IFIP newsletter

International Federation for Information Processing

Editor:
Dr. Jack L. Rosenfeld
Distributed by
CHAPMAN & HALL

Vol. 14, no. 3; September 1997

Dr. George Metakides, Dr. Gordon Moore, and Prof. Andries van Dam Will Be Keynote Speakers for 1998 Congress

Calls for Papers Are Now Available

Dr. George Metakides

Dr. Gordon Moore

Professor Andries van Dam

We are pleased to announce the selection of three eminent scientists. **Prof. Andries van Dam** (USA), **Dr. George Metakides** (GR), and **Dr. Gordon Moore** (USA), to be keynote speakers for the 15th World Computer Congress **(IFIP** Congress '98), which will be held in Vienna and Budapest in August and September 1998.

Dr. Gordon Moore

Dr. Gordon Moore, Chairman Emeritus of Intel Corporation, was born in San Francisco, California. He earned a B.S. degree in Chemistry from the University of California at Berkeley and a Ph.D. in Chemistry and Physics from the California Institute of Technology.

In 1968, he co-founded Intel, serving initially as Executive Vice President. He became President and Chief Executive Officer in 1975 and held that post until elected chairman and Chief Executive Officer in 1979, retaining that position until 1987.

In 1965, Dr. **Moore** predicted that transistor density on microprocessors would double every two years. So far, this prediction has proven amazingly accurate. If it continues, computer processors should contain between 50 million and 100 million transistors by the turn of the century and execute 2 billion instructions per second.

Dr. Moore is a director of three corporations, a member of the U.S. National Academy of Engineering, a Fellow of the

continued on page 2

CONTENTS

Speakers Announced for Congress '98 1
Bids to Host Congress '02 Are Solicited .. 2
Brazilian Computer Society 3
Who's Who in **IFIP:** Dr. Bruce Shriver ... 4
News About **IFIP** Books 5
Conference on Electronic Publishing 6
National Abbreviations 3
Calls for Papers 12
Future **IFIP** Meetings 12
Calendar of Events 16

IFIP NEWSLETTER

Editor:

Dr. Jack L. Rosenfeld
IBM Journal of Research and Development
T.J. Watson Research Center
P.O. Box 218
Yorktown Heights, NY 10598-0218, U.S.A.
telephone: 1 (914) 945-2362
facsimile: 1 (914) 945-2018
Internet: rosenj@watson.ibm.com

Published quarterly by

IFIP Secretariat
Hofstrasse 3
A-2361 Laxenburg, Austria
telephone: +43 2236 73616
facsimile: +43 2236 736169
e-mail: ifip@ifip.or.at

CORRESPONDENTS

TC2 R.K. DeBry (USA)
TC3 B. Samways (GB)
TC6 D. Khakhar (S)
TC7 J. Dolezal (CZ)
TC8 B. Glasson (AUS)
TC9 J.A.N. Lee (USA)
TC10 E. Dirkx (B)

Printed for **IFIP** by the courtesy of Chapman & Hall. ISSN 1024-8102

Please apply to the **IFIP** Secretariat, at the address given above, for copies of the ***IFIP*** *Newsletter* and to be added to (or removed from) the mailing list.

The Secretariat can also answer inquiries about **IFIP.**

The ***IFIP*** *Newsletter* may be reprinted, translated, and reproduced, in whole or in part, except for material specifically denoted as copyright protected. Reprinting in national and local information processing periodicals is encouraged. Acknowledgement to **IFIP** would be appreciated. In order to reprint material protected by copyright, apply for permission to the **IFIP** Secretariat, giving all pertinent details.

Kindly submit material for the *Newsletter* three months before the publication date.

Please send announcements of conferences, workshops, and other meetings directly to the Secretariat, which prepares the Calendar of Events. Calls for papers should be sent to both the Secretariat and the *Newsletter* editor.

