MEMBERSHIP PROPOSED

At its September meeting in Harare, Zimbabwe, the **IFIP** General Assembly (GA) approved, in principle, a new category of membership in **IFIP:** Associate Member. This would be available to virtually any nation, giving it all privileges of Full Membership in **IFIP** except voting and holding executive office.

This proposal originated with the Commission for South-East Asia, which was formed at the March 1991 Council meeting in Barcelona to propose steps for improving the relationship between **IFIP** and the countries of Southeast Asia (as well as other developing countries). It was felt that though Regional Full Members of **IFIP** (e.g., South East Asia Regional Computer Confederation) may be very successful in coordinating activities among their own members, they have been less successful in. bringing their members closer to **IFIP.** Some recommendations of the Commission had to do with means by which member nations of Regional Members could participate more directly in **IFIP —** for example, by receiving **IFIP** mailings directly rather than through the Regional Members. Associate Membership was proposed by the Commission, and endorsed by the **IFIP** Technical Assembly, as a means for such members, as well as other developing and small countries, to participate in **IFIP** to whatever extent they desire and are capable.

An Associate Member will have all the rights of a Full Member, such as sending a representative to the GA, nominating representatives to TCs (who might choose to participate by correspondence), and participating in other **IFIP** activities. However, the GA and TA representatives would have no vote and be ineligible to hold elective office.

Associate Membership will be open to individual nations belonging to Regional Full Members, to Corresponding Members, and to nations that have applied to **IFIP** for Full Membership in the past but not been accepted because of insufficient professional activity. Other applicants may also apply for Associate Membership. However, Full Members of **IFIP** may not become Associate Members. The dues for Associate Members will generally be less than the dues for Full Members. (Note that organizations, such as computer societies and academies of science, are the members of **IFIP** and not nations themselves.)

The GA approved this new membership category in principle and directed the Statutes and Bylaws Committee to pre-

continued on page 8

CONTENTS

General Assembly Meets in Zimbabwe . 1
Associate Membership Proposed 1
IFIP Congress '92 2
Africa and **IFIP** 3
IFIP Volunteers Lecture in Africa 3
IFIP Honors Ando and Others 4
Uhlig IPC Chairman for Congress '94 ... 4
Human Jobs and Computer Interfaces .. 4
Seventh **IFIP** Conference on Security 5
Shared Working Groups 6
Manpower Needs
in Developing Countries 7
Voting Rights for TC and WG Chairs ... 8
Women, Work and Computerization 8
Strategic Planning by TC8 13
Modeling in Computer Graphics 13

Calls for Papers 14
Future **IFIP** Meetings 14
National Abbreviations 14
Calendar of Events 16

IFIP NEWSLETTER

Editor:
Dr. Jack L. Rosenfeld
IBM Corporation
Journal of Research and Development
500 Columbus Ave.
Room 2B-71
Thornwood, NY 10594, U.S.A.
telephone: 1 (914) 742-5929
facsimile: 1 (914) 742-6033
Internet: rosenj@watson.ibm.com
Bitnet: rosenj@ yktvmh

Published quarterly by-
IFIP Secretariat
16 Place Longemalle
CH-1204 Geneva, Switzerland
telephone: 41 (22) 28 26 49
facsimile: 41 (22) 781 23 22
Bitnet: ifip@cgeuge51

CORRESPONDENTS
TC2 R.K. DeBry
TC3 B. Samways
TC5 G. Karlmark
TC6 D. Khakhar
TC7 P. Kali
TC8 A.A. Verrijn-Stuart
TC9 F. van Rijn
TC 10 R.N. Ibbett
TC11 D. Lindsay

Printed for **IFIP** by the courtesy of Elsevier/North-Holland.

Please apply to the **IFIP** Secretariat, at the address given above, for copies of the ***IFIP*** *Newsletter* and to be added to (or removed from) the mailing list.
The Secretariat can also answer inquiries about **IFIP.**
The ***IFIP*** *Newsletter* may be reprinted, translated, and reproduced, in whole or in part, except for material specifically denoted as copyright protected. Reprinting in national and local information processing periodicals is encouraged. Acknowledgement to **IFIP** would be appreciated. In order to reprint material protected by copyright, apply for permission to the **IFIP** Secretariat, giving all pertinent details.
Kindly submit material for the *Newsletter* three months before the publication date.
Please send the following **IFIP** information directly to the Secretariat: announcements of conferences, workshops, and other meetings; calls for papers; appointments to committees and other positions; and changes of address. The Secretariat is the clearinghouse for all such information; it will forward it to the *Newsletter.*

IFIP COUNCIL

Executive Board

Bl. Sendov	President BG	89-92
A. Rolstadås	Pres.-Elect N	91-92
G.J. Morris	Vice-Pres. GB	89-92
A. Balasubrahmanian	Vice-Pres. IND	90-93
H.L. Funk	Vice-Pres. USA	91-94
A.W. Goldsworthy	Vice-Pres. AUS	91-92
J. Fourot	Secretary F	90-93
A. Melbye	Treasurer DK	90-93

Trustees

A. Alvarez-Rodriguez	E	91-94
M. Ozeki	J	91-93
M. Tienari	SF	89-92
D. Dolan	**IRL**	91-94
K. Bauknecht	CH	90-92
G.R. Fairall	ZW	91-94
D. Khakhar	S	91-93
W. Brauer	D	91-92

IFIP CONGRESS '92

Invited Speaker List Published, and Call for Papers Issued

The International Program Committee of **IFIP** Congress '92 recently announced invited speakers for the Congress — **IFIP's** 12th World Computer Congress — which will be held in Madrid 7-11 September 1992. At press time, those invited speakers who have confirmed their participation in the program are as follows:

Keynote speaker:
Pamela McCorduck (USA) — *Art, Complexity, and Artificial Intelligence*

From Architectures to Chips stream —
Invited Speakers:
Hajime Ishikawa **(J)** — *Progress, Trends and Perspective of VLSI Technology*
Jean-Claude Laprie (F) — *Fundamental Concepts and Taxonomy of System Dependability*
Main Martin (USA) — *Tomorrow's Digital Hardware Will be Asynchronous and Verified*
David May (GB) — *General-Purpose Parallel Computers*
John Meyer (USA) — *The Role of Modeling and Evaluation in the Design Process*
Michele Morganti (I) — *Dependability Issues in Telecommunications*

Panels:
Parallel and Distributed Computing
The CAD Tool for the Future
Dependability Issues in Distributed and Real-Time Systems
Concurrent Engineering

Informatics and Education stream —
Invited Speakers:
Magda Bruin (NL) — *Information Technology and Equity in Education*
Geoff Cumming (AUS) — *Where Is the ELITE: Excellent Liberal IT Education?*
Stephen Franklin (USA) — *The Academic Computing Center as a Strategic University Resource*
Robert Lewis (GB) — *Research into Practice*

Panels:
Informatics Education in Developing Countries
Computers in Education: Research and Development in Latin-America
Teleteaching

The Vulnerability of the Information Society: Social, Legal, and Security Aspects stream —
Invited Speakers:
Harold Highland (USA) — *Reliability and Security in Personal Computers and Local Area Networks*
Lance Hoffman (USA) — *Diminishing Vulnerability in an Artifact*
Herbert Kubicek (D) — *Computer-Supported Work: the Fairy Tale of Invulnerability*
G.B.F. Niblett (GB) — *Fighting Vulnerability with Law?*

Panels:
Informatics and Development
The Electronic Cottage: How Will Daily Life Be Affected?
Ethics of Computing: Information Technology and Responsibility
Identification and Authentication of Users and Systems

Expanding the Power of the Personal Computer subconference —
Invited Speakers:
Esther Dyson (USA) — *New Technologies and Technology Transfer for the PC Industry*
Dave Liddle (USA) — *Object-Oriented Operating Systems Concepts*
Jeff Raikes (USA) — *Pen-Based Computing*
Stan Rosenschein (USA) — *Distributed Intelligent Agents*
Rob Shostak (USA) — *New Trends in Database Technology*
Rolf Wildhack (D) — *ISDN for Multimedia Workstations*

Panel:
The Future of the Personal Computer

Additional streams, whose invited speakers have not yet been announced, are *Software Development and Maintenance* and *Algorithms and Efficient Computation.* There will also be **a** subconference on *Enhancing the Intelligence in Information Systems* and workshops on *Informatics for Environmental Protection* and *Cooperative Research Programmes.*

The five streams will be presented during all five days of the Congress. The two subconferences, on the other hand, will run for 2%2 days each.

How to Submit Papers

Papers and posters may also be submitted for the streams and subconferences. Each submission will be reviewed by at least 3 expert referees, and the best will be selected for presentation at the Congress. For information about submitting papers and posters, please contact the **IFIP** Congress '92 Committee at the address given at the end of this article. The deadlines for receipt of papers and posters are 10 January and 15 April 1992, respectively. Proceedings will be published by Elsevier/North-Holland.

In announcing the program, Prof. *Wilfried Brauer (D),* chairman of the International Program Committee (IPC), promised the Congress participants an intellectually stimulating experience, including sessions **on** leading-edge technology, state of the art surveys, societal issues, and concerns for developing countries.

