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Simulation News Europe

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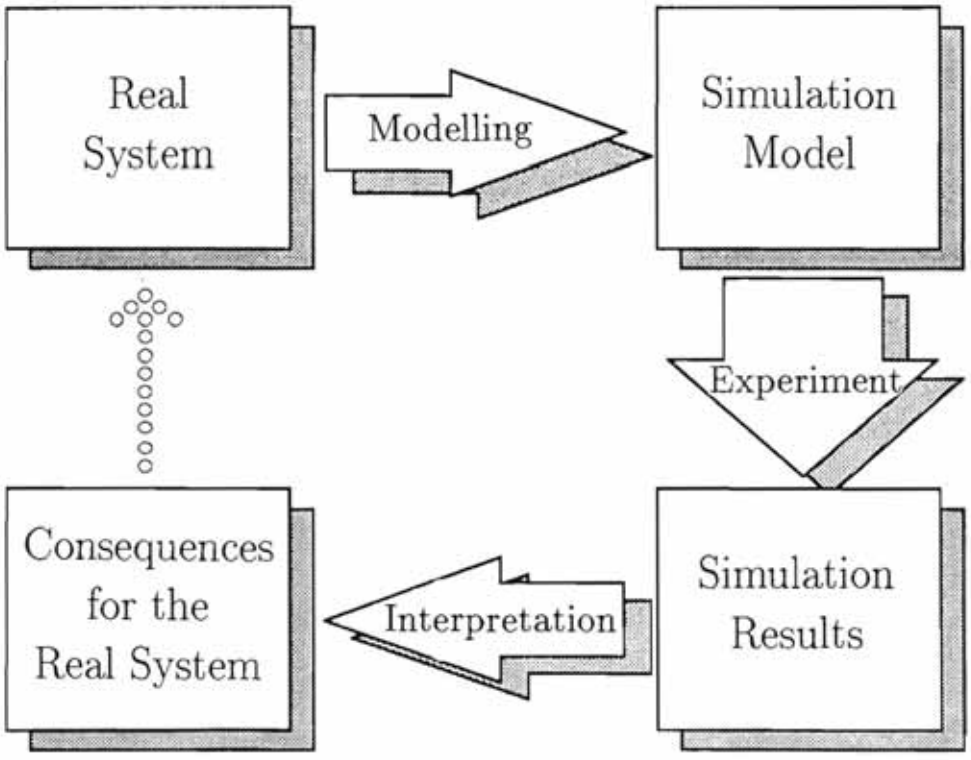

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Editorial

EUROSIM - Simulation News Europe plays an important role within the EUROSIM Federation - it disseminates information to all member societies and to all members of these societies. Furthermore it introduces the importance of simulation to industry, government, and education.

In 1990 the EUROSIM board of directors decided to accept the offer of ASIM to publish this newsletter. ASIMs offer is based on a financial support from the Scientific Academy of Lower Austria (which will become a regional university) for editing and publishing. The editors hope that this issue of **EUROSIM - Simulation News Europe** is able to continue the quality of the preceding issues. Besides the main topic, the dissemination of information on simulation, the editors intention was to produce a newsletter at low costs, with condensed information on as few pages as possible (for easy mailing) and with concern to the environment (use of recycling paper).

The issue has a fixed structure which will be observed also in the following issues. It starts with a report on EUROSIM activities, followed by a section with essays. In this issue the essays report on the situation and on the simulation activities in Eastern European countries. In 1989 and 1990 the situation changed rapidly - the idea of a European community swept over whole Europe. Consequently the logo of **EUROSIM - Simulation News Europe** changed - Europe without any borders. The logo will be changed another time in the next issue expressing the progress of the changes.

A 'classical' section are the societies' reports dealing with activities within ASIM, DBSS, FRANCOSIM, ISCS, SIMS and UKSC. Reports on activities of international societies (IFAC, IMACS, SCS) in the next section complete the societies affairs.

New is a series on simulation centers. This issue starts the series with the introduction of two simulation centers. Another new series is a comparison of simulation software. In this issue a model is presented to be tested with different simulation languages. The results will be published in the next issues. Both series will be continued. A calendar of events completes this issue.

The editors wish to thank all who gathered, prepared and sent information for this issue. Furthermore, they thank companies for the advertisements and finally the Scientific Academy of Lower Austria for the financial support including the copies for the Eastern European countries.

All readers are kindly invited to send letters, comments, suggestions or contributions to the editors, either to the editors of the simulation societies (editorial board) or directly to the **EUROSIM - Simulation News Europe** editors.

F. Breitenecker, I. Husinsky

Preface

It is a great pleasure for me to present to the simulation community this first number of **EUROSIM - Simulation News Europe,** an official publication of our Federation edited by Prof. Dr. F. Breitenecker and Mrs. I. Husinsky (Technical University of Vienna).

I hope, that co-operation in simulation in Europe will grow and will become more and more important in the next future, and I believe, that EUROSIM and its activities are a very effective tool to develop this co-operation, to diffuse information and to get an improvement of our research activities.

I ask all members of our federated societies to cooporate with the editors in order to make **EUROSIM - Simulation News Europe** an exhaustive, useful and widely diffused document of our federation. I am sure, that this publication will greatly contribute to the success of the next European Simulation Congress to be held at Capri in 1992 and I wish to express my appreciation for the effort made by the editors and by our colleagues to publish this newsletter.

Prof. Dr. Franco Maceri,
EUROSIM President

In Memoriam
Professor Giorgio Savastano

In February, the international simulation community lost one of its pioneers. His nomination as the first president of the European Simulation Society (EUROSIM) in November 1989 at the time of its establishment symbolized the recognition of Professor Giorgio Savastano's work by the European simulation community. Those who had the privilege of working with him will remember a conscientious, concerned, and very respected leader of distinction.

He started his university career in 1948 as an assistant professor, and in 1957 he became the first Technical Director of the Calculus Center of the University of Naples. In 1962 he was appointed to the chair of Electrical Measurements. From 1964 - 1978 Professor Savastano was the Director of the Institute of Electrical Engineering and from 1970 - 1982 he was the first director of the "Hybrid Computer Research Center" - National Research center of Italy. In 1983 he became the President of the community of researchers at C.N.R. involved in the study of Electrical Measurements.

The results of his research are contained in about 60 papers in and outside of Italy. The students of the University of Napoli and the large number of his colleagues will remember a man who was able to transfuse his knowledge and rigor into his scientific activities. He will never be forgotten by the many who were honored to know him as a friend and colleague.

EUROSIM

One of the milestones in the area of simulation in the year 1989 was the foundation of EUROSIM, the Federation of European Simulation Societies. Eurosim formally was founded at the 3rd European Simulation Congress (Edinburgh, September 5 - 8, 1989). The purpose of EUROSIM is to provide a European forum for regional and national simulation societies to promote the advancement of modelling and simulation in industry, research and development.

Activities of EUROSIM will concern:

- co-ordination of meetings of member simulation societies
- information distribution to member societies about activities, advancements and the state-of-the-art in system simulation
- co-operaration in joint research projects, in standardisation committees and with international societies in the field of simulation.

Up to now the following European national and regional simulation societies form EUROSIM:

- ASIM - Arbeitsgemeinschaft Simulation (Austria, Germany, Switzerland)
- DBSS - Dutch Benelux Simulation Society (Belgium, The Netherlands)
- FRANCOSIM - Société Francophone de Simulation (Belgium, France)
- ISCS - Italian Society for Computer Simulation (Italy)
- SIMS - Simulation Society of Scandinavia (Denmark, Finland, Norway, Sweden)
- UKSC - United Kingdom Simulation Council (UK)

EUROSIM holds contacts with people in Czechoslovakia, Greece, Hungary, Portugal, Spain and Yugoslavia for new member societies. It is anticipated that simulation societies of these and other countries (either existing societies or societies to be founded) will join EUROSIM in the future.

Each simulation society nominates one person into the board of directors of EUROSIM. This board meets up to three times a year and decides the agenda of EUROSIM.

The last two meetings were held in Liège and Capri, resp. The following report summarizes the topics of these two meetings, based on the notes of the meeting in Liège and on the preliminary notes of the meeting in Capri.

Board of Directors - Meeting, Liège, April 3rd, 1990:

Participants were Mr.Ameling (ASIM), Mr.Dekker (DBSS), Mr.Maceri (ISCS), Mr.Juslin (SIMS) and Mr.Zobel (UKSC), furthermore Mr.Laret, Mr.Pave and Mr.Lebrun from France and Belgium, resp., because this meeting was arranged and held in conjunction with the inaugural meeting of FRANCOSIM, the French speaking Simulation Society. Mr.Zobel, the EUROSIM coordinator, chaired the meeting. He opened the meeting with a memorial address on the late EUROSIM President Prof.G.Savastano, who died unexpectedly.

ISCS proposed in a letter Mr.Maceri, professor at University of Rome II, for the EUROSIM presidency - the board warmly and unanimously approved this appointment. Mr.Maceri proposed to institute a "Savastano Award", presented for the first time during the ESC 1992. The board fully supported this idea.

Mr.Dekker informed the participants about the contact with the European Community in order to support EUROSIM; support based for instance on ESPRIT projects with significant overlap with EUROSIM is possible, a financial support of an EUROSIM office, too. Contacts with CEC will be intensified. Concerning the bylaws (not approved up to now) Mr.Lorenz will contact a company in Belgium specialised in making bylaws.

Due to their excellent work Mr.Dekker and Mr.Zobel were nominated and accepted as treasurer and secretary of EUROSIM, resp. Furthermore, the board agreed to have an Advisory Committee, consisting of famous European specialists in simulation. Mr.Kerckhoffs (DBSS) will prepare detailed suggestions on an Advisory Board.

The first EUROSIM congress, the 4th European Simulation Congress, will be held in Sorrento or Capri, tentative date is end of September 1992. Mr.Maceri will inform the societies about further details. The board will nominate persons for the scientific committee.

The board decided that ASIM can produce EUROSIM Simulation News Europe till 1991. ASIM will be informed about continuation in time (ASIM's offer for publishing the newsletter is based on a financial support of the Scientific Academy of Lower Austria resulting in a low price). Mr.Breitenecker is proposed as chief editor, the societies will nominate persons for the editorial board. Furthermore the board discussed about a scientific journal published by EUROSIM. The societies will prepare suggestions for discussion at the next board meeting. In order to stimulate the growth of EUROSIM Mr.Giron (Spain) and Mr.Porta Nova (Portugal) will be contacted officially, colleagues in Greece and Eastern European Countries on a private basis.

Board of Directors Meeting, Capri, June 30/July 1, 1990:

Participants of this meeting were Mr.Halin (ASIM), Mr.Decker (DBSS), Mr.Iazeolla (ISCS), Mr.Maceri (ISCS), Mr.M.Savastano (ISCS) and Mr.Zobel (UKSC). Main topic of this meeting was the European Simulation Congress ESC'92. Mr.Maceri reported on the preparations. Persons and topics for the scientific committee are to be nominated to him. Each society should contact industries concerning an exhibition at the ESC'92. The date is September, 30 - October, 3 1992, the congress will be held at Capri.

EUROSIM Simulation News Europe should be printed as soon as possible. Each society should nominate a person into the editorial board responsible for the society's report and send the report to Mr.Breitenecker (Editor-in-Chief).

A concept for the Advisory Board was presented. Each society will discuss this concept. Discussion on a scientific journal published by EUROSIM were continued. Mr.Maceri asked for candidates for the editorial board. Each society should discuss this topic and prepare suggestions.

EUROSIM will contact Mr.Tzafestas (Greece) officially concerning a Greek simulation society. ASIM will discuss this topic with regard to Eastern Germany.

In the next board meetings topics like Savastano Award, scientific journal, EUROSIM logo, etc. will be discussed.

Hungarian Contacts to the European Simulation Community

The events in the Eastern part of Europe are promising for a unification of the continent that has been torn apart for decades. One of the most important and pioneering fields in establishing contacts is culture and science. In the field of simulation IMACS/Hungary has endeavoured to establish contacts with the European simulation community and also with scientists beyond Europe.

In the last decade three IMACS European Simulation Meetings have been organized in Hungary.

In 1980 the first one took place in Keszthely on *Discrete Simulation and Related Fields*, with participants from 11 countries. During the meeting a round table discussion on "Future Tools of Simulation vs. the Future of Simulation Tools" was held.

The second conference in the series was held in Eger in 1984 on *Simulation in Research and Development*. Here the participants were from 17 countries, and the round table discussion was on the topic "From Theory to Application of Simulation: How to Bridge the Gap?".

