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International Federation for Information Processing

Editor:
Dr. Jack L. Rosenfeld

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GENERAL ASSEMBLY MEETS IN TOKYO

Goldsworthy Chosen as President-Elect

The IFIP General Assembly (GA) met in Tokyo 4-7 September, preceded by meetings of the Council and several IFIP committees. The major actions taken were the election of vice-president Mr. Ashley Goldsworthy (AUS) as president-elect and the approval of several measures modifying IFIP's structure.

IFIP's Council and GA were welcomed by officials of the Information Processing Society of Japan (IPSJ): Messrs. Masanori Ozeki, Masumi Sakamoto, and Kiyoharu Tsuruta, and by Prof. Eiichi Goto, former IFIP vice-president. IFIP president Dr. Kaoru Ando (J) opened the meeting and described three areas in which he wishes IFIP to make greater efforts: increased scientific activity; closer relationships with developing countries through the IFIP Committee: Informatics for Development (ICID); and improvements to IFIP's structure to respond to changes in the world's information processing environment.

The first major order of business was the election of officers. Mr. Goldsworthy was chosen as president-elect. His term as president will begin following the September 1986 GA meeting in Dublin. (A biography of Mr. Goldsworthy is on page 8 of the June 1985 ***IFIP*** *Newsletter.)* Mr. George Glaser (USA) was elected to a second term as vice-president, and IFIP trustee Mr. Graham Morris (GB) was selected to complete Mr. Goldsworthy's term as vice-president, which expires in 1986. Trustees Mr. Aage Melbye (DK) and Prof. Ping-Xin Guo (PRC) were re-elected, and Prof. Alex Verrijn-Stuart (NL) was also elected trustee.

IFIP's Future

Two reports were presented concerning the future direction of IFIP. Mr. Morris, chairman of the Task Force on Restructuring, presented its report, and the GA adopted several of the measures suggested in the report. These are described more fully in *GA Modifies* ***IFIP*** *Structure* on page 4. IFIP Honorary Member Dr. Richard Tanaka (USA), chairman of the Long Range Planning Committee, presented an initial report concerning IFIP's selection of technical areas in which to be involved. The article *Long Range Planning Committee Report* on page 4 covers this. Although the scope

continued on page 3

CONTENTS

General Assembly Meets in Tokyo 1
VLSI 85 1
National Abbreviations 2
GA Modifies IFIP Structure 4
Long Range Planning Comm. Report 4
Information Processing Soc. of Japan 5
Prof. Dr. Heinz Zemanek 6
IFIP Finances 6
Woman's Role in Information-Oriented Society 7
PROLAMAT 85 8
Preliminary Congress Program 8
FIACC Meeting in Oslo 9
Hollerith Honored 9
New IFIP Publications 9
Changes in IFIP 10
Calls for Papers 11
Future IFIP Meetings 11
Calendar of Events 12

VLSI 85

IFIP's Technical Committee on Digital Systems Design (TC10) and its Working Group on Very Large Scale Integration—VLSI (WG10.5) sponsored a conference *VLSI 85* in Tokyo 26-28 August. Nearly 400 registrants attended this major IFIP conference. Dr. Egon Hörbst (D) was Program Committee chairman, Mr. Hajime Sasaki (J) was chairman of the Organizing Committee, and Prof. Tohru Moto-oka (J) was general chairman.

The major topics of *VLSI 85* were VLSI Architecture, Impact of Technology on Design and Architecture, Novel Techniques for CAD, Design Methodology and Theory, New Applications, and State-of-the-Art CAD Tools. Dr. Ulrich Lauther (D) received the Best Paper Award for *Channel Routing in a General Cell Environment.*

An interesting paper by Mr. Michael Newman (USA), *Is WSI [Wafer Scale Integration] Too Big,* combined a summary of how redundancy can be used to achieve larger degrees of integration, with a mathematical analysis for a specific example. Following are excerpts from his paper. *

Wafer Scale Integration

Redundant logic has been used to achieve Wafer Scale Integration (WSI), in an attempt to make the fabrication of full wafer components possible. The traditional argument for the use of full wafer parts is that if we can put many functions on a single wafer, it will be cheaper and faster. This is justified with two observations that

continued on page 2

VLSI 85 continued from page 1

are true for a comparison of conventional VLSI parts with medium-scale integration (MSI) parts. First, that on-chip delays are shorter than off-chip delays (2.5 to 10 times as fast). The second observation is that VLSI is cheaper per function than MSI (as much as 10 times). Recent work shows that these observations do not directly apply to the comparison of full wafer parts with VLSI. However, through the use of redundant logic,.cheaper and/or larger parts than VLSI are still possible.

The nature of present chip fabrication technology is such that there are defects on virtually every wafer. In general, each defect is a local phenomenon, affecting only the structures in its immediate area. Any defect makes a part bad, because the structure of the chip design requires all of its components to work. But almost any defect can be locally circumvented with additional logic. Parts can be built with redundant logic which permit the masking of any particular defect. This technique is common in the fabrication of random access memories (RAMs), where extra rows and columns are used to mask defects. The following discussion describes techniques appropriate to masking defects in irregular logic.

Triple Modular Redundancy

Triple Modular Redundancy (TMR) is a technique which is capable of providing redundancy to any logic structure. This is done by dividing the logic into stages, providing three copies of the logic at each stage, and providing for a majority vote on the results. Determining how often voting should occur or, conversely, how large the functional blocks should be is a complex trade-off. The more often voting occurs, the better the yields will be. However, more frequent voting requires a higher overhead for voters and thus less useful logic. The chief advantages of TMR are that it can be implemented with no changes to the fabrication process and that it requires no specialization to each part. It is possible to use TMR to create a redundant logic structure for all types of logic, especially large microprocessors. The major problem with using TMR is the amount of overhead required. An overhead of 3.6 times nonredundant logic is typical. Overhead also occurs in the design time: the voters and data flow between redundant blocks must be designed, at an additional cost. Also, TMR adds a modest amount to the cycle time.

Another technique used to avoid defects is block substitution. This technique supplies spare copies of functional blocks. An extra copy is used when one of the initial blocks is defective. This technique is most effective when a part is composed of copies of a subfunction. The advantages of block substitution include the relatively modest overhead and the ease with which this can be added to existing designs. An overhead factor of 20% can double the yield. A particular problem with this technique is that it is not appropriate for all logic structures. In particular, it would work poorly, if at all, for a large microprocessor chip.

Systolic Arrays

A systolic array uses many identical parts, which can be substituted for each other. The array is programmed to use only working elements. A particularly interesting technique has been developed in which the systolic array is self-programming at power-up time. An array element performs testing to find a working neighbor. That neighbor does the same, until a network of adequate size is built up. This network is then used as a storage ring, similar to a charge-coupled device (CCD) memory. The systolic array is efficient in area, as is block substitution. The systolic array is also efficient in design time, because each block is of the same design. As with block substitution, the problem is that not all functions are amenable to an implementation in systolic silicon.

The author described his specific analysis of TMR and then summarized his conclusions, as follows.