At the same time, Mrs. Rosa *Alonso (E),* chairman of the Organizing Committee, guaranteed the delegates an exciting and comfortable time in Madrid. In addition to the streams, subconferences, and workshops organized by the IPC, there will be 6 one-day tutorials, an exhibition, technical visits, and a tourist program that will include visits to historical sites around Madrid and pre-

continued on page 13

AFRICA AND IFIP

During the meeting of the **IFIP** Technical Assembly that preceded the General Assembly in September in Harare, Zimbabwe, *Dr. Elliot Zwangobani,* former president of the Computer Society of Zimbabwe, presented a talk entitled "Africa's Involvement with **IFIP."** Following are highlights of that address:

We consider ourselves fortunate that **IFIP** decided to hold its General Assembly in Harare. This decision is an example of the support **IFIP** can give to professionals in developing countries. It encourages the Zimbabwe professional to feel a member of an international professional fraternity, and it enlightens our thinking and broadens our vision in a manner and to an extent difficult to attain in any other way.

Allow me to categorize some of the problem areas evident in African countries in the area of Information Technology (IT):

1. Lack of policies promoting development of IT. On the contrary, there **is** a strong tendency towards regulatory policies.

2. Poor information technology literacy amongst the intelligentsia, **and chiefly amongst the decision-makers.** Perhaps even more serious is a relatively weak awareness of the value of timely, accurate, analysed data in decision-making.

3. Poor training infrastructure. Africa has made and is making gigantic strides in education. However, technical education is still weak.

4. Relative isolation of the practising African professional. This isolation is caused by many environmental, political and economic factors. Some of the more noteworthy are: very expensive travel, poor communications, an intellectually inactive environment, a paucity of local professional journals, lack of access to international technical information flow, poor foreign currency resources and few active professional associations.

5. Weak meaningful participation in technology. This factor can be directly attributable to the others mentioned above. It is a lamentable fact that of all the continents, Africa is the only one without any indigenous industry in any area of IT.

6. Markedly higher costs of hardware, software and other IT products. Two reasons may be given for this. One is the shortage of foreign currency and the other is the prices charged by the original suppliers. Since local companies may have difficulty in securing a reasonable amount of working foreign exchange, there may *be* a tendency to want to maximise margins of each successful sale. Further, some external supplier companies, including some multinationals, raise the prices of their products sold to African countries. This is ironic, since African countries can least afford such premium payments.

What Can IFIP Do?

The question is then what can **IFIP** do to help resolve or at least overcome some of these problem areas? I do not pretend to have a prescription. However, I shall try to offer some areas that seem to be in line with **IFIP's** activities.

Dr. Zwangobani went on to discuss how **IFIP** might encourage professional activity in Africa, help to publicize IT in Africa, bring African professionals into the international community, and educate the world about business conditions in Africa. He also suggested how African nations could take advantage of what **IFIP** can offer. He concluded as follows:

The rather weak participation by African professionals in **IFIP** should notbe taken as a sign of their apathy. It could well be symptomatic of an environment that makes it relatively more difficult to participate on terms equal to those of their colleagues. Some of the **IFIP** Technical Committees and Working Groups deal with topics that, though of immense intellectual appeal to the African professional, have as yet little practical significance in their countries. There is no doubt that, given their relative isolation, the African professionals are, on the whole, eager for frequent professional contact with colleagues from elsewhere. Quite often, factors beyond their control makes it difficult to do this.

What they most probably require from **IFIP and** its membership, is empathy coupled with a willingness to give practical assistance in ameliorating some of the factors that hinder IT development in Africa.

As a result of this talk and related ideas that have been circulating in **IFIP,** the Technical Assembly took the following steps:

- Requested the Developing Countries Support Committee to intensify activities concerning training in Developing Countries (DCs)
- Planned to encourage DCs to nominate members of **IFIP** Working Groups, to participate by correspondence
- Encouraged TC 11 on Security and Protection in Information Processing Systems to provide DCs with tools for evaluating commercial software and hardware
- Requested TC3 on Education to approach UNESCO to obtain greater support ■

IFIP VOLUNTEERS LECTURE IN AFRICA

Before and following the September **IFIP** General Assembly (GA) in Harare, several GA participants lectured at events held in Zimbabwe and South Africa. Some of the **IFIP** lecturers presented talks at more than one place. The events prior to the GA were the "Information Technology Education and Training Workshop '91," sponsored by **IFIP's** Working Group on Vocational Education and Training (WG3.4) and the "COMSEC 91 Seminar," sponsored by the Computer Society of Zimbabwe. A post-GA event was the Society's 1991 Summer School. Also, lectures were given at universities in South Africa before and after the GA.

The lecturers included *Dir.* Peter Bollerslev *(DK), Prof. Wilfried Brauer (D), Prof. Klaus Brunnstein (D), Prof. William Caelli (AUS),* Mr. Geoff *Fairall (ZW), Prof. Josef* Gruska (CS), *Dr. Dipak Khakhar (S), Prof. Gerard Rei jns (NL),* and *Dr. Ronald Uhlig (USA).*

This is one of the many ways **IFIP** benefits developing countries: by bringing them lecturers at little or no expense to the countries. The same effect frequently occurs when Technical Committee or Working Group meetings are held in developing countries. ■

New IFIP Bulletin

The newly revised ***IFIP*** *Information Bulletin* (number 23) is now available from the Secretariat.

IFIP HONORS ANDO AND OTHERS

The IFIP General Assembly, meeting in Harare in September, unanimously elected ***Dr. Kaoru Ando (J)*** an Honorary Member of IFIP. ***Dr.*** Ando served as president from 1983 to 1986, previously having been trustee and vice-president. He represented Japan from 1977 to 1987.

According to the IFIP statutes, "On rare occasions, Honorary Membership may be awarded to a person who has earned exceptional merit in furthering the aims and interest of the Federation. Honorary Membership shall be conferred for life."

Also, the GA granted the IFIP Outstanding Service Award (OSA) to

Jan Wibe (N) —WG3.1 and 3.6
David Tinsley (GB) –WG3.1
Eugenia Sendova (BG) –WG3.5
Pentti Kerola (SF) –TC8

The OSA is given for outstanding services rendered to IFIP by Technical Committee and Working Group members.

DON'T SNEEZE!

Girl atop 7-story "human tower" is about to wave IFIP flag. This event was staged for an excursion following the Barcelona Council.

UHLIG IS IPC CHAIRMAN FOR CONGRESS '94

In September, at the IFIP General Assembly in Harare, Zimbabwe, president ***Acad. Blagovest*** Sendov (BG) announced the appointment of ***Dr. Ronald Uhlig (USA)*** as chairman of the International Program Committee for IFIP Congress '94. The members of the GA were delighted with this appointment, since ***Dr. Uhlig*** has served IFIP well in several capacities. ***Prof. A.*** Nico ***Habermann (USA),*** who was appointed to this position in March, was unable to serve.

A biography of ***Uhlig*** appeared in the September 1990 issue of the ***IFIP Newsletter*** (page 3). He is currently the chairman of IFIP's Technical Committee on Communication Systems (TC6), as well as the representative to IFIP of the International Council for Computer Communication (ICCC), an Affiliate Member. His TC6 term will be completed at the end of 1991.

The Congress, which will be held in Hamburg 29 August-2 September 1994, will be the fourteenth in the series of these major IFIP events. An article about IFIP Congress '92 in Madrid appears on page 2 of this issue. Congress '96 will be held in Canberra in September 1996.

HUMAN JOBS AND COMPUTER INTERFACES

*by Pertti Jarvinen (SF)**

This working conference, sponsored by IFIP's Working Group on Computers and Work (WG9.1), attracted about 160 participants to Tampere, Finland 26-28 June 1991. The Conference was international, with the authors of the papers and the participants coming from around the world: from 21 countries and 24 countries, respectively.

The preparation for the Conference was exceptional, in that all the Baltic republics (Estonia, Latvia, and Lithuania) were represented on the International Program Committee, chaired by ***Markku Nurminen (SF).*** Researchers from these countries submitted papers, and several of them were accepted. ***Pertti Jarvinen (SF)*** served as chairman of the Organizing Committee. The Conference proceedings, edited by ***Nurminen*** and George Weir (GB), will be published shortly by Elsevier/North-Holland.

The presentations covered a very wide area of computers and work. ***Ben Shneiderman (USA),*** one of the four invited speakers, expressed concern about the ethics of computer professionals. ***David A. Buchanan (GB)*** considered a computer interface too narrow and recommended high-performance work systems (a new technique for company organization) instead. ***Yrjo Engestrom (USA)*** emphasized "activity theory" as a promising approach to organizational learning and design. ***Arvid Aulin (SF)*** presented "The Law of Requisite Hierarchy" for self-regulating dynamic systems. ***Kari Kuutti*** (SF) and ***Liam Bannon (IRL)*** preferred that interface design be integrated with job design rather than performed as a separate action. Multimedia and hypermedia were considered by ***Aria Vainio-Larsson*** (S) and ***Tze Min Chung (SGP).*** ***Hiroyoshi Ishibashi (J)*** presented features of software supporting groupwork.

An interesting characteristic of the Conference was the large number of female participants, almost 40%. This may have two explanations: In the computing field, we normally have about 15% female computer professionals worldwide, but this figure is about 30% in Finland; another reason is the fact that IFIP's 4th Women, Work and Computerization conference took place two days later in Helsinki, and some persons took part in both conferences.■

* chairman of the Conference Organizing Committee

IFIP's Technical Committee on Security and Protection in Information Processing Systems (TC 11) held its annual International Conference and Exhibition on Information Security (IFIP/Sec'91) 15-17 May 1991 in Brighton, U.K. This year's theme was "Creating Confidence in Information Processing." More than 300 participants, from 27 countries, attended the seventh in this series of conferences, considered by many to be the leading international technical and managerial conference in information systems security.

