IFAC International Federation of Automatic Control
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IFAC's Governing Bodies Discuss IFAC's Future

(Council and Related Meetings, October 31 — November 4, 1983, Laxenburg)

After a record breaking summer a record-breaking series of sunny autumn days turned Vienna to look her very best, when a record breaking number of IFAC officers — many with their spouses — gathered to attend the annual meetings of IFAC Committees, -Boards, and -Council.

Thorough deliberations, exchange of information, important future-oriented decisions and a climate of friendship and cooperation marked this series of meetings. Here are some of the highlights:

— After an elaborate selection procedure, based on proposals received from NMOs and TCs the Nomination Committee has agreed on a slate of candidates for the offices of Council Members, Board Members, TC-Chairmen and -Vicechairmen and others during the period 1984/87. After approval by the respective NMO and acceptance by the candidates themselves the Council and the General Assembly, meeting in Budapest in July 1984 will take the final decisions.

— The Treasurer reported on IFAC's financial situation; difficulties could be met so far, but certain measures concerning membership fee and publication policy will have to be suggested to the General Assembly in view of future developments. The report for the financial year 1982 and the budget for 1984 were approved unanimously.

— The Council accepted the request of the present Secretary, Fred Margulies, to retire after the Budapest Congress due to his age, and appointed Dr. Manfred Paul, Technical University, Vienna, Deputy Secretary.

— In 1981 the General Assembly meeting in Kyoto approved of the new IFAC Constitution for an interim period of three years, after which adjustments should be considered taking into account the practical experiences gathered during that period. Several suggestions to that effect had been submitted and will be tabled as amendments for the General Assembly 1984 in Budapest.

Some of these amendments concern the rules for the formation and termination of Working Groups as sub-groups to the Technical Committees. This was initiated by the Technical Board meeting putting more emphasis on subdividing TC activities into Working Groups rather than splitting them by new Technical Committees.

More about these and other issues will be brought to the attention of IFAC's member organisations and committees in the course of preparations for the "Council and Related Meetings" scheduled for July 1984 in Budapest.

Mentioning the highlights of this week in Vienna and Laxenburg, with more than 70 participants in some 15 meetings, we must not forget to tell about the enjoyable and equally successful framework of social events. A "Heurigen" evening, Vienna style, given by the Austrian NMO, a cocktail reception by the Mayor of Vienna, a dinner invitation by President Vamos, two performances of the Vienna State Opera, a visit to the Spanish Riding School and to a Mass performed by the Vienna Boys' Choir as well as a series of sightseeing tours, efficiently organized and charmingly guided by Margaret Gottfried, the co-producer of our Newsletter — all this is not only worth mentioning, it was worth attending and was thoroughly enjoyed by the attendees.

We are confident that this spirit of combining work and pleasure and friendship and understanding will accompany us to Budapest and beyond.

Real-Time Concept Vital to Distributed Computer Control (DCCS '83)

The 5th IFAC Workshop on Distributed Computer Control Systems last May took place in a unique venue — the Sabi Sabi Game Reserve set in the Eastern Transvaal in South Africa. The Workshop proved to be a great success, attracting as it did some of the leading workers in this field from eleven IFAC nations.

Amongst the papers presented was that by Dr. Lalive d'Epinay of Brown Boveri Research Centre in Switzerland. Dr Lalive's paper presented a new type of computer architecture which is based on a broadcast principle and source addressing. This system is viewed as a combination and generalization of data flow and continuous systems. His paper showed that such a structure has many inherent advantages over classical architectures and the concept has been established to allow the development of powerful systems by non-specialist users. Real-time can be embodied in the basic architecture; this important fact anticipated other presentations in the Workshop in stressing the vital role played by real-time in distributed computer control systems. The paper was a result of many years' research undertaken by Brown Boveri.

Following on this, Professor Hermann Kopetz (University of Technology, Vienna, Austria) presented a review of the need for the recognition of real-time as a vital part of the solution to many distributed control system problems. His presentation illustrated the fact that unless real-time is taken into consideration there are fundamental problems in the areas of specification, communication, error detection and state restoration. A further role of real-time was discussed by Ian MacLeod of South Africa whose work over the last three years has resulted in a means of ensuring data consistency in real-time distributed systems. Mr. MacLeod showed in his presentation that he is able to produce an algorithm for ensuring that over reasonable intervals there is total consistency, plantwide, in the system.