Using redundant logic can be cost-effective. In fact, a cost of a half to a quarter of the conventional VLSI cost is available. Simple TMR will not be successful at building full wafer parts. This study, in combination with other results, shows that WSI is too ambitious a goal. A full wafer will give 20 times the functionality of a conventional custom part. Instead of trying to build a full wafer, one should use TMR to build parts of roughly 4 times the complexity of large, nonredundant parts. These can be built at similar or perhaps lower costs than large, nonredundant VLSI parts. ■

IFIP NEWSLETTER

Editor:
Dr. Jack L. Rosenfeld
IBM Corporation
Thomas J. Watson Research Center
P.O. Box 218
Yorktown Heights, NY 10598, USA
tel. 1 (914) 945-2097
telex (023)137456 ibmresrch ykhg

Published quarterly by-
IFIP Secretariat
3, rue du Marché
CH-1204 Geneva, Switzerland
tel. 41 (22) 28 26 49
telex 428 472 ifip ch

CORRESPONDENTS
TC5 L.H. Fransson
TC6 D. Khakhar

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National Abbreviations Used in Newsletter

A	Austria	DK	Denmark	NL	The Netherlands
AUS	Australia	F	France	P	Portugal
BG	Bulgaria	GB	United Kingdom	PRC	China
CDN	Canada		Italy	SU	U.S.S.R.
D	Fed. Rep. of Germany	IRL	Ireland	USA	U.S.A.
DDR	German Demo. Rep.		Japan	ZA	South Africa

GA MEETS continued from page 1

of the two committees overlapped to some extent, the former was primarily concerned with changes that could be made immediately to IFIP's structure, to make it more responsive to new developments in information processing technology; whereas, the latter committee is more concerned with identifying areas in which IFIP should be active, and how IFIP can best enter new areas.

Reports were presented concerning IFIP's activities for developing nations and its relationship with the United Nations Economic, Scientific and Cultural Organization (Unesco). As a result of continuing discussion with Unesco officials, the prospect for increased Unesco sponsorship of IFIP activities and greater involvement by IFIP in Unesco activities seems likely. At the time of the GA meeting, Unesco' was preparing its budget for 1986 and 1987, and Technical Committee (TC) chairmen were studying the items in Unesco's Intergovernmental Informatics Program budget to determine how IFIP could play a role. As it becomes available, more information on this topic will be printed in the ***IFIP*** *Newsletter.*

Technical Committee Reports

A significant amount of time was devoted to the reports of IFIP's TCs. A large number of technical meetings have been held, and many publications have been printed. Of special note was the creation of Working Groups (WGs) in the following areas: Office Systems (WG8.4), Security Management (WG11.1), Security in Office Automation (WG11.2), and Crypto Management (WG11.4). Also, a report was heard from the International Medical Informatics Association of IFIP (IMIA). Concern was expressed by the GA over IMIA's financial report. Affiliate Members also presented their reports. With regard to IFIP's membership in the Five International Associations Coordinating Committee (FIACC), it was noted that only 9% of IFIP's activities are co-sponsored with other FIACC members; TC chairmen should be aware of the opportunities for co-sponsorship. (An article about FIACC appears on page 9.)

The following actions and discussions also ensued. It was noted that the Centro Latinoam ericano de Estudios en Informatica (CLEI) is not yet officially a member of IFIP, despite the GA vote in September 1984 to admit it to membership, because CLEI has not sent a representative to a GA meeting and paid its dues, as required by the IFIP By-Laws. Also, the dues of two countries are in arrears, and their memberships will be terminated if the back dues are not received by 1 January 1986. On the positive side, the Icelandic Society for Information Processing was admitted as a Corresponding Member.

IFIP General Assembly Hard at Work in Tokyo

Fiscal Matters

Treasurer Mr. Owen Dalton (IRL) presented a financial report indicating that IFIP's income and expenses should be approximately equal for 1985, and that IFIP is in a healthy state. More details are given in ***IFIP*** *Finances* on page 6.

In order to clarify IFIP's attitude toward taking positions on political issues, the GA recommended the inclusion in IFIP statutes of a statement to the effect that ***IFIP*** *does not take any account of the political, social, or economic aspects of its member societies, because* ***IFIP*** *is totally dedicated to the transfer of scientific and technical information and experience.*

Honorary Member Prof. Dr. Heinz Zemanek (A), who is preparing the IFIP 25th Anniversary Volume, announced that all the material has now been assembled, and that only some editing remains to be done. He also proposed an IFIP commission to collect material on the history of IFIP and of computing. The GA approved and appointed him head of the commission.

IFIP Congresses

Plans for Congress '86 in Dublin next September were aired. (See *Preliminary Program Available for Congress '86* on page 8.) The GA recommended that no pre-Congress tutorial program be held. The GA also requested the president to encourage greater emphasis on applications in Congress '89 by appointing members to that Program Committee who will stress applications. Trustee Mr. James Finch (CDN) reported for the Congress Site Selection Committee that four National Members have expressed interest in holding Congress '92 in their countries: Bulgaria, The Netherlands, the South East Asia Regional Computer Confederation (SEARCC), and Spain. The decision will be made by the 1987 GA.

The GA approved the production of an annual document comprising brief reports from each member society. This is intended to keep members informed of the activities and new initiatives of other members.

Publications Committee chairman Mr. Hans-Rainer Schuchmann (D) announced that the first volume in a series of IFIP State-of-the-Art Reports would be available in October: *Computer Integrated Manufacturing,* edited by Prof. Detlef Kochan (DDR). He expressed his concern that no further books of the series have yet been planned.

The GA meeting was adjourned with many thanks to the host society. The week in Tokyo was memorable for the very efficient administrative support provided by the IPSJ, as well as for the extensive hospitality provided. On 9 September, the IPSJ celebrated its 25th anniversary. That celebration is described in the article about IPSJ on page 5.

Future IFIP meetings are as follows:

10-14 Mar. '86 in Lisbon: Council and committees
11 Aug. '86 in Dublin (prior to Congress '86): GA and committees
Mar. '87 in Singapore: Council and committees
Sep. '87 in Budapest: GA and committees
Aug. '89 in San Francisco (prior to Congress '89): GA and committees ■

GA MODIFIES IFIP STRUCTURE

Specialist Groups Approved

The IFIP General Assembly (GA), at its September meeting in Tokyo, made certain modifications to IFIP's structure. These changes were proposed by a Task Group on Restructuring led by IFIP vice-president Mr. Graham Morris (GB). The GA voted to —

- establish *Specialist Groups* to handle new activities, with an individual or committee given responsiblity for supporting and managing the Specialist groups,
- establish the *Activity Development Board* to replace the Activity Planning Committee (APC), but with a different membership, and
- create a fourth vice-presidency.

The following material, taken from the Task Group report, gives the reasons for these actions.

***IFIP** has no natural home for activities concerned with many applications areas, and it is extremely slow at exploring and establishing new activities.*

Specialist Groups

We recommend that the term Specialist Group (SG) be applied to new groups concerned with applications and any other area of interest not effectively incorporated within any Technical Committee (TC). Initially such a group would be described as provisional and given a period of time (probably 2 to 3 years) to establish itself and either be confirmed as a permanent group (a TC, Working Group [WG], Special Interest Group, or a confirmed SG) or abandoned.

*In order to manage the creation and development of SGs, a Specialist Group Committee (SGC) should be formed, which would be roughly equivalent to a TC. Because of the likely diversity of the subject matter of the SGs, it would not be practicable to expect **IFIP** member nations to nominate national representatives to the SGC. Instead, it should consist of about 6 GA members with a wide spread of experience and with initiative and dedication. The chairmen of SGs could also become members of the SGC. The chairman of the SGC would be likely to be a council member. (Initially, the work of the SGC could be undertaken by a single individual.)*

*It is expected that a confirmed SG will have much greater autonomy than a WG. While **IFIP** will be responsible for its budget and may provide loans or grants, the SG will have freedom to recruit members as it sees fit and to charge membership fees and/or subscriptions to a newsletter.*

Activity Development Board

*The APC is currently responsible for the vital, central **IFIP** function of managing **IFIP's** technical activities. Although virtually all our technical work is carried out by TCs, their chairmen are not members of APC. The Task Group recommends the replacement of APC by an Activity Development Board (ADB). All TC chairmen will be members of the ADB, as will the chairmen of the SGC, Special Interest Groups (SIGs), Publications and Public Information Committees, and the Conference Officer. Affiliate Members will also be offered seats. The Board should be chaired by an **IFIP** vice-president. (In exceptional circumstances, the **IFIP** president may instead appoint as chairman a well qualified GA member who will then become an ex-officio member of the Executive Body.) Finally, the A DB will be completed by up to 6 GA representatives.*

Role of Vice - Presidents

*We have already proposed the appointment of a vice-president as chairman of the ADB. At present, vice-presidents play no special role in **IFIP's** affairs (other than as cognisant officers), and the Task Group believes that this should be changed in order to improve the management and direction of our affairs.*

The Task Group is of the view that the workload produced by the allocation of responsibilities to vice-presidents could be excessive, especially for the vice-president who must be chairman of the ADB. We recommend, therefore, that a fourth vice-president be elected to share these responsibilities.

