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Newsletter

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IFAC Council- and Related Meetings Swansea, Wales, UK, 16 – 19 July, 1991

Upon invitation of the United Kingdom Automatic Control Council (UKACC), the annual IFAC Council- and Related Meetings were this year held at the University College of Swansea, UK, from 16-19 July, in conjunction with the IFAC/IFIP/IMACS Symposium on Computer Aided Design in Control & Engineering Systems (cf. page 5).

Before the actual Council meeting on 19 July, the following IFAC bodies held their sessions: The Technical Committees on Applications, on Developing Countries and on Systems Engineering; the International Program Committee of the 1993 IFAC World Congress (cf. page 2); the Awards Committee, the Administrative and Finance Committee, the Policy Committee, the Publications Committee, the Publications Managing Board, the Automatica Editorial Board, the Technical Board and the Executive Board.

At the Council meeting, the reports of the President, the Technical Board Chairman, the Executive Board Chairman, the Treasurer and the Secretary were unanimously approved. So was the draft budget 1992, as presented by the Treasurer.

TB Chairman, Lennart Ljung, informed the Council about the newly established Steering Committees, formed in order to take care of the maintenance and development of the series of events. He also referred to the IFAC relation to regional control conferences. So far such relations have been definitely established with the American Control Conference; final discussions are taking place with the European Control Conference and similar relations are envisaged with the Asian Control Conference and the Latin American Control Conference. Council Member Jürgen Ackermann proposed the establishment of a new Technical Committee on Automotive Control (cf. page 2).

Robert Evans, co-chairman of the International Program Committee for the Sydney World Congress of IFAC reported on the IPC activities and the structure of the forthcoming World Congress (cf. page 2).

The involvement of industry in IFAC and IFAC events seems to be one of the most important questions in the further development of our Federation. The President was asked by the Council to inform the National Member Organizations about the possible ways of developing industrial involvement and to ask them for their co-operation and help.

The Executive Board proposed to change the structure of the IFAC Textbook Prize Selection Committee by including the respectively last EDCOM chairman ex officio and by changing the time frame for this prize. Both proposals were approved unanimously by the Council.

The Council changed the rules of granting support to authors from developing countries with accepted papers and decided to use all available funds to support such authors to attend the triennial IFAC World Congress. (cf. page 2).

The discussion and analysis of the IFAC publications policy and related finances occupied a major part of the deliberations at the Council meeting. No decision was taken, but the Council formed a Task Force to study all these questions in depth.

The Council congratulated Prof. Huibert Kwakernaak upon his appointment as Deputy Editor-in-Chief of Automatica. (cf. Who is Who page 2)

Past President Boris Tamm reported on membership and membership structure. In this case, too, a Task Force was formed.

The NMOs that have applied to host the IFAC World Congress in 2002 are Belgium, Czechoslovakia, Italy and Spain (in alphabetic order). The four representatives of these NMOs presented their respective proposals and outlined them in greater detail. Several questions were then asked of these persons who will also be the prospective Presidents if their NMO is selected to host the World Congress. A decision will, however, only be taken at next year's Council meeting.

During the Council meeting in Swansea, representatives of the host country informed the participants about the UK activity in control engineering.

The next Council- and Related Meetings will be held in Malaga, Spain, from 20 - 24 May, 1992, in conjunction with the IFAC Symposium on Intelligent Components and Instruments for Control Applications, SICICA.

At the end of the Council Meeting, the President thanked both the UK NMO for their invitation and the organizers of the CADC in Swansea who had provided IFAC with ample facilities and support and had made the members of the IFAC family most welcome.

A New Technical Direction for IFAC

Human organizations, like humans themselves, run the risk of becoming so set in their ways that change becomes almost impossible. If recent outcomes of the Council- and Related Meetings in Swansea are any guide, this is not an immediate danger for IFAC, as we now have a new Technical Committee soon to come into existence, on Automotive Control.