The last one, in 1990, was held in Esztergom on *Problem Solving by Simulation*. The number of countries from which scientists arrived was 17 again, and beyond the panel discussion on "Problems vs. Solutions or How to Find Diseases to the Medicines" demonstrations of simulation programs were held.

All of these conferences were attended by some of the most outstanding scientists in the field from all over the world and it was taken care that the level of the conferences - dealing both with methodology and applications - should be kept high. One of the major aspects - as is reflected by the discussion topics as well - was to deal with the interaction of theory and practice for simulation being an applied science.

It is very much hoped that in the 90's the scientific contacts may be extended further.

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Simulation of Systems in Czechoslovakia - a quick history

The history of systems simulation in Czechoslovakia dates from the second half of 1960's when the production of general purpose analog computers was started in this country. The competition of two producers, AAT and Tesla, a very unusual phenomenon at those "communist" times, undoubtedly contributed to a fairly good technical standard of those machines and this in turn led to the rapid development of continuous simulation. Higher education facilities and not only the technical ones were generously equipped with analog computers and the simulation of continuous systems became a part of the curriculum.

As late as in the first half of 1970's the number of installed analog machines still exceeded the number of digital ones. The production of digital computers made a very slow start in Czechoslovakia and most users were entirely dependent on imports. This was also the main reason why the era of hybrid computing systems touched Czechoslovakia only marginally. The past decade was already fully marked by digital computers and the development of both continuous and discrete simulation took place, though the hardware of Czechoslovak origin was not and is not on a desired technical level and up to now there is almost complete absence of computers with non-von Neumann architecture.

The continuing overall decline of the national economy and the bureaucratic system of its management shifted simulation of systems aside, out of the focus of decision making circles. The demand for simulation studies was rather low and simulation was fostered by a not very large group of dedicated enthusiasts.

The simulationists gathered from the very beginning in the Czechoslovak Scientific and Technical Society. On the ground of this society the first annual simulation conferences were started already in 1964. The conference name was MEDA and in the first years it focused on the applications of the analog computers of the same name made by the Prague producer AAT. Another conference was initiated three years later and oriented to the machines of the other competitor Tesla Pardubice. This era culminated in 1973 by organizing the 7th World AICA (now IMACS) Congress in Prague.

At that time the technical section for simulation of systems has already been formally constituted and worked within the society's Committee for Applied Cybernetics. The section was gradually joined by simulation supporters of nearly every "religion". This trend was encouraged by the Agreement on Understanding the Notion "Simulation of Systems" adopted by the society in 1977. According to this agreement simulation of systems

in a narrow sense is understood as a method of experiments with the simulation model. In a broad sense, however, it is considered to be a specific form of the cognition process. The agreement is not in direct contradiction with any well known understanding of simulation of systems and represents an important integrating factor of the simulation community in Czechoslovakia.

The tradition of MEDA conferences was terminated by the twentieth meeting in 1983 and the role of the main simulation event - now with a really general scope - was taken over by the North-Moravian simulation conferences. At 1987 and 1989 they included international audience but only from the countries of Central and Eastern Europe. Since 1975 specialized Prague symposia Simulation in Biology and Medicine were organized first as Czechoslovak, then since 1978 biannually as international, however, also just for scientists from the Central and Eastern Europe.

Other activities include two annual "chamber" meetings above all with theroretical and methodological problems. The newest event is the Bratislava conference devoted to the simulation of technological processes. In addition a number of simulation courses were organized. They were oriented both on theory and methodology as well as on applications in various areas of science and technology. A particularly active group of simulationists are users of SIMULA who arrange regular meetings and courses related to SIMULA.

The political and social changes in Czechoslovakia after November 1989 were reflected also in the organization of the scientific and technical societies. On May 16, 1990 during the 24th North-Moravian simulation conference the Czechoslovak System Simulation Club has been founded. It is a joint technical section of both Czech and Slovak Scientific and Technical Societies for Applied Cybernetics and Informatics. Unlike former times the Club is a legal subject and has its own membership. The Club immediately got in contact with EUROSIM and SCSI as all restrictions on foreign relations, which formerly limited the scientific contacts to Central and Eastern Europe, disappeared. The 25th jubilee North-Moravian conference in 1991 will thus be held as an entirely open 4th international symposium on modelling and simulation of systems. The same is true of the 8th Prague symposium Simulation of Systems in Biology and Medicine in 1992. These symposia should pave the way of the Czechoslovak simulation community to Europe.

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May 14 - 16, 1991
Vsetin, Czechoslovakia

4th North-Moravian International Symposium on Modelling and Simulation of Systems

The conference organized by the Czechoslovak Systems Simulation Club under the motto

"Simulation of Systems - Czechoslovakia to Europe - Europe to Czechoslovakia".

The deadline for abstracts is December 15, 1990. The language of the papers is English, presentations will be in Czech/ Slovak and English with simultaneous translation. Information concerning the acceptance of contributions will be sent by the end of January. The accepted papers will have to be submitted by February 28, 1991. The scientific program will be composed of plenary, parallel and poster sessions and software demonstrations.

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Computer-Simulation in East Germany

Starting in the 60's with analog computers a growing community of simulationists in East Germany (former GDR) has been formed. At that time about three hundred active specialists are cooperating with the simulation society (Fachausschuß Modellierung und Simulationstechnik) in the frame of the Scientific- Technological Society of Measurement and Automatic Control. This simulation society is focused with subgroups to basic problems in modelling and simulation, simulation in the industry (like flexible automation, chemical and biotechnological reactors etc.), in informatics, water management and environmental protection, in economy etc. Highlights of the scientific life are the conferences, the yearly meetings at the University Rostock and about every three years the International Symposium on Systems Analysis and Simulation in Berlin. Both conferences are attended by about 300 participants.

The 19th meeting will take place in December 18-20 this year in Rostock and is focused on problems of systems with distributed parameters, neural nets and economy besides basic methods of simulation techniques (hardware and software).

The 4th International Symposium, co-sponsored by IMACS, IFAC, IIASA and ASIM, from August 27 to September 2, 1992 in Berlin is concentrated on modelling, simulation, complex systems analysis for environmental problems, industrial automation, and other applications.

In East Germany about 20 block oriented or branch specific simulation systems were developed and used. Besides the usual applications in industry and technique are remarkable applications in VLSI-design, ecology, water management and environmental protection, sports training.

Today parallel simulation on multiprocessor systems are a topic of research activities, too. The combination with environmental research (air pollution models) is directed on smog warning systems for the area of Berlin as example. Depending on the hardware which was used in the former GDR there was a close cooperation with the other eastern countries especially the Czechoslovak simulationists. There were joint conferences in Prague with strong participation from both sides.

Nowadays we are looking for the partnership with ASIM and the possibilities of the cooperation within ASIM.

Achim Sydow
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Simulation and Operations Research activity in Yugoslavia

Operations research (OR) activities in Yugoslavia are growing for more than three decades. OR is being taught in a number of University departments throughout the country. Its development and applications span a wide range of disciplines from mathematical programming, multicriteria decision-making, transport and traffic, production and inventories control, simulation, econometrics etc. A number of books and papers have been published. Yugoslav annual operations research symposium had its 17th birthday this year, with more than 150 papers published each year. Besides, Yugoslavia successfully organized Mini EURO in "OR in transportation and traffic" in 1987 in Herceg Novi, and 10th EURO conference in 1989 in Belgrade.

Simulation modelling is a rather popular discipline in Yugoslavia, particularly on a usage level. Discrete-event simulation and classic continuous simulation are most popular, while system dynamics is attracting substantially less interest. Simulation is taught mainly in technical, information systems (informatics) and economics departments. A few books and a number of papers were published by Yugoslav authors in this area, including a couple of papers in international journals "Computers in Industry", "Journal of the Operational Research Society", "Transportation Planning and Technology" etc. Several Yugoslav researchers are active in the European simulation meetings too. Applications of simulation modelling appeared in a number of different fields, developed by the specialists from industry and University.

In the beginning of October 1990 the idea about a foundation of the informal Yugoslav simulation society YUSIM was discussed both on a special panel session of a 17th Yugoslav OR symposium held in Kupari, and on a "Simulation Modelling seminar" which is regularly held on the Faculty of Economics in Zagreb. Initiative for the foundation of the society was originated from the suggestion made by Dr. Felix Breitenecker to the author of this text during the August 1990 IMACS simulation meeting in Esztergom, Hungary. On both places the initiative was accepted with enthusiasm, and it was decided to found the informal Yugoslav simulation society YUSIM, with the prospective to formalize it during the next year. Some 30 simulation practitioners joined the society. Relevant informations about the members of the society will be collected and distributed. The ideas for further activities were discussed too. Till founding of the formal YUSIM society exchange of informations and contact with the EUROSIM federation will be mediated by Dr. Vlatko Ceric, Faculty of Economics in Zagreb.

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ASIM

ASIM (Arbeitsgemeinschaft Simulation) is an association for simulation in the German speaking area. ASIM was founded in 1981 and has now about 550 individual members. ASIMs main technical and scientific work is done in now six working groups (Arbeitskreise), which gather members with same interests (name of the speaker in brackets):

Simulationsmethoden und Sprachen für parallele Prozesse (H. Fuss)

Simulationssoftware und -hardware (J. Halin)

Simulation und künstliche Intelligenz (J. Krauth)

Simulation in Medizin, Biologie und Ökologie (D. Möller)

Simulation technischer Systeme (G. Kampe)

Simulation in der Fertigungstechnik (A. Kuhn)

ASIM organizes a yearly german speaking conference and in general each working group organizes an annual meeting.

The last conference was held in September 1990 in Vienna. A report on this conference can be found below. The next conference will be held from September 24 to 26, 1991 in Dortmund, organized by FernUniversität Hagen.

At the Vienna conference this year, ASIM held its **General Meeting.** About 50 persons visited that meeting. At first the speaker, Prof. Ameling gave an overview over ASIMs former activities, reported the on current situation of EUROSIM and on future plans.

ASIM will organize or participate at the following conferences:

- 1991: german speaking conference in Hagen
- 1992: 4th European Simulation Congress in Capri
- 1993: german speaking conference in Berlin

Mrs. Bausch-Gall gave a report of ASIM finances, Mr. Breitenecker gave an overview of the development of membership. ASIM is growing constantly and has now about 500 members. Each ASIM-member received the finance and membership reports with the last issue of the annual report.

At this meeting a new ASIM board had to be elected. The ASIM board is elected as a group. According to GI statutes the board decides internally about special positions. The acting ASIM board consisted of 6 elected members, of all speakers of working groups and of persons, who have been asked to assist the board for special purposes. The acting ASIM board suggests to increase the number of elected members to 8 persons. The amount of work to be done increased due to the growing membership, the relation to EUROSIM and new services for members. Amongst the elected board members are also speakers of working groups, who have additional responsibilities. The ASIM members agreed with this suggestion.

Out of 14 candidates the following 8 persons with most votes have been elected (alphabetical order): Ameling, Bausch-Gall, Breitenecker, Gottwald, Halin, Kampe, Sydow, Tavangarian Additional members of the board, as speakers of working groups are: Fuss, Krauth, Kuhn, Möller.

The board has now 12 members. The next meeting of the board will be in early December 1990. Then the final position of each member will be decided. A report from the board meeting will appear in the next issue of this journal.

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Reports from the Working Groups

Report from the Working Group "Simulationsmethoden und Sprachen für parallele Prozesse"

The 6th workshop on simulation methods and languages for distributed systems and parallel processes took place at SDZ, Simulations-Dienstleistungszentrum in Dortmund on April 23-24, 1990. The proceedings (extended abstracts of the talks, ASIM-Mitteilungen Nr. 22) were available to participants at the beginning of the workshop, thanks to the local organizer SDZ. A revised and extended version will be available as report number 22a.

Participants came from universities and similiar research centers, from software companies and from indu-

stry. The participation from the (former) GDR was rather high. Participants came from Berlin, Dresden, Magdeburg, both from universities and institutes of the Academy of Sciences. Participants from GDR received grants from DAAD. Every presentation was followed by an engaged and lengthy discussion. Furthermore there were many so-called problem statements of 5 to 10 minutes, i.e. reports of the current work or more or less of the current problems and obstacles (some of them concerning acceptance problems). Many hints and help could be given to these participants from the audience.

There were demonstrations of simulation software by various producers. Program packages as SIMPRO, SLAM, Design/CPN, DOSIMS-3 were demonstrated. A grand buffet was offered by the sponsor SDZ.