The GA favored the principle of dividing administrative responsibilities among the vice-presidents but declined to adopt that specific recommendation of the Task Group, so as to give greater freedom to the IFIP president.

Past deliberations of the Task Group (see ***IFIP** Council Meets in Munich* on page 3 of the June 1985 ***IFIP** Newsletter* and *Task Group on Restructuring **IFIP*** on page 1 of the September 1984 issue) had also included plans for restricting voting in the GA and changing the roles of Affiliate Members and SIGs. These ideas were not included in the final recommendations.

LONG RANGE PLANNING COMMITTEE REPORT

The IFIP Long Range Planning Committee's preliminary report was presented to the General Assembly (GA) in Tokyo in September by Committee chairman and IFIP Honorary Member Dr. Richard Tanaka (USA). The Committee was created in March by IFIP president Dr. Kaoru Ando (J) at the Council meeting in Munich, to study the evolution of IFIP and to determine those technical areas in which IFIP should initiate activities or extend its present ones.

The report begins with a description of the evolution of IFIP and IFIP's role. It gives details of the changes that have taken place in IFIP. In discussing how IFIP might react to technological developments, the report says—

The underlying technology of information processing is changing rapidly. Generally, the Technical Committees (TCs) have reacted appropriately to changes within their specialty areas, partly because of the flexibility possible in appointing members of Working Groups (WGs). However, the TCs cannot be effective on topics which are outside their scope. It is the responsibility of the GA to establish new TCs or to charter relevant conference themes and, correspondingly, to de-emphasize activities which are no longer relevant.

Expanding technical activities by adding more TCs has surface appeal. But proliferating the number of TCs can also create a burden on national members, since a member must supply the resources for it to be represented on a TC. Not having full representation in every TC is not necessarily bad. If there is adequate and well

distributed membership in a TC, that TC can still be healthy. However, it would be undesirable if very many of the TCs had limited or unbalanced participation. This would imply some combination of inappropriate TC topics or too many TCs or a lack of support for the TC concept.

An alternative approach is to limit the number of TCs. This is the de facto approach that IFIP has been following. Although new TCs have been established in recent years, they have had to overcome an implicit barrier imposed by the concern for over-proliferation of TCs. Limiting the number of TCs, whether by fiat or by procedures, is an acceptable approach, but only if IFIP is able to maintain its priorities. This eventually means subtracting TCs at a rate equivalent to the rate at which TCs are created.

Disbanding TCs

Disbanding an existing TC is even more difficult than starting one. The Review Committee concept was meant to force a weeding-out process; in practice, it has not done so. And dissolving a TC is a slow process; a TC or WG needs time to wind down its affairs.

Limited and carefully selected additions of TCs, accompanied by a redirection or elimination of some of the existing TCs will serve IFIP's needs for several years. These changes will eventually result in an increase in the number of TCs. But if the number of TCs is large enough, it will be easier to weed some out or to implement mergers. To accomplish even this level of change, IFIP must install a serious and sustained approach which will force the dissolution or merger of TCs of lesser priority.

Recommendations

The Committee's report concluded with the following preliminary recommendations for IFIP actions. Given after each is the schedule suggested by the Committee.

- List the new technical areas of potential interest; select the topics of importance. *[Complete the selection process in less than one year.]*
- Perform critical reviews of existing technical activities. *[Initiate the reviews immediately, and complete the process within 3 years.]*
- Based on the reviews, redirect or disband the low priority activities. *[Initiate action immediately after each review.]*
- Assess the Congress program approach. *[Implement a new or revised approach for Congress '89.]*
- Organize regional conferences. *[Hold at least two new conferences within five years.]*
- Organize specialized conferences, and sustain the successful ones. *[Hold at least one new event per year.]*
- Organize joint conferences with outside organizations. *[As opportunities permit, hold conferences, but initiate at least one per year.]*
- Organize conferences in cooperation with affiliate societies. *[Raise the total of conferences with outside organizations and affiliates to an average of one and one half events per year.]*
- Expand the publications program. *[Commission at least two books per year in addition to Technical Committee and conference proceedings, and establish at least one new periodical before the end of 3 years.]*

At the GA meeting, the Committee conducted an informal survey of attendees to determine what technical areas they felt IFIP should stress in the future. The topics highest on the list were—

computer networking
office automation
character and image processing
expert systems and artificial intelligence
education
computer security ■

News from Member Societies:

INFORMATION PROCESSING SOCIETY OF JAPAN

The Information Processing Society of Japan (IPSJ) was established in April 1960, with the objective of promoting information processing science in Japan by providing means for exchanging ideas and experience on subjects of computer applications. IPSJ began with a membership of 800, but today the membership exceeds 20 000. The major activities of IPSJ are as follows:

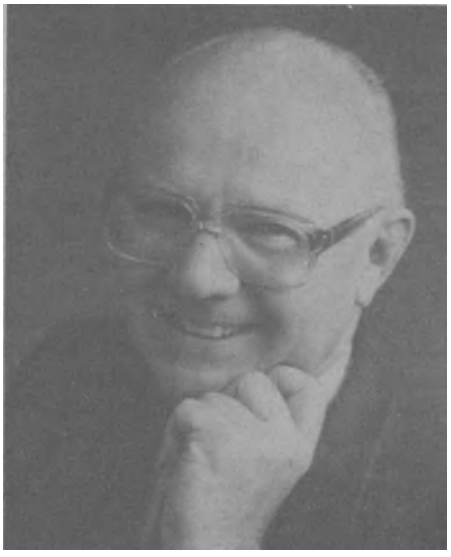
- to represent Japan in the IFIP General Assembly,
- to publish technical journals,
- to hold National Conferences twice a year (conferences with more than 1 000 submitted papers),
- to hold working conferences and symposia for its Working Groups, and
- to coordinate the Japanese National Committee for the International Standards Organization's Technical Committee for Information Systems.

The *17* Working Groups of IPSJ are: Natural Language, Database Systems, Artificial Intelligence and Knowledge Engineering, Symbol Manipulation, Software Engineering, Microcomputers, Computer Architecture, Operating Systems, Computer Vision, Design Technology, Distributed Processing Systems, Japanese Text Input System, Computer Graphics and Man-machine Communication, Numerical Analysis, Software Foundations, Information Systems, and Programming Languages.

IPSJ publishes the English language *Journal of Information Processing* and Japanese language *Transactions of IPSJ* and *Joho Shori,* a monthly journal.

Twenty-five years ago, the establishment of IPSJ was initiated and accelerated by the creation of IFIP. Today the number of IFIP related activities is very high. IPSJ hosted the first part of IFIP Congress '80 in Tokyo (followed by the second part in Melbourne). IPSJ maintains a National Committee for IFIP, in order to strengthen and further active cooperation with IFIP. In August, two major conferences sponsored by IFIP were held in Tokyo: *VLSI 85* and *Computer Hardware Description Languages and their Applications (CHDL 85),* and early in September, IPSJ played host to the IFIP Council and General Assembly meetings.