Most readers of this Newsletter will recognize that automobiles are a mature technology in which the application of control remains rather rudimentary. Yet the potential for application of control is clear: fuel efficiency, minimization of pollution, safe braking, active suspension and guided highway motion are all examples crying out for sophisticated control engineering.

Approximately one year ago, Council Member Jürgen Ackermann undertook to investigate the possibility of IFAC doing much more in the automotive control area than at present. (We do have some activity, such as that going on within the Working Group on Transportation Systems for example.) He contacted (among others) senior engineers in the majority of the big car companies in the USA, Europe and Japan, as well as the major professional groups which could have a significant interest. The enthusiasm from these individuals and organizations for IFAC to show a lead was enormous.

It quickly became clear to Jürgen Ackermann, the IFAC Technical Board and the Council that the conjunction of technological and organizational windows of opportunity and the size of the activity demanded a Technical Committee rather than just a Working Group, and accordingly, the Council at its recent Swansea meeting voted for the creation in principle of a Technical Committee on Automotive Control. The actual timing will depend on the development of a precise scope and the selection of a suitable chairman. Some rationalization of the activities of the new Committee with those of existing Working Groups will be needed also.

IFAC has on this occasion taken the trouble to find out what the market (i.e. users and practitioners of automatic control) wants, and then acted to set up the first Technical Committee in a number of years. We should be pleased about our organizational performance, but more importantly, we hope that soon we will be truly proud of the accomplishments of our recently conceived but still unborn Technical Committee.

Brian D O Anderson

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IFAC World Congress

Sydney 1993

IPC Meeting, Swansea, UK

17 July, 1991

The next IFAC World Congress will take place in Sydney, Australia, between 19 and 23 July 1993. The first IPC Meeting was held in Swansea on 17 July, 1991. At the meeting the general format of the Congress was decided. A brief summary of the main features of the 1993 Congress is set out below.

The Congress is the prime IFAC event and covers all areas of control theory and associated applications. Up to 1500 participants are expected. Presentations will cover regular papers, poster sessions and invited papers. As in previous congresses, the topics to be covered are roughly defined by the various IFAC Technical Committees.

A new feature of the Sydney Congress will be the introduction of Mini Symposia and Target Areas in addition to the regular Congress programme. We envisage that these will comprise about half the papers.

The Mini-Symposia will be of two types and will either occupy a single room for the whole Congress or a single room each afternoon. The Mini Symposia topics are:

1. Robust Control Design
2. Interactions between Modelling, Control and Adaptation
3. Real Time Computing for Control
4. Measurement and Control Applied to Mining, Minerals and Metal Processing

5. Chemical Process Control
6. Nonlinear Control Systems

The Target Areas will have two formats and will either occupy a single room for a day or afternoon. The Target Area topics are

1. Automobile Control (exact title to be verified with Target Area Chairman)
2. Discrete Event Systems Control
3. Intelligent Control Systems
4. Manufacturing Systems
5. Power Plant Control Issues
6. Control of Biotechnological Systems
7. Control of Resonant and Flexible Systems
8. Control of Biomedical Systems

The Second Announcement and Call for Papers will appear towards the end of 1991 giving full details of how to submit papers to either the regular Congress, the Mini Symposia or Target Areas. Also, directions for Invited Sessions will be outlined. The date for submission of all material will be July 1992.

The Congress is expected to herald new advances in control and will also give participants a unique opportunity to visit an exciting and different country in the Southern Hemisphere.

G.C. Goodwin
R.J. Evans
Co-IPC Chairmen

IFAC Election Process Starts

General Information About the IFAC Election Procedures for Officials to Serve During the Triennial Term 1993 - 1996

The IFAC President has appointed an Elections Committee for the nomination of IFAC officials to serve during the triennial term 1993-1996 according to the IFAC Constitution. The Members of the Elections Committee are Dr. Stephen Kahne (USA) and Professor Lennart Ljung (S). Professor Yong-Zai Lu (China, P.R.) acts as Chairman of the Elections Committee. The IFAC Council endorsed these appointments at their recent meeting in Swansea, UK.