His Royal Highness, The Duke of Kent, who is the Patron of the British Computer Society, formally opened the Conference. The 34 papers presented were organized into 3 daily streams, with a keynote speaker introducing each day.

The first keynote address, *Criteria, Evaluation and the International Environment: Where Have We Been, Where Are We Going?* was delivered by *Mr. Steven Lipner (USA).* Following are selections from his paper*, which deals with the process of evaluating computer systems from the standpoint of security:

A History of Evaluation Programs

About ten years ago, the United States Department of Defense issued a directive establishing the Department of Defense Computer Security Center. The primary role of the Center was to establish and operate a program that would evaluate the security properties of commercial computer vendors' products. The theory underlying the Center was that commercial and defense users of computer security products had common needs, and that by evaluating commercial products, the Center would improve the security available both to the defense and commercial users.

The Center began its task by drafting, coordinating, and publishing the Trusted Computer System Evaluation Criteria (TCSEC, or "Orange Book"). The TCSEC was published in 1983 and specifies a range of security evaluation classes that apply to operating systems. By 1986, the Center — now renamed the National Computer Security Center (NCSC) and with scope encompassing the entire U.S. Federal Government — had evaluated a handful of commercial operating systems. Recently, the NCSC's charter has been reduced to the needs of U.S. government agencies that process classified defense information. A few dozen operating systems have been evaluated.

A potentially more significant development is that the governments of the U.K., Germany, France, and the Netherlands have begun joint development of the Information Technology Security Evaluation Criteria (ITSEC). The European developers of the ITSEC have begun trial use of the draft ITSEC, and the European Community has begun the process of establishing EC-wide security criteria based on the ITSEC. The governments of Canada, Australia, and Sweden have also expressed, to varying levels, the intent to develop their own information security criteria. And the U.S. government is engaged in discussions with the ITSEC developers and the EC of common evaluation criteria and processes.

Trusted Operating Systems

Almost every U.S. manufacturer of computer systems has completed at least one evaluation of a Class C2 operating system. C2 systems are the workhorses of commercial computing. They incorporate user identification and authentication mechanisms, auditing, mechanisms to authorize individual users' access to data, and controls that ensure that the contents of deleted storage objects cannot be retrieved. They are tested to ensure that the controls work "as advertised." They are thus well suited to the vast majority of commercial multi-user applications. While the TCSEC is widely condemned as applicable only to protection of data from unauthorized disclosure, a C2 operating system provides basic mechanisms that can be used to enforce a level of data integrity as well. Some users require features beyond those required by Class C2 (such as more controls over the passwords used for authentication), and these are frequently added by vendors. Other users *do* not require some of the features mandated by Class C2, but those unnecessary features can be "turned off" by system administrators. On the whole, C2 is a good common denominator.

The "goodness" of C2 systems, however is marred by two deficiencies that are especially visible to the vendor: First, no one can tell what a C2 system is; and second, by the time a C2 system is developed and evaluated, it is obsolete.

Mr. Lipner continued, discussing other limitations of the TCSEC, associated with networks of computers, large applications and databases that "work across users," and other common features of large systems. He continued:

In my work, I have occasionally encountered a user who has experienced a security penetration despite using an evaluated system. The common denominator among such incidents is system configuration and management: The user attempts to install the secure system in his environment and "gets something wrong" that allows a hostile party to go where he shouldn't be. The trusted system evaluation is irrelevant, because the user is doing something he should not — operating in a network or running an application — to get the job done.

Help from Vendors

Vendors try to document real-world ways of using systems securely. They offer tools to help users with this task. When an unexpected problem arises, the vendors learn from it and update their tools and documentation. Real systems used in real applications are complex, and evaluations are not a substitute for experience.

Mr. Lipner proceeded to observe that computer evaluations should be worldwide, the criteria should be more explicit, the evaluation process should be more adaptable to the changing computer industry environment, the process should be well tested before being adopted, and that it should apply to developments such as heterogeneous networks and real-time systems. He concluded his address as follows:

It is up to us all now to recognize that evaluation and criteria, at least for the moment, are limited to operating system products. Rather than stretch the paradigm where it has no business going, we should concentrate on establishing stable and economical operating system evaluation processes, but put the major focus of our efforts on more broadly applicable guidelines that help to guide choice by users in the development or selection of cost-effective security measures.

continued on page 6

* CO IFIP

SHARED WORKING GROUPS

Between Technical Committees and Between Federations and IFIP

Two significant changes to the Technical Committee (TC) structure were approved in September by IFIP's General Assembly, meeting in Harare, Zimbabwe. The first enables more than one TC to share a Working Group (WG). The second permits a WG to be shared by an IFIP TC and a similar body of an IFIP Affiliate Member or sister federation.

The former change was motivated by the realization that the present tree-like structure of IFIP's TCs (eleven TCs, at present, reporting to the Technical Assembly, with each TC containing one or more WGs) does not necessarily correspond to the network-like relationship of the technical work they perform. For example, new WGs on Information Security Education (WG11.8) and Education in HCI and HCI Curriculum (WG13.1) were established by the IFIP TA in Harare. These WGs might just as well belong to the TC on Education (TC3). Also, the proposed WG on Technology for the Environment (WG5.11) is the result of joint efforts between the TC on Computer Applications in Technology (TC5) and Relationship between Computers and Society (TC9). Eventually, the new WGs may be shared by TCs.

The latter change grew from the desire for closer cooperation between TC5 and the International Federation of Automatic Control (IFAC), a sister federation of IFIP in the Five International Associations Coordinating Committee (FIACC). Collaboration has existed for several years, but recently an attempt to form a joint group on Computer Architecture faced barriers related to royalties, copyrights, and other formalities. It is hoped that the new change in IFIP's structure will permit such cooperation with sister federations and with Affiliate Members to proceed.

The two changes approved by the GA follow.

WGs Shared by TCs

A WG may be shared by two or more TCs under the following conditions:

1. A WG must belong to one TC for all administrative matters.

2. A WG may belong to and report to more than one TC for technical matters.

3. Such a WG is listed in the ***IFIP** Bulletin* under the TC having the administrative responsibility, with a reference to which TCs it reports to for technical matters.

Shared with Other Federations

1. IFIP may establish joint WGs with any FIACC member or IFIP Affiliate Member.

2. The chairman of the WG must be jointly agreed upon by the appropriate societies.

3. Activities of the WG require joint sponsorship or alternating sponsorship.

4. Either IFIP's publisher or the other society's publisher may be selected. Royalties should be split between IFIP and the other society.

5. Surpluses of activities shall be split between IFIP and the other society.

6. Operating expenses provided by IFIP must be matched equally by the other society. ■

SEC'91 continued from page 5

Mr. David Lindsay (GB), chairman of the Organizing Committee, reported on the Conference. We quote here from that report.

Theory and Practice

The theme of the second day was "Information Security — Theory and Practice," the keynote address being given by *Dr. Donald Davies (GB). Many* of the papers illustrated the conflict that often prevails between the desire to encourage access to information and the need to protect that information from unauthorised access and change. More than one speaker emphasised the changing pattern of world trade and production, with Western nations passing basic manufacturing to lesser-developed countries, possibly seeing their future key interests lying in information technology. For this to be successfully accomplished, effective information security principles and criteria must be established — and established in a wide, international field.

It was felt that encryption must be the basic technique to provide protection to information transmitted outside its point of origin, but that encryption techniques require continual refinement. The authentication of messages is based upon the channel upon which the message is passed. The technique of automatic personal identification, or biometrics, is an example of the development of existing techniques that continue to emerge in the field of information security. Passwords, cryptology and authentication techniques form the basis of the science of information security.

Auditing

The theme of the third day was "Electronic Data Interchange (EDI) and Audit — the State of the Art," the keynote address being given by *Mr. Michel Leger (F).* The days when an auditor needed only to check account books and records are long past, and the whole function of audit in a computing environment has been subject to extensive change and development.

Inevitably, the question of viruses appeared in more than one daily theme.

Dr. *Wyn Price* (GB) was chairman of the International Program Committee. Proceedings of the Conference, edited by him and Mr. *Lindsay,* was published by Elsevier/North-Holland in October 1991.

The eighth conference in the series, IFIP/Sec'92, will be held in Singapore 27-29 May 1992. ■

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**?*
- **IFIP** Plan (planned events)
- WG Chairman's Handbook
- Event Approval Guidelines
- Policy on Working Conferences
- Publications Policy
- Guidelines for Editors of **IFIP** Working Conference Proceedings

MANPOWER NEEDS IN DEVELOPING COUNTRIES

Workshop Finds Need Great for Information Analysts

*by Prof. Subhash Bhatnagar (IND) **

A workshop on Information Technology Manpower Needs in Developing Countries was organized by IFIP's Working Group on Social Implications of Computers in Developing Countries (WG9.4) August 5-6, 1991 in Ahmedabad, India. The Workshop was attended by 35 participants from 17 different countries. Fifteen papers on various aspects of manpower needs were presented at the Workshop.

The following themes were covered by the presentations:

1. The status of computer applications and manpower needs in developing countries (DCs) in Africa and Asia
2. The need for training information analysts
3. Experiences with curricula for training information analysts
4. The role of government and the private sector in bridging the manpower gap in information technology (IT) in DCs

Several presentations emphasized the need to choose computer applications in DCs only after a careful analysis of the needs of the organisation and the socio-economic context. By and large, the existing applications in DCs are oriented towards automating clerical operations. It was pointed out that in DCs, capital is scarce; therefore, the applications need to focus on productivity of capital.