Amongst other papers of particular significance was a review by Dr. Greg Suski of the Lawrence Livermore Laboratory in California, of his laboratory's experience in the use of high-level languages in the development of software for large distributed control systems. Dr. Suski's paper looked at the language PRAXIS which has been used by him and his colleagues, and compared this to ADA, the long-promised standard real-time language.

Dr. Morris Sloman of the Department of Computing at Imperial College, London, discussed a flexible communication system which is used in a control system developed by his department for application in the coal mining industry. In this paper Dr. Sloman presented the inter-process communication language primitives for his system and showed how they can be used to provide a very simple datagram service which allows for the development of an extremely flexible distributed structure.

Turning to applications, a spectacularly large system developed by Mitsubishi and Nippon Steel for application on hot strip mills was discussed by Mr. C. Imamichi. This extremely complex system is composed of four main computers, five DDC computers, nine front-end processors and up to thirty programmable controllers. It includes four loops of communication dataways which provide communication between the various levels of control. This presentation clearly illustrated the extent to which distributed computer systems are becoming an essential part of the modern process control industry. At the other end of the complexity scale, Milton Maxwell of Colgate Palmolive Company, USA, presented a down-to-earth review of the impact of distributed systems on an industry which works at relatively low profit margins. In his paper, Mr. Maxwell emphasized the importance of selecting the most appropriate solution to meet the requirements. He pointed out that in most modern applications, the distributed approach offers many economic advantages to the users. A series of local South African papers further illustrated this point. These were presented by Mr. Cedric Byrne, Mr. Dave MacDonald and Mr. Ian Brown, and clearly illustrated the gradual acceptance of distributed systems throughout the South African process control industry.

Turning to the communications aspects of distributed computer control systems, Dr. Tom Harrison of IBM, Florida, USA, reviewed the progress of the IEEE 802 Committee which is attempting to standardize local area networks. Dr. Harrison, a regular participant in the Workshops, showed the trends that are occurring in the LAN world and emphasized the significance of this work for distributed computer control systems.

Dr. Willem Gertenbach of the Nuclear Development Corporation in South Africa, presented an extensive discussion on work his organization has undertaken to develop a hierarchical model for distributed process computer systems. The purpose is to provide a reference model for the analysis and synthesis of multicomputer process control systems.

Returning for a second presentation, Professor Hermann Kopetz, on behalf of his team of researchers at Berlin University, discussed MARS — a Maintainable Real-Time System. MARS has been based on many of Professor Kopetz's ideas of global real-time and has reached a point where the system has been proved to be viable in a practical application.

On a more theoretical note, Dr. M. A. Salichs of the University of Madrid, Spain, produced an advanced research paper which discussed a method for task assignment in distributed systems. His paper showed how a relatively simple heuristic algorithm, which he and his colleagues have developed, can be applied to the problem of task assignment and can yield a total structure which is highly efficient and effective.

Another paper from Europe, presented by Professor Plessman of Aachen University, discussed a system which is a combination of a distributed computer system and an extremely powerful multiprocessor. The objective is to provide a computing tool for use in distributed process control.

Probably the most important fact that emerged from the Workshop, and one which was generally agreed upon, was that future generations of distributed computer control systems must inherently take into account real-time. The point was emphasized by many authors that unless the concept of global real-time is adopted, it is impossible to ensure a system which is totally consistent at all times. Amongst other points which emerged during the Workshop was the necessity of constructing a distributed computer control system on an architecture which is well-defined, and not merely a conglomeration of various computers which have been glued together in an attempt to solve a particular problem. There was little doubt in the minds of the delegates that present commercial distributed systems fall far short of the ideal and that within the next few years we will see the emergence of new generations of such systems.

Mike Rodd
University of Witwatersrand
Johannisburg
(Chairman NOC)

SOCOCO '82

The 3rd IFAC/IFIP Symposium on Software for Computer Control (SOCOCO '82) was held in Madrid, 5—8 October 1982.