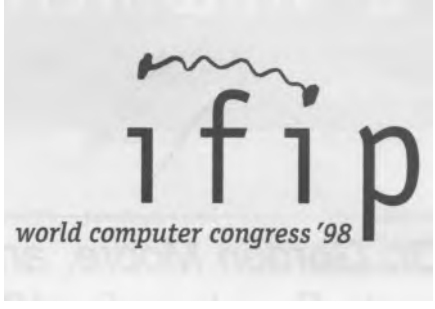
IFIP on the Internet

IFIP information (including this *Newsletter) is* available through the Internet as follows:

anonymous ftp:
ftp tip. or.at
WWW:
http://www.ifip.or.at

CONGRESS '98 continued from page 1

U.S. Institute of Electrical and Electronics Engineers, and Chairman of the Board of Trustees of the California Institute of Technology. In 1990, he received the U.S. National Medal of Technology from then-President George Bush.



Prof. Andries van Dam

Prof. Andries van Dam has been on the faculty of Brown University since 1965. He was one of the founders of the Computer Science Department and served as its first Chairman, from 1979 to 1985. He is also director of the National Science Foundation Science and Technology Center for Graphics and Visualization, a research consortium comprising five U.S. universities. His research has concerned computer graphics, text processing and hypermedia systems, and workstations. He has been working for thirty years on systems for creating and reading electronic books with interactive illustrations, based on high-resolution, high-performance interactive graphics systems, for use in teaching and research.

Prof. van Dam received the B.S. degree with Honors from Swarthmore College in 1960 and the M.S. and Ph.D. degrees from the University of Pennsylvania in 1963 and 1966, respectively. He has been associate editor or on the editorial board of three journals. He is currently on the Technical Advisory Boards of three corporations, including that of Microsoft.

In 1967, **Prof. van Dam** co-founded the ACM Special Interest Group on Graphics (SIGGRAPH). He has co-authored five books, including the widely used reference books *Fundamentals of Interactive Computer Graphics* and *Computer Graphics: Principles and Practice.* He has authored or coauthored over 80 papers.

Among his many awards are the ACM SIGGRAPH Steven A. Coons Award (1991) and honorary degrees from Darmstadt Technical University and Swarthmore College. In 1996 he was inducted into the U.S. National Academy of Engineering.

Bids to Host 17th World Computer Congress Are Solicited

*by Mr. Howard Funk (USA) **

The bidding for the 17th World Computer Congress **(IFIP** Congress '02) is open. The deadline for submitting bids (to the **IFIP** Secretariat) is 30 January 1998. The Congress Committee will visit the proposed sites and report to the 1998 General Assembly, which will select one of the proposed sites. This will give the successful bidder 4 years in which to prepare. For further information, please see the Congress Guidelines now available at

http://www. i fip. or. at/guide lines/guide.html

and from the **IFIP** ftp server at

ftp://ftp. ifip.or. at/pub/congress/

Also, one may consult with the **IFIP** Congress Committee Chair, **Mr. Christopher Guy,** at

P.O. Box 587
Cramerview 2060, Republic of South Africa
e-mail: feline@global.co.za ■

* vice-president of **IFIP**

Dr. George Metakides

Dr. George Metakides was born in Thessaloniki, Greece. He is currently the director of Research and Development in Information Technologies of ESPRIT (European Strategic Programs for Research and development in Information Technology).

He received the M.S. degree in Electrical Engineering and the Ph.D. in Mathematical Logic from Cornell University (U.S.A.) in 1971, following which he pursued an academic career in the U.S. at the University of Rochester and M.I.T. until 1978, when he returned to Greece to take the chair of Logic at the University of Patras. He has published numerous articles and books in the areas of mathematical logic, computer science, and science policy.