The 7th workshop will be on April 22/23, 1991 in Berlin at CIT GmbH (Communication and Information Technology). Dr. Scheschonk will host the meeting. Applications of participation will be accepted already now. The facilites in Berlin do not allow more than 50 participants. As usual, there is no conference fee for members of ASIM.

Speaker of the working group: Dr. Hans Fuss, GMD, Forschungsinstitut für Methodische Grundlagen, Postfach 1240, 5205 St. Augustin 1. Tel: +49-(0)2241/14-2778, Fax: +49-(0)2241/14-2889.

Report from the Working Group "Simulationssoftware und -hardware"

The annual spring meeting of this working group was held at ETH Zürich on March 8 and 9, 1990. The meeting was focused on "Partial Differential Equations: Algorithms, Software and Applications". The workshop featured in total 20 presentations and was attended by some 50 participants. Surprisingly most of the authors had done the research work that was presented on supercomputers or minisupercomputers employing paralellism and/or multiprocessing.

The audience, which was well balanced between groups from universities, research institutions on the one hand and people from industry on the other hand, made this meeting particularly rewarding by stimulating discussions of the interesting papers that were presented.

Special subjects of the meeting were:

- Applications in Electrical and Electronic Engineering
- Simulation of Environmental Problems
- Simulation of Energy Converting Systems and Phenomena
- Methodology and Simulation Languages for PDEs
- Special Methods for Vector and Parallel computers

Proceedings of this workshop totaling well above 100 pages are available as ASIM-Mitteilungen Nr. 19.

Speaker of the working group: Doz. Dr. J. Halin, ETH Zürich, Institut für Energietechnik, Clausiusstr. 33, CH-8092 Zürich. Tel: +41-(0)1/256-4608, Fax: +41-(0)1/2520192

Report from the Working Group "Simulation und künstliche Intelligenz"

This working group discusses approaches and ideas to combine concepts and tools stemming from the two fields contained in its name. A combination can be such that an existing simulation tool is coupled with an export system which e.g. interpretes the results of simulation experiments, discovers weaknesses or bottlenecks in the simulation system and suggests improvements.

A different way to combine simulation and AI is the development of new modelling techniques, e.g. object oriented or qualitative modelling. The term "Artificial Intelligence" is not used restrictively and the working group did not make any attempt to define it. The emphasis is on simulation and therefore it is open for any ideas and concepts, which may help to improve the capabilities of existing simulation tools or to develop new tools.

So far the working group has held three workshops which are reported in the series "ASIM-Mitteilungen" No. 10 (Wien 1988), No. 14 (Stuttgart 1989) and No. 21 (Hannover 1990). The next workshop will be held in Berlin on April 25-26, 1991.

Speaker of the working group: Dr. Johannes Krauth, Bremer Institut für Betriebstechnik und angewandte Arbeitswissenschaft (BIBA), Postfach 330560, D-2800 Bremen 33. Tel: +49-(0)421/2200943

Report from the Working Group "Simulation in Medizin, Biologie und Ökologie"

In 1990 the 4th Workshop "Analysis of Dynamical Systems in Medicine, Biology and Ecology" was organized by the Working Group. The workshop was held from 5th to 7th April 1990 at the old castle of Ebernburg. The 65 participants of the workshop came from Austria, Germany and former GDR, The Netherlands, and Switzerland.

Application of recently developed mathematical theories of dynamical systems, i.e. parameter sensitivity, population dynamic, chemical cinetics, control theory, identification, chaos, multicompartment-modelling, decision support and cluster analysis are topics of this meeting.

The main lectures were given from Prof. Dr. H. Haken, the prize winner of the Max-Planck-medal, about "Synergetic", Prof. R. Kaehr and E. v. Goldammer about "Problems of Autonomy and Discontexturality in the Theory of Living Systems" and Dr. J.P. Schloeder "Parameter-Estimation in Nonlinear Differential Equations".

Without doubt, the diversity of the workshop program will appeal to the interdisciplinary research activities in the field of analysis of dynamical processes.

Therefore the workshop was divided into the sections Medicine (8 lectures), Biology (5 lectures), Ecology (9 lectures), Environmental Systems (7 lectures) and Mathematics (3 lectures).

The proceedings of the workshop will be published in the series "Informatik Fachberichte", Springer Verlag, Heidelberg.

The participants of the workshop stayed in the old castle of Ebernburg. The workshop was opened Thursday evening by a welcome reception in the pleasant atmosphere of the castles vault with the Ebernburger Venison dinner. During the reception a tasting of Nahe wines was offered. Friday evening a banquet of the most honourable knight-hood was given in the stimulating atmosphere in the knight's hall of the old castle of Altenbaumburg.

The 4th workshop was the 7th annual meeting of the working group since 1984, where the ASIM working groups were founded. The 8th annual meeting of the working group is planned to be held in spring at the academy of sciences in East-Berlin.

For details please contact: Dr. Dietmar Möller, Drägerwerk AG, GG-VM-A, Moislinger Allee 53-55, D-2400 Lübeck. Tel: +49-(0)451 8822940, Fax: +49-(0)451 8823748 or +49-(0)451 8822080.

Report from the Working Group "Simulation technischer Systeme"

The ASIM Working Group "Simulation of Technical Systems" had its annual Spring Workshop in March 5-6, 1990. About 50 participants from industry, universities and research centers met at Northern Technology Center in Unterluess near Hannover, FRG. The program was divided into 4 sessions:

1. Reports From Northern Technology Center (TZN)

Latest results in landscape simulation (applying fractal geometry), interactive electrical simulation within a modular environment on AD processors, satellite docking control, and hardware-in-the-loop-simulation were presented. A tour through the TZN Labs showed its high standard of research and the outstanding simulation equipment for further studies.

2. Modelling and Simulation

Various modelling tools were explained: e.g. a PC-based general purpose modeller for education, a modelling and application expert system, an automatic control system designer, the ACSL and MATLAB environment on workstations, ALLIANT supercomputing for flight simulation. Furthermore, a paper on computer algebra in system theory was given.

3. Continuous System Simulation

Two papers focused on the simulation of drive systems. Simulators in various fields of application were presented, e.g. a human heart model, an impure liquid filter model and a barrage model.

4. Discrete System Simulation

In this session a study on measuring accuracy and Petri Nets was outlined, and the simulation of flexible production lines by SIMPLEX II was discussed. Two papers reported on simulation on transputer systems.

The workshop dinner was sponsored by ALLIANT computers and allowed an extensive discussion among the participants, in a pleasant atmosphere.

The extended abstracts of this Workshop (ASIM-Mitteilungen Nr. 18) are available from ASIM or from G. Kampe, FHTE, Flandernstr. 101, D-7300 Esslingen, Germany.

The 1991 spring workshop will be hosted by the German Aerospace Research Establishment (DLR) at Oberpfaffenhofen near Munich, Germany. The following sessions are planned:

- Research Reports from the DLR Institute of Dynamics in Flight Systems
- Simulation in Automotive Systems
- Simulation in Electronic Engineering
- Visits to DLR Labs and to the nearby German Space Operation Center

The Workshop will start at 2 p.m. on March 4 and it will end at 3 p.m. on March 5, 1991. The participation is free of charge. The meeting will be financially supported by BMW AG, München. A detailed program will be mailed to all ASIM members under separate cover. For further information please contact Hans Schubert, Insitut für Dynamik der Flugsysteme, DLR, D-8031 Oberpfaffenhofen.

Speaker of the working group: Prof. Dr.-Ing. Gerald Kampe, Fachhochschule für Technik Esslingen, Flandernstraße 101, D-7300 Esslingen. Tel: +49-(0)711/394-258, Fax +49-(0)711/394-266.

Report from the Working Group "Simulation in der Fertigungstechnik"

This working group encourages the dialogue between the creators and the users of simulation for an already traditional field of usage. Practice oriented simulation studies were already done about 30 years ago. The technical discussions are held on three levels.

First working teams for special subjects meet with the aim to come to generally valid conclusions or to publish results and thus to get a sort of guideline competence. Two interesting results

- *Leitfaden für Simulationsbenutzer in der Fertigung*
- *Simulation in der Fertigungstechnik - Anwendungsbeispiele*

have been published, a third brochure is in preparation. Further subjects of working teams are

- *Beschreibung der Systemlast*
- *Modellebenen*
- *Ergebnisdarstellung*

Despite the success the working group has to cope with the extra work required from its members. A plan has been elaborated, how financial means can be acquired for this important work and how the work of the team members, most of whom come from institutes and universities, can be rewarded. Therefore working areas have to be defined, whose results are of general interest. The proposals will be discussed at the next meeting of the working group. The working group wants to emphasise also scientific areas. These working group meetings are the second basis of the discussion. The members are invited to it, confronted with a priority subject and participate in the work design. The next meeting will take place in Hannover on March 20, 1991. Invitations will be mailed separately. The third kind of exchange of ideas takes place in an ASIM conference, where usually about 150 experts are present. The following meetings

Simulation und Logistik (Dortmund)

Simulation und Fabrikbetrieb (Berlin)

Simulation und Integration (München)

have been the very successful conferences up to now. All contributions have been published in three volumes (gfmt, Lothstraße 1a, 8000 München 2).

The next conference will be held on March 22-23, 1991 in Hannover on the subject *Simulation und Systemverständnis*. Topics will be:

- *Schulung und Entscheidertraining mit Hilfe der Simulation*
- *Leitstände, Monitoring und Interpretationsverfahren für Simulationsergebnisse*
- *Teachware - in Simulatoren integrierte Schulungssoftware*
- *Empirische Forschung - Simulationsexperimente bis zum Beweis der Gesetzmäßigkeit*
- *Richtlinien*
- *Simulationsmethoden als Wissensspeicher*

These subjects still have to be confirmed by the organizing committee.

The working group "Simulation in der Fertigungstechnik" has now about 100 members. It cooperates closely with the VDI in the elaboration of guidelines (VDI-Richtlinie "Materialfluß-simulation"). A special seminar for the introduction of potential users of simulation technique is in preparation. Additionally members of the working group regulary visit national and international congresses.

Speaker of the working group: Prof. Dr.-Ing. A. Kuhn, Fraunhofer-Institut f. Materialfluß u. Logistik (IML), Emil-Figge-Straße 75, D - 4600 Dortmund. Tel: +49-(0)231/7549-130, Fax +49-(0)231/7549-211

Report on 6. Symposium Simulationstechnik, ASIM 90

The symposium was organized by ASIM, the Technical University of Vienna and the Scientific Academy of Lower Austria and took place from September 25 to 27, 1990.

In connection with the symposium for the first time user groups of simulation software met on Monday, September 24. These meetings were individually organized featuring presentations, demonstrations and discussions. Groups connected with the following software gathered at the Technical University of Vienna: ACSL, MATLAB, MATRIXx, PILAR, and XANALOG. Users of these products had the opportunity to hear about new developments, to ask questions, to exchange experiences and ideas. The idea of user group meetings in connection with the symposium will be continued at next years' ASIM annual meeting.

On Monday evening participants were welcomed at a reception at the Technical University of Vienna. The scientific program of the symposium started on Tuesday morning, September 25. It consisted of two plenary lectures and presentations in four parallel sessions per day (111 papers in total). Methodology topics included model reduction, object oriented modelling, preprocessors for simulation software, special aspects in simulation languages, animation, AI, parallel computers in simulation. Application oriented sessions covered manufacturing systems, production systems, education, biology and medicine, control engineering, technical systems, traffic.

Full papers are published as volume 1 in the book series "Fortschritte in der Simulationstechnik" at Vieweg-Verlag (edited by F. Breitenecker, I. Troch, P. Kopacek, 602 pages).

An exhibition of related hardware and software was associated to the conference. The following institutes and companies presented their products in presentations and demonstrations: Applied Dynamics Int. Ltd., BAUSCH-GALL GmbH, CSE Systems, GE.PAR.D, inpro, Linssen &Beese, Origin Italia, RAPID DATA Ltd., Ruhr-Universität Bochum, Scientific Computers GmbH, SimulationsDienstleistungsZentrum GmbH, SIMUTECH, Technische Universität Wien, Ungarische Akademie der Wissenschaften, Universität Erlangen-Nürnberg.

Tuesday evening featured a reception by the major of Vienna on a ship on the Danube canal. On Wednesday all participants and accompanying persons were transported by bus to Krems, some 80 km west of Vienna, in the beautiful Danube valley. The scientific program took place at the Scientific Academy of Lower Austria. For accompanying persons a visiting program was arranged. Afternoon and evening program featured guided tours through Krems, a reception in Krems and, of course, a "Heurigenabend" in a typical Austrian wine cellar.