One of the important tasks of the Elections Committee is the identification of highly qualified people to be nominated as candidates for many different IFAC positions. The Elections Committee will receive nominations from the NMOs, Council Members, Advisors and current

officials. In general, qualifications involve technical experience, English language proficiency, activities in IFAC and/or other professional societies and demonstrated leadership skills. In addition, the Elections Committee will emphasize nominations of qualified young contributors and those working in industry.

Having received nominations, the Elections Committee will analyze them to evaluate leadership skills, technical qualification, and motivation to serve IFAC, including availability of support from their employer. IFAC does not support travel expenses of its volunteer officials.

The Elections Committee will begin discussing candidates in early January, 1992.

Changes in Authors' Support

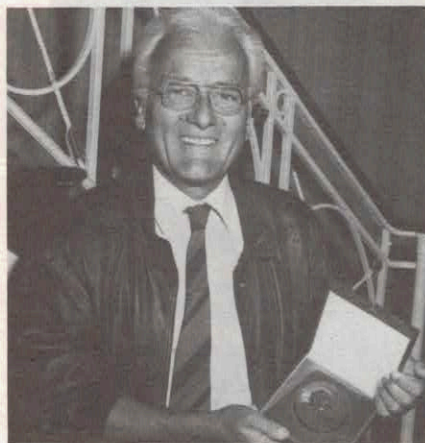
In the last years IFAC has tried to assist authors of accepted papers from developing countries to attend IFAC events. The Committee for the Support of Control Engineering Education in Developing Countries (CSCEEDC) distributed the amount received from UNESCO, the Royal Society, etc., and covered the registration fee and some local expenses of about 10 authors per year. Unfortunately, the above mentioned sources are no longer available and the amount put at IFAC's disposal has been exhausted. IFAC itself has therefore earmarked a certain amount of money for support purposes in its budget. At the same time the number of applicants for funds is growing rapidly due to

economic difficulties in Central- and Eastern European countries as well as the Soviet Union. In this year only, more than 100 applications have been received by the Committee, most of them from the former Eastern bloc.

Considering the very limited resources, the IFAC Council decided to use them exclusively for the triennial IFAC World Congresses.

Currently the concept developing country is undergoing a change in definition. For the time being, IFAC has decided to consider countries with a non-freely convertible currency as developing countries.

Quazza Medal Presented



Prof. Petar Kokotovic
Quazza Medal Holder 1990

On the occasion of the 1991 American Control Conference, held in Boston, USA, IFAC President-Elect Stephen Kahne presented the Quazza Medal, awarded at the 11th IFAC Congress, to Petar Kokotovic.

Introducing IFAC Working Groups

Working Group on Large Scale Systems - Theory and Applications

WG of the TC on Systems Engineering

The area covered by this Working Group extends over various subjects: some of them being rather classical ones in the field of automatic control such as decomposition techniques, aggregation, multilevel and multiobjective control..., others having to some extent an up-to-date flavour such as knowledge based control and its relations with artificial intelligence, fuzzy sets, parallel processing,.... In this large scale area, attempting a definition of the global philosophy covering most of the work one can say that they generally profit of structural properties about the models and information to be processed in order to overcome the difficulties implied by the problem dimension which often also implies as a corollary some stochastic and uncertain features.

In this respect, one may propose a list, certainly not exhaustive, of some of the topics of interest in the large scale area and the related working group:

- structural analysis and large scale modelling
- stability and robustness issues
- aggregation techniques and model reduction
- decentralized estimation and control
- multilevel, hierarchical control
- decentralized control and constrained information pattern
- multitime scale system
- multiobjective optimization and control
- knowledge based control and AI approaches
- parallel processing: multiprocessor architectures and networks

- application in management systems, energy systems, telecommunications networks

The next important meeting in the large scale system area is the symposium on Large Scale Systems: Theory and Applications, to be held in Beijing, China, P.R., August 22-25, 1992.