At different times between 1984 and 1987, he held the positions of president of the Research Group of the Council of the European Commission and member of the ESPRIT Management Committee and the NATO Science Committee. From 1988 to 1993, he headed the Department of Basic Research and Scientific Relations in Information Technologies in the Directorate General XIII of the Commission of the European Communities. He was re-

continued on page 4

Brazilian Computer Society

*Host to the 1997 **IFIP** General Assembly*

In the early 1970s, the growing Brazilian academic community in computer science began organizing two annual events: the Seminar on Software and Hardware, a technical forum for research and development, and the Seminar on Computing in the Universities, a political forum for discussing government policies related to industry and universities and, mainly, the industrial and technological advancement of the country in the field and its impact on society. In 1976, these two events were merged into a single meeting, and in 1978, during the third such meeting, the Brazilian Computer Society (Sociedade Brasileira de Computação, or SBC) was founded.

SBC has scientific, educational, and political roles. Its purposes are

- to stimulate teaching, research, and development activities
- to preserve and improve the critical thought, professional responsibility, and national skills of the technical and scientific community
- to be attentive to government policy, in order to ensure the technological independence of the country
- to promote, through meetings, conferences, and publications, knowledge, information, and opinions about computer science and the interests of the community.

The Congress of the SBC has been held annually since 1979 as the flagship event of the SBC. It grew by the incorporation of many parallel events. During the 1980s, Society members with common interests in various sub-fields began organizing dedicated symposia. Interest Groups were then formally created, each of which holds an annual symposium. There are now 12 very active Interest Groups, with some symposia attracting hundreds of attendees. (Some of the proceedings are published by Springer-Verlag or by the IEEE Computer Society.)

SBC is greatly involved with professional and educational subjects. It is a forum for discussions involving undergraduate and graduate curricula and has taken strong positions on the regulation of professional activities. The undergraduate curriculum proposed by the SBC is used by the Brazilian Ministry of Education. SBC has also been very active in demanding government support for education and research in the universities.

SBC has also played a major political role since its creation. The Brazilian computing industry emerged at the end of the 1970s as a result of a high synergy between academia and Brazilian investors and strong influence by proposals from the academic community.

Membership

SBC has five member categories: founding (who attended the 1978 meeting), active (professionally active in the field or in a related area), honorary, institutional (universities, research centers, and companies), and student. As of July 1997, SBC had approximately 200 founding members, 1700 active members, 50 institutional members, and 2900 student members. Today, SBC is mainly comprised of members from academia, with very few members from industry and government agencies. SBC is the only academic society in the field in Brazil. Almost all professors and other teaching assistants from the major Brazilian universities are members of the Society. A growing number of members come from smaller universities that are expanding their activities in the field.

SBC has three main bodies: the General Assembly, the Council, and the Board of Directors. The General Assembly, composed of all founding and active members, decides on all aspects of the Society. The Council is composed of ten Trustees, and the Board of Directors is composed of 11 Officers.

Currently, the Society has the following 12 Interest Groups, which hold annual scientific symposia and are responsible for promoting the development of their respective fields:

- Software Engineering
- Computer Networks
- Data Bases
- Computer Architecture and Parallel Processing
- Computer Graphics and Image Processing
- Artificial Intelligence
- Design of Integrated Circuits
- Fault-Tolerant Computing
- Computer Music
- Neural Nets
- Education in Informatics
- Multimedia and Hypermedia Systems

Also, five Regional Divisions organize meetings and short courses. Seventy-three Institutional Delegates, in Brazilian institutions where large scientific and technical groups are active, are responsible for maintaining a link between the members and the Society and for organizing meetings.

In addition to the two components mentioned above, the Congresses include tutorials, a forum for discussing undergraduate and graduate curricula, presentation of awards for the best M.Sc. and Ph.D. theses presented in Brazil, presentation of awards for the best research projects by undergraduate students, and a student forum for discussing educational and professional subjects.