The interest in this years ASIM conference was greater than ever. 241 participants came from universities and industry. Participants from East Germany, Czechoslovakia, Hungary and Poland were especially welcomed. As in former years the scientifc quality of presentations was high. Participants also valued the pleasant atmosphere that Vienna offers for a meeting and the personal engagement of the organizers for a smooth functioning of all events. In the exhibition area at the Technical University the Viennese style "Cafe Simulation" was a favourite meeting and relaxation point during the conference, inviting for business discussions as well as for establishing and maintaining personal contacts.

ASIM meetings and conferences

Upcoming working group meetings are announced in the reports from the working groups above.

The next annual ASIM conference, the 7. Symposium Simulationstechnik will take place from September 24 to 26, 1991 at the University of Dortmund. Organizer and contact person is

Prof.Dr. Dj. Tavangarian
FernUniversität Hagen
Fachbereich Informatik
LG Technische Informatik II
Postfach 940
D - 5800 Hagen 1, Germany
Tel: +49-(0)2331 804 8371/72
Fax: +49-(0)2331 804 313

User Groups and Tutorials on Simulation Software and Hardware will be held on September 23. People interested to organize a User Group meeting or a tutorial should contact the organizer before February 1991.

Aim of the symposium is to promote the exchange of ideas and experiences of experts and people interested in modelling and simulation in theory and practice. Topics will be Modelling and Methodology, Simulation Tools (hardware and software) and Applications. Conference language is German.

Deadlines: April 1, 1991: Abstracts and Proposals
Mai 1, 1991: Notification of Acceptance
June 30, 1991: Camera-ready Papers Due

DBSS

1. General information

In Europe there are several examples of regional simulation societies, covering a geographical area of a common language. One of those, DBSS, is grouping the Dutch speaking simulation people from the Benelux countries.

DBSS is a member society of EUROSIM (Federation of European Simulation Societies).

DBSS has as primary goal to promote the advancement of systems simulation. In this respect the Society will actually promote the following:

- the study of systems, models and modelling (continuous, discrete and mixed systems); deterministic, stochastic and probabilistic systems; systems from specific disciplines; they all belong to the domain of interest;
- the development and application of methodological concepts, methods and algorithms with respect to systems, models, modelling, experimenting and tools;
- the development of hardware and software simulation tools and the advancement of their applicability.

To accomplish the above goals DBSS shall:

- stimulate the organization of meetings in the domain of systems simulation; in these local meetings the emphasis will be on informality and information exchange;
- activate the organization of conferences, symposia, workshops, courses;
- furnish information to the members about the state-of-the-art as well as advancements and activities in the domain of simulation of systems;
- co-operate with societies active in the domain of simulation;
- use other legal means which may serve meeting the goals of the society.

The current Board of DBSS consists of:

L. Dekker (The Netherlands)	chairman
E.J.H. Kerckhoffs (The Netherlands)	secretary
J.C. Zuidervaart (The Netherlands)	treasurer
G.C. Vansteenkiste (Belgium)	vice-chairman
F.M. Broeckx (Belgium)	

DBSS is closely co-operating with the other member societies of EUROSIM.

Moreover, for already many years, DBSS has affiliation agreements with IMACS (International Association for Mathematics and Computers in Simulation) and SCSI (Society for Computer Simulation International).

DBSS-Membership

Individuals (in particular Dutch speaking ones) and institutes etc. from the Benelux countries, active in the field of simulation, can become DBSS-member. Membership fee (per annum) is in 1990:

- - personal member:
  25 guilders or 450 Belgium francs
- - institutional member:
  50 guilders or 900 Belgium francs

DBSS-members receive "EUROSIM-Simulation News Europe" and can benefit in many cases from special discounts on conferences, meetings, organized by DBSS or other member societies of EUROSIM, IMACS and SCSI.

Notice to DBSS members:

Unfortunately, there are still members who did not pay their membership fee for 1990 up to now.

We kindly but urgently request you to pay your fee as soon as possible on the giro account of the treasurer (see below).

Contact addresses

Those interested to become a member of DBSS are invited to write to the secretary:

Dr. E.J.H. Kerckhoffs
Fac. of Technical Mathematics and Informatics
Delft University of Technology
Julianalaan 132
2628 BL Delft, The Netherlands
Tel: +31-(0)15 789111
Fax: +31-(0)15 787141

(Please mention your name, affiliation and address, and indicate whether you are interested in the personal or institutional membership).

The membership fee should be paid to:

Giro account 3582241
J.C. Zuidervaart
Leeuwerikplantsoen 27
2636 ET Schipluiden
The Netherlands

with the mention: DBSS membership 1990.

If you changed address or your address is incomplete, please inform the secretary.

If you are interested to contribute in future activities of DBSS or if you have ideas in this respect, please contact the secretary.

Do you have information for 'EUROSIM-Simulation News Europe', Please send it to the secretary.

2. Meetings in 1990

One-day Symposium on Computer Algebra

It is intended to organize a one-day Symposium on Computer Algebra (Formula Formulation, Symbolic Computation). This event shall take place at Delft University of Technology (Delft, The Netherlands) on December 17, 1990. Both Benelux researchers and invited specialists from abroad will present lectures and demonstrations. The program will be introductory and practice-oriented; practical applications in both scientific research and engineering are stressed.

It is remarked here that also the incorporation of formula manipulation in computer simulation has proven to be of importance. For example, in simulation of continuous systems characterized by ordinary and partial differential equations often insight about analytical features such as stability and parameter sensitivity is needed or at least helpful. For this purpose computer algebra can offer attractive possibilities (among others, the output of computer algebra can be Fortran code, which is then used for further numerical solution).

For further information about the Symposium, please contact the secretary of DBSS.

3. Meetings 1991

Preliminary announcement

A meeting will be organized about the following topic in the domain of systems simulation: **Structural analysis through parallel finite element simulation with the software package DIANA**

DIANA is a finite element analysis software package developed by TNO Institute of Building Materials and Structures (Delft, The Netherlands). DIANA can be used to model and simulate the mechanical and physical behavior of a large variety of structures. The finite element analysis of many engineering problems is very computation intensive, the use of vector/parallel computers is therefore inevitable. First DIANA and its application fields will be discussed. A methodology for parallel direct solution of large sparse matrix systems and its implementation onto DIANA will then be presented.

In the beginning of next year a meeting will be held about **3-D graphical display for two application areas: "flight simulation" and "fluid flow simulation" (3-D scientific data visualization).**

If you are interested to participate, please contact our secretary.

4. Meeting reports

On January 25, 1990, Dr. Granino Korn, well-known emeritus professor at the University of Arizona, Tucson, U.S.A., has presented a lecture entitled: "Interactive Simulation of Neural Networks on Personal Computers" at Delft University of Technology.

Some 100 people have attended this interesting event.

The contents of his presentation:

New, very fast programs for backpropagation, competitive learning, pseudo adaptive resonance, and vector quantization of random patterns demonstrate a simple matrix language for interactive simulation of user-designed neural networks. Simulations can also combine multiple neural networks with dynamic systems such as robots or physiological models. Neural networks and experiment protocols created on a CRT screen may be tried and modified without annoying compilation delays; Simulations run faster than Microsoft FORTRAN 16- or 32 bit. AT-type personal computers admit networks up to 16,380 interconnections and also solve up to 1000 dynamic-system differential equations with a variety of integration rules. DESIRE/NEUNET is useful for teaching as well for research. Users can write their own help screens and live menus, and a new textbook will be available.

5. Miscellaneous

The DBSS-members are informed that the next triannual European Simulation Congress will take place in 1992 on Capri, Italy. This major conference is organized by EUROSIM. The tentative dates are: September 30 to October 3.

It is EUROSIM's intention to publish a new scientific journal: "Journal of Simulation, Practice and Theory".

If you are interested to submit articles for publication in this journal, please send in advance an abstract or contact the secretary of DBSS.

FRANCOSIM

History

The idea of a French speaking simulation society has been first discussed in Lyon in March 1989 during the workshop "A.I. in Numerical and Symbolic Simulation". However, it took one full year to mature the idea and the society has finally been informally founded in Liège (Belgium) on the 3rd of April 1990. It has the same day been accepted as sixth full member of EUROSIM. Another meeting in Paris in June 1990 definitely fixed the most important points of the bylaws i.e. the name, seat, legal form und objectives. The bylaws should be officially registered before the end of 1990.

Description

The societys official name is "Société Francophone de Simulation", abbreviated to FRANCOSIM. The English translation "French Speaking Simulation Society" is also official and explicitly mentioned in the bylaws.

It will have its legal seat in Roanne (France) and will take the form of an "association loi de 1901" (French form of non-profit making society).

Its objectives are defined as follow:

"The society aims to the promotion and development of simulation models, tools and methods as well as related techniques, in all human activities and notably in industry, research and education, and this especially in the international French speaking community.

It may furthermore undertake, encourage or favour all activities that can contribute to reaching its objectives, like among others:

- *organize congresses, conferences, symposia, workshops or seminars or participate to their organization,*
- *realize or edit totally or partially periodicals, journals, newsletters or any other communication work, printed or using any media technique,*
- *cooperate with other societies dealing mainly or secondarily with simulation."*

(translated from the bylaws.)

Activities

Although the society is not yet officially registered, a first activity has already been organized in its name.

It was a workshop held in Liège (Belgium) on the 4th of April 1990 and named "La Simulation : Pour Quoi Faire?" (roughly "Simulation : For What?"). About thirty participants, most of them from industry, actively took part in the presentations and discussions. The workshop was based on concrete experiences and that orientated the debates towards the following topics:

- Simulation includes the very fundamental work of modelling. Much remains to do in this specific field to make the research results practically usable.
- Simulation software usability is a key point that actually covers several different aspects : reliability, robustness, validation, reusability, transportability, maintainability, user-friendliness. Most of these aspects are not yet totally satisfactory.
- The financial return of a simulation is hardly assessed. If it helps to avoid a major problem, numbers are generally not put on it. On the other hand, if it only confirms the expectations, it is felt unnecessary. It should probably be considered as an insuring investment.

Information

Any information about the society may be obtained from:

FRANCOSIM
c/o Maison de la Productique
Esplanade Diderot
F-42300 ROANNE - FRANCE
Tel: +33-77.71.20.00
Fax: +33-77.72.52.99

ISCS

General Information

The Italian Society for Computer Simulation (ISCS) is a scientific nonprofit association of members from industry, university, education and several public and research institutions with common interest in all fields of computer simulation. Its primary purpose is to facilitate communication among those engaged in all aspects of simulation for scientific, technical or educational purposes.

The affairs of the ISCS are directed by a Steering Committee presently consisting of the following persons:

G. Iazeolla	(chairman)
F. Maceri	(vice-chairman)
S. Tucci	(treasurer)
B. Buttarazzi	(secretary)

Membership

The membership situation is presently as follows: 108 members, 7 of which are institutional and 4 are honorary, 95 are regular members and 2 are affiliate ones.

Charges per annum are Lit. 20,000 for regular and affiliate members and Lit. 350,000 for institutional ones.

Contact addresses

Application for admission are to be mailed to:

ISCS
c/o Dip.to Ing. Elettronica
Universita di Roma II
Via O. Raimondo
I - 00173 - ROMA, Italy

Information can be obtained by:

Tel: +39-(0)6-79794.484/485/486
Fax: +39-(0)6-2490519
E-mail: IAZEOLLA@IRMIAS.BITNET

Activities

The ISCS activities in the period January through August 1990 can be synthesized as follows:

1. Promotional action for the introduction of a new massively parallel computer in addition to the previous INTEL iPSC/2 Hypercube. The new machine is a 16 nodes Transputer based Computer Surface machine by Meiko, financed by the EEC under the *Parallel Computing Action* project. Main research objectives are the introduction of efficient methodologies and tools for the performance and reliability analysis of message passing concurrent multicomputers.

2. Supporting activities to lead the progress in the concurrent simulation projects launched last year and involving the INTEL iPSC/2 Hypercube. They regard the implementation of a parallel discrete-event simulation environment based on the Time-Warp strategy (SIMCOR); the use of parallel continue look-ahead simulation in the in-harbor maritime traffic surveillance (SIMMAR); the computer algebra LISP based tools for the performance analysis of parallel architectures (LISPACK).

3. The organization and sponsoring of the "Seminario di Informatica", a periodic scientific seminar held at the University of Roma II. Among the seminars the following ones were given: *Combined parallel-simulation and expert system analysis of continuous models with applications* (Dr. G.K. Blackwell), *Towards a unified theory of pattern recognition* (Prof. O. Stanasila), *Querying universal schemas under extension chase semantics, A functional database model and its query language* (Prof. N. Spyratos), *The De Bruijn multiprocessor network: a versatile parallel processing and sorting network for VLSI* (Prof. D.K. Pradhan, Dept. of Electrical and Computing Engin., University of Massachusetts, USA).