IPSJ celebrated its 25th Anniversary in September at the time of its Fall National Conference. A special one-day seminar was held on 9 September to commemorate the Anniversary. Dr. Kaoru Ando (J), IFIP president, conveyed IFIP's greetings to IPSJ, and two speakers from IFIP were invited to address this meeting: Prof. Dines Bjørner (DK), Program Committee chairman for IFIP Congress '86, who spoke on *Software Engineering—Looking into the Future Development of Software Engineering Technologies,* and Dr. Karen Duncan (USA), IFIP Publications Officer, who spoke on *The Role of Women in the Information-Oriented Society.* (A summary of Dr. Duncan's talk is on page 7.) ■



Prof. Dr. Heinz Zemanek, an Honorary Member and past president of **IFIP,** was born in Vienna in 1920. His formal education, from elementary school to university, all took place in Vienna. After his military service, he started an electrical engineering company, but he soon returned to the University of Technology in Vienna in 1947 as an assistant professor. He worked on digital communication technology, cybernetic models, information theory, and switching algebra, slowly preparing for computer development.

From 1954 to 1959 he gathered a group of students to develop one of the earliest fully transistorized computers in Europe, the *Mailüfterl.* This enterprise, having no official university backing, was supported mainly by industry and banks. All transistors, e.g., were donated by a manufacturer. The European Research Office of the U.S. Army supported the early *Mailüfterl* application projects in compiler design, logical data processing, and attempts at software engineering. In parallel, a project aimed at a digitized vocoder, and several projects for post office automation were carried out.

IBM offered to establish a laboratory in Vienna centered around the *Mailüfterl* group and vocoder development, and in 1961 Prof. Zemanek moved his group there. A commercial voice-response system was the first product based on the laboratory's work (developed and completed in Germany, France, and the U.S.A.). The group slowly increased to 40 people, under Prof. Zemanek's leadership.

The main achievement from 1961 to 1976 was the formal definition of PL/I. The formal definition was written in the Vienna Definition Language, which was later extended to the Vienna Definition Method. An **IFIP** Working Conference in 1964 on Formal Language Description Languages helped initiate this definition method activity. (The Conference was the first of its type and served as a model for more than 100 subsequent conferences.)

In 1976 Prof. Zemanek was appointed IBM Fellow. His work aimed at a design theory, called *Abstract Architecture.* This work is still in progress.

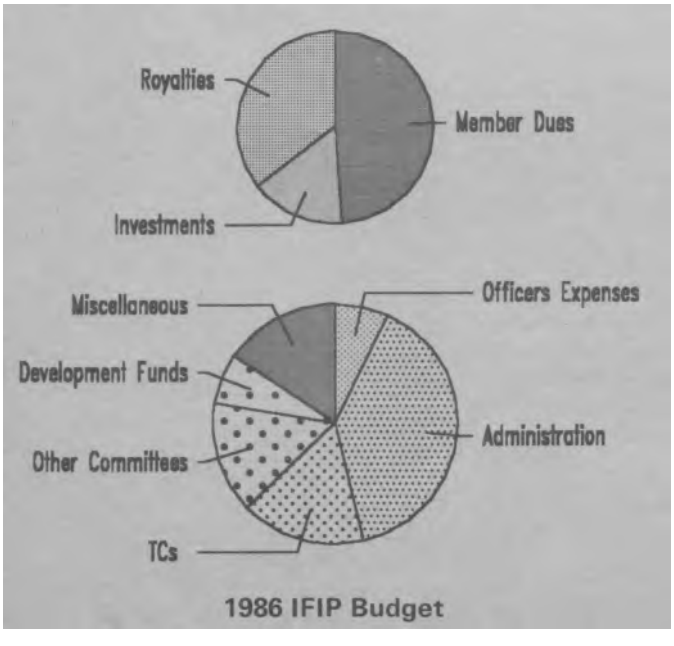
Prof. Zemanek has 360 publications to his credit (possibly more by the time this newsletter is printed), including seven books, and he has given innumerable talks at conferences and seminars. He has also received many awards. The most recent honor is the establishment by the Austrian Computer Society of the *Heinz Zemanek Prize* for Austrian computer scientists.

Prof. Zemanek's contributions to **IFIP,** as president from 1971-74 as well as in many other capacities, are summarized on page 3 of the September 1985 ***IFIP*** *Newsletter.* At present he is completing the editing of the 25th Anniversary Volume and heading an **IFIP** commission on the history of IFIP and of information processing.

Those who have had the pleasure of talking with Prof. Zemanek know him to be a man of many talents. Among his numerous interests are the 9th century Persian mathematician al-Khorezmi, the legend of the Seven Sleepers of Ephesos, and music, especially music played or composed by computer. ■

IFIP FINANCES

1986 Budget Approved



Where does **IFIP** get its funds? How does it spend them? How much does it spend? How are **IFIP** workers supported? Answers to some of these questions can be found in the 1986 budget, approved by the General Assembly (GA) at its September meeting in Tokyo. Other answers appear in the annual report of **IFIP** treasurer Mr. Owen Dalton (IRL).

IFIP's income comes from four major sources (listed in order of decreasing magnitude): members' dues, royalties, surpluses from Congresses and other conferences, and investments.

The annual dues range from 13 100 Sfr. for the U.S.A. and U.S.S.R., down to

1800 Sfr. These rates have been in existence since 1984. When the dues structure was established at the time of IFIP's founding, a decision was made to support the administrative expenses of IFIP with the dues. That principle is followed to this day. In practice, however, increases in dues have lagged several years behind increases in costs.

Royalties are an important source of income. They are derived from proceedings of IFIP Congresses and conferences, and from other technical publications. As the number of IFIP publications has increased over the years, and as the number of publications per year has increased, the proportion of IFIP income due to royalties has increased to approximately 36%.

Surpluses from Congresses and other IFIP meetings are also a major source of income. The amount varies widely from year to year and from event to event. For example, Congress '83 in Paris provided a surplus of 121 000 Sfr. The range has been from 12 000 Sfr. to 363 000 Sfr.

Finally, IFIP keeps its funds invested in bank accounts and securities and derives income from these investments. Funds are invested around the world in different currencies, to prevent major hardship to IFIP in case of problems with any one currency. At present, IFIP's assets total slightly more than one million Sfr. In recent years, the net worth of IFIP has been-580 thousand Sfr. (1980), 776 (1981), 976 (1982), 981 (1983), and 1088 (1984).

Expenses

Because IFIP is an organization run by unpaid volunteer workers, most of whose employers or societies reimburse their expenses, a large part of IFIP's budget is attributable to such administrative expenses as salaries, office expenses, cost of internal publications, and mailing charges. Beyond the Secretariat's expenses are costs of running the Technical Committees (TCs) and other IFIP committees. Also, IFIP grants money to TCs to support some conferences and to help attendees from developing countries attend meetings.

If we examine the budget, we find that the 1986 expense budget (705 000 Sfr.) is somewhat larger than the 1985 budget (593 000), which reflects the increasing activity of the Federation. Expenses exceed income (352 000) by a significant amount. In recent years, IFIP has deliberately operated with such unbalanced budgets yet shown surpluses, because substantial parts of the amounts budgeted have not been spent.

Support for IFIP Workers

IFIP volunteer workers include members of the GA, TCs, Working Groups, and committees. They incur expenses for travel, secretarial support, office costs, etc. In some instances, expenses may be paid by workers' national computer societies, governments, or employers; at the other extreme, some IFIP workers pay their expenses from their personal funds. Although expenses of officers, committee chairmen, and some others are included in IFIP's budget, the IFIP funds are generally not needed.