The Society is pleased to welcome the **IFIP** General Assembly to Canela, in southern Brazil, for its 1997 meeting. ■

National Abbreviations Used in Newsletter

A Austria	E Spain	PL Poland
AUS Australia	EE Estonia	PRC China
B Belgium	F France	ROK Republic of Korea
BR Brazil	GB or UK United Kingdom	RUS Russia
BG Bulgaria	GR Greece	S Sweden
CDN Canada	H Hungary	SF or FIN Finland
CH Switzerland	I Italy	SLO Slovenia
CZ The Czech Republic	IL Israel	USA U.S.A.
D Germany	IRL Ireland	ZA South Africa
DK Denmark	P Portugal	ZW Zimbabwe

Who's Who in IFIP: Dr. Bruce Shriver

Dr. Bruce Shriver, chairman of the International Program Committee for the 16th World Computer Congress (in Beijing in 2000) and vice-chair of the International Program Committee for the 15th WCC (in Vienna and Budapest in '98), was born in Buffalo, New York. He received a B.Sc. in Aerospace Engineering and a B.Sc. **in** Mathematics from California State Polytechnic University, Pomona, California, an M.S. in Systems Analysis and an M.S. in Systems Engineering from West Coast University, Los Angeles, California, and a Ph.D. in Computer Science from the State University of New York at Buffalo. His research interests are in computer systems organization, computer architecture, parallel and distributed systems, strategic planning, and core technologies. **He** has directed over fifteen research grants and has an extensive list of publications; he has lectured throughout the world on the design and implementation of computer hardware and software systems; and he has edited several books and co-edited a book series. Among the several awards and honors he has received is the title of IEEE Fellow, conferred in 1990 for his work in Computer Systems Organization and Microprogramming.

Dr. Shriver continues to have both an academic and an industrial career. He has held endowed chairs at the University of Southwestern Louisiana and the University of Hawaii. He is currently an Adjunct Professor at the University of Tromso in Norway and previously was a senior visiting faculty member at the University of Aarhus in Denmark. He has also served on science advisory committees at several universities. On the industrial side, he

was a Research Engineer at Ames Research Center, working on the biosatellite project in the early 1960s, and Manager of Software Technology at the IBM T. J. Watson Research Center in the mid-1980s. Currently, he heads his own consulting company, Genesis 2, Inc.

As for professional society participation, he was President of the IEEE Computer Society (U.S.A.) in 1992, editor-in-chief of the Computer Society periodicals *Computer* and *IEEE Software*, and member of the Society Board of Governors and its Executive Committee a number of times. He has been the technical program chair or general program chairman for more than 30 international conferences and a plenary or keynote speaker for a similar number of meetings.

His involvement with **IFIP** began back in the 1970s, when he became a member of the TC 10 Working Group on System Concepts and Characteristics. He has served two terms as Chairman of FOCUS (Federation on Computing in the United States), the U.S. member society of **IFIP.**

Dr. Shriver has been able to accomplish all of the above and be attentive to family, friends, and hobbies by means of innovative sleeping habits. He has been happily married for 35 years, and he and his wife, Beverly, have three sons, a daughter, two grandsons and a granddaughter. He likes to help Beverly cook regional cuisine, from a Louisiana Crawfish boil to a traditional Danish Christmas dinner. They enjoy learning the local customs of every country they visit. He enjoys hiking and photography when he finds the time. ▬

IFIP COUNCIL

Executive Board

K. Bauknecht	President CH	95-98
H.L. Funk	Vice-Pres. USA	94-97
A.W. Goldsworthy	Vice-Pres. AUS	95-98
W. Brauer	Vice-Pres. D	95-98
G.R. Fairall	Vice-Pres. ZW	96-99
G.J. Morris	Secretary GB	96-99
D. Khakhar	Treasurer S	96-99

Trustees

W. Grafendorfer	A	95-98
P. Glenn	CDN	94-97
M. Gottlieb	IL	95-98
R. Johnson	GB	95-98
C. Guy	ZA	95-97
R. Reis	BR	96-99
X. Yan	PRC	96-99
J. Granado	P	96-97

CONGRESS '98 continued from page 2

sponsible for planning and policy for the Framework Programme for R&D, 1994-1998 in Information Technology.