4. The participation in the sponsoring of the sojourn at the University of Rome II of eminent scientists from foreign universities: Dr. G.K. Blackwell from the Ship Control Group of Plymouth Polytechnic (U.K.), Prof. O. Stanasila from the Dept. of Control and Computers of Polytechnic Institute of Bucharest (Rumania), and Prof. N. Spyratos from the University of Paris (France). Seminars and lessons have been held by all of them at the Dept. of Electronics Engineering, University of Rome II.

NOTICE TO ISCS MEMBERS:

The annual meeting of ISCS members is scheduled to be held on December 14th 1990 in Rome (at the University of Rome II).

On the occasion a simulation workshop will be organized. Papers are solicited from ISCS members describing their current activities in the general simulation field.

For information please contact:

Dr. Michele Colajanni
Dip.to Ing. Elettronica
Universita di Roma II
Via O. Raimondo
00173 - ROMA
Tel: +39-(0)6/79794484
Fax: +39-(0)6/2490519

Accepted papers will be included in the proceedings volume of the workshop.

SIMS

Information on SIMS

The Scandinavian Simulation Society, SIMS, has about 260 members from Denmark, Finland, Norway and Sweden. For more than 30 years SIMS has served as the regional simulation society in Scandinavia, gathering individuals and organizations involved in simulation. The activities have been concentrated on arranging annual meetings and courses, delivery of information letters, and co-operation at European and international level in the field of simulation.

The SIMS conference in Lund, May 30-31, 1990

The very best thanks to everybody participating in the previous annual meeting held at Lund University in Sweden or involved in the arrangements. The 39 participants contributed with several interesting presentations covering many different fields of simulation:

- Computer Aided Control Engineering, the CACE project. Sven Erik Mattson, Department of Automatic Control, Lund University.
- On-line Application of a State Estimator Based on Givens Rotations of Sparse Matrices. Kaj Juslin, Technical Research Centre of Finland.
- Simulation of Logistic Systems Using Siman/Cinema. Knud Eric Wichman, SIMOS A/S.
- Deterministic Simulation of the Pin-ball Machine. L.U. Hansen and E. Mosekilde, Technical University of Denmark.
- Simulation of Dynamical Behavior of a Front Wheel Suspension. M. Johnson, Lulea University of Technology.
- Discrete Event Simulation Using 3D CAD for Animation. Kjell T-son Sandberg, VBB Industrial Team.
- Simulation of Production Systems at FLYGT AB. Olle Lindstrand and Paul Dietrichsson, Flygt AB.
- Some Applications of Discrete Simulation for the Swedish Industry and Community, with the Help of SIMULA/DEMOS. Stefan Bengtsson, AF-Industriteknik AB.
- Simulation Using ACA/32000. Jarl Jönsson, Systemettan AB.

- Simulation of Flexible Multibody Systems Including Control - Vehicles and Satellites. Olof Friberg, Chalmers University of Technology.
- Using Driveline Simulations to Optimize Fuel Consumption and Performance for a Car with an Automatic Gearbox. Clas Niste, Volvo Car Corporation.
- Experience with Training of Shuttletanker Bridge Operators Loading at SPM-buoys in the North Sea on a Ship Handling Simulator. Petter Overas and Arve Lerstad, Skips Manover Senteret.
- A Hardware Real-time GSM Channel Simulator Based Upon Table-look-up and Linear Interpolation. Hans Gaunholt, Technical University of Denmark.
- CEMulator - a Real-time Simulator for Training of Cement Operators. Niels Holger Rueskov Nielsen, F.L. Smidth & Co. A/S.
- Complex Dynamics in Bacterium Phage Interactions. H. Kristensen, L. Risbo and E Mosekilde, Technical University of Denmark.

At the SIMS business meeting the following officials were elected: Erik Mosekilde chairman, Markku Hänninen secretary, Lars Lidner treasurer, Mats Johansson, Torleif Iversen, Odd Falmyr and Poul Rathje board members, and Kaj Juslin international liaison. The meeting was completed with a Banquet at Grand Hotel, Lund.

How to join SIMS?

If you or somebody of your Nordic colleagues are inteested in simulation but not yet a member of SIMS, then just send an informal application or recommendation for membership to the SIMS secretariat:

c/o M. Hänninen,
VTT /Sah,
Otsvängen 7 B,
SF-02150 ESBO, Finland,
Tel: +358-0-4566564,
Fax: +358-0-4550115,
Telex: 123 704 vtte sf.

The 33rd annual meeting of SIMS in Copenhagen 1991.

The next annual meeting of SIMS will be held in close connection to the European Simulation Multiconference ESM in Copenhagen, June 17-19, 1991, which is organized by SCS in co-operation with SIMS.

UKSC

The UKSC (United Kingdom Simulation Council) has approximately 150 members and about half of whom are also SCS members. The Council holds regular one-day meetings in various parts of the country and holds larger conferences at intervals of three years. The present chairman of the Council is Dr. Richard Zobel of the Department of Computer Science, University of Manchaster.

Enquiries concerning membership of UKSC should be sent to Mrs. E. Rimmington, Computing Centre (Watts Building), Brighton Polytechnic, Moulescomb, Brighton BN2 4GJ, U.K.

Report on Sixth UKSC Conference, Brighton, September 1990

The United Kingdom Simulation Council (UKSC) continued its established practice of triennial conferences on a general theme of computer simulation by taking UKSC 1990 to the University of Sussex near Brighton. The three day conference was held during the period 5th-8th September and was organised jointly by Mrs. Elizabeth Rimmington of Brighton Polytechnic and Mr. Keith Nock of Scientific Computers Ltd.. UKSC owes much to Elizabeth and Keith for such a smooth running event.

The attendance at the conference was very similar to that at UKSC 1987, which was held at Bangor in North Wales, with a total of about 80 delegates. The standard of the 50 papers presented was high and many interesting and thought-provoking ideas surfaced.

It is unfortunately only possible here to give a brief summary of the sessions. All of the papers, apart from the specially invited keynote address by Chris Budd, are published in the Proceedings of the Conference.

The opening paper of the conference was a keynote address by Dr. Chris Budd of the School of Mathematics at Bristol University on the subject of Bifurcations and Chaos. Dr. Budd presented a stimulating account of the concepts of chaotic dynamical systems with interesting illustrative examples drawn from mechanical and electrical engineering. This paper was followed by a further plenary presentation involving a paper by Jerry Banks of the Georgia Institute of Technology which was concerned with the verification and validation of large scale simulation models. The context in this case was discrete event simulation and the paper provided some interesting points of reference which were returned to many times during the discussion in subsequent sessions.

Apart from these two papers presented in the plenary session during the first morning of the conference the programme was organised as two parallel sessions. In terms of methodology topics which were emphasised included object oriented simulation, knowledge-based simulation environments, other a.i. approaches for modelling and the use of parallel computers in modelling and simulation. Applications-related sessions covered simulation in training and education, control engineering, biological and medical applications, discrete event

techniques, real time simulation and a range of other applications from engineering. The conference programme included a lively round-table discussion on the future of object-oriented simulation. A fascinating debate developed between the proponents of object oriented programming systems and those who favoured the introduction of object-oriented features to general purpose languages. The papers presented in the session on object oriented simulation provide very interesting reading in the context of that debate.

The conference had a small exhibition associated with it and exhibitors were provided with an opportunity to give very brief presentations of their organisations and their products or services. A visit was also organised to the Redifusion factory which is located only a few miles from the University. Although numbers going on this visit were restricted it appears that a very interesting and enjoyable time was had by all. We are very grateful to Redifusion for providing this opportunity.

It is difficult to summarise a whole conference on such diverse subject matter but it is clear that considerable progress is being made in a number of important areas. Software engineering principles are being used increasingly for the development of improved simulation tools, while the impact of artificial intelligence on the simulation scene appears to be at a critical point. Parallel architectures are now being used routinely for many types of application and are having an influence both on real-time problems and on large scale modelling tasks which are not time critical. In many ways developments in the simulation field reflect more fundamental changes which are influencing all areas of computing and computer applications. We look forward with keen interest to the corresponding conference in 1993.

UKSC 90: Proceedings of the 1990 UKSC Conference on Computer Simulation, edited by K.G. Nock is published by UKSC and is available from Mr. K.G. Nock, c/o Scientific Computers Ltd., 50 Victoria Road, Burgess Hill, West Sussex RH15 9LW, United Kingdom. The cost of the volume is 30 pounds.

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Tel: +44-(0)41 330 5222,
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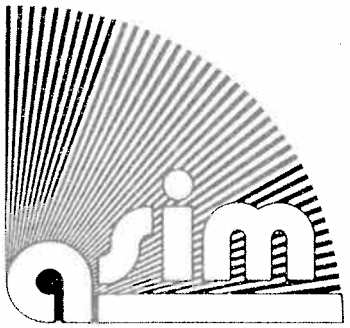
UKSC Meetings for Session 1990-91

A programme of four one-day meetings is planned for the coming year. All Members and Associates of UKSC will receive details of these events. Anyone who is not on the UKSC mailing list and who wishes to receive information concerning meetings and membership should contact Mrs. Elizabeth Rimmington.

The 1992 SCS Multi-Conference

The United Kingdom is to host the 1992 SCS European Multi-Conference. Further details will be provided as soon as possible concerning the location and dates for this event.

Fortschritte in der Simulationstechnik



Felix Breitenecker, I. Troch und P. Kopacek (Hrsg.)

Simulationstechnik

6. Symposium in Wien, September 1990
1990. X, 602 S. (Reihe Fortschritte in der Simulationstechnik, Bd. 1; hrsg. von Walter Ameling)
Kart. DM 120,– ISBN 3-528-06401-3

Das von ASIM veranstaltete Symposium hat sich zum Ziel gesetzt, den Austausch von Ideen und Erfahrungen von Fachleuten und Interessenten zu fördern, die auf dem Gebiet der Modellbildung und Simulation in Theorie und Praxis tätig sind. Der Tagungsband enthält folgende Schwerpunkte:

- Modellbildung und Simulationsmethodik
- Simulationswerkzeuge
- Anwendungen

Advances in System Analysis

Dobrivoje Popovic (Ed.)

Analysis and Control of Industrial Processes

(Advances in System Analysis, Vol. 6; ed. by Dietmar Möller) 1991. X, 281 pp. Softcover DM 98,– ISBN 3-528-06340-8
Contents: Survey Papers – Dynamic Systems – Model Building and System Simulation – Process Analysis and Control – Expert Systems – Intelligent Robots.

The book represents a rough cross-section of classical and non-classical (knowledge-based) approaches for process automation and robotics. It includes at over pages illustrations and references of relevant publications in the field of industrial automation, most of them being implemented at Institute of Automation Technology of University of Bremen in co-operation with relevant academic institutions and regional industry. In a way, the book represents a bridge between theory and practice, with the emphasize on computer application to process industries to solve such problems as

- adaptive control
- optimal route planning
- knowledge-based plant diagnosis
- system modelling and simulation
- parameter estimation
- collision free motion planning of robot manipulation
- distributed, multi-computer process control implementation using the modern communication technology

Dietmar Möller (Ed.)

System Analysis of Biomedical Processes

Erwin-Riesch-Workshop, 3rd Ebernburger Working Conference, Bad Münster am Stein-Ebernburg, 7.-9. April 1988
1989. X, 234 pp. (Advances in System Analysis, Vol. 5; ed. by Dietmar Möller) Softcover DM 66,– ISBN 3-528-06341-6
Contents: Simulation of Biological Systems on Working Stations – Methods – Biomedical and Ecological Systems – Validation of Intelligent Models for the Metabolic Processes.

Erhard Godehardt

Graphs as Structural Models

The Application of Graphs and Multigraphs in Cluster Analysis
1988. X, 214 pp. (Advances in System Analysis, Vol. 4; ed. by Dietmar Möller) Softcover DM 48,–
ISBN 3-528-06312-2

Contents: Mathematical Symbols and Notation – Introduction, Basic Concepts – Current Methods of Cluster Analysis: An Overview – Graph-theoretic Methods of Cluster Analysis – Probability Models of Classification – Probability Theory of Completely Labelled Random Multigraphs – Classifications by Multigraphs: Three Examples from Medicine – Bibliography.