The Symposium, organized by the Spanish Committee of IFAC, was sponsored by COMPUT, APCOM and EDCOM, and co-sponsored by IFIP.

The aim of the Symposium was to present, discuss and summarize the present state of software developments for digital computer applications in science and control. Special emphasis was given to application of software developments, when relevant.
A total of 132 papers was submitted out of which 73 were finally presented by the authors from 26 different countries. 210 people attended the Symposium.

The following topics were covered:

- Real-time languages and operating systems
- Man-machine communication software
- Software for robots
- Software for distributed control systems
- C.A.D. of digital computer control systems
- Adaptive computer control systems
- Algorithms for digital computer control
- Control software engineering and management
- Industrial applications

Four invited plenary papers covering the theory, methods and applications of digital computer programming for control purposes were presented by E. A. Trakhtengerts, I. D. Landau, R. Iserman and K. H. Lachmann, I. M. MacLeod and M. G. Rodd.

In addition two round tables were held. The first one about "Trends in Computer Control Education", the second dealing with "Computer Control Systems in Industry".

G. Ferrate
IPC Chairman

Shaping IFAC '84 — the 9th World Congress in Budapest

When the International Program Committee for the 1984 World Congress met in Laxenburg on November 2, more than 1000 papers had been received by the congress secretariat. The reviewing procedure had been completed by the end of October and the IPC could get down to shape and finalize the congress program.

A total of 569 papers, 100 of them invited, have been accepted and will be presented in 37 "Congress Colloquia", a new feature of IFAC congresses.

Papers have been arranged into 89 two-hour and 13 one-hour paper sessions. These sessions form 10 strings, each comprising sessions on related subjects under the following headings:

1. adaptive and stochastic control
2. synthesis of control, applications of nonlinear programming
3. identification, theory and methodology of large scale systems
4. analysis and structural properties, cad of control systems
5. mathematical systems theory, singular perturbations, team and game theory, decision support techniques
6. power stations and systems, control for the utilization of energy and materials
7. control of industrial processes, industrial systems engineering, space applications
8. biomedical control, components and instruments, computers, traffic control
9. manufacturing technology, man-machine systems, social effects of automation
10. developing countries, energy systems, environmental control, water resources, international stability, education.

As an 11th string, a series of 11 panel discussions will be organized on important practical problems of the industry, like business management, modelling and control of chemical processes, mill-wide control, man-machine communications and human factors, production management for small orders, robotics, power systems and traffic control. The results of these discussions will be summarized at the closing session of the congress.

In addition to the industrial problem sessions, 27 more panel discussions will be held on different subjects, mostly related to the paper sessions.

Some of the titles are:

management and education for world complexity
the proper use of human ability — a challenge to engineers
industrialization and infrastructure
the responsibility of system scientists
supervision for unattended machining
power system training simulators
credibility of models
achievable accuracy in identification
the role of theory in control synthesis.

Further, 7 case study sessions are planned; highlights of the congress however will undoubtedly be the 6 plenary lectures by renowned experts on

Progress of system science (J. Zaborszky)
Advances in modelling and control (P. Kokotovic)
Flexible automation (A. Yoshikawa)
Process control and information systems (G. Farber)
Incentives and control in economic organizations (R. Radner)
Latest developments in bio-control (U. Shamakov, V. Viktorov, V. Novoseltev).

The congress will be held in downtown Budapest, in the central building of the Hungarian Academy of Sciences and in 3 new hotels, all within walking distance along the Danube bank.

Don't miss the reunion date of the IFAC-family — July 2 through 6 in Budapest!

REGISTER NOW.

J. Gertler
(Chairman Congress '84
Program Committee)

IFAC Workshop

Supplemental Ways for Improving International Stability (SWIIS)

September 13—15, 1983, Laxenburg,

Engineers and other control experts, accustomed to dealing with conditions of instability, believe that some of the world's boiling tensions can be resolved by means not normally known to diplomats, political leaders and other actors in public life. The engineers believe that the confrontation tactics used by many of these tend to worsen, rather than ease, some of these problems.