Importance of Information Analysts

In the context of making appropriate use of IT, the role of information analysts was seen to be very important. Many participants argued that organisations in DCs do not have trained information analysts who can perform organisational analysis to identify applications that can have a significant positive impact on performance. Very few countries have educational programs to train information analysts. Most of the existing programs were found to be technically oriented, producing programmers and software engineers rather than information analysts.

In discussing the curriculum design for an information analyst course, the participants strongly felt that classroom input that will enable students to understand different management functions must be given. However, to provide this input, different types of pedagogy need to be used. Lectures have to be supported by real-life illustrations in the form of case studies. In addition to the management input, an information analyst must also understand the socio-political context in an organisation. Human factors influencing implementation of a system should be taken into account from the very beginning of the system life cycle rather than as a last phase in the process of information system design.

Some specific programs meant for information analysts were critiqued. A broad conclusion reached was that faculty in most computer science schools will have to re-orient themselves to become more applied and sensitive to organisational dynamics, for teaching courses such as MIS, database, and systems analysis and design.

Private Training in IT

The role of the private sector in training IT manpower was discussed. Experience from many countries suggested that the performance of the private sector has been uneven. There are a few private companies, particularly in large countries such as India, that have provided good quality training in programming and system design. However, a large number of private institutions offer sub-standard training programs. Most governments in DCs are likely to put more resources into primary education compared to university education. It is, therefore, unlikely that new institutions will be set up by governments to bridge the large manpower gaps that already exist. In fact, even the existing institutions may be starved for funds. The private sector would therefore have to play a key role in bridging the manpower gap, both in terms of quantity and quality.

Participants emphasised the need for some agency to regulate/certify the quality of private teaching shops. Professional societies could play a significant role in this area.

On the second day of the Workshop, the participants were divided into five groups, representing various regions in the developing world. These groups discussed strategies to design and implement programs for information analysts in their regions. The reports of the working groups were presented in a plenary session. The discussion pointed out several interesting contrasts between the needs of small countries and large countries, as well as between DCs and the industrialised countries.

Problems of DCs

It was argued that the differences between industrialised countries and DCs were not fundamental but only a matter of degree. However, such differences exist in many dimensions, resulting in a substantial impact on the way applications can be chosen, designed and implemented. Most of the DCs have a poor resource base, a high cost of equipment and a comparatively low cost of labour. Organisations in DCs, in general, operate in an environment shielded from competition. There is, therefore, a basic lack of motivation for improving organisational performance. In the social context, there is less formalism in organisational procedures and a long tradition of oral rather than written communication. There are a plethora of rules and procedures, which are not well documented. There is low penetration of IT; therefore, users are largely unaware of the potential of IT. Many formal methodologies of systems analysis and design may be quite inappropriate for most organisations in DCs, because of their small size and informal work culture.

Teaching programs in DCs tend to replicate curriculum design, textbooks and other teaching material as well as the pedagogy from similar programs in North America and Europe, making such programs ineffective in a DC context. Greater use of indigenous materials and cooperation amongst DCs was recommended.

The Workshop was attended by six WG9.4 members and *Maj. Gen. A. Balasubrahmanian (IND),* a vice-president of IFIP. The director of the Indian Institute of Management, Ahmedabad inaugurated the Workshop, and the keynote address was given by the president of the Manufacturers Association of Information Technology in India. *Prof. Subhash Bhatnagar (IND),* chairperson of WG9.4, organised the Workshop. He will also edit the proceedings, which will be published by Tata McGraw Hill.

* chairperson of WG9.4

VOTING RIGHTS FOR TC AND WG CHAIRMEN

Deliberations in September at the **IFIP** Technical Assembly (TA) and General Assembly (GA) in Harare, Zimbabwe concerned whether Working Group (WG) chairmen should be granted the right to vote at Technical Committee (TC) meetings and whether TC chairmen should have the right to vote in the GA.

Arguments favoring the vote are that it gives people who devote much effort to **IFIP** the opportunity to affect the direction **IFIP** takes, and that to be without a vote is to be deprived of a voice in **IFIP** affairs. On the other hand, many TCs reach decisions by consensus, with votes rarely taken, so the franchise is insignificant in those TCs. Furthermore, the TA was formed three years ago to focus on the strategic direction of **IFIP's** technical activities and to provide the TCs a forum. Most significant technical decisions in **IFIP** are made in the TA, where each TC chairman has a vote.

The TA decided to reconsider the matter of WG chairmen's voting rights at the next TA in March, after the TCs have had an opportunity to debate the issue. **IFIP** president *Acad. Blagovest Sendov* (BG) appointed a task force to consider the matter of TC chairmen's voting rights and to make recommendations to the **IFIP** Council in Trondheim, Norway in March.

To Organizers **of IFIP** Conferences:
Please send several copies of your Calls for Papers to the **IFIP** Secretariat, in order that the staff may be able to handle queries.

ASSOC. MEMBERS cont. from page 1

pare the changes that will be necessary to implement it. The Finance Committee was asked to propose a dues structure for the new category. The nations mentioned above have been informed of the situation and invited to send representatives to the 1992 GA in Madrid, where the Statutes and Bylaws changes for Associate Membership will probably be approved. At that time, these nations will most likely be admitted to **IFIP.** Other countries that might be interested in joining will also be contacted by the president of **IFIP** and invited to send representatives to Madrid.

WOMEN, WORK AND COMPUTERIZATION

*by Kea Tijdens (NL) **
and Inger Eriksson (SF)'[

The 4th Conference on Women, Work and Computerization (WWC4) was held in Helsinki, from June 30 to July 2, 1991, sponsored by **IFIP's** Working Group on Computers and Work (WG9.1). The Organizing Committee (OC) was chaired by *Anna - Maija Lehto* (SF); its 9 members are key persons within their fields (equality, women's research, the labour market, informatics, and computer and information systems sciences). The International Program Committee (IPC) consisted of 35 persons from 18 countries, mostly from universities and research centres, representing a variety of scientific disciplines (sociology, computer and information system sciences, pedagogy, and psychology). The IPC was chaired by *Inger Eriksson (SF).*

One hundred twenty-five persons participated in the Conference. Approximately 25% of the participants came from Finland, 10% from other parts of Scandinavia, 40% from other countries in Europe (with the highest representation from The Netherlands [21]), and 5% from North America. Africa and Asia, too, were represented. Although the Conference dealt with women and work, men were not excluded: Men were on both the OC and IPC; there were men among the authors, keynote speakers and panelists; and there were also male participants in the Conference.

The programme included plenary presentations, working group sessions, a panel, a symposium, and a discussion session. The first day provided a general theoretical basis for the Conference theme. *Sara Hein* (USA) and *Joan Greenbaum* (USA) were invited speakers in the plenary session, talking about artificial intelligence and participatory design. **In** the afternoon, a discussion session, "Women in Information Technology Business," was more business- and labour-market-oriented. The second day had as its theme "Work." There were three plenary presentations: by Dr. *Swasti Mitter (GB), Prof. Andrew Clement* (CDN) and Dr. *Susan Leigh* Star (GB). In the afternoon, a symposium on "Woman Managers, Woman Workers and Computers" was held.

The theme of the third day was "Training and Education." Researcher *Heidi Schelhowe (D)* spoke about women's research in computer science. **In** the afternoon, there was a panel discussion on "Men, Women and Computers."

There were parallel working groups the first and third days. Each of the groups had about 6 to 30 participants and discussed 2 to 4 papers. The authors gave short explanatory presentations of their papers. Initially five but later seven themes were chosen for the working groups:

- Improving the quality of women's work
- Labour markets within firms
- Division of labour, and computerization in different countries
- Female orientation in system design
- Training and education
- Women in EDP jobs
- Gender, symbols and technology

In the "Birds of a Feather" session, topics such as electronic-mail networks, future WWC conferences, and future **IFIP** conferences were discussed, and a video presentation about education was explained.

When we compare the results of questionnaires received from participants of WWC4 with those from participants at prior WWCs (1988 and 1984), we find some interesting results: Less younger women and more older women participated in the latest conference. Not surprisingly, a higher percentage of them had children. The education level was high in Italy (68% were university graduates), higher in The Netherlands (84%), and even higher in Finland (94%). The majority of the participants had a degree either in social and behavioral sciences or in computer science and system analysis. In 1984, there were more students (22%) than there were in 1988. (4%) and in 1991 (2%). With regard to professional activity, we find that the participants were predominately researchers at all three Conferences.

Finally, when asked, "Would you visit the **next WWC** conference, **if** possible?" 90% of the 63 respondents said yes!

The Conference proceedings, edited by *Tijdens, Eriksson,* and *Barbara Kitchenham* (GB), have been published by Elsevier/North-Holland.

* member of WWC4 International Program Committee
t chairperson of WWC4 International Program Committee

GA continued from page 1

Technical Activities

The fruitful discussions at the TA, GA, and other bodies were greatly helped by the presence of nine of the twelve chairmen of IFIP's TCs and Specialist Group, an amazingly good attendance when one considers the relatively remote location. Unfortunately, only one Affiliate Member, the International Council for Computer Communication (ICCC), was represented, which is causing IFIP to re-examine its relationship with its Affiliate Members.