Working Group on Modelling and Control of National and Regional Economies

WG of the TC on Economic and Management Systems

The Working Group is concerned with the development and application of decision making methods, in a wide sense, for economic systems. The methods range from conventional statistical modelling tools to stochastic control, robust control, nonlinear programming, game theory, artificial intelligence, to the design of decision support and expert systems.

The Working Group has recently been reconstituted and currently has an invited membership of over forty distinguished researchers in the fields of economics, systems and optimization theory and computer science. The Working Group fosters close relationship with the Society of Economic Dynamics and Control in order to revive the fruitful interaction with economists which has waned slightly in the recent years.

The principal activity of the Working Group is to assist the dissemination of work in its area of interest, mainly through meetings. The following areas have been identified for meetings in the near future.

1. Computational problems in modelling and decision making: Model solution, game theory, nonlinear optimization, stochastic control problems and algorithms.
2. Time series estimation, learning and modelling.
3. Artificial intelligence aids for economic modelling and decision making.

Researchers wishing to join the Working Group are requested to write to the current chairman: Dr. Berc Rustem, Department of Computing, Imperial College of Science, Technology and Medicine, 180 Queen's Gate, London SW7 2BZ, UK

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Computer Aided Design in Control and Engineering Systems

IFAC/IFIP/IMACS Symposium

Swansea, UK, 15-17 July, 1991

CADCS 91, the fifth Symposium in the now well-established IFAC Symposium series on Computer Aided Design in Control Systems was held in the attractive seaside setting of the University College of Swansea. The Symposium was sponsored by the Applications, Computers, Education, Manufacturing Technology and Systems Engineering Committees of IFAC, and co-sponsored by IMACS. It was organized by the University College of Swansea on behalf of the United Kingdom Automatic Control Council and attended by 135 participants, of whom 30 were from the UK and 105 from the rest of the world.

From 145 papers submitted, the International Program Committee selected 110 for the technical program, of which 90 were presented at the Symposium. The technical program was organized into 3 plenary sessions and 24 technical sessions, of which 3 were specially organized on particular themes. Supporting the program was an exhibition of state-of-the-art CADCS hardware and software, together with demonstrations of participants' software and opportunities for hands-on experience.

The tone for the Symposium was set by the 3 excellent plenary papers, each extremely well presented. The paper Object-Oriented Modelling: Tools and Techniques for capturing properties of physical systems in computer code by Francois Cellier emphasized the power offered by the object oriented programming paradigm in the development and application of modelling tools and techniques. The paper Experiences Using Knowledge-Based Reasoning in On-Line Control Systems by Greg Stanley described his experiences in designing and implementing knowledge-based systems for real-time control problems. The paper High Integrity Systems by John Cullyer emphasized the social implications of control engineering and the professional obligations of the control engineer with respect to safety-critical systems.

The technical sessions followed a number of coherent themes, including Environments, System Modelling, Simulation, Graphics and Animation, Intelligent and Expert Systems, Object-Oriented and Symbolic Methods, Numerical Methods, System Design, Electrical Systems, Process Systems and Education. Two special sessions on Concurrent Control Engineering were organized by Georg Grubel, and a special session on Hydraulic Systems was organized by Fin Conrad.

There was considerable emphasis on integrated software packages and the more open, customizable environments now emerging. Particularly stressed were the needs for good database facilities which exploit the opportunities offered by the object-oriented approach, together with facilities for implementing graphical descriptions of systems through a well designed and user-friendly interface. Applications of knowledge-based methods to several aspects of CADCS were reported, and will obviously assume increasing importance in the future.

The character of the Symposium was enhanced by the presence of many senior IFAC figures who were attending meetings of the Council and other related committees held in Swansea during the same week. An excellent social program provided plenty of scope for greeting old friends and making new ones.

H.A. Barker, NOC Chairman

Electric Power Systems Control Centers IFAC Workshop

Alpbach, Austria, June 19 – 21, 1991

The Workshop was held in Alpbach, a typical Tyrolean village, surrounded by a wonderful alpine scenery. This presented stimulating surroundings for 76 experts from 22 countries who discussed and exchanged ideas in 5 technical sessions on selected current topics pertaining to the design and functions of SCADA/EMS control centers.