But the tangible costs represent only a small fraction of the expenses of supporting IFIP. More important is the time spent by the volunteer workers on IFIP activities. In some cases, IFIP workers' employers may be commercial enterprises or governmental agencies that treat participation in IFIP activities as part of their professional responsibilities. In other cases, IFIP workers are self-employed and work for IFIP at personal sacrifice. In any case, were it not for the support of member societies, employers, governments, and especially the workers themselves, IFIP's income could not begin to support all the work of the Federation.

WOMAN'S ROLE IN INFORMATION-ORIENTED SOCIETY

Dr. Duncan Addresses IPSJ

Dr. Karen Duncan (USA), IFIP Publications Officer, was invited by the Information Processing Society of Japan (IPSJ) to address its 25th Anniversary celebration on 9 September. The topic was *The Role of Women in the Information-Oriented Society*. She began her talk with her view of what the information society will look like. She then discussed progress in the status of women in the world and the role of women in computing in the U.S.A. She concluded her talk as follows:

What should be the role of women in an information-oriented society? Clearly, the information-oriented society is going to have a profound impact on women's roles—on their roles as mothers, as wives, and as wage-earning members of the workforce.

More Options for Women

Women will have more opportunity than ever before to choose options for themselves, because technology—in the home and out of it—has enabled women to take more control over their own lives. Women will also have greater opportunities to help shape their children's lives, through educational and recreational choices. But what kinds of choices are women going to make? What kinds of choices should they make? What choices are best for the society and the family, as well as for the individual woman?

It is unlikely, in the competitive environment of the near future, that any nation can afford ***not*** *to take advantage of the productive potential of half of its adult population. The economics of educating women for work they will perform for only a few years will not be reasonable or acceptable. It is up to us, who will be leading our countries into the information-oriented society, to find ways in which women can lead economically productive lives without sacrificing the traditional values of family, individual, and country.*

Having realized that women are needed as full partners in the information-oriented society, we are facing the question of how to encourage women to ***become*** *full partners. Changes in some aspects of the infrastructure of an information society will be needed. For example, it is not reasonable to expect women who enter the workforce to perform* ***two*** *full-time jobs while men continue to perform only one. Perhaps each adult can learn to care for him- or herself, and to share in personal and family care. Alternatively, a society of the future may define a new job category, the family caretaker, so that work in the home can be performed by a paid worker. Adequate child care is also a serious problem when all adult 'n the family must work. A society that children as a national resource for the future might want to provide readily available, high-quality day-care for its children. Finally, even such a simple change as keeping the shops open for more hours, for the convenience of workers, can ease the transition to a society in which most adults will be wage-earners.*

continued on page 8

WOMEN continued from page 7

With respect to women's use of computers in the information-oriented society, some problems have been encountered in the educational system. For the last 15 years, it was believed that if computer programming classes were made available to boys and girls alike, then boys and girls would take advantage of this opportunity in more or less equal numbers. But some studies have shown that the natural link between computer science and mathematics has allowed the traditional attitudes and problems that girls have with mathematics to carry over into computer science; even before the students go to college, the selection process that favors boys is already operating.

Early Computer Education

There is now a trend in the United States to begin computing classes as early as the first grade, in order to capture the interest of girls in computing before it is too late. The thought is that students can use computers early in their academic careers for word processing, artistic and creative endeavors, and games; thus, computers will become a natural part of girls' academic environments before they have a chance to develop negative associations of computers with sciences and mathematics. This is a simple theory and a social experiment that will require years to prove or disprove.

Some people believe that the patterns that make it difficult for girls to work with computers with the same freedom as boys are patterns that are set many years before they enter school. It is important that we study these matters and try to learn the answers. Otherwise, it will be very difficult to have an information-oriented society when nearly half of the adult population is not prepared to use computers, the tools of the information society.

I understand that the approach of introducing very young children to computers is being followed here in Japan. Plans exist for non-regular schools for parents and children at the primary school level, where families may go together and learn to use computers for drawing, games, word processing, and searching databases.

This seems like a good beginning, and I wish you well in your endeavors to bring the information society to the people. I'm sure it will lead you into years of prosperity, as men and women work together to build the information society. ■

PROLAMAT 85

Conference on Software for Discrete Manufacturing

*by Prof J.P. Crestin (F) **

From 11-13 June, 200 participants attended *PROLAMAT 85,* the 6th in a series of triennial meetings devoted to manufacturing automation. It was held in Paris, organized by IFIP's Working Group on Discrete Manufacturing (WG5.3) and the International Federation of Automatic Control (IFAC).

Forty-four papers from 12 countries were selected from the 200 submitted. In addition, three invited papers were presented during the opening and closing sessions, and four panel discussions were organized. Papers dealt with advances in computing methods, and techniques for discrete manufacturing, from machining to assembly. Discrete manufacturing includes manufacturing of all products except those made by continuous processes—mechanical parts and systems, electrical parts, furniture, clothes, etc.

Prof. J.P. Crestin (F), chairman of WG5.3, was chairman of the Program Committee, and Mr. M. Neuve Eglise (F) was chairman of the Organizing Committee. Proceedings are being published this year by North-Holland, edited by J.P. Crestin and J.R. McWaters.

* chairman of WG5.3

The name PROLAMAT originated at the first conference in 1969: *Programming Languages for Machine Tools.* Since then, the title has evolved to *Software for Discrete Manufacturing.* This change reflects the evolution of production automation as well as the interests of **IFIP** and IFAC.

In the 1960s, engineers and scientists involved in production automation were mainly interested in numerically controlled (NC) machine-tools and associated software: NC processors and post-processors, computer-aided planning, technological data bases, and direct and adaptive NC. Computer applications to manufacturing have rapidly developed: computer-aided drafting and design, scheduling, production planning and management, technical computations such as structural analysis and simulation, and robotics. Present trends are towards high-level man-machine communication, including realistic graphical output and interactive processing, and towards integration of software and hardware tools: integration of computer aided design (CAD) and computer aided manufacturing (CAM), of workshop planning and NC, and of robots and assembly subsystems planning. Artificial intelligence is becoming one of the prominent tools of that evolution. ■

PRELIMINARY PROGRAM AVAILABLE FOR CONGRESS '86

Artificial Intelligence Stressed

The preliminary program for the 10th World Computer Congress is now being distributed. It provides a wealth of information about **IFIP** Congress '86, to be held 1-5 September 1986 in Dublin, at Trinity College. The first **IFIP** Congress was held in Paris in 1959, and since then, these major **IFIP** events have been held around the world every three years.

The Congress will present 50 invited speakers with responders, 30 panels, and 90 contributed papers. The names of the invited speakers, responders, and panelists are listed in the preliminary program, along with the titles of the talks and panels. The speakers include many of the luminaries of the information processing community.

In addition to the technical program, there will be a major computer exhibit, an exhibition of books and instruments related to computing, and a computer art exhibit, as well as an extensive social program.

IFIP Congress '86 will differ from its predecessors in its stress on transferring awareness between different groups of participants: between researchers and developers, between consumers and scientists, and between other groups. For example, the Congress will attempt to transfer awareness of system design methods from developers to consumers.

continued on page 9

CONGRESS '86 continued from page 8

Another innovation of this Congress is the designation of responders to each invited paper. These people have been chosen for their viewpoints, which are in many cases divergent from those of the invited speakers. Exciting dialogues are expected.

New Program Areas

The program areas are also varied and different from those in prior Congresses, reflecting contemporary interests: Theoretical Computer Science, Programming Science and Methodology, Software Engineering, Computer Engineering, Distributed Systems, Information Systems, Artificial Intelligence, Computer Integrated Manufacturing, New Informatics Applications, and Informatics in a Developing World.