The number of events sponsored by IFIP is as large as ever. For the past reporting year, 49 events were recorded for which IFIP was the sole or main sponsor; IFIP was co-sponsor of many others. A significant increase (perhaps 25%) is expected for 1991-1992. The excellent new summary reports prepared by the Activity Management Board (AMB) are very useful for all those planning IFIP activities or otherwise interested in them. At present, the preponderance of IFIP events are entered in the IFIP database and appear in the AMB summaries. From this information, the AMB was able to report the following:

> As the Summary shows, there are interesting differences between the TCs. TCs 5, 6, 7, and 10 have been very active during the reporting period (July '90—June '91), with 12-14 IFIP-sponsored events each, in contrast to the remaining TCs, which (not including the new ones) have had only 2-5 events each. TC5 has many co-sponsored events; TC6 favours open conferences; TC7 focuses on working conferences; and TC10 on workshops. Perhaps the most striking difference between the four most active TCs is the publication activity associated with the events, with no less than 10 publications from TC6, down to 2 from TC7.

The formation of four new WGs was approved by the TA: WG5.11 on Technology for the Environment (provisionally approved), WG10.6 on Neural Computer Systems, WG11.8 on Information Security Education, and the Specialist Group on Foundations of Computer Science's WG3 on Foundations of Systems Specifications (provisionally approved). Approved Scopes and Aims of the new WGs will be published in a future ***IFIP*** *Newsletter.* Also, WG11.7 on Legislation has been reactivated.

IFIP's new activity in microprocessor cards (smart cards) is being pursued by a task force of the TA. (See the article on page 1 of the September 1991 ***IFIP*** *Newsletter.)* As a result of this initiative, WG8.4 on Office Information Systems is holding a working conference on "The Portable Office: Microprocessor Cards as Elements of Distributed Offices" in June 1992. After that, if sufficient interest is shown, the task force may request formation of an IFIP Specialist Group.

TC2 on Software: Theory and Practice is planning three state-of-the-art seminars in the near future. One, on Formal Program Development, is scheduled for Rio de Janeiro in January 1992, and another, on Formal Description of Programming Systems, will be held in Bombay in February. Plans for a third, in Bangkok in late 1992, are under way.

TC3 on Education announced plans for a large conference on teleteaching in 1993, at which 1500 participants are expected.

Several TCs are planning to start activities in new areas: TC2 is considering logic programming; TC6 (Communication Systems) is considering performance evaluation, wireless communication, intelligent networks, and broadband communication; and TC9 (Relationship between Computers and Society) is considering computers and disability and computers and culture.

A major concern of this GA and TA was IFIPs technical activities in developing countries (DCs). Each TC chairman reported to the TA on his TC's activities in DCs, and all resolved to do all they could to increase the activities, despite the difficulties (especially the high cost of transportation for TC and WG members to travel to many DCs). Prof. *Asbjørn Rolstadås,* chairman of the TA, invited *Dr. Elliot Zwangobani,* a former president of the Computer Society of Zimbabwe, to address the TA on what IFIP should be doing in Africa, and the TA resolved to take several actions. More about this is in an article on page 3.

Membership Actions

Perhaps the most far-reaching action of the GA was the plan to create Associate Membership, which would have all rights of Full Membership except the vote. It is anticipated that this will attract to IFIP many countries that could not participate before. A full discussion is on page 1.

The GA also voted to admit three new Full Members: Malaysia, Andorra, and the African Regional Computer Confederation (ARCC), which consists of the computer societies of Malawi, Zambia, and Zimbabwe and the Kenya Computer Institute. (Representatives of ARCC attended the GA as observers and were overjoyed at the outcome of the vote admitting ARCC to IFIP.) Information about the new members will be published in a future ***IFIP*** *Newsletter.*

Another development concerns the status of the membership of Cuba. Its membership had been on the verge of being terminated because of Cuba's failure to pay dues; however, upon payment of back dues, Cuba will retain the full privileges of IFIP membership.

Also, the GA approved the transition of Full Membership for the U.S.A. from AFIPS to FOCUS (Federation on Computing U.S.). Mr. *Howard Funk* will continue as the U.S.A. representative. For further information, see the article on page 6 of the June 1991 ***IFIP*** *Newsletter.*

continued on page 10

GA continued from page 9

IFIP Congresses

The GA voted to hold **IFIP** Congress '96 in Canberra, Australia. The vote favoring Canberra over Vienna/ Budapest (China had withdrawn its bid to hold the Congress in Beijing) was undoubtedly due, in part, to the eloquence of Prof. *Ashley Goldsworthy,* the Australian representative and the prior president of **IFIP,** who argued that since the 1992 and 1994 Congresses will be held in Madrid and Hamburg, respectively, it is appropriate for the next Congress to be held outside of Europe. He was named chairman of the Congress Organizing Committee. Most delegates felt that both bids were very attractive and that, aside from the geographical issue, it was difficult to make a choice.

Congress '94, which will be held in Hamburg in September 1994, also received attention at the GA. *Dr. Ronald Uhlig (USA)* was appointed chairman of the International Program Committee of the Congress by **IFIP** president *Acad. Blagovest Sendov (BG).* See the article on page 4. *Dr. Uhlig* asked for suggestions for members of the International Program Committee, major speakers, topics for tutorials, and "hot topics" to be covered in the Congress program. Prof. *Wilfried Brauer* (D), chairman of the Organizing Committee, revealed the logo for the Congress.

The upcoming **IFIP** Congress '92, to take place 7-11 September 1992, was thoroughly discussed by the GA. Details of that Congress are in an article on page 2.

New Officers

The GA chose *Prof. Asbjørn Rolstadås (N)* as president-elect of **IFIP.** His term as president will begin after the 1992 GA.

Mr. Funk and *Prof. Goldsworthy* were elected vice-presidents, for 3-year and 1-year terms, respectively.

Six trustees were elected or re-elected: *Prof. Angel Alvarez (E), Mr. Dudley Dolan (IRL),* and *Mr. Geoff Fairall (ZW)* for 3-year terms; Prof. *Dipak Khakhar* (S) and *Mr. Masanori Ozeki* (J) for 2-year terms; and *Prof. Wilfried Brauer (D)* for a 1-year term. It was noted that according to **IFIP** Statutes, *Mr. Robert lau (SEARCC)* was deemed to have resigned as trustee because he had missed two consecutive Council meetings.

President Sendov noted the resignation of two GA representatives who have served **IFIP** well for many years: *Mr. James Finch* (CDN) and *Dr. Peter* Kovacs *(H).*

Structural Changes

Several structural changes to **IFIP,** in addition to Associate Membership, were approved by the GA. The most significant of these is shared Working Groups, which is described in an article on page 6. Another pair of proposals, which will receive further study, is for WG chairman to be given a vote in their TCs and for TC chairmen to be given votes in the GA. These are discussed on page 8.

Finances

IFIP's treasurer, Mr. *Aage Melbye (DK),* reported that **IFIP's** finances are in "a reasonably healthy condition." As announced in March, there was a net surplus of 173 000 CHF* for 1990. A surplus of 110 000 CHF is estimated for 1991. Income is expected to be 10% above budget and expenses 11% below budget. The budget for 1992 passed by the GA is nearly balanced, specifying a deficit of 43 000 CHF. The value of **IFIP's** assets at the end of 1991 are estimated to be approximately 1 250 000 CHF. The GA discontinued the Activity Development Fund and the Contingency Fund and moved these monies into the General Fund.

There is an apparent trend of slightly increasing royalties and an improving situation with regard to the income from **IFIP's** investments.

Two areas appear troublesome, however: an increasing number of countries in arrears with their dues (e.g., Brazil and Centro Latinoamericano de Estudios Informatica [CLEI] have dues outstanding since 1989); and very few events with positive net proceeds. (Proceeds from events, excluding Congress '89, have decreased from 141 000 CHF in 1989 to 68 000 in 1990 and an estimated 60 000 in 1991.) To remedy the former situation, *Mr.* Melbye recommended that Members more than one year in arrears be deprived of their voting rights and those more than two years in arrears have their memberships suspended. This will be studied further before being presented to the 1992 GA. To encourage TCs to manage the financing of their events more carefully, the GA approved a modification of the TC funds computation: TCn fund = past year's surplus + 25% of TCn's royalties + 75% of net proceeds (or losses) from TCn's events. It is hoped that these funds, which give the TCs more fiscal autonomy, will now provide sufficient incentive for the TCs to plan event finances so as to produce positive revenues. A description of the TC fund mechanism is on page 2 of the December 1990 ***IFIP** Newsletter*

A favorable aspect of the treasurer's report was its format. Mr. *Melbye* was congratulated on presenting what used to be an incomprehensible jumble of numbers in a neat, understandable package.

Other Matters

The GA voted Honorary Membership to *Dr. Kaoru Ando (J)* and the Outstanding Service Award to four WG members. More on these awards is on page 4.

Thirty-five books were published by **IFIP's** main publisher (Elsevier/North-Holland) during the accounting year ending June 1991. This number has not changed significantly in recent years. In addition, *Prof. Alex Verrijn-Stuart (NL),* chairman of the Publications Committee, reported that negotiations were under way with Springer-Verlag, **IFIP's** secondary publisher, to combine the present practice of ad hoc publication contracts into a uniform system of three master contracts. Also, a policy on **IFIP** journals is being developed.

A resolution concerning the legality of "reverse engineering" was introduced late in the GA meeting, but its consideration was deferred so that representatives may have an opportunity to consult with their societies. It will be reconsidered at the March Council meeting in Trondheim, Norway.

The Marketing Committee and the Developing Countries Support Committee discussed a plan for an IFIP Lectureship program. A database will be established that lists **IFIP** volunteers willing to give lectures and national societies desiring to hear such lectures, and matches will be made. Details have yet to be worked out.