Tutorials

A new approach is being taken in organizing the tutorial program for the Congress. For this Congress, a "Call for Tutorial Proposals" was issued in June. Although the deadline for submitting proposals was 1 August, we present this brief item to inform the **IFIP** community. The following was contained in the Call:

> Tutorials will be held on August 30th in Vienna, Austria, and on September 5th in Budapest, Hungary. A total of five tutorials will be selected to be presented in Austria and five to be presented in Hungary. A tutorial consists of a full day of lectures on specific topics. Parallel tutorials will run from 9 a.m. to 5 p.m., with breaks during the day.

Those making proposals were asked to submit the title, descriptions, and outlines, at various levels of detail. Biographies of the speakers were also requested. Those submitting proposals will be notified of the decision by 15 September.

Sponsors

Oracle Corporation has provided a substantial amount of financial support for the Congress and thus qualifies as an **IFIP** Supporter. Thus far, Oracle, the Republic of Austria, and the City of Vienna are the Main Sponsors of the Congress.

Calls for Papers

The calls for papers for the seven conferences constituting the Congress are now available. The calls, along with other information about the Congress, can be found on the WorldWide Web at

http://www.ocg.or.at/ifip98.html or
http://www.njszt.iilhu/ifip98.html

or from the two host societies:

Austrian Computer Society
Wollzeile 1-3
A-1010 Vienna, Austria
tel: + 43 1 5120235, fax: + 43 1 5120235 9
e-mail: ifip98@ocg.or.at
http://www.ocg.or.at

or

John v. Neumann Computer Society
Bathori u. 16
H-1054 Budapest, Hungary
tel: +36 1 1329 349, fax: +36 1 1318 140
e-mail: ifip98@neumann.hu
http://www.njszt.iif.hu

A biography of **Dr. Bruce Shriver** (USA), vice-chair of the Congress International Program Committee, is on this page. Additional information can be found in the June ***IFIP*** *Newsletter* (page 3). ▬

EP CONFERENCE continued from p. 11

tiplicity of approaches discussed was bewildering. For example, in a paper on a "pure e-journal" about glacial geology and geomorphology, **Whalley, MacNeil, Munroe,** and **Landy** (IRL) had the following to say with regard to the future of EP:

> ...There are so many groups working in the field of EP (of one form or another) that it is, nevertheless, difficult to see what the trends will be. Indeed, we would argue that these trends cannot really be known at the moment. Rather, we suggest that a form of evolution will take place and adaptations to different environments will take place in several, perhaps many, ways. ... There is now a good opportunity to see what is currently underway and which adaptive route might be the best for a particular environment.

This journal uses a double-blind review process through electronic communication, and the editor, or a member of the editorial board, serves as a mediator to resolve differences between the authors and referees. One commentator suggested an extreme use of electronic communication for the review: to make the original manuscript available on a list server and "throw it to the sharks," allowing whoever wants to comment on the manuscript do so.

In **IFIP,** we have been wrestling with the questions of EP for several years (see the December 1996 *IFIP Newsletter,* page 11). **IFIP** has a significant interest in technical publication — both for the sake of disseminating the scientific work done by the Federation and for the sake of the revenue it receives from royalties on its publications. The Conference was sponsored by **IFIP,** partly in order to provide our leadership with a view of the state of the art in EP and with some idea of where we should be going. **IFIP** participants included our president, **Prof. Kurt Bauknecht** (CH), treasurer, **Prof. Dipak Khakhar** (S), who originally conceived the Conference, chairman of the Publications Committee, **Dr. Roger Johnson** (GB), chairman of Working Group 6.1, **Dr. Harry Rudin** (CH), and *IFIP Newsletter* editor, **Dr. Jack Rosenfeld** (USA). Whether much was learned of help to the **IFIP** community will become apparent during the September 1997 **IFIP** General Assembly in Brazil. (An experiment in EP by **IFIP** and its publisher is discussed in an article on this page.)