Artificial intelligence (AI) has gained worldwide interest in the past few years, both on the academic and the industrial sides. **IFIP** Congress '86 is the first **IFIP** World Congress to deal in depth with AI. Dr. Hervé Gallaire (D) is chairman of this area. He says,

Over the last decade, computing moved from data processing to information processing. This decade shows a similar move from information processing to knowledge processing, where knowledge is obtained by summarising or generalising information. Knowledge is created out of facts and general rules, and it must be applied according to certain methods to be used properly. AI is precisely concerned with closing gaps in our understanding of these processes and exploiting knowledge to solve real problems. Presentations at Congress '86 will emphasize the practical state of the art in the major application fields, and will discuss the right environment for Al development, so that participants can apply AI in their own companies. Talks will also cover topics that are critical to further progress in this field.

To receive the preliminary program, or for further information about **IFIP** Congress '86, write-

IFIP Congress '86
44 Northumberland Road
Dublin 4, Ireland

or from the U.S.A., write-

IFIP Congress '86
c/o AFIPS
1899 Preston White Dr.
Reston, VA 22091 ■

FIACC MEETING IN OSLO

*[The following article appeared in the October **IFAC** Newsletter]*

The 16th meeting of the Five International Associations Coordinating Committee (FIACC) took place 10 August, in conjunction with the 11th World Congress of the International Association for Mathematics and Computers in Simulation (IMACS). The Congress, held in Oslo 5-9 August, attracted about 500 delegates from all over the world.

IMACS was represented at the FIACC meeting by its president, who also chaired the meeting; IFAC (International Federation of Automatic Control) was represented by its secretary; IMEKO (International Measurement Confederation) by its president; IFORS (International Federation of Operational Research Societies) by its secretary; and IFIP by its treasurer, Mr. Owen Dalton (IRL).

The participants of the meeting stated the pleasing fact that the development of closer contacts among the Sister Federations is reflected in a growing number of co-sponsorships of technical meetings. Furthermore, an exchange of ideas as to the organization of World Congresses took place.

For the next two years, FIACC will be chaired by IFORS, with IMEKO to take over after that time. Prof. Gy. Striker (H) was elected Honorary Secretary for another year. ■

HOLLERI TH HONORED

In 1885, at the first session of the International Statistical Institute **(ISI),** Herman Hollerith showed his tabulating machine to representatives of statistical offices from all over the world. As a result, the statistical offices of Austria and Norway were the first to adopt the new machinery outside the U.S.A.. The 1890 censuses of the U.S.A. and Austria as well as the 1900 census of Norway were the first instances ever of large-scale applications of computational equipment. This event was celebrated at the 45th Session of the **ISI,** 12-22 August 1985. The International Association for Statistical Computing, an **IFIP** Affiliate Member is a section of the **ISI.** ■

NEW IFIP PUBLICATIONS*

CONFERENCE PROCEEDINGS

Computer Applications in Food Production and Agricultural Engineering - II
Proceedings of the Second IFIP TC5 Working Conference
New Delhi, Mar. 1984
(A. Balasubrahmanian, Ed.)

Women, Work and Computerization: Opportunities and Disadvantages
Proceedings of the First **IFIP** WG9.1 Working Conference
Riva del Sol, Tuscany, Italy, Sep. 1984
(A. Olerup, L. Schneider, E. Munod, Eds.)

Can Information Technology Result in Benevolent Bureaucracies?
Proceedings of the IFIP TC9/WG9.2 Working Conference
Namur, Belgium, Jan. 1985
(L. Yngström , R. Sizer, J. Berleur, **R.** Laufer, Eds.)

Formal Models in Programming
Proceedings of the IFIP TC2 Working Conference on the Role of Abstract Models in Information Processing
Vienna, Austria, Jan./Feb. 1985
(E.J. Neuhold, G. Chroust, Eds.)

Computer Security
Proceedings of the 3rd **IFIP** International Conference on Computer Security, IFIP/Sec'85
Dublin, Ireland, Aug. 1985
(J.B. Grimson, **H.-J. Kugler, Eds.)**

Computer Hardware Description Languages and Their Applications
Proceedings of the Seventh **IFIP** WG10.2 International Conference
Tokyo, Japan, Aug. 1985
(C.J. Koomen, T. Mota-Oka, Eds.)

Computer Applications in the Automation of Shipyard Operation and Ship Design, V
Proceedings of the Fifth IFIP/IFAC International Conference
Trieste, Italy, Sep. 1985
(P. Banda, C. Kuo, G. Di Filippo, Eds.) ■

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

CHANGES IN IFIP

NEW APPOINTMENTS

GA Members

Mr. A. Ameur-Moussa
Entreprise Nationale des Systemes Informatiques
Route Nationale No. 5
Cinq Maisons/Bordj-El-Kiffan
Algiers, Algeria

Prof. Dr. Ing. L. Uncovsky
Vysoka Skola Ekonomicka
Ulica Odbojarov 10
832 20 Bratislava, C.S.S.R.
(succeeding L. Gvozdjak)

Prof. Dr. W. Brauer
Institut fur Informatik
Technische Universität Munchen
Postfach 20 24 20
D-8000 Munich 2, F.R.G
(succeeding R. Piloty)

TC Chairmen

TC6
Dr. R. P. Uhlig
Northern Telecom, Inc.
Dept. 8173
2100 Lakeside Blvd.
Richardson, TX 75081, U.S.A.
tel. 1 (214) 437-8836
(succeeding A. Danthine)

TC7
Prof. M. Lucertini
Dipartimento di Informatica e Sistemistica
Universita di Roma
Via Buonarroti 12
1-00185 Rome, Italy
(succeeding J. Stoer)

TC 1I
Dr. P. Hoving
SAAB-SCANIA AB
S-581 88 Linkoping, Sweden
(succeeding the late K. Beckman)

TC11 Vice-Chairman
Dr. W.H. Ware
The Rand Corp.
1700 Main St.
Santa Monica, CA 90406, U.S.A.

WG **Officers**

WG2.4 Secretary
Dr. L.R. Carter
GenRad Designs, Inc.
Suite 100
1158 E. Missouri Ave.
Phoenix, AZ 85014, U.S.A.

WG3.4 Chairman
Mr. B.Z. Barta
51 Disraeli St.
Haifa 34333, Israel
(succeeding P.G. Raymont)

WG5.2 Secretary
Mrs. Sos
Computer and Automation Inst.
Hungarian Academy of Sciences
P.O.B. 63
H1502 Budapest 112, Hungary
(succeeding A. Pregitzer)

WG5.6 Chairman
Dr. J.M. Hee
B & W Shipbuilding Services
Dept. 21
P.O. Box 21 22
DK-1015 Copenhagen, Denmark
(succeeding C. Kuo)

WG7.3 Chairman
Dr. K.C. Sevcik
Computer Systems Research Group
Univ. of Toronto
Sandford Fleming Bldg.
10 King's College Road
Toronto, Ontario, Canada M5S 1A1
(succeeding H. Kobayashi)

WG7.3 Vice-Chairman
Dr. Mr. Reiser
IBM Research Laboratory
Saeumerstrasse 4
CH-8803 Ruschlikon, Switzerland
(succeeding U. Herzog)

WG8.3 **Vice-Chairman**
Dr. R.M. Lee
IIASA
2361 Laxenburg, Austria
(succeeding **R.** Sprague)

WG8.4 **Chairman**
Prof. A.A. Verrijn-Stuart
Inst. of Applied Mathematics and Computer Science
Univ. of Leiden
P.O. Box 9512
Wassen arseweg 80
2300 RA Leiden, The Netherlands

WG10.2 Chairman
Prof. Dr. Ing. R.W. Hartenstein
Universität Kaiserslautern
Fachbereich Informatik
Postfach 3049
D-6750 Kaiserslautern, F.R.G.
(succeeding M. R. Barbacci)

WG 1 0.2 Vice-Chairman
Dr. T. Uehara
Information Processing Lab.
Fujitsu Laboratories, Ltd.
1015 Kamikodanaka Nakahara-ku
Kawasaki 211 , Japan
(succeeding D. Borrione)

WG **1 0.2 Secretary**
Prof. P. Prinetto
Politechnico di Torino
Dipt. di Automatica e Informatica
Corso Duca degli Abruzzi 24
1-10129 Torino, Italy
(succeeding R.W. Hartenstein)

WG10.5 Chairman
Dr. E. Horbst
Siemens AG
ZTI VENUS
Otto-Hahn-Ring 6
D-8000 Munich 83, F.R.G.
(succeeding S. Michaelson)

WG1 **1.1 Chairman**
Mr. J.H. Finch
55 Beech Ave.
Toronto, Ontario, Canada M4E 3H3

WGI **1.2 Chairman**
Mr. W.A.J. Bound
CSC UK Computer Sciences Co., Ltd.
Heathcoat House
20 Savile Row
London W1X 1AE, U.K.