The TC chairmen issued a plea to members of the GA to study their countries' lists of TC members, in order to replace inactive TC members and fill vacancies.

Before adjourning the meeting, President *Sendov* noted that no invitations have been received yet from potential hosts for the Council and GA meetings of 1993 and beyond.

continued on page 13

* Henceforth, we use **"CHF"** to denote Swiss francs.

NEW IFIP PUBLICATIONS FROM NORTH-HOLLAND

Computer Hardware Description Languages and their Applications (CHDL '91)

Proceedings of the IFIP TC10/WG10.2 Tenth International Symposium, Marseille, France, 22-24 April 1991

edited by **D. Borrione** *and* **R. Waxman**

1991 xii + 478 pages
Price: US $ 113.00 / Dfl. 220.00
ISBN 0 444-89208-7

Smart Card 2000

Proceedings of the Second International Conference, Amsterdam, The Netherlands, 4-6 October 1989

edited by **D. Chaum**

1991 216 pages
Price: US $ 79.50 / Dfl. 155.00
ISBN 0 444-892664

Computer Applications in Production and Engineering

Proceedings of the Fourth International IFIP TC5 Conference on Integration Aspects, CAPE '91, Bordeaux, France, 10-12 September 1991

edited by **G. Doumeingts, J. Browne** *and* **M. Tomljanovich**

1991 xvi + 790 pages
Price: US $ 141.00 / **Dfl.** 275.00
ISBN 0-444-89159-5

Protocol Specification, Testing and Verification, XI

Proceedings of the IFIP TC6/WG6.1 Eleventh International Symposium, Stockholm, Sweden, 18-20 June 1991

edited by **B. Jonsson, J. Parrow** *and* **B. Pehrson**

1991 xvi + 366 pages
Price: US $ 95.00 / Dfl. 185.00
ISBN 0-444-89210-9

Information Security

Proceedings of the IFIP TC11 Seventh International Conference, Brighton, UK, 15-17 May 1991

edited by **D.T. Lindsay** *and* **W.L. Price**

1991 xii + 468 pages
Price: US $ 110.50 / Dfl. 215.00
ISBN 0 444-89219-2

Object-Oriented Databases: Analysis, Design & Construction (DS-4)

Proceedings of the IFIP TC2/WG2.6 Working Conference, Windermere, UK, 2-6 July 1990

edited by **R.A. Meersman, W. Kent** *and* **S. Khosla**

1991 xiv + 512 pages
Price: US $ 113.00 / Dfl. 220.00
ISBN 0 444-88929-9

High Speed Networking, III

Proceedings pf the IFIP TC6/WG6.4 Third International Conference, Berlin, Germany, 18-22 March 1991

edited by **0. Spaniol** *and* **A. Danthine**

1991x + 328 pages
Price: US $ 89.50 / Dfl. 175.00
ISBN 0 444-89197-8

Collaborative Work, Social Communications and Information Systems

Proceedings of the IFIP TC8 Conference, Helsinki, Hanasaari, Finland, 27-29 August 1991

edited by **R.K. Stamper, P. Kerola, R. Lee** *and* **K. Lyytinen**

1991 xvi + 386 pages
Price: US $ 100.00 / Dfl. 195.00
ISBN 0 444-89211-7

Object Oriented Approach in Information Systems

Proceedings of the IFIP TC8/WG8.1 Working Conference, Quebec City, Canada, 28-31 October 1991

edited by F. **van Assche, B. Moulin** *and* **C. Rolland**

1991 x + 432 pages
Price: US $ 107.50 / Dfl. 210.00
ISBN 0 144-89209-5

Support Functionality in the Office Environment

Proceedings of the IFIP TC8/WG8.3/WG8.4 Working Conference, Canterbury, Kent, UK, 9-12 September 1991

edited by **A.A. Verrijn-Stuart, H.G. Sol** *and* **P. Hammersley**

1991 viii + 284 pages
Price: US $ 79.50 / Dfl. 155.00
ISBN 0 444-89223-0

ELSEVIER SCIENCE PUBLISHERS OFFERS A 50% DISCOUNT TO INDIVIDUAL MEMBERS OF IFIP SOCIETIES...
SEE OVERLEAF FOR ORDER INFORMATION

CONDITIONS FOR THE 50% DISCOUNT ON IFIP PUBLICATIONS

1. Bona-fide individual researchers who are members of IFIP member societies are entitled to purchase copies of IFIP Publications at 50% discount off the list price.
2. No discounts are given if the book(s) ordered is not an iFIP computer science publication from North-Holland.
3. Discounts are not applicable to orders from libraries, institutions, companies, etc.
4. Orders at these special discounts must be submitted using the order form below.
5. In all cases the discounts refer to pre-paid orders from personal funds.

SPECIAL DISCOUNT ORDER FORM FOR IFIP PUBLICATIONS

Send this form (or a photocopy) to:

Elsevier Science Publishers BV
Imprint: North-Holland
Attn: Petra van der Meer
P.O. Box 103 1000 AC Amsterdam, The Netherlands

Yes, please send me ..... copy(ies) of	List price	Less 50% Discount	Discount Price

US $ prices are valid only in the USA and Canada. In all other countries the Dutch Guilder (Dfl.) price is definitive. Customers in The Netherlands, please add 6% BTW. In New York State, please add applicable sales tax.
No postage will be added to prepaid book orders. ***All*** *prices are subject to change without prior notice.*

I am a member of the following IFIP Member Society:

My membership number is:

___ **Payment enclosed:**
___ (Bank Draft/Eurocheque/International Money Order/Postal Cheque).

Charge my credit card: ❑ Access ❑ Eurocard ❑ MasterCard ❑ American Express ■ VISA

Card no. Valid until

Name

Address

Date

Signature

407\B \ IFDec.91

STRATEGIC PLANNING BY TC8

*By Prof. Gordon Davis (USA)**

[Last year, *Prof. Gordon Davis* (USA), chairman of IFIP's Technical Committee on Information Systems (TC8), wrote the following report on strategic planning within TC8. Although it is not "news," it is of sufficient general interest to the **IFIP** community that we reprint it here. — Ed.]

Under the fine leadership of the past TC8 chairmen, TC8 and its working groups have been instrumental in promoting worldwide scientific and practitioner interaction in the domain of information systems. There are now a number of new organizations that are related to the same domain. The strategic issues are the role and direction for TC8 in a world with many organizations.

At the 1990 meeting of the TC8 National Representatives in Vienna on June 9-10, much of the time was devoted to strategic planning. The planning looked at how TC8 differs from other TCs, what TC8 is especially qualified to do, and how TC8 should work. This report was assisted by notes taken by P. *Lockemann,* the German National Representative to TC8.

Distinctive Characteristics of TC8

The issue was what sets TC8 apart from other TCs. The essence of the discussion was that participants in many TCs *use* the following, **but** TC8's unique domain is as a *provider* (through research, concepts, discussion, reports, and practical direction) of

- methodologies for information system requirements and design
- methodologies for organizational analysis
- organizational and technical platforms supporting analysis and design
- support systems for analysis, decisions, planning, and executive management
- office systems analysis and design methods

Since many functions and fields of work represented in **IFIP** by other TCs apply these methods, methodologies, and systems solutions, TC8 should actively seek and develop links to these users and similar users outside IFIP.

In some cases, TC8 has a unique role in **IFIP** as provider for some application areas. If so, TC8 will explore and develop the field. An example is office systems and governmental information systems.

Comparative Advantage of TC8

There are many groups operating more or less within the general domain of TC8. The comparative advantage of TC8, which gives it a unique role, is its ability to reach out to a *broad audience* and organize conferences and workshops with strong institutional support, because we are a well-regarded international organization. Many groups are constrained by national borders or limited to a few countries. TC8 has an advantage in bringing together researchers and practitioners from both industrialized and less industrialized countries. New insights for both research and practice come from this broad participation.

Given this comparative advantage and profile of distinctive competence, the audience for TC8 must be researchers in information systems and inquisitive practitioners from both developed and less developed countries.

To impact this audience, TC8 must strive to *stimulate novel research* and to raise and *explore new issues.* There should always be an objective of making a *connection to practice,* encouraging a dialogue between researchers and practitioners, and transforming research results to practical use.

Achieving the Objectives of TC8

The work of TC8 is primarily done by the Working Groups. The TC8 National Representatives should operate as a planning and steering group to suggest topics, initiatives, and pioneering directions to the Working Groups. Task groups and Working Groups should be established as necessary.

In order to identify new and promising topics, TC8 as a planning and steering group should work on mechanisms for reaching out to scientists outside TC8. Because of its unique position, TC8 is well qualified to seek out and support new ideas related to information systems from a variety of sources. ■

• TC8 chairman

GREETINGS

At this time of holidays and the new year, we send greetings to all our **IFIP** friends and wish you joyful holidays and a year of health, happiness, and peace.

MODELING IN COMPUTER GRAPHICS

IFIP's Working Group on Computer Graphics (WG5.10) held a Working Conference on Modeling in Computer Graphics in Tokyo 8-12 April 1991. The program consisted of 20 papers, organized into 13 sessions. Eighty participants, including 14 from countries other than Japan, attended.

Two types of papers were presented: integration of a variety of models into a small set of models; and modeling of individual phenomena. The field of modeling in computer graphics is relatively new. Most of the Conference participants felt that it was very valuable and that further research in modeling is most important.