Proceedings

The proceedings of the Conference were not available at the time of the Conference — either in print or electronically. At the end of the Conference, **Prof. Meadows** reminded the authors to submit the final versions of their papers (to be used in the printed proceedings) by the deadline, "replacing the original lies with new lies." The printed proceedings, entitled *Electronic Publishing '97 — New Models and Opportunities,* edited by **Mr. Rowland** and **Prof. Meadows,** will be published by the ICCC Press. For further information, please contact

ICCC
P.O. Box 9745
Washington, DC 20016, U.S.A.
http://www.iccc.inter.net/

No electronic version is planned; however, the organizers expect to place selected papers on the Web.

The next Conference on EP is planned to be held 20-22 April 1998 in Budapest, Hungary.

News about **IFIP** Books

TC3 Book Is Now on the Web

Increased Discount from Publisher

One complete **IFIP** book has just been placed on the WorldWide Web by Thomson Science, the **IFIP** publisher.* Since August, the full text of *Information Technology: Supporting change through teacher education,* edited by **Mr. Don Passey** (GB) and **Mr. Brian Samways** (GB) and published in June, has been available to anyone, at no charge. It can be found at the Thomson site, with URL

http://www.infotech.chapmanhall.com

Each chapter of the book can be searched for keywords, and printing is permitted.

This is a pilot project, to determine the value of making books available in electronic form. (For an extensive discussion of electronic publication, see the article that begins on page 6.) It is not known whether the impact upon sales of the print book will be positive or negative. The experiment will be monitored by studying the site usage and feedback from site visitors. A number of other **IFIP** books are planned for electronic submission, and Thomson hopes to be able to further develop the electronic publishing project, which will be initially reviewed at the September 1997 **IFIP** General Assembly in Brazil.

35% Discount

There has been a recent increase of 5% on the discount that Thomson Science offers to individual members of **IFIP** member societies. A 35% discount on the published price of all **IFIP** publications with Chapman & Hall* is now available. For further information on **IFIP** publications, please visit the following World-Wide Web sites:

http ://www.i fip. or. at/publ i c.htm
http://www.it-ch.com/

With respect to discounts, one may contact Emma Rogers at

Chapman & Hall
2-6 Boundary Row,
London SE1 8HN, United Kingdom
tel: +44 171 865 0066, ext. 6150
fax: +44 171 865 0014
e-mail: Emma.Rogers@chall.co.uk ■

* Although the company name has changed from Chapman & Hall to Thomson Science, the "imprint" Chapman & Hall will still be used on the books.

TECHNICAL COMMITTEE CHAIRMEN

TC1:	G. Ausiello	I 97-99
TC2:	R. Kurki-Suonio	SF 95-97
TC3:	B. Samways	GB 97-99
TC5:	G. Doumeingts	F 96-99
TC6:	0. Spaniol	D 92-97
TC7:	P. Kall	CH 95-98
TC8:	B. Glasson	AUS 96-98
TC9:	P. Jaervinen	SF 96-98
TC10:	J.-C. Laprie	F 96-99
TC11:	B. von Solms	ZA 94-98
TC12:	L. Carlucci-Aiello	I 96-98
TC13:	J. Hammond	AUS 95-98

IFIP—ICCC Conference on Electronic Publishing Was Notable for the Diversity of Topics Covered

*by Dr. Jack L. Rosenfeld (USA) **

The Conference "Electronic Publishing '97 — New Models and Opportunities," held 14-16 April in Canterbury, U.K., was notable for the diversity of topics covered in its program and the variety of backgrounds of the attendees. Jointly sponsored by **IFIP** and the International Council for Computer Communication (ICCC), an Affiliate Member of **IFIP,** the Conference attracted over 140 attendees from the following areas: U.K. (approximately 60), elsewhere in Western Europe (30), Eastern Europe (25), and North America (20). There were, however, no attendees from South or Central America or the African continent. The Open Society Fund, established by philanthropist **George Soros** (USA), provided funding to help 19 of the participants from Eastern Europe attend.