Papers From the Next Issue – Nov. 1991

Papers

Appropriate Automation: Integrating Technical, Human, Organizations, Economic and Cultural Factors

(T. Martin, J. Kivinen, J.E. Rijnsdorp, M.G. Rodd, W.B. Rouse)

An Expert System Interface for an Identification Program

(J.E. Larsen, P. Persson)

Automated On-Orbit Frequency Domain Identification for Large Space Structures

(D. S. Bayard, F.Y. Hadaegh, Y. Yam, R.E. Scheid, E. Mettler, M.H. Milman)

Frequency Domain Analysis and Robust Control Design for an Ideal Flexible Beam

(K. Lenz, H. Özbay, A. Tannenbaum, J. Turi, B. Morton)

Linear Time-Varying H_2 -Optimal Control of Sampled-Data Systems

(T. Chen, B.A. Francis)

On Multivariable Stability in the Gain Space

(O.D.I. Nwokah, R. Perez)

Minimality of Descriptor Representations under External Equivalence

(M. Kuijper, J.M. Schumacher)

Optimal Estimation Theory for Dynamic Systems with Set Membership Uncertainty:

An Overview

(M. Milanese, A. Vicino)

New Overlapping Coordination Methodologies for Large-Scale Optimization Problems

(T. Shima)

Brief Papers

Study of the Discrete Singularly Perturbed Linear-Quadratic Control Problem by a Bilinear Transformation

(Z. Gajic, X-m. Shen)

Properties of a Discrete-Time Enhanced Linear-Quadratic Controller

(D.A. Pierre)

On the Parameterization of Solutions to the Servomechanism Problem

(M.A. da Silveira, G.O. Corree)

Uncertain Feedback Loops and Robustness in General Linear Systems

(G. Tadmoor)

A Generalisation of the Small-Gain Theorem for Nonlinear Feedback Systems

(D.J. Hill)

Dynamic Stabilization of Systems with Input Delays

(L. Pandolfi)

Book Reviews

Analysis and Synthesis of Time Delay Systems, by H. Gorechi, S. Fuksa, P. Grabowski & A. Korytowski

(M. Nihtilä)

System Identification and Control Design Using P.I.M. + Software, by I.D. Landau

(J.P. Norton)

Topic 1: Distributed Computer Systems

- Open architecture concepts
- Local area networks and LAN protocols
- Fullgraphic workstations
- Software standardization
- Task distribution among processors
- Intertask communication and interfacing
- Availability and response improvements
- System loading considerations

Topic 2: Hierarchical Control Centers

- Hierarchical structures
- Wide area networks
- Communication standards
- Allocation of functions in a hierarchy
- Station computers and intelligent RTU's
- Hierarchical state estimation
- Inter- and intra-utility data flow requirements
- Pros and cons of integrated networks

Topic 3: Static Security Analysis and Control

- Contingency selection
- Violation check list
- Active power security dispatch
- Voltage/reactive power control
- Experience with optimal power flow

Topic 4: Dynamic Security Assessment

- Security indices
- Contingency selection
- Security distances and regions of interest
- Feasible techniques of online security assessment, e.g. processing, direct methods
- Prospects for use of expert systems

Topic 5: Man-Machine Interface Requirements

- Fullgraphic characteristics
- Human factors design
- Desirable display format features
- Alarm processing philosophies
- Response requirements
- Video projectors
- Audible alarms
- Other MMI equipment

A survey of the participants about the selection of topics and location & accommodation was rated with an overwhelming 80-90 % as excellent, the presentation of the topics showed with 55 % very good and 40 % not too bad, which shows that there is room for improvement at the next workshop which is planned for 1993 to be held in Italy.