Friedr. Vieweg & Sohn Verlagsgesellschaft mbH · Postfach 58 29 · 6200 Wiesbaden

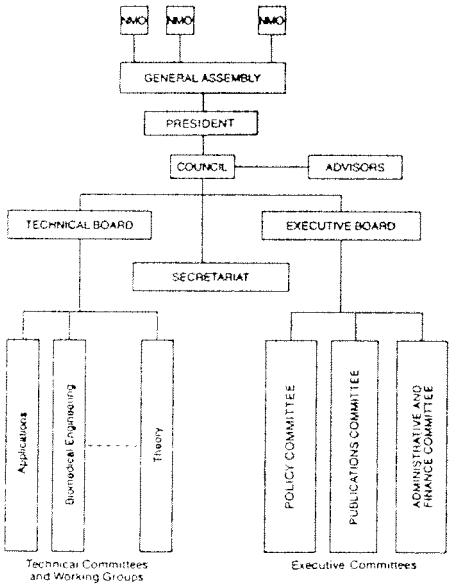
vieweg

Simulation in IFAC

The International Federation of Automatic Control, founded in 1957, is a multinational Federation of National Member Organizations (NMOs), each one representing the engineering and scientific societies concerned with automatic control in its own country.

The purpose of the Federation is to promote the science and technology of control in the broadest sense in all systems whether, for example, engineering, physical, biological, social or economic, in both theory and application. The primary objective of the Federation is to serve all those concerned with the theory and application of automatic control and systems engineering, wherever situated. To further this aim, it maintains working relationships with other organizations, national or international, especially with other non-governmental professional federations. For example IFAC making its broad technical expertise available to the United Nations and other international and regional organizations. It has consultative status with UNESCO and UNIDO, keeps liaison with IAEA (International Atomic Energy Agency), ECE (Economic Commission for Europe), ICSU (International Council of Scientific Unions), and some others. IFAC also is a member of FIACC, the Five International Associations Coordinating Committee, comprising also IFIP (International Federation for Information Processing), IFORS (International Federation of Operational Research Societies), IMACS (International Association for Mathematics and Computers in Simulation), and IMEKO (International Measurement Confederation).

The organizational structure of IFAC is depicted in the following chart:



The supreme body of the Federation is the General Assembly which consists of delegations from all 46 National Member Organizations (NMOs). Between meetings of the General Assembly - usually every three years during the World Congress - the management of the Federation is vested in the Council. To deal with the technical or executive activities respectively there are two working organs of the Federation, both reporting to the Council: the Technical Board and the Executive Board. These Boards are chaired by the two IFAC Vice-Presidents. All the Technical Committees report to the Technical Board. Reporting to the Executive Board are three Executive Committees: the Policy Committee, the Publications Committee, and the Administrative and Finance Committee.

For fulfilling the tasks IFAC organizes every three years a World Congress and in between some other events like conferences, symposias, and workshops. For these events one of the 14 Technical Committees (Aerospace, Applications, Biomedical Engineering and Control, Components and Instruments, Computers, Developing Countries, Economic and Management Systems, Education, Manufacturing Technology, Mathematics of Control, Social Effects of Automation, Systems Engineering, Terminology and Theory) is responsible for the scientific programme. For all IFAC events a Proceedings Volume, published by Pergamon Press Oxford, is available and selected papers are published in the IFAC journal Automatica.

Usually papers or sessions of concerning simulation aspects are included in several IFAC events. But there are some special events dealing with simulation, for example Simulation of Control Systems, Vienna 1986, or Computer Aided Design of Control Systems, 1985, Lyngby Denmark, 1988 Beijing, China, and 1991 Swansea, U.K. As pointed out earlier simulation is more or less a necessary tool for a lot of control problems. In the last three years the methods of discrete simulation are coming up dramatically in the field of control engineering, especially in the field of manufacturing automation.

For further information please contact the IFAC Secretariat, Schlossplatz 12, A-2361 Laxenburg, Austria.

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IMACS - International Association for Mathematics and Computers in Simulation

IMACS is an International Association of professionals and scientists concerned with computers, computation and applied mathematics, in particular as they apply to the simulation of systems. This includes numerical analysis, mathematical modelling, approximation theory, computer hardware and software, programming languages and compilers. IMACS also concerns itself with the general philosophy of scientific computation and applied mathematics, and with their impact on society and on disciplinary and interdisciplinary research.

IMACS is one of the five International Scientific Associations (with IFAC, IFORS, IFIP and IMEKO) represented in FIACC, the Five International Associations Coordinating Committee. FIACC interfaces with UNESCO and other national and international organizations in the area of computers, automation, instrumentation and the relevant branches of applied mathematics. Of the five, IMACS (which changed its name from AICA in 1976) is the oldest, having been founded in 1956.

IMACS organizes local and international scientific symposia and conferences, and sponsors publications in its fields of interest. IMACS is a membership Association. There are 3 types of members:

- Affiliated society members, such as Simulation Society of Australia, Chinese System Simulation Council, IMACS -America, IMACS - Czechoslovakia, IMACS - Greece, IMACS - Hungary, IMACS - Ireland, IMACS - Israel, Centre for Mathematics and Computer Science at Amsterdam, IMACS - Spain, International Association for Mathematical and Computer Modelling, National Committee for Mathematical Modelling of the USSR Academy of Sciences, Soviet National Committee of IMACS,
- Institutional Associate members i.e. Industries, Industrial, Public, Scientific or Research Institutions,
- Individual members.

Members of IMACS receive the scientific journal *Mathematics and Computers in Simulation* (Transactions of IMACS) and benefit from reduced prices on certain IMACS and other publications, including a greatly reduced price for the IMACS journal *Applied Numerical Mathematics*, and on the participation fee of IMACS and its affiliated societies' conferences.

Moreover, IMACS maintains contact with many other organizations, which are not (or not yet) affiliated members of IMACS. Among them are IMACS membership - Austria, IMACS - Canada, Schweizerische Gesellschaft für Automatik, International Society for Innovative Numerical Analysis, IMACS France, Simulation Group of the GI (ASIM), International Association for Computational Mechanics, Japan Society for Simu-

Applications for individual or associate membership should be addressed to

IMACS membership/Europe
c/o Prof.P.Borne
I d N
F-59651 Villeneuve d'Ascq Cedex, France

Preparation of conferences and discussion of specific topics of interest is performed within IMACS *Technical Committees (TC)*:

TC 1: Modelling and Simulation of Electrical Machines,
TC 2: Mathematical Modelling,
TC 3: Simulation Software,
TC 4: Parallel Computation,
TC 5: Modelling and Simulation of Biological Systems,
TC 6: Partial Differential Equations,
TC 7: Nuclear Power Plants Modelling and Simulation,
TC 8: Energy Systems Modelling,
TC 9: Integral Equations,
TC 10: Ordinary Differential Equations,
TC 11: Stochastic Systems Modelling,
TC 12: Computational Electromagnetics,
TC 14: Control Systems and Robotics,
TC 15: Expert Systems in Mathematical Modelling,
TC 16: Bond Graph Modelling,
TC 17: Computational Acoustics,
TC 18: Computing and Simulation for Management Systems,
TC 19: Performance Analysis,
TC 20: Computational Physics,
TC 21: Expert Systems for Numerical Computing,
TC 22: Computational Linear Algebra,
TC 23: Computer Arithmetic.

Anyone interested in more details of the work of a TC or in the name(s) of its chairperson(s) is asked to inquire either at one of the above mentioned IMACS secretariats or Prof.Dr.Inge Troch. Especially those interested to co-operate in TC 2 are invited to contact Prof.Troch.

An IMACS *Calender of Events* containing all conferences sponsored or co-sponsored by IMACS within 1990 - 1992 may also be obtained from one of the IMACS secretariats. The most important events are

- IMACS Symposium on Iterative Methods in Linear Algebra, April 2-4, 1991, Brussels
- IMACS Symposium on Modelling and Control of Technological Systems, May 7-10, 1991, Casablanca
- IMACS Symposium on Computational Acoustics, June 26-28, 1991, Cambridge, Mass.
- 13 th IMACS World Congress, July 22-26, 1991, Dublin

As already mentioned, IMACS publishes not only the *Proceedings* of IMACS Symposia, Congresses and Conferences but also two scientific journals (North-Holland, Amsterdam):

- The aim of *Mathematics and Computers in Simulation* (Transactions of IMACS) is to provide an international forum for the dissemination of up-to-date infor-

mation in the field of Computer Simulation of Systems. Published material ranges from short, concise research papers to more general, tutorial articles. It is published bimonthly and is the official organ of IMACS. Topics covered by the journal include mathematical tools in the foundations of Systems Modelling, specific applications in science and engineering, numerical analysis and the development of algorithms for simulation, considerations about computer hardware for simulation, considerations about special software and compilers, the general philosophy of systems simulation, and its impact on disciplinary and interdisciplinary research.

The journal also includes a Book Review section and a section called 'News from IMACS' informing about the activities of IMACS and of a selection of related events.

Papers may be submitted to any member of the editorial board especially to the editor-in-chief, Prof.R.Vichnevetsky or to Prof.Dr.Inge Troch.

- The purpose of the second IMACS journal i.e. of *Applied Numerical Mathematics* is to provide a forum for the publication of high quality research and tutorial papers in computational mathematics. In addition to the traditional issues and problems in numerical analysis, the journal also publishes papers describing relevant applications in such fields as physics, fluid dynamics, engineering and other branches of applied science. The journal is published in two volumes (12 issues) a year. Submission of papers can be performed to any member of the editorial board, especially to

  Prof.Dr.R.Vichnevetsky,
  Editor-in-Chief,
  Dept. of Computer Science,
  Rutgers University,
  New Brunswick, NJ 08903, USA.

  Prof.Dr.Inge Troch
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  A-1040 Wien, Austria
  Tel: +43-(0)222 58801 5367
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SCS - The Society for Computer Simulation

During the last annual meeting of the SCS Board of Directors (Calgary, Canada, July 18, 1990) a proposal has been accepted and approved to form a European Member Council of SCS with the name "Continental Europe Simulation Council" (CESC). Accordingly all SCS-members in Europe outside the UK are also members of CESC without additional fees.

The Council will start its activities in close co-operation with the SCS European Office in Ghent. The first co-operation lies in the co-organisation of the European Simulation Symposium on "Intelligent Process Control and Scheduling and Discrete Event Systems".

During this Symposium a meeting will be organized on Saturday November 10, 1990 at 2.00 p.m. All CESC-members are kindly invited to attend. Topics on the agenda are among others: the original proposal to SCS, the tentative bylaws, activities of the Council, representatives from CESC in SCS bodies such as the Board of Directors and Nominating Committee.

The Society for Computer Simulation will organise the following activities in 1991:

January 23-25, 1991, Anaheim, USA: **WSM 91, 1991 Western Simulation Multiconference**

April 1-5, 1991, Fairmont Hotel, New Orleans, USA: **1991 Simulation Multiconference**

April 22-24, 1991, Vienna, Austria: **SIP 1, Simulation in Practice 1**

June 17-19, 1991, Copenhagen, Denmark: **ESM 91, 1991 European Simulation Multiconference**

July 22-24, 1991, Baltimore, Maryland, USA: **SCSC 1991**

October 21-23, 1991, Orlando Twin Towers, Orlando, Florida: **SIMTEC'91, Simulation Technology Conference International 1991**

November 1991, Ghent, Belgium: **ESS 91, 1991 European Simulation Symposium**

The Society for Computer Simulation will co-sponsor the following events:

March 26-28, 1991, Bournemouth, United Kingdom: **CEEDA 91, International Conference On Concurrent Engineering And Electronic Design**

May 14-16, 1991, Vsetin, Czechoslovakia: **4th North-Moravian International Symposium on Modelling and Simulation of Systems**

For further information on SCS activities please contact:

SCS, c/o Philippe Geril
University of Ghent, Coupure Links 653
B - 9000 Ghent, Belgium
Tel: +32-91 23 69 61 232
Fax: +32-91 23 49 41

Presentation of Simulation Centers

This series will present and introduce simulation centers of any kind.

Simulation is an interdisciplinary area, one may find simulation activities in very different areas, like computer science, electrotechnics, manufacturing, mathematics, biology, etc.

Simulation as a tool for problem solving is used in production, science, and education in industrial companies, laboratories, and universities.

As Europe becomes closer it is worth to learn about different simulation centers in Europe.

EUROSIM - Simulation News Europe starts this series with presentations from Scotland and Finnland. The series will be continued in the next issues. If you would like to see your institution introduced in EUROSIM - Simulation News Europe please contact the editors.