In the belief that they can help public leaders to understand the basic cultural differences and popular misperceptions of other peoples' views — differences which can often lead to disputes between countries or regions, sometimes to war and cataclysm — control engineers and other specialists from 14 countries concerned with system design met for three days at Laxenburg, to consider novel and peaceful ways to deal with some of the major disagreements in today's world.

The inspiration for the "Supplemental Ways" meeting comes chiefly from Dr. Harold Chestnut, a past president of IFAC and retired leader in industrial research. Chestnut said, "Ideas as well as funds are needed to focus the engineer's attention on new approaches to peace: more carrots must be found". Prof. Dr. Engelbert Broda, of the University of Vienna's Institute of Physical Chemistry commented: "Because of their knowledge and key positions in life, engineers and scientists have special responsibilities in joining forces to prevent war, to avoid nuclear holocaust."

The group decided to propose a number of action-projects to be undertaken before its next meeting during the 9th IFAC World Congress in Budapest in July 1984.

The Workshop was organized by IFAC's Austrian member organization, the Austrian Centre for Efficiency and Productivity (ÖPWZ) and was supported by the Austrian Academy of Sciences' Institute for Peace Research, by the International Institute for Applied Systems Analysis (IIASA), by the International Federation for Systems Research (IFSR) and by UNESCO.

Workshop proceedings are being published by Pergamon Press. For further information on SWIIS please refer to

Dr. Harold Chestnut
1226 Waverly Place
Schenectady NY 12308

EMSCOM
IFAC Economic and Management Systems Committee

Beyond technical areas of application, IFAC is also concerned about the impact of automatic control on the economy and on the society. Besides, economic and management aspects often occur in connection with the selection, design and use of technical systems using automatic control.

This is why some years ago EMSCOM was established. It is concerned in general with modelling, analysis, control and management of large systems in which self-organizing behavior can be present, from the points of view of: economics, finance, organization, resource allocation and decisions. The development of dynamic planning and management processes, and the interactions between the various systems involved, in the face of external changes, is of particular relevance.

The first area of application are macroeconomic, national, regional, sectoral or global modelling and control problems, stressing the dynamic aspects, and decision-making.

The second area of application is management planning and control in industrial and public organizations, with scheduling, investments, operations, manufacturing and resource utilization. This extends to management control systems.

The third area is hardware, software and orgware integration, in relation to management systems, innovation, man-machine interactions, and general effects.

Finally, to sustain these developments, the committee is involved in software tools, forecasting, estimation, game and control methods to the extent of their direct use in the above areas.

EMSCOM has at present about 80 members. They have formed three active working-groups, namely:

WG 1: Modelling and control of national and regional economies
WG 2: Management planning and control in industrial organizations
WG 3: Hardware, software and orgware integration.

The members have mixed backgrounds in control, economics, management, organization, or policy making.

EMSCOM is organizing or sponsoring conferences, symposia and workshops in the above areas, often in collaboration with other societies like: IFORS, IFIP, SEDC, and the national member organizations.

EMSCOM is also publishing a newsletter which serves to convey information and initiatives among its members.

Among the examples for recent activities of EMSCOM, represented either by conference sessions or by other projects, let us mention:

I. Tools:
- Optimal control algorithms and software for the optimization of macroeconomic models
- Statistical forecasting techniques and identification algorithms for economic model building
- Input/output analyses
- Game theory applications for economic competition and price fixation.

II. Macroeconomics:
- National planning models for developed and developing nations
- International trade models
- Financial and monetary models, national and international
- Multicountry models and resource allocations.

III. Sectoral economics:
- National, world or regional models (incl. estimation and control) for: energy, oil, transportation, fertilizers, food, etc.

IV. Management:
- Management information systems design in specific industries
- Decision support systems for production, finance, and sales
- Dynamic models of competition
- Control procedures
- Inventory
- Applications of artificial intelligence and pattern recognition for financial taxonomy
- Production and personnel scheduling.

EMSCOM welcomes contacts with experts from the public or private sectors, as well as from academia, who may be interested in these subjects, or who have proposals for new activities.