K. Schenk
NOC Chairman

WHO IS WHO IN IFAC



Prof. Huibert Kwakernaak
Deputy Editor-in-Chief of Automatica

Huibert Kwakernaak was born in 1937 in Rijswijk (Z.H.), The Netherlands. He obtained the diploma in Engineering Physics at Delft University of Technology in 1960. Following this, he studied Electrical Engineering at the University of California at Berkeley, where he obtained the M.Sc. degree in 1962 and the Ph.D. degree in 1963.

After returning to The Netherlands, Dr. Kwakernaak first was a research associate and later a reader in the Department of Engineering Physics and Mathematics of Delft University of Technology. Since 1970 he has been a full professor in the Department of Applied Mathematics of what is now the University of Twente, where he teaches systems and control theory.

Professor Kwakernaak's research interests are in linear control theory. He is the co-author of several books (Linear Optimal Control Systems, with R. Sivan, Wiley Interscience, 1972; Lineare Kontrolltheorie, with H.W. Knobloch, Springer Verlag, 1985; Modern Signals and Systems, again with R. Sivan, Prentice Hall, 1991) Currently his research is focussed on the 'polynomial' approach to H_∞ optimization.

In 1968, when Automatica became the official IFAC Journal, Dr. Kwakernaak was appointed Associate Editor, with George Axelby as Editor. In 1980, George Axelby became Editor-in-Chief, and Professor Kwakernaak was promoted to Editor. In 1991, he was appointed Deputy Editor-in-Chief. From 1969 to 1972, Professor Kwakernaak was vice-chairman of the IFAC Education Committee and from 1972-1975 chairman of the Theory Committee. He is active on the editorial board of various other journals and publications (Springer Lecture Notes in Control and Information Sciences, Control-Theory and Advanced Technology, Robust and Nonlinear Control) but considers his work for Automatica as the most important.

Professor Kwakernaak is a Fellow of the IEEE and received the IFAC Outstanding Service Award.