Even greater than the geographical diversity of the participants was the variety of their interests. Some were editors of electronic publications, and some were editors of conventional scientific journals. The attendees included a large number of librarians (primarily from university libraries), several people affiliated with subscription agents (organizations that order journals and perform other services for libraries), and a few representatives of publishers. Some of the participants were interested in the languages used to display documents on the WorldWide Web (e.g., HTML), while some were interested in accounting, security, intellectual property rights, and other aspects of Internet communication. Many participants were specifically interested in making specialized documents available on the Internet — from collections of art images to the writings of Renaissance women.

In a Nutshell

The co-chairs of the Conference Organizing Committee were **Prof. Michael Miller** (GB) and **Mr. John Smith** (GB), while **Prof. Jack Meadows** (GB) was chair of the International Program Committee.

The Conference consisted of two parallel tracks, one on technical issues and the other on socio-economic issues, the latter including more papers than the former. The tracks were preceded by a plenary opening session. Summaries of the two tracks were presented by **Prof. Meadows** and **Mr. Fytton Rowland** (GB) during the plenary closing session.

In order to cover most of the material discussed at the Conference, a definition of electronic publishing (EP) would have to be rather broad, such as the following, from the *Academic American Encyclopedia:* "the publishing of material in a computer-accessible medium...." This definition includes both on–line (e.g., Internet) and off–line (e.g., CD-ROM) publications; one-of-a-kind and periodical publications (serials); multimedia and plain text; and unrestricted distribution as well as distribution to a small, restricted community. Virtually all the alternatives were considered in presentations at the Conference.

Summarizing the Conference is difficult because of the wide range of topics covered; nevertheless, we attempt to first present the highlights, after which we discuss some material that should be of interest to the **IFIP** community at large, with liberal quotations from the authors of the papers.

Overview

A substantial number of papers involved, in one way or another, the choice of document language for electronic publications. SGML (Standard Generalized Markup Language) seems to be the choice of the academic community, although its shortcomings are recognized, while PDF (Portable Document Format) seems to be preferred by publishers and libraries; however, neither seems wholly adequate in its present form. Other languages, as well as variations on these [e.g., XML (Extensible Markup Language) and HyTime (Hypermedia/Time-based Structuring Language)], were also discussed. Consensus, not to speak of standardization, appears to be years away. **Mr. Rowland** noted that a major theme of many of the technical papers was the separation of documents into three parts: the presentation or format, the link structure, which interconnects the parts of documents and connects them to other documents, and the content itself. Another technical concern was the effective use of hypertext linkages, both among electronic documents and within them.

Several papers, however, dealt with technical issues more understandable by the layman. Among these were protecting proprietary documents from copying (e.g., by electronic "watermarking"), "retrospective" capture of documents (i.e., creating electronic versions of documents after they have been printed), means of collaboration in creating multimedia documents from a number of sites, payments when electronic publications are offered for a fee, security (e.g., limiting access to authorized users and preventing unauthorized modification of documents), automatic arbitration of disputes involving commerce over the Internet, and intellectual property rights.

An even greater variety of topics was covered in the stream on socio-economic issues. Several papers dealt with the concerns of librarians and subscription agents, and the rest dealt with people's experiences in creating electronic journals, as well as in creating a variety of other electronic publications [e.g., international standards documents, literature databases (writings of Renaissance women and poems of the poet Wordsworth), a catalog of art images, medical records, and an archive of 16th-19th century documents on Venice]. We quote from several of these papers below.

Opening Session

Dr. Pramode Verma (USA), president of the ICCC, opened the Conference with remarks concerning, "the linkages among — and perhaps the convergence of — education, economics, and EP." As an example, EP "...can provide the means to populate a library without actual physical contents. Such a library will also be a library with some very unique characteristics. Today, when a book or report is borrowed from a library, it leaves a gap on the shelf where it was stored. The next person who needs the book can't access it until it's returned by the current user and replaced by the librarian. When we talk about a virtual library enabled through EP, the number of people who can browse over the same document at the same time is essentially unlimited."