L. F. PAU
Chairman EMSCOM

Automatica Prize Paper Awards

The Automatica editorial board will again award one thousand Swiss Francs, for each of three outstanding contributions to the theory and/or practice of control engineering or control science.

These awards will be presented by the president of IFAC at the 1984 IFAC World Congress in Budapest. They will be awarded for the three best papers published in any of the issues of Automatica in 1981, 1982 and 1983.

Recommendations for the awards are invited from the control engineering community. They should be received before March 1, 1984 by the chairman of the awards committee:

Prof. Pieter Eykhoff,
University of Technology,
P.O. Box 513,
NL-5600 MB Eindhoven.

It would be most helpful to the committee to have each recommendation accompanied by a few reasons why the paper should be considered for the prize paper award.

WHO IS WHO IN IFAC

Professor P. Martin Larsen
Chairman IFAC-TC on Education

Professor P. Martin Larsen was born in 1933 in Copenhagen, Denmark. In 1957 he received the M.Sc. degree in electrical engineering from the Technical University of Denmark. Since 1959 he has been with the Electric Power Engineering Department at the Technical University, and was appointed senior lecturer (associate professor) in 1962 within the field of automatic control of power plants and industrial systems. On sabbatical leave in 1961—62 with Westinghouse Electric Corporation and Carnegie Mellon University in Pittsburgh, USA. His main interests are industrial applications of on-line process computer control, power plant automation, teaching methods and automatic control terminology.

In 1975 he was elected Vice-Chairman of the TC on education under V. V. Petrovas as chairman, and he served as chairman of the IPC for the IFAC Symposium on Trends in Automatic Control Education held in Barcelona in 1977.

In 1978 he was elected Chairman of the Education Committee, and has contributed actively to several IFAC events through IPC memberships. He initiated a series of EDCOM case reports on experimental projects in automatic control education, and supports strongly the international development of continuing education courses in automatic control.

He has emphasized the cooperation with the Developing Countries Committee by organizing round tables during the IFAC Congresses in Helsinki 1978 and Kyoto 1981, and during the Conference on Systems Approach for Development in Rabat 1980, the 3rd Workshop on Distributed Computer Control Systems in Beijing 1981, and the Workshop on Computer Aided Projects and Development Policies in Ankara 1982.

He is also a member of the TCs on computers, developing countries, and terminology and standards.

He is a member of the Danish Engineering Society, the Danish Electrotechnical Society, the Danish Automation Society, the Executive Council of the Scandinavian Simulation Society, member of the Society for Computer Simulation and senior member of IEEE.

FORTHCOMING EVENTS

Title	1984	Place	Deadlines	Further Information
IFAC Workshop Systems Engineering Approaches in Control Engineering	March 26 — 28	Noord-wijkerhout, NL	—	H. Feikema Foundation for post-degree-education in control engineering Lorentzweg 1 NL 2628 CJ Delft, Netherlands
IMACS/IFAC Int'l Symposium Modelling and Simulation of Electrical Machines and Converters	May 17 — 18	Liège, B	—	Prof. H. Buysse Unité Courant Fort et Electrotechnique Université Catholique de Louvain Bâtiment Maxwell Place du Levant 3 B-1348 Louvain-la-Neuve, Belgium
6th INRIA/IFAC Int'l. Conference Analysis and Optimization of Systems	June 19 — 22	Nice, F	—	Prof. A. Bensoussan INRIA Domaine de Voluceau B.P. 105 F-78153 Le Chesnay, France
9th WORLD CONGRESS IFAC	**JULY** **2 — 6**	**BUDAPEST, H**	—	Computer and Automation Institute Hungarian Academy of Sciences P. O. Box 63 H-1502 Budapest, Hungary
IFIP/IFAC Conference Human Factors in Computer Systems Human-Computer Interaction INTERACT '84	Sept. 3 — 7	London, UK	—	Prof. B. Shackel Dept. of Human Sciences University of Technology Laughborough Leicestershire, UK
IFAC Workshop Reconfigurable Spacecraft Systems Autonomous and Non-Autonomous	Sept. 11 — 13	Cambridge MA, USA	January 10, 1984	John W. Hursh Aircraft and Spacecraft Division The Charles Stark Draper Lab., Inc. 555 Technology Square Cambridge, MA 021389, USA