The Conference proceedings, edited by ***Prof. Tosiyasu Kunii (J),*** who also served as chairman of the International Program Committee, have been published by Springer-Verlag. ■

GA continued from page 10

The GA was adjourned, with many thanks to Mr. *Gudza* and *Mr.* Geoff *Fairall,* the **IFIP** delegate from Zimbabwe and secretary of the Computer Society of Zimbabwe, for the magnificent job the Society did in hosting the GA. The administration was excellent, the facilities were very comfortable, and the hospitality was especially warm. This was all the more impressive when one considers the small size of the Society. ■

IFIP CONGRESS '92 cont. from p. 2

and post-Congress tours to the world exhibition EXPO'92 in Seville.

Furthermore, *Mrs. Alonso* informed the **IFIP** General Assembly in September that their Majesties the King and Queen of Spain have accepted the Presidency of the Committee of Honor for the Congress.

For further information, please contact

IFIP Congress 92
Grupo Geyseco
Mauricio Legendre 4, 8°G
28046 Madrid, Spain
fax: 34 (1) 3234936
e-mail: ifip92@dit.upm.es ■

CALLS FOR PAPERS

WG10.3 Conf. on Programming Environments for Parallel Computing
6-8 Apr 92, Edinburgh
papers due: 1 Dec 91
contact: Dr. Rosemary Candlin
Dept. of Computer Science
The Univ. of Edinburgh
The King's Buildings
Edinburgh EH9 3JZ, U.K.
tel: 031 650 5137/5128
fax: 031 667 7209
e-mail: RC@cs.ed.ac.uk

WG8.4 Working Conf. on The Portable Office: Microprocessor Cards as Elements of Distributed Offices
9-12 Jun 92, Ottawa
papers due: 5 Dec 91
contact: Dr. Pierre Paradinas
RD2P, Hopital Calmette, CHR
Rue du prof. Jules Leclerc
59037, Lille, cedex, France
tel: +33-20 44 60 44
fax: +33-20 44 60 45
e-mail:RD2P@frcit181.bitnet

WG10.5 Workshop on Generation and Synthesis of Regular Logic Blocks in Silicon Compiler Environment
Mar 92, Grenoble
extended summaries due: 15 Dec 91
contact: Prof. G. Saucier
INPG - CSI
38031 Grenoble cedex, France
tel: (33) 76 87 21 95
fax: (33) 76 50 34 21

IFIP Congress '92
7-11 Sep 92, Madrid
papers due: 10 Jan 92
contact: **IFIP** Congress '92
Grupo Geyseco
Mauricio Legendre 4, 8 °G
28046 Madrid, Spain
fax: 34 (1) 3234936
e-mail: ifip92@dit.upm.es

Eighteenth Euromicro Conf. Software **and Hardware: Specification and Design — EUROMICRO 92**
14-17 Sep 92, Paris
papers due: 30 Jan 92
contact: EUROMICRO
Attn. Mrs. C. Snippe-Marlisa
P.O. Box 2346
7301 EA Apeldoorn, The Netherlands
tel: +31-55-557372
fax: +31-55-557393

Third **IFIP** Working Conf. on Dependable **Computing for Critical Applications — DCCA3**
14-16 Sep 92, Mondello, Sicily
papers due: 31 Jan 92
contact: Dr. Carl E. Landwehr
Code 5540
Naval Research Laboratory
Washington, DC 20375-5000, U.S.A.
tel: 1 (202) 767-3381
fax: 1 (202) 404-7942
e-mail: landwehr@itd.nr.navy.mil

New IFIP Bulletin

The newly revised ***IFIP*** *Information Bulletin* (number 23) is now available from the Secretariat.

FUTURE IFIP MEETINGS

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

Council	2-6 Mar 92	Trondheim, Norway
GA	11-15 Sep 92 (adjacent to **IFIP** Congress '92)	Madrid
GA	Sep 94 (adjacent to **IFIP** Congress '94)	Hamburg

TECHNICAL COMMITTEE AND WORKING GROUP MEETINGS*

TC2	14-15 Aug 92	Ellivuori, Finland
WG2.1	late 91 or early 92	Rio de Janeiro
	Sep 92	Germany
WG2.2	Mar 92 (with State-of-the-Art seminar)	Bombay
WG2.4	Mar 92 (with IEEE conf.)	London
WG2.6	Nov 92	Melbourne
WG2.7	Aug 92 (with conf.)	Ellivuori, Finland
WG2.8	13-17 Jan 92	Santa Fe, New Mexico
	31 Aug-4 Sep 92 (tent.)	Oxford, U.K.
TC3	5-6 Sep 92 (before **IFIP** Congress '92)	Madrid
	Jan 93	Mexico
	28-29 Aug 93	Birmingham, U.K.
	26-27 Aug 94	Hamburg
	22-29 Jul 95	Birmingham, U.K.
WG5.3	24-26 Jun 92 (with PROLAMAT conf.)	Tokyo
TC6	20-21 Mar 92	Helsinki
	24-25 Sep 92	Nice
	Mar 93 (with conf.)	Capetown
	15-16 Oct 93	Sofia
WG6.1	4-8 May 92 (with conf.)	Florence
	or May-Jun 92	Orlando
WG6.5	22 May 92 (with conf.)	Vancouver, Canada
TC8	5-6 Sep 92 (before IFIP Congress '92)	Madrid
WG8.1	13-15 Apr 92 (with conf.)	Alexandria, Egypt
WG8.2	15 Dec 91	New York
TC9	5-6 Sep 92 (before **IFIP** Congress '92)	Madrid
WG9.6	7 Mar 92	U.K. or Brussels
TC 10	7 Jan 92	Lyngby, Denmark
	8-10 Sep 92 (with **IFIP** Congress '92)	Madrid
WG 10.4	Feb 92	Hawaii
	10-13 Jul 92	Cap Cod, Massachusetts
	Feb 93	Captiva, Florida
	Jun 93	Toulouse region, France
WG10.5	22 Mar 92	Dresden
	6 Sep 92	Hamburg
TC 11	25-26 May 92 (after **IFIP/SEC'92)**	Singapore

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

Will TC and WG chairmen kindly keep the Secretariat advised of the dates and locations of their future administrative meetings and also send a copy of the minutes to the Secretariat.

WG2.1 Working Conf. on Engineering for **Human-Computer Interaction**
10-14 Aug 92, Ellivuori, Finland
papers due: 1 Feb 92
contact: Joelle Coutaz
Laboratoire de Genie Informatique
c/o IMAG Campus
B.P. 53X
F-38041 Grenoble Cedex, France

Thirteenth SIM/TIMS/ACM/IFIP Intl. Conf. on **Information Systems**
13-16 Dec 92, Dallas
papers **due:** 9 Mar 92
contact: Dr. Joyce Elam
Decision Sciences and Information Systs.
Florida International Univ.
University Park
Miami, FL 33199, U.S.A.
tel: 1 (305) 348-2719
fax: 1 (305) 348-3278
e-mail: ELAMJ@SERVAX

Thirteenth IFORS Conf. on Operations Research **— IFORS 93**
12-16 Jul 93, Lisbon
abstracts due: 1 Apr 92
contact: Secretariat of IFORS 93
Faculdade de Economia
Universidade Nova de Lisboa
Travessa Estevão Pinto
1000 Lisboa, Portugal
fax: (351) **(1)** 387 1105

Fifth **IFIP** Conf. on Computer Applications in Production **and Engineering — CAPE '94**
25-27 Aug 94, Hamburg
extended abstracts due: 30 Jun 93
contact: CAPE '94
c/o Congress Centrum Hamburg
Congress Organisation
P.O. Box 30 24 80
W-2000 Hamburg 36, Germany
tel: 040 / 35 69 - 22 44
fax: 040 / 35 69 - 23 43
telex: 212609 ■

National Abbreviations Used in Newsletter

AUS	Australia	F	France	NL	The Netherlands
BG	Bulgaria	GB	United Kingdom	S	Sweden
CDN	Canada	H	Hungary	SEARCC	South East Asia Regional Computer Confederation
CH	Switzerland		Italy	SF	Finland
CS	Czechoslovakia	IND	India	SGP	Singapore
D	Germany		Ireland	USA	U.S.A.
DK	Denmark	J	Japan	ZW	Zimbabwe
E	Spain	N	Norway		

CALENDAR OF EVENTS

(continued from page 16)