Simulation Activities within the Department of Electronics and Electrical Engineering University of Glasgow

Applications of continuous system simulation for teaching and research in this Department can be traced back to at least 1964 when an EAI 231R analog system was purchased. This was subsequently expanded to form an EAI 231R/640 hybrid computer and the analog component was replaced in 1978 by an EAI 2000 which was linked to a PDP 11-45 digital computer. The EAI 2000 is still in use and is now coupled to an IBM PC/AT which provides a variety of facilities including automatic set-up of analog simulations.

In parallel with the analog simulation activities there has been a steady growth of digital simulation. Although extensive use was made of CSMP at one time, recent work has involved use of ACSL and the XANALOG software, especially for student project work where the availability of these simulation packages on personal computers is very valuable.

Research concerned with particular fields of application has made use of more specialised software, such as the TSIM2 package which is used extensively for work on helicopter flight control system design and analysis. TSIM was developed initially at the Royal Aerospace Establishment and has special features which make it especially useful for aeronautical problems. Similarly, SPICE is extensively used for work on electronic circuits and MATLAB for control engineering.

A Control Oriented Language (COL) has been developed within the Microprocessor Laboratory to assist in the specification of self-contained real-time programs targeted for embedded microprocessor controllers. The language comprises concurrent CSSL-based segments which can support continuous/sequential control and simulation models and sub-models.

Current research activities involving modelling and simulation range from the development of transputer-based software for electronic device modelling to the real-time modelling of aircraft systems (again using transputer hardware) and the development of techniques for simulation model validation from helicopter flight test data. Work is also being carried out on the simulation of biological neural networks.

Simulation principles are taught to undergraduate students as part of a module on Electronic Computer Aided Design which is taken as a component within the third year of the four year B.Eng. degree course. This is built upon in other options involving, for example, automatic control and avionic systems. Some of the initial instruction is based upon simplified simulation packages developed specially for teaching but students rapidly progress to the use of ACSL and other commercial packages.

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Simulation Activities at Technical Research Centre of Finnland (VTT)

VTT has extensive experience in the research and practical applications of simulation for more than two decades. In order to further develop capabilities in this rapidly growing field a wide research program on Numerical Simulation of Process was implemented in 1986-1988. The activities included both development of new simulation software - in particular the Advanced Process Simulation environment APROS - and applications of internally developed or commercially available programs to a variety of processes and systems.

Increasing use of simulation

We have found that the extent and scope of applications of numerical simulation is increasing. Powerful low cost computers and user-oriented interfaces lower the threshold of getting started. Designers can easily

compare a large number of process alternatives without having to learn how to program or solve differential equations. Control concepts can be verified and controllers pretuned. Operation practices can be planned in advance. Start-up time can be shortened. Training simulators for operational staff has found increasing use in fields characterized by high safety and operational reliability requirements.

Power plant applications

VTT together with the company Imatran Voima has developed a new simulation environment. The latest developments in computer software and hardware are employed. Already during the APROS- development project two comprehensive applications were made. Dynamic simulation models of the IVO-owned peat-powered condensation power plant of Haapavesi and a nuclear plant analyzer level model of Loviisa nuclear power plant were constructed. The simulation system can be used as a decisions making tool for analyzing of power plant concepts and alternatives, but also as an application generator for training simulators.

Industrial processes

VTT also participates in the international EUREKA project CHEDYN. Dynamic models of multicomponent flow and chemical reactions are included to the APROS-system. The material property library needed is implemented by the Belgian company BELSIM sa. Applications in connection to combustion, fluidized bed reactors, water chemistry and paper production processes have already been started in Finland. During the last year of the project, 1991, new application partners are welcome.

Furnace model

3-dimensional furnace models have been made using the widely known PHOENIX-code. Calculations have been compared to measurements in real plant. The results obtained have been possible to use for parametrization of a new real-time 3-dimensional model developed, the Qualitative Estimator of Burning. It is intended for use as a display tool for the plant operator and also for feedback control of emissions.

Air flows in room spaces

The design of demanding heating and ventilation systems requires detailed predictions about air flows, temperatures and contaminant concentration. Computational models have been developed and an extensive international OECD/IEA co-operation project has been started. Also commercial code as WISH and CHAMPION are in use.

Flowsheeting of chemical processes

In the field of steady state simulation VTT has developed two flowsheeting programs of its own, KATTILA for the simulation of energy processes and SSPS for general flowsheeting. SSPS will be implemented into the APROS environment.

Event-based systems

VTT has used simulation eg. for analyzing flexible manufacturing systems, printing presses, milled heat production and public transportation using commercial programs and own code.

CAE systems for foundries

Simulation makes it possible to develop an optimized casting plan without expensive and time consuming castings. The extensive design tool for castings developed by VTT includes eg. the PHOENIX program for mould filling, and FEM-code ADINAT for predicting of the course of the solidification and the location of possible shrinkage cavities and pores.

How VTT operates

VTT developes in own projects new capabilties in the field of simulation and also constructs new software tools. VTT performs on contract simulation studies using models and simulators either already in use or to be developed for specific purposes. The customers can also purchase rights to use simulation programs and systems owned by VTT. Further VTT can develop new programs and simulators on contract with customers and transfer all rights to the customer. VTT can also provide guidance and consultation services for customers performing their own simulation operations. A VTT owned company VTT TECHNOLOGY is marketing consultation services and products developed at VTT.

Further information

The developments at VTT are frequently reported at international simulation conferences. VTT has also several own publication series for reporting on research made. If you need more information of our activities in some specific field of simulation please contact

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SEMINAR

AI and Computer Power: The Impact on Statistics

14-15 March 1991
London

Background and Objectives

Statistical analysis of data is ubiquitous throughout commerce, manufacturing industry, and science. In the past, developments in statistical theory have arisen from the practical requirements of particular application domains, thus, agricultural research was a prime motivator for the development of experimental design, medicine stimulated techniques such as survival analysis, psychology led to methods such as factor analysis, and so on. Now, however, we are witnessing a new kind of stimulus. The ready availability of computer power, to an extent which was inconceivable a few decades ago, has permitted entirely new classes of tools to be developed. The aim of this meeting is to describe and explore those developments.

Topics Include

Probabilistic Reasoning In Expert Systems
Practical Bayesian Statistics
Statistical Expert Systems
Symbolic Methods Of Data Analysis
Simulated Annealing
Genetic Algorithms
Simulation

Who Should Attend And Why

Statisticians and OR Analysts interested in the impact computers are having on their discipline and on likely future developments. **Managers** who undertake or direct statistical investigations and who wish to keep abreast of the possibilities opened up. **Computer scientists** interested in the novel problems thrown up by these new developments.

Demonstrations of related products and services are also invited

For further information, please fill in the form below and send to Julie Valentine or Alec McCutcheon

UNICOM

Brunel Science Park, Cleveland Road, Uxbridge, Middlesex, UK
Tel **0895 56484** Fax **0895 813095**

Please send me further information on the seminar "AI and Computer Power"

Name.....
Organisation.....
Address.....
.....Country.....
Tel.....Fax.....

I would like to be put on your mailing list for other IT events [ ]

Other Unicom topics for Spring 1991 include: Managing and Testing of Software for Quality; OOP, Object Oriented Analysis and OOD; IS: Software Development in the 90's; Creating a Strategic IT Policy; Graphics Animation and Visualisation; Expert Systems & Optimisation in Process Control; Intelligent Buildings.

Send to: UNICOM SEMINARS, Brunel Science Park, Cleveland Road, Uxbridge, Middlesex, UK
Tel: 0895 56484 Fax: 0895 813095

Comparison of Simulation Software

In the early 70's only a few simulation languages existed. But soon, together with the use of PCs, the number of languages increased rapidly. Looking at the catalogue of simulation software over the years the increase started exponentially, but now a limited growth can be observed.

Even for a specialist in simulation it is now difficult to overview all languages and their features. A lot of benchmarks have been developed, but they are quite complicated.

EUROSIM - Simulation News Europe now starts a series using another approach for comparison of simulation software. Based on simple, easily comprehensible models special features of modelling and experimentation within simulation languages, also with respect to an application area, shall be compared.

We invite all institutes and companies developing or distributing simulation software to participate in this comparison:

Please, simulate the model described and send a report to the editors in the following form:

- short description of the language
- model description (source code, diagram, ...)
- results of the tasks with experimentation comments
- approx. 1/2 page A4

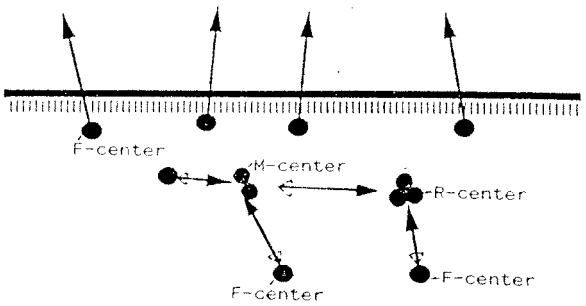
Reports will be published in EUROSIM - Simulation News Europe.

New comparisons will be prepared for the next issues. As it is difficult to find suitable "simple" models and relevant tasks we would like to ask you to contact the editors if you have an idea for a model to be compared in different simulation languages.

Comparison 1: Lithium-Cluster Dynamics under Electron Bombardment

The first model to be compared is taken from solid state physics. The special features to be compared are rate equations (application area), stiff systems (numerical integration), parameter sweep and steady-state calculation (experimentation).

The model describes formation and decay of defect ("F-centers") aggregates in alcali halides. The defects are produced by electron bombardment near the surface of the crystal and can either form aggregates or will evaporate if they reach the surface.



The variable f(t) denotes the concentration of F-centers, m(t) and r(t) respectively denote the concentration of aggregates consisting of two (M-center) or three F-centers (R-center). In principle the system can be easily extended taking into account formation of larger aggregates (n F-centers). The variable p(t) is the production term of F-centers due to electron bombardement (irridiation):

$$dr/dt = -d_r r + k_r mf$$
$$dm/dt = d_r r - d_m m + k_f f^2 - k_r mf$$
$$df/dt = d_r r + 2d_m m - k_r mf - 2k_f f^2 - l_f f + p$$

The parameter l_f measures the loss of F-centers at the surface. k_r and k_f are rate constants describing the formation of an M-center out of two F-centers, or the formation of an R-center out of an M-center and an F-center. The decay of an R-center into an M-center and an F-center is described by the rate constant d_r and the decay of an M-center into two F-centers by the rate constant d_m. Investigations are started after constant electron bombardment $p(t) = p_c = 10^4$ of approximately 10 s; the production term has to be set to zero ($p(t) = 0$), the initial values are:

$f(0) = 9.975$
$m(0) = 1.674$
$r(0) = 84{,}99$

The parameter values are:

$k_r = 1$
$k_f = 0.1$
$l_f = 1000$
$d_r = 0.1$
$d_m = 1$

The following tasks should be performed

a) simulation of the stiff system over [0,10] with indication of computing time depending on different integration algorithms

b) parameter variation of l_f from 1.0E2 to 1.0E4 and a plot of all $f(t;l_f)$, logarithmic steps preferred.

c) calculation of steady states during constant bombardment ($p(t) = p_c = 1.0E4$) and without bombardment ($p(t) = 0$).