WG11.4 Chairman
Dr. V. Fäk
Dept. of Electrical Engineering
Linkoping Univ.
S-581 83 Linkoping, Sweden

Publications Officer
Dr. Karen Duncan
15 Parsons Way
Los Altos, CA 94022
tel. 1 (415) 948-3941

ADDRESS CHANGES

GA **Members**

Maj. Gen. A. Balasubrahmanian
1 Oliver Road
Madras 600 004, India

Prof. P.-X. Guo
Computer Science and Technology Committee MEI
P.O. Box 162
Beijing, China

TC/WG **Officers**

TC3 **Chairman**
Prof. Dr. W. Brauer
(see address in "new appointments", above)

WG5.2 Chairman
Dr. K. B6
Productivity Support AS
P.O. Box 2865 Elgeseter
N-7001 Trondheim, Norway

WG5.6 **Vice-Chairman**
Prof. C. Kuo
Dept. of Ship and Marine Technology
Univ. of Strathclyde
100 Montrose St.
Galsgow G4 OLZ, U.K.

Affiliate Member Representatives

ICCC
Prof. A.S. Douglas
9 Woodside Ave.
Walton-on-Thames
Surrey KT12 5LQ, U.K.

IAPR
Dr. H. Freeman
CAIP Center, 605 Hill
Rutgers Univ., Busch Campus
New Brunswick, NJ 08903, U.S.A.
tel. 1 (201) 932-4208

Member Society

Sociedad Argentina de Informatica
e Investigacion Operativa
Uruguay 252 - 2 "D"
1015 Buenos Aires, Argentina
tel. 54 (1) 405755 or 453950

North-Holland Representative
Mrs. Stephanie Smit
tel. 31 (20) 5862441

These changes and others will appear in the ***IFIP** Information Bulletin,* No. 19, to be published by the end of 1985. ■

CALLS FOR PAPERS

3rd Latin-Ibero American Cong. on Operations Research and Systems Engineering and 9th Systems Engineering Meeting
18-22 Aug 1986, Santiago, Chile
sponsor: ALIO, ICHIO
summaries due: 30 Nov 1985
contact: President of the Program Committee, III CLAIO
Dept. of Industrial Engineering
University of Chile
P.O. Box 2777
Santiago, Chile

Intl. Symp. on Simulation of Control Systems
22-26 Sep 1986, Vienna
sponsor: IFAC, IMACS
abstracts due: 1 Dec 1985
contact: OPWZ
Dr. P. Kopacek
P.O.B. 131
A-1014 Vienna, Austria

Symp. on **Modelling and Simulation for Control of Lumped and Distributed Parameter** Systems
3-6 Jun 1986, Lille, France
sponsor: IMACS
abstracts due: 1 Dec 1985
contact: IMACS 86 Symposium
IDN - B.P. 48
F. 59651 V.N. D'Ascq, France

Work. Conf. on Highly Parallel Computers
24-26 Mar 1986, Nice, Fran&
sponsor: WG10.3
papers due: 15 Dec 1985
contact: Michael Barton, Sec. WG10.3
Dept. of Electrical Engineering
The University
Bristol BS8 1TR, United Kingdom

1st Intl. Conf. on Economics **and Artificial Intelligence**
2-4 Sep 1986,
Aix-en-Provence, France
sponsor: IFIP, IFAC, IFORS
papers due: 6 Jr. 1986
contact: Prof. Jean-Louis Le Moigne
Faculty d'Économie G.R.A.S.C.E
(CNRS 935)
5, Avenue Victor Hugo
13100 Aix-en-Provence, France

Work. Conf. on New Technologies **for Production Management** Systems
1-3 Oct 1986, Tokyo
sponsor: WG5.7
ext. abstracts due: 31 Jan 1986
contact: Prof. Hiroyuki Yoshikawa
Dept. of Precision Machinery Engineering
Faculty of Engineering
The University of Tokyo
7-3-1, Hongo, Bunkyo-ku
Tokyo, Japan
tel. +81-3-812-2111, ext. 6446
telex: 272-2111 feut j

Intl. Symp. on **Theory of** Robots
3-5 Dec 1986, Vienna
sponsor: IFIP, IFAC, IMACS
abstracts **due:** 1 Feb 1986
contact: OPWZ
Dr. P. Kopacek
P.O.B. 131
A-1014 Vienna, Austria

3rd Intl. Conf. on Advances in Production Management Systems **(APMS 87)**
11-14 Aug 1987, Winnipeg
sponsor: WG5.7
ext. abstracts due: 31 Mar 1986
contact: Dr. Andrew Kusiak
APMS 87 Program Chairman
Dept. of Mechanical and Industrial Eng.
University of Manitoba
Winnipeg, Manitoba R3T 2N2, Canada
tel. 1 (204) 474 9839 or 9803 ■

FUTURE IFIP MEETINGS

TECHNICAL COMMITTEE AND WORKING GROUP MEETINGS*

WG2.1	Dec 85	Menlo Park, CA, U.S.A.
WG2.3	16-20 Jun 86	Lake Balaton, Hungary
WG2.4	Aug 86	Trondheim, Norway
WG2.6	31 Mar-2 Apr 86	Palo Alto, CA, U.S.A.
WG2.7	7-11 Apr 86	Princeton, NJ, U.S.A.
WG2.7	Sep 86	Ireland
TC3	8-10 Nov 85	Interlaken, Switzerland
WG3.5	Apr 86	Interlaken, Switzerland
TC5	20 May 86	Copenhagen, Denmark
TC6	27-28 Mar 86	Cape Town, S. Africa
TC6	Sep 86	Dublin or Munich
TC 11	Nov 86	France

* Please note that some of above are scheduled in conjunction with Working Conferences, for which the conference dates are listed

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

Council	10-14 Mar 86	Lisbon, Portugal
GA	? Aug 86	Dublin, Ireland
Council	? Mar 87	Singapore
GA	? Sep 87	Budapest, Hungary
GA	? Aug 89	San Francisco, U.S.A.

IMIA

Board Meeting	15-20 Apr 86	Beijing, China
GA	Oct 86, prior to MEDINFO 86	Washington, DC, U.S.A.