Event	Date	Location	Sponsored by
Fifth Work. Conf. on *Engineering for Human-Computer Interaction*	10-14 Aug 92	Ellivuori, Finland	IFIP WG2.7
Seventh Conf. on *Dynamic Modelling of National Economies*	18-20 Aug 92	Beijing	IFAC/IFORS IIASA IFIP
Eleventh IAPR Intl. Conf. on *Pattern Recognition*	30 Aug-3 Sep 92	The Hague	IAPR
Seventh World Congress on *Medical Informatics — MEDINFO '92*	6-10 Sep 92	Geneva	IMIA
IFIP Congress '92 — Twelfth World Computer Congress	7-11 Sep 92	Madrid	IFIP
Work. Conf. on *Dependable Computing for Critical Applications — DDCA* 3	14-16 Sep 91	Mondello, Sicily	IFIP WG 10.4/ TC11, IEEE CS TC on FTC, EWICS TC7
Eighteenth EUROMICRO Conf. on *Software and Hardware: Specification and Design — EUROMICRO'92*	14-17 Sep 92	Paris	EUROMICRO
ICCC '92	27 Sep-2 Oct 92	Genoa	ICCC
Workshop on *Interfaces in Industrial Systems for Production and Engineering*	*?* Oct 92	Darmstadt, Germany	IFIP TC5/ WG5.2/5.3/5.7/5.10
Open Conf. on *Formal Description Techniques for Distributed Systems and Protocols — FORTE '92*	12-16 Oct 92	Lannion, France	IFIP WG6.1/ France Telecom, Conseil Regional, CNRS
Intl. Work. Conf. on *Semantics Issues for Interoperating Databases — DS-5*	16 Nov 92	Melbourne	WIP WG2.6/ La Trobe Univ.
Thirteenth Intl. Conf. on *Information Systems*	13-16 Dec 92	Dallas	SIM TIMS ACM IFIP
Work. Conf. on *Computational Techniques of Stochastic Programming*	*?* Feb 93	Seregelyes, Hungary	IFIP WG7.7/ IFAC
Conf. on *Feature Modelling and Recognition for CAD/CAM Systems*	*?* Feb 93	Valenciennes, France	IFIP WG5.3/ AFCET
Workshop on *Knowledge-Based Hybrid Systems in Manufacturing*	*?* Apr 93	Genoa	IFIP WG5.3
Ninth Intl. Conf. on *Computer Security — IFIP/SEC'93*	*? May* 93	Canada	IFIP TC11
Open Conf. on *Informatics and Changes in Learning*	7-11 Jun 93	Gmunden, Austria	**IFIP** TC3 (WG3.1 and 3.5)
Work. Conf. on *Computer-Based Training and Hypermedia in Vocational Education*	*? Jul* 93	Soest, Germany	**IFIP** WG3.4
Sixteenth Open Conf. on *System Modelling and Optimization*	5–9 Jul 93	Compiegne, France	**IFIP** TC7
Thirteenth IFORS Triennial Conf. on *Operations Research — IFORS '93*	12-16 Jul 93	Lisbon	IFORS
VLSI '93	? Jul 93	Grenoble	**IFIP** WG10.5
Work. Conf. on *Statistical Aspects of Stochastic Programming*	*?* Jul 93	Prague	IFIP WG7.7
Intl. Conf. on *Teleteaching '93*	20-25 Aug 93	Trondheim, Norway	IFIP TC3
Thirteenth IJCAII Intl. Joint Conf. on *Artificial Intelligence — IJCAII '93*	29 Aug-3 Sep 93	Chambery, France	IJCAII
Workshop on *Large-Scale Stochastic Programs: Applications and Solutions*	*?* Oct 93	Yalta, U.S.S.R.	**IFIP** WG7.7
Work. Conf. on *Software Engineering Education*	*?* Oct 93	Kowloon, Hong Kong	**IFIP** WG3.4
Conf. on *Network Information Processing Systems*	12-14 Oct 93	Sofia	**IFIP** TC6/Bulgarian Acad. of Sci.
IFAC World Congress '93	*?* Dec 93	Sydney	IFAC
Workshop on *Stochastic Methods and Global Optimization*	*? Mar* 94	Lithuania	IFIP WG7.7
Fifth Conf. on *Computer Applications in Production and Engineering — CAPE '94*	25-27 Aug 94	Hamburg	**IFIP** TC5
IFIP Congress '94 — Thirteenth World Computer Congress	*29* Aug-2 Sep 94	Hamburg	**IFIP**
Workshop on *Expert Systems in Computer Integrated Manufacturing*	*? Dec* 94	Kiev	**IFIP** WG5.3
World Conf. on *Computers in Education — WCCE '95*	24–? Jul 95	United Kingdom	**IFIP** TC3/BCS
IFIP Congress '96 — Fourteenth World Computer Congress	Sep 96	Canberra	**IFIP**
Thirteenth *IFAC World Congress*	*?* Dec 96	San Francisco	IFAC

Please see page 14 for schedule of IFIP administrative meetings.
The IFIP Secretariat can furnish details of most of the events listed.

CALENDAR OF EVENTS

Event	Date	Location	Sponsored by
Twelfth Annual Intl. Conf. on *Information Systems — ICIS'91*	16-18 Dec 91	New York	ICIS/SIM, TIMS, ACM **IFIP** TC8
Intl. Workshop on *Designing Correct Circuits — DCC '92*	6-8 Jan 92	Lyngby, Denmark	**IFIP** WG10.5/WG10.2
Workshop on *Broadband Communications — BROADCOM*	20-22 Jan 92	Estoril, Portugal	**IFIP** TC6/API
Intl. Seminar on *Formal Description of Programming Concepts*	17-28 Feb 92	Bombay	**IFIP** WG2.2/Tata Inst.
Work. Conf. on *Stochastic Programming: Stability and Numerical Methods*	*? Mar* 92	Wendisch-Rietz, Ger.	IFIP WG7.7/ Humboldt Univ.
Work. Conf. on *Low Quality Information*	11-13 Mar 92	Montpellier, France	**CRIM/IFIP** WG12.3 INRIA, USTL
Fourth Intl. Conf. on *Information Networks and Data Communication — INDC '92*	16-19 Mar 92	Espoo, Helsinki	**IFIP** TC6
Intl. Work. Conf. on *Global IT Explosion: Opportunities and Risks for Developing Countries*	23-25 Mar 92	Nairobi	**IFIP** WG9.4/ PC World Africa
Intl. Workshop on *Configurable Distributed Systems — WCDS*	25-27 Mar 92	London	IEE/ **IFIP** WG6.6, WG2.4, U.S. Office of Naval Research
Workshop on *Generation and Synthesis of Regular Logic Blocks in Silicon Compiler Environment*	*?* Mar 92	Grenoble	**IFIP** WG10.5
Work. Conf. on *Programming Environments for Parallel Computing*	6-8 Apr 92	Edinburgh	**IFIP** WG10.3/ BCS PPSG GI/ ITG-PARS
Intl. Work. Conf. on *Information-Decision-Action Systems in Complex Organizations*	6-8 Apr 92	Oxford	IEE/ **IFIP** WG8.3
Intl. Symp. on *Latin American Theoretical Informatics — LATIN'92*	6-10 Apr 92	Sao Paulo, Brazil	Inst. de Matematica e Estatistica/ **IFIP** SGFCS ACM, EATCS, IEEE, TCMTC, CLEI, SBC
Work. Conf. on *Stochastic Optimization: The State of the Art*	12-19 Apr 92	Havana	**IFIP** WG7.7/ Univ. or Havana
Work. Conf. on *Information System Concepts: Improving the Understanding — ISCO*	13-15 Apr 92	Alexandria, Egypt	**IFIP** WG8.1
First Work. Conf. on *Manufacturing in the Concurrent Engineering*	13-15 Apr 92	Tel-Aviv	**IFIP** WG5.3/5.2/SME, ITIM, IPICS, IPA CIRP
IEEE Intl. Conf. on *Computer Languages*	27-30 Apr 92	San Francisco	IEEE/ **IFIP** TC2
Intl. Seminar on *Advanced Technologies in Production Management Systems — ATPMS '92*	5-8 May 92	Beijing	**IFIP** WG5.7/CEAS-CIE MIAI-CMES
Work. Conf. on *Upper-Layer Protocols, Architectures, and Applications '92*	20-22 May 92	Vancouver, BC, Canada	**IFIP** WG6.5
Seventh Symp. on *Information and Control Problems in Manufacturing — INCOM '92*	25-28 May 92	Toronto	IFAC/ **IFIP** TC5
Eighth Intl. Conf. on *Computer Security — IFIP/SEC'92*	27-29 May 92	Singapore	**IFIP** TC11
Conf. on *Measurement & Modelling of Computer Systems — SIGMETRICS 92*	1-5 Jun 92	Newport, Rhode Island	ACM SIGMETRICS/IFIP WG7.3
Work. Conf. on *Boundary Control and Boundary Variations*	3-5 Jun 92	Sophie-Antipolis, France	IFIP WG7.2/ CMA-Ecole des Mines
Fifth Symp. on *Man-Machine Systems*	9-11 Jun 92	The Hague	IFAC/ **IFIP** WG5.2/10 IFORS
Work. Conf. on *The Portable Office: Microprocessor Cards as Elements of Distributed Offices*	9-12 Jun 92	Ottawa, Ontario	**IFIP** WG8.4
Twenty-fourth Intl. Seminar on *Manufacturing Systems*	11-12 Jun 92	Copenhagen	CIRP/ **IFIP** TC5
Work. Conf. on *The Impact of Computer-Supported Technologies on Information Systems Development*	15-17 Jun 92	Minneapolis	**IFIP** WG8.2
Eighth Intl. Conf. on *Software for Discrete Manufacturing — PROLAMAT '92*	24-26 Jun 92	Tokyo	**IFIP** WG5.3/ IFAC JSPE IPSJ
Summer School on *Formal Methods for VLSI Design*	29 Jun-3 Jul 92	Lyngby, Denmark	IFIP WG10.5/2
Intl. Workshop on *Comparison of Qualifications and Certification of Information Technology Professionals*	8-10 Jul 92	Singapore	**IFIP** WG3.4
Work. Conf. on *Professional Development of IT Professionals*	13-17 Jul 92	Singapore	**IFIP** WG3.4/ Sing. Comp. Soc.

(continued on page 15)

IFIP Congress '92 — 12th World Computer Congress	7-11 Sep 92	Madrid	**IFIP**
IFIP Congress '94 — 13th World Computer Congress	29 Aug-2 Sep 94	Hamburg	**IFIP**
IFIP Congress '96 — 14th World Computer Congress	Sep 96	Canberra	**IFIP**

Please see page 14 for schedule of **IFIP** administrative meetings.
The **IFIP** Secretariat can furnish details of most of the events listed.