FORTHCOMING EVENTS

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Title	1991	Place	Deadlines	Further Information
IFAC Symposium Advanced Control of Chemical Processes - ADCHEM '91	Oct. 14-16	Toulouse France	-	ADCHEM '91, LAAS/CNRS 7, av. du Colonel Roche F-31077 Toulouse Cedex, France
IFAC/IMACS/IFIP Workshop Cultural Aspects of Automation	Oct. 16-18	Krems Austria	-	ÖPWZ, Ms. J. Hähnel Rockgasse 6, A-1014 Vienna, Austria
IFAC/IFIP Conference Safety, Security, Reliability SAFECOMP '91	Oct. 30 - Nov. 1	Trondheim Norway	-	NFA POB 2312, Solli, N-0201 Oslo Norway
IEEE/MBS/(IFAC) Conference New Frontiers of Biomedical Engg. - Innovations from Nuclear to Space Technology	Oct. 31 Nov. 11	Orlando, FL USA	-	Dr. Swamy Laxminarayan Academic Computing Center, IST Univ. of Medicine & Dentistry 185 South Orange Ave Newark, NJ 07103, USA
Title	1992	Place	Deadlines	Further Information
IFAC Symposium Control of Power Plants and Power Systems	March 9-11	Munich Germany	-	VDI/VDE-GMA Secretariat Symposium, Power Plants and Systems POB 1139, D-W-4000 Düsseldorf 1, Germany
IFAC Conference Modelling and Control of Biotechnical Processes	April 5-8	Monterey, CA USA	-	Prof. M. Karim, Dept. of Agriculture & Chem. Engg, Colorado State Uni. Fort Collins, CO 80523, USA
IFAC Workshop AI, Control and Advanced Technology in Marine Automation - CAMS '92	April 8-10	Genoa Italy	15 Oct. 1991	Istituto Internazionale d. Comunicazione Secretariat CAMS '92, Via Pertinace, Villa Piaggio I-16145 Genoa, Italy
IFAC Symposium On-Line Fault Detection and Supervision in the Chemical Process Industries	April 22-24	Newark Delaware USA	-	Dr. P. Dhurjati, Dept. of Chemical Engg. Univ. of Delaware Newark, DE 19716, USA
IFAC Symposium Advanced Control in Chemical Processes DYCORD '92	April 27-29	College Park MD, USA	-	Dr. T. McAvoy, Dept. of Chem. & Nuclear Engg. University of MD, College Park MD 20742-2111, USA
IFAC/IFIP Workshop Experience with the Management of Software Projects	May 18-19	Schloss Seggau Austria	15 Dec. 1991	MSP-92 NOC, c/o ÖPWZ Rockhkg. 6, A-1014 Vienna, Austria
IFAC Symposium Intelligent Components and Instruments for Control Applications	May 20-22	Malaga Spain	-	SICICA '92 Symposium Secr. Faculty of Information, Plaza El Ejido s/n, E-29013 Malaga, Spain
IFAC/IFIP/IFORS/IMACS Symp. (7th) Information Control Problems in Manufacturing Technology	May 25-28	Toronto Canada	-	Ms. Nicole Léger, INCOM '92 National Research Council Ottawa, Ont. K1A 0R6, Canada
IFAC Workshop Automatic Control for Quality and Productivity	June 3-5	Istanbul Turkey	15 Nov. 1991	Prof. A. Talha Dinibütün, Istanbul Technical Univ. Mechanical Engg. Dept. Gümüssuyu 80191-Istanbul, Turkey
IFAC/IFIP/IFORS/IEA Symposium Analysis, Design and Evaluation of Man-Machine Systems	June 9-11	The Hague Netherlands	-	Mr. P. L. Brinkman, c/o Man-Mach. Systems Group Lab. of Measurement and Control Fac. of Mech. Engg & Marine Tech Mekelweg 2, NL-2628 CD Delft, Netherlands
IFAC Symposium Artificial Intelligence in Real Time Control	June 16-18	Delft Netherlands	1 Nov. 1991	AIRTC 1992 Congress Office Kivi, POB 30424 NL-2500-GK-The Hague, Netherlands
IFAC/IFIP Workshop Real-Time Programming	June 23-25	Bruges Belgium	15 Nov. 1991	IFAC/IFIP WRTP'92, c/o BIRA, Desguinlei 214, B-2018 Antwerp, Belgium
1992 American Control Conference in cooperation with IFAC	June 24-26	Chicago, IL USA	-	Dale E. Seborg, Dept. of Chem. & Nucl. Engg, Univ. of California Santa Barbara, CA 93106, USA
IFAC Symposium Nonlinear Control Systems Design NOLCOS	June 24-26	Bordeaux France	1 Oct. 1991	Dr. M. Fliess, CNRS ESE, Lab. des Signaux & Systèmes, Plateau de Moulon F-91192 Gif sur Yvette, France

FORTHCOMING EVENTS (ctd.)