Calendar of Events

December 1990

3-9 **Computer Simulation Modelling: A Tool for Achieving Sustainable Development.** Alberta, Canada.
Contact: Sandra Harris, Banff Center for Management, Box 1020; Banff, Alberta, Canada T0L 0C0. Tel: +1-403 762-6133

9-12 **Winter Simulation Conference.** New Orleans, Louisiana, USA.
Contact: Richard E. Nance; Systems Research Ctr.; 320 Femoyer Hall; Virginia Tech; Blacksburg VA 24061. Tel: +1-703 231-6144

14 **Annual meeting of ISCS.** Rome, Italy.
Contact: M. Colajanni, Dip.to Ing. Elettronica, Universitá di Roma II, Via O. Raimondo, I - 00173 Roma, Italy

17 **DBSS Symposium on Computer Algebra** Delft, The Netherlands.
Contact: Dr. E.J.H. Kerckhoffs, Fac. of Techn. Mathematics and Informatics, Delft University of Technology, Julianalaan 132, 2628 BL Delft, The Netherlands

18-20 **Annual Meeting GDR Simulationists.** Rostock.
Contact: A. Sydow, GDR Academy of Sciences Kurstraße 33, Berlin

January 1991

15-17 **IFAC/IEEE/IFIP/IMEKO Symp. Intelligent Tuning and Adaptive Control.** Singapore
Contact: Dr. Kang Chang Guan, Instr. & Control Society, 1 Science Park Drive Nr 61 A, The Fleming, Singapore Science Park, Singapore 0511

23-25 **1990 Western Multiconference on Computer Simulation.** Anaheim, California.
Contact: Brain O'Neill, P.O. Box 17900, San Diego CA 92111. Tel: +1-619 277-3888

February 1991

6-8 **Supercomputing Europe '91.** Stuttgart, Germany.
Contact: Annemarie J.W. Tiebout-de Jong, P.O. Box 8500, 3503 RM Utrecht, The Netherlands. Tel: +31-30955911. Fax: +31-30940379

13-15 **Modelling Techniques and Tools for Computer Performance Evaluation.** Turin, Italy.
Contact: Gianfranco Balbo, Dipartimento di Informatica, Universita di Torino, Corso Svizzera 185, I - 10149 Turin, Italy

March 1991

4-5 **ASIM Workshop. Group "Simulation Technischer Systeme".** Oberpfaffenhofen, Germany.
Contact: Prof.Dr. Gerald Kampe, Fachhochschule für Technik Esslingen, Flandernstr.101, D - 7300 Esslingen. Tel: +49-(0)711 349258

13-15 **IMACS Workshop on Decision Support Systems and Qualitative Reasoning.** Toulouse, France.
Contact: Marie-Therese Ippolito, DSSSQR IMACS Workshop, L.A.A.S./ C.N.R.S. 7, Avenue du Colonel Roche, F - 31077 Toulouse Cedex, France. Tel: +33-61336274 Fax: +33-61553577

20 **ASIM Working Group Meeting "Simulation in der Fertigungstechnik".** Hannover, Germany.
Contact: Prof.Dr.A. Kuhn, Fraunhofer-IML, Emil-Figge-Straße 75, D - 4600 Dortmund. Tel: +49-(0)231 7549 130

22-23 **Simulation und Systemverständnis.** Hannover, Germany.
Contact: Prof.Dr.A. Kuhn, Fraunhofer-IML, Emil-Figge-Straße 75, D - 4600 Dortmund. Tel: +49-(0)231 7549 130

26-28 **CEEDA '91 International Conference on Concurrent Engineering and Electronic Design Automation.** Bournemouth, U.K.
Contact: Michelle Bell, Department of Electronic Engineering, Dorset Institute, Wallisdown, Poole, BH125BB, U.K.

April 1991

1-4 **8th International Conference on Mathematical and Computer Modelling.** University of Maryland, USA.
Contact: X.J.R. Avula, President IAMCM, University of Missouri, Rolla, Dept. of Engineering Mechanics, P.O. Bax 1488, Rolla MO 65401-0249

2-4 **IFAC Workshop on Modelling and Experimental Verification of Dynamics and Control of Flexible Aerospace Structures.** Huntsville, Alabama, USA.
Contact: Dr.S.M. Seitzer; Control Dynam. Company, Office Park South Suite 304, 600 Blvd South, Huntsville, AL 35802, USA

2-4 **IMACS International Symposium on Iterative Methods in Linear Algebra.** Brussels, Belgium.
Contact: R. Beauwens, Fac.des Sc.Appl., C.P. 165, Universite Libre de Bruxelles, Ave F.D. Roosevelt 50, B - 1050 Brussels, Belgium

1-5 **1991 Eastern Simulation Multiconference.** New Orleans, Louisiana.
Contact: Brian O'Neill, P.O. Box 17900, San Diego CA 92111. Phone: +1-619 277-3888

15-19 **EUROCAST '91. Second International Workshop on Computer Aided Systems Theory.** Krems, Austria.
Contact: Prof. F. Pichler, Institute for Systems

Science, Johannes Kepler University, A - 4040 Linz, Austria. Tel: +43-(0)732 2468 896. Fax: +43-(0)732 2468 10

17-19 **International Training Equipment Conference.** Wiesbaden, Germany.
Contact: Richard Curtis, International Training Equipment Conference Limited, 10 Sambourne Road, Warminster, Wiltshire BA12 8LJ, U.K.

22-23 **ASIM Workshop. Group "Simulationsmethoden und Sprachen für parallele Prozesse".** Berlin.
Contact: Dr. H. Fuss, GMD, Postfach 1240, D - 5205 St. Augustin 1.

22-24 **SIP1. Simulation in Practice.** Vienna, Austria
Contact: Philippe Geril, European Simulation Office, University of Ghent, Coupure Links 653, B - 9000 Ghent, Belgium. Tel: +32-91 236961 232. Fax: +32-91 234941

25-26 **ASIM Workshop. Group "Simulation und künstliche Intelligenz".** Berlin
Contact: Dr. J. Krauth, BIBA, Postfach 330560, D - 2800 Bremen 33

Mai 1991

2-3 **22nd Annual Pittsburgh Conference on Modeling and Engineering.** Pittsburgh, Pennsylvania
Contact: William G. Vogt, Modeling and Simulation Conference, 348 Benedum Engineering Hall, University of Pittsburgh, Pittsburgh PA 15261, USA

6-8 **3rd European Cars/Trucks Simulation Symposium.** Schliersee, Germany.
Contact: Moshe R. Heller, ASIMUTH GmbH, Planegger Strasse 26, Postfach 600438, D - 8000 Munich 60, Germany

7-10 **IMACS Symposium on Modelling and Control of Technological Systems.** Casablanca, Morocco.
Contact: IMACS - MCTS Symposium, I.D.N., B.P. 48, F - 59651 Villeneuve d'Ascq Cedex, France

14-16 **4th North-Moravian International Symposium on Modelling and Simulation of Systems.** Vsetin, Czechoslovakia.
Contact: Jan Stefan, VUHZ Dobra, pob. Ostrava, Hasicska 32, CS - 705 00 Ostrava. Tel: +42-(0)69 356246. Fax: +42-(0)69 353988

21-24 **1991 ACM SIGMETRICS Conference on Measurement and Modelling of Computer Systems.** San Diego, California.
Contact: Prof. John Zahorjan, Dept. of Computer Science and Engineering, University of Washington, Seattle WA 98195

22-24 **5th Mediterranean Electrotechnical Conference melecon 91.** Ljubljana, Yugoslavia.
Contact: melecon 91 Secretariat, Fakulteta za Electrotehniko, Trzaska 25, YU - 61001 Ljubljana, Yugoslavia

29-31 **IFAC/(IFIP) Workshop on Computer Software Structures Integrating AI/KBS Systems in Process Control.** Bergen, Norway.
Contact: N.P. Sundby, Norwegian Soc. of Automatic Control, Kronprinsensgate 17, N - 0251 Oslo, Norway

June 1991

17-19 **European Simulation Multiconference ESM 91.** Copenhagen, Denmark.
Contact: Philippe Geril, European Simulation Office, University of Ghent, Coupure Links 653, B - 9000 Ghent, Belgium. Tel: +32-91 236961 232. Fax: +32-91 2349413

17-21 **28th Design Automation Conference.** San Francisco, California.
Contact: Alfred Dunlop, Program Chair, 28th DAC, MP Associates Inc., 7490 Clubhouse Road, Suite 102, Boulder, Colorado 80301. Tel: +1-303 530-4333

19-21 **IFAC Workshop on Electric Power Systems Control Centers.** Semmering, Austria.
Contact: K. Schenk, Senior Director, Siemens Österreich AG, Gudrunstr. 11, A - 1101 Vienna, Austria

24-25 **IFAC Conference. Advances in Control Education.** Boston, Massachusetts, USA.
Contact: Mike Rabins, Mech. Eng. Dept., Texas A&M University, College Station TX 77843-3123, USA. Tel: +1-409 845-1251

26-28 **3rd IMACS International Symposium on Computational Acoustics.** Cambridge, Mass. USA. Contact: Ding Lee, Code 3122, Naval Underwater Systems Center, New London CT 06320, USA

26-28 **1991 American Control Conference.** Boston, Massachusetts.
Contact: Timothy L. Johnson, GE Corporatio, R&D, KW-D217, P.O.Box 8, Schenectady NY 12301. Tel: +1-518 387-5096. Fax: +1-518 387-5164

26-29 **12th International Conference on Application and Theory of Petri Nets.** Aarhus, Denmark. Contact: Kurt Jensen, Computer Science Department, Aarhus University, Ny Munkegade, Bldg. 540, DK - 8000 Aarhus C, Denmark

July 1991

8-12 **IFAC/IFORS Symposium on Identification & System Parameter Estimation.** Budapest, Hungary.
Contact: Eva Soos, Computer & Autom. Inst., HAS, Kende u. 13-17, H - 1111 Budapest

15-17 **5th IFAC/IMACS Symposium on Computer Aided Design in Control & Engineering Systems.** Swansea, U.K.
Contact: H.A. Barker, Dept. of Elect. and Electronic Engg, Univ. College of Swansea, Singleton Park, Swansea SA2 8PP U.K.

22-24 **1991 Summer Computer Simulation Conference.** Baltimore, Maryland.
Contact: Brian O'Neill, P.O. Box 17900, San Diego CA 92111. Tel: +1-619 277-3888

22-26 **13th IMACS WORLD CONGRESS on Computation & Applied Mathematics.** Dublin, Ireland
Contact: Paulene McKeever, IMACS '91, 40 Millview Lawns, Malahide, Co. Dublin, Ireland. Tel: +353-1 6797655. Fax: +353-1 6792469

August 1991

5-9 **14th International Symposium on Mathematical Programming.** Amsterdam, The Netherlands.
Contact: 14th International Symposium on Mathematical Programming, Paulus Potterstraat 40, 1071 DB Amsterdam, The Netherlands.

13-15 **IFAC Symposium on Distributed Intelligent Systems DIS '91.** Washington DC, USA.
Contact: Prof.A.H. Lewis, LIDS 35-410, M.I.T. Cambridge, MA 02139, USA

19-22 **EFMI/IIASA/IFAC International Conference. Medical Information Systems and Expert Systems.** Vienna, Austria.
Contact: K.P. Adlassnig, MIE '91 Secr. General, c/o Inst. f. Med. Computerwissenschaften, Garnisong. 13, 8. Hof, A - 1090 Vienna, Austria

September 1991

2-6 **15th IFIP Conference on System Modelling and Optimization.** Zurich, Switzerland.
Contact: Karl Frauendorfer, Institut für Operations Research, Universität Zürich, Moussonstr. 15, CH - 8044 Zurich, Switzerland

4-6 **IFAC Symposium on Design Methods of Control Systems.** Zurich, Switzerland.
Contact: Prof.F. Kraus, ETH Zentrum ETL, CH - 8092 Zurich, Switzerland

7-9 **International Workshop on Software for Automatic Control Systems.** Irkutsk, USSR.
Contact: V.M. Matrosov, Director of the Irkutsk Computing Center, Siberian Branch, USSER Academy of Science, Lermotov Str. 134, SU - 664033 Irkutsk, USSR

10-13 **IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes SAFEPROCESS '91.** Baden-Baden, Germany.
Contact: Herbert Wiefels, VDI/VDE - GMA, Postfach 1139, D - 4000 Dusseldorf 1, Germany

16-18 **IFAC/IFIP/IMACS Symposium on Robot Control - SYROCO '91.** Vienna, Austria.
Contact: J. Hähnel, OEPWZ, Rockhgasse 6, A - 1014 Vienna, Austria. Tel: +43-(0)222 533 8636/0

23-25 **3rd IFAC Workshop on Artificial Intelligence in Real Time Control.** Napa, California, USA.
Contact: Prof. G.J. Suski, Lawrence Livermore Nat. Lab., 7000 East Ave, Livermore, CA 94550, USA

24-26 **7. Symposium Simulationstechnik, ASIM 91.** Dortmund, Germany.
Contact: Dj. Tavangarian, FernUniversität Hagen, Fachbereich Informatik, LG Technische Informatik II, Postfach 940, D - 5800 Hagen 1, Germany. Tel: +49-(0)2331 804 8371/72, Fax: +49-(0)2331 804 313

25-27 **5th International Conference on Fault-Tolerant Computing Systems.** Nürnberg, Germany.
Contact: W. Hohl, IMMD III, Universität Erlangen-Nürnberg, Martensstr. 3, D - 8520 Erlangen, Germany. Tel: +49-(0)9131 857003. Fax: +49-(0)9131 39388

October 1991

2-4 **IFAC Workshop on Cultural Aspects of Automation.** Krems, Austria.
Contact: P. Kopacek, Inst. f. Handhabungsgeräte und Robotertechnik, Techn. Universität Wien, Karlsplatz 13, A - 1040 Wien, Austria.

1992 Preview

8th Prague Symposium Simulation of Systems in Biology and Medicine

4th European Simulation Congress ESC 92. Capri. September 30 - October 3

ESM 92 European Multiconference. U.K.