CALENDAR OF EVENTS

Event	Date	Location	Organized by
Second Intl. Symp. on *Optical and Electro-Optical Applied Science and Engineering*	25 Nov-6 Dec 85	Cannes	SPIE/ANRT/IFIP
Work. Conf. on *Information Systems in Primary Care*	2-6 Dec 85	Munich	IMIA
Fifth Symposium on *Ship Operation Automation, ISSOA 86*	Jan 86 ?	Rotterdam ?	IFAC/TC5/WG5.6
Second Conference on *Automation for Safety in Shipping and Offshore Petroleum Operations—ASSOPO*	Jan 86 ?	The Netherlands	TC5/WG5.6
Work. Conf. on *Control Problems for Partial Differential Equations and Applications*	2-6 Feb 86	Gainsville, FL, U.S.A.	TC7/WG7.2
Workshop on *Wafer-Scale Integration*	Feb 86 ?	Florida, U.S.A.	TC10/WG10.5
World Conf. on *Data Communication*	17-19 Mar 86	Johannesburg	TC6/CSSA
Regional Symposium: *European Symposium on Programming*	17-19 Mar 86	Saarbrucken, F.R.G.	AFCET/AICA/ BCS/GI
Work. Conf. on *Progress in Functional Analysis by Computer Technologies*	17-22 Mar 86	Berlin, G.D.R.	IMIA
Work. Conf. on *Highly Parallel Computers*	24-26 Mar 86	Nice	TC10/WG10.3
Second Baghdad Conf. on *Computer Technology and Applications*	24-26 Mar 86	Baghdad	NCS/ECRC/ ECWA/IBI
Work. Conf. on *Computational Issues in Combinatorial Optimization*	24-28 Mar 86	Capri	TC7/IASI/CNR
Intl. Symp. on *Modeling of Computer Communication Systems*	Mar 86	Clemson, SC, U.S.A.	IMACS
In-depth Conf. on *Local Area Network Services*	Mar 86 ?	Zurich	TC6
Work. Conf. on *Data Modelling for CAD Applications*	Mar 86 ?	U.S.A.	TC5/WG5.2
Work. Conf. on *Home Computers and Education*	7-11 Apr 86	Interlaken	TC3/WG3.1/WG3.5
Work. Conf. on *Maintaining a Healthy State within the Individual*	8-10 Apr 86	Kobe	IMIA
Work. Conf. on *Program Specification and Transformation*	14-17 Apr 86	Bad Tolz, F.R.G.	TC2/WG2.I
Work. Conf. on *Information Network and Data Communication*	21-22 Apr 86	Malmo	TC6/SSI/SDF
Symp. on *Information Control Problems in Manufacturing Technology*	22-25 Apr 86	Yerevan, U.S.S.R.	IFAC/IFIP/ IMACS/IFORS
Work. Conf. on *Expert Systems Applied in Marine Activities*	Apr 86	Glasgow	TC5/WG5.6
Sixth Work. Conf. on *Protocol Specification Testing and Verification*	Apr 86	Montreal	TC6/WG6.1
Intl. Workshop on *Architectural Synthesis of Digital Systems*	Apr 86	Torino, Italy	TC10/WG10.2
Workshop on *South East Asia Focus*	Apr 86 ?	Singapore	TC10/WG10.5
Work. Conf. on *Health Informatics for Development*	Apr 86 ?	Havana	IMIA/WG9
Work. Conf. on *Logical Structure of Distributed Information Processing*	Apr 86 ?	Venice	TC2
Work. Conf. *Comparative Review of Information System Design Methodologies: Improving the Practice*	5-7 May 86	Noordwijkerhout, NL	TC8/WG8.1
Work. Conf. on *Participative Information System Design*	12-15 May 86	Berlin, G.D.R.	TC9/WG9.1
First Workshop on *Experience with the Management of Software Projects*	14-16 May 86	Heidelberg	IFAC/TC5
Second Intl. Conf. *CAPE 86—Computer Applications in Production and Engineering*	20-23 May 86	Copenhagen	TC5/IFORS
Fourth Symp. on *Software for Computer Control—SOCOCO '86*	20-23 May 86	Graz, Austria	
Intl. Conf. *EURIT86—European Conference on Information Technology*	20-23 May 86	Enschede, NL	COI/CEC/TC3/ATEE
Fourteenth Intl. Workshop on *Real Time Programming*	26-28 May 86	Balaton, Hungary	IFAC/IFIP
Workshop on *Analog Circuits in VLSI*	May 86	Princeton	TC10/WG10.5
Work. Conf. on *Reliability and Optimization of Structural Systems*	May 86	Denmark	TC7
Intl. Seminar on *Teletraffic Analysis and Computer Performance Evaluation*	2-5 Jun 86	Amsterdam	TC7/WG7.3/ITC
Fifth Intl. Symp. on *Intelligent Measurement*	10-14 Jun 86	Jena, G.D.R.	IMEKO/IFIP
Work. Conf. on *Decision Support Systems—The Decade in Perspective*	16-18 Jun 86	Noordwijkerhout, NL	TC8/WG8.3
Fifth Intl. Conf. on *Dynamic Modelling and Control of National Economies*	17-20 June 1986	Budapest	IFAC/IFIP/IFORS
Work. Conf. on *Mathematical Modelling in Immunology*	Jun 86 ?	Vienna	TC7/WG7.1
Fifth Symp. on *Control in Transportation Systems*	8-11 Jul 86	Vienna	IFAC/IFIP/IFORS
Second Intl. Cong. on *Computational and Applied Mathematics*	21-26 Jul 86	Leuven, Belgium	JCAM/U. Leuv.
Workshop on *Silicon Compilation*	Jul 86	Edinburgh	TC10/WG10.5
Work. Conf. on *Changing Requirements for Training in Informatics*	11-15 Aug 86	U.S.A.	TC3/WG3.4
Intl. Symp. on *Automation and Data Processing in Aquaculture-AQUACULTURE 86*	18-21 Aug 86	Trondheim	IFAC/NFA/NSAC
Regional Conf. on *Microcomputers in Secondary Education*	18-22 Aug 86	Tokyo	TC3
Twelfth Intl. Conf. on *Very Large Data Bases—VLDB-86*	25-28 Aug 86	Kyoto	VLDB/IFIP
Third Work. Conf. on *Formal Description of Programming Concepts*	25-29 Aug 86	Ebberup, Denmark	TC2/WG2.2
Fourth Symp. on *Large Scale Systems: Theory and Applications*	26-29 Aug 86	Zurich	SFAC/IFAC/IFORS
Work. Conf. on *Information Systems Assessment*	26-29 Aug 86	Noordwijkerhout, NL	TC8/WG8.2
Intl. Workshop on *Performance-Driven Digital System Design*	Aug 86	Los Angeles	TC 10/WG 10.2
Intl. Workshop on *Software Engineering for CAD Tools*	Aug 86	Bonn	TC10/WG 10.2
First Intl. Conf. on *Economics and Artificial Intelligence*	2-4 Sep 86	Aix-en-Provence, France	IFAC/IFIP/IFORS
Intl. Conf. *ICCC 86—New Communication Services: a Challenge to Computer Technology*	15-19 Sep 86	Munich	ICCC/TC6
Eighth European Conf. on *Operational Research*	16-19 Sep 86	Lisbon	EURO/IFORS
Intl. Symp. on *Simulation of Control Systems*	22-26 Sep 86	Vienna	IFAC/ACPE/IMACS
Work. Conf. on *Hanging Things on a Micro*	Sep 86	Australia	TC3/WG3.3
Workshop on *Concepts and Characteristics of High-Performance Workstations*	Sep 86,		TC10/WG10.1
Conf. on *The Future of Information Systems—Lessons from the 80's*	Sep 86	Linz, Austria	AUSCS/IFIP
Work. Conf. on *Women and Computerization*	Sep 86	Dublin	TC9/WG9.I

IFIP 86 – 10th World Computer Congress	1-5 Sep 86	Dublin	IFIP
IFIP 89 – 11th World Computer Congress	28 Aug-1 Sep 89	San Francisco	IFIP

Please see page 11 for schedule of IFIP administrative meetings.