Title	1992	Place	Deadlines	Further Information
IFAC/IFORS Workshop Support Systems for Decision and Negotiation Processes	June 24-26	Warsaw Poland	-	Dr. Z. Nahorski, DNS '92 System Research Inst. Polish Academy of Sciences Newelska 6, PL-01 447 Warsaw, Poland
IFAC Symposium Adaptive Control and Signal Processing	July 1-3	Grenoble France	1 Nov. 1991	L. Dugard, Lab d'Automatique de Grenoble-ENSIEG, BP 46 F-38402 St. Martin d'Herès, France
IFAC/IFORS/IFIP/(IIASA) Symp. (7th) Modelling and Control of National Economies	August 18-20	Beijing China, P.R.	15 Dec. 1991	Ms. Wang Hong, MCNE '92 Secretariat Chinese Association of Automation POB 2728, Beijing 100080, China, P.R.
IFAC/IFORS Symposium (6th) Large Scale Systems: Theory and Applications	August 22-25	Beijing China, P.R.	-	Prof. Y. P. Zheng, IFAC LSS92 Chinese Association of Automation POB 2728, Beijing 100080, China, P.R.
IFAC Workshop Distributed Computer Control Systems - DCCS '92	August 23-25	Beijing China, P.R.	15 Jan. 1992	Prof. Bing Zheng Gong POB 927, Beijing 100080 China, P.R.
IFAC Symposium (7th) Automation in Mining, Mineral and Metal Processing	August 26-28	Beijing China, P.R.	-	7th IFAC MMM '92 Secretariat Mr. Shen Wei-Zhi ARIM Information Section, POB 919 100071 Beijing, China, P.R.
IFAC Workshop Algorithms and Architecture for Real Time Control	Aug. 31 Sept. 2	Seoul Korea	31 Jan. 1992	WS Secr. Jaehyun Park, IFAC AARTC WS Secr. Engg. Research Centre for Advanced C&I Seoul National University, Seoul 151-742, Korea
IFAC Workshop Mutual Impact of Computing Power and Control Theory	Sept. 1-2	Prague CSFR	15 April 1992	Dr. M. Karny, Head of Dept. of Adaptive Systems Inst. of Information Theory & Automation Pod vodarenskou vezi 4, CS-18208 Prague, CSFR
IFAC Workshop (2nd) System Structure and Control	Sept. 3 - 5	Prague CSFR	10 Jan. 1992	2nd IFAC WS, Inst of Information Theory & Automation, POB 18 CS-182 08 Prague, CSFR
IFAC Symposium Automatic Control in Aerospace	Sept. 8-11	Munich FRG	15 Nov. 1991	VDI/VDE Secretariat Att. Mr. H. Wiefels, POB 1139 D-W-4000 Düsseldorf 1, FRG
IFAC Symposium (3rd) Low Cost Automation	Sept. 9-11	Vienna Austria	15 Nov. 1991	Ms. J. Hähnel c/o ÖPWZ Rockgasse 6, A-1014 Vienna, Austria
IFAC Workshop Spacecraft Automation and On-Board Autonomy for Control of Missions in Space	Sept. 14-16	Darmstadt FRG	31 Jan. 1992	Mr. W. Wimmer ESOC, Robert-Bosch-Str. 6 D-W-6100 Darmstadt, FRG
IFAC/(IFORS) Workshop Supplemental Ways for Improving International Stability - SWIS	Sept. 21-24	Toronto area Canada	1 Feb. 1992	Prof. J.O'Shea, Ecole Polytechnique CP 6079, succ. "A" Montreal, QUE H3C 3A7, Canada
IFAC/IFORS Symposium Automated Systems Based on Human Skill	Sept. 23-25	Madison, WI USA	1 April 1992	Prof. Frank Emspak, Univ. of Wisconsin 422 Lowell Hall, 610 Langdon Str. Madison, WI 53703, USA
IFAC Workshop Intelligent Manufacturing Systems	Oct. 1-2	Dearborn MI, USA	15 Oct. 1991	Prof. N.A. Kheir, EI & Systems Oakland University Rochester, MI 48309-4401, USA
IFAC Conference SAFECOMP '92	Oct. 28-30	Zurich Switzerland	*	Dr. Heinz Frey, ABB Transportation Systems CH-8050 Zurich, Switzerland
IEEE/MBS/IFAC Conference 14th Annual Intl. Conf. of the IEEE Engg. in Medicine & Biology Society	Oct. 29 Nov. 1	Paris France	*	Dr. Swami Laxminarayan Academic Computing Center, IST Univ. of Medicine and Dentistry 185 S. Orange Avenue, Newark, NJ 07103, USA

Title	1993	Place	Deadlines	Further Information
IFAC Workshop Production Control in Process Ind.	March 29-31	Germany	*	H. Wiefels, VDI/VDE GMA PF 101139, Graf-Recke-Str. 84 D-4000 Düsseldorf, Germany
IFAC WORLD CONGRESS	JULY 19-23	SYDNEY AUSTRALIA	*	The Institution of Engg., Australia, 11 National Circuit Barton, ACT 2600 Australia

* deadline not yet known
- deadline past