Title	1985	Place	Deadlines	Further Information
IFAC/IFORS/IFIP Workshop Artificial Intelligence Pattern Recognition in Economics and Management	March 12 — 14	Zurich, CH	not yet known	Prof. L. F. Pau Battelle Institute 7, Route de Drize CH-1227 Carouge Switzerland
6th IFAC Workshop Distributed Computer Control Systems	May 19 — 24	San Francisco, CA, USA	not yet known	Dr. R. W. Gellie CSIRO P.O. Box 71 Fitzroy, 3065 Australia
IFAC Workshop Control Application of Nonlinear Programming and Optimization	June 11 — 14	Capri, I	not yet known	Gianni Di Pillo Dipartimento di Informatica e Sistemistica Universita di Roma „La Sapienza" Via Eudossiana 18 I-00184 Rome, Italy

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FORTHCOMING EVENTS (ctd.)

Title	1985	Place	Deadlines	Further Information
IFAC/ISAGA Workshop Simulation and Games	June	Alma-Ata, SU	not yet known	Acad. V. A. Trapeznikov Institute of Control Sciences Profsojuznaja 65 Moscow 117342, USSR
IFAC Symposium Automatic Control in Space	June 24—28	Toulouse, F	not yet known	Prof. M. Pelegrin CERT Complexe Aérospatial de Lespinet 2, Avenue Édouard Belin BP 4025 F-31055 Toulouse Cedex France
IFIP/IFAC Symposium Automation for Safety in Shipping and Offshore Petroleum Operations — ASSOPO '85	June 25—27	Trondheim, N	not yet known	The Norwegian Society of Automatic Control Kronprinsens gt. 17 Oslo 2, Norway
7th IFAC/IFORS Symposium Identification and System Parameter Estimation	July 3—7	York, UK	not yet known	Prof. H. A. Barker University College of Swansea Dept. of Electrical and Electronic Engineering Singleton Park Swansea SA2 8PP, UK
1st IFAC Symposium Automation for Mineral Resource Development	July 9—11	Brisbane, AUS	April 1, 1984	Prof. Alban J. Lynch Julius Kruttschnitt Mineral Research Centre University of Queensland Isles Road, Indooroopilly, QLD 4068 Australia
IFAC Symposium Planning and Operation of Electric Energy Systems	July	Rio de Janeiro, BR	not yet known	T. E. DyLiacco Consultant 651 Radford Drive Cleveland, OH 44143 USA
3rd IFAC/IFIP Symposium Computer Aided Design in Control and Engineering Systems	July 31— Aug. 2	Copenhagen, DK	not yet known	Prof. P. M. Larsen Electric Power Engineering Building 325 DK 2800 Lyngby, Denmark
Regional Conference Control Science and Technology for Development	August 20—22	Beijing, PRC	not yet known	Prof. YANG Jiachi Beijing Institute of Control Engineering P.O. Box 2417 China
2nd IFAC/IFIP/IFORS/IEA Conference Analysis, Design and Evaluation of Man-Machine Systems	Sept.	Stresa, I	not yet known	Prof. G. Johannsen Geranienweg 4 D-5308 Rheinbach, FRG
7th IFAC/IFIP/IMACS Symposium Digital Computer Application to Process Control	Sept. 17—20	Vienna, A	not yet known	Dr. P. Kopacek Ö P W Z Postfach 131 1014 Vienna, Austria
IFAC/IFORS Symposium Systems Analysis Applied Water and Related Land Resources	Oct.	Lisbon, Portugal	not yet known	Prof. Luis Valadares Tavares APDIO Av. Rovisco Pais 1000 Lisbon, Portugal
1st IFAC Symposium Modelling and Control of Biotechnical Processes	Dec.	Noordwijkerhout, NL	not yet known	Prof. Dr. A. Johnson Lab. voor Fysische Technologie Prins Bernhardlaan G 2628 BW Delft The Netherlands

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