In the opening plenary session, **Prof. David Brailsford** (GB) presented a paper describing an existing electronic journal, *Electronic Publishing — Origination, Dissemination and Design (EP–odd),* and the considerations that led to its present state. In the early days, typography was a major concern, as indicated by the following passage from the paper:

> It was appreciated from the outset that the typographic complexity of

* Editor of the ***IFIP*** *Newsletter*

some of the *EP-odd* material demanded that it be typeset in PostScript. This seems straightforward enough these days, with PostScript being the de facto typesetting standard in the Scientific, Technical and Medical (STM) journal world. But back in 1987, it added considerably to the journal's production costs, and the only comfort was that our ever-expanding archive of PostScript, plus the corresponding source texts,... would be a valuable resource when the journal became truly electronic.

The format of the electronically distributed journal was also a major concern. Scanned page images, PostScript, PDF, SGML, Hypertext Markup Language (HTML), and others were considered, resulting in the selection of the Acrobat/PDF system by Adobe Systems Inc. The author pointed out that arguments against scanned page images (bit maps) include the following: they require large amounts of storage, they contain no information about the document structure, and they cannot be searched for particular words or phrases.

The debate over paper vs. electronic text was summarized in the following passage:

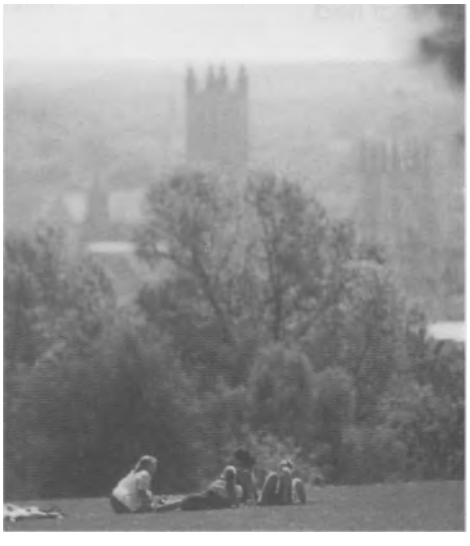
> (There are advantages in) having all reference material online, in one form or another, if only to make repeated offprints when existing paper copies become lost or illegible. So great is the need that I have started to use ... software to acquire electronic copies of paper-only archive material in PDF form. ... It then "re-typesets" the document into PDF, yielding a full-text searchable FILE... To be fair, the advocates of the great new economic order in e-journals do not deny the need for paper offprints of the sort described above. What they do challenge is the continuing need for the appearance of expensive bound copies of a journal, either before or after the electronic version.

The speaker went on to quote Gregory Rawlins concerning the potential impact of EP:

> The last time something this radical happened was in the 15th century when the printing press used the newly available cheap paper to take over the manuscript market, throw scribes out of work, and explosively increase the number of available books. Print led to pagination, indices and bibliographies since they were now possible and they made searching easier. And that forced people to learn the alphabet so that they could use the new indices. Print increased literacy, democratized knowledge, increased accuracy, made fiction possible, made propaganda possible, created public libraries, and created the idea of authorship. Print also decreased the importance of memories — and their main possessors, the elders; loosened the hold of the Church and led to the Reformation; added fuel to the Humanist movement and led to the Renaissance by puffing classical authors back in print; increased education, science and technology transfer; and created publishers.

Prof. Brailsford continued as follows:

> It is not too fanciful to envisage similar profound changes in society being brought about by the Internet in general, and the World Wide Web in particular. But whereas the printing press virtually annihilated all previous technologies, it now seems clear that the printed word has a secure place, within some bigger electronic backdrop, for the foreseeable future. The "paperless office" never came about; instead the blizzard of paper is relentless now that low-cost laser printers make it possible to get a printout of virtually anything. And we must not forget that it is possible to flick through a paper copy of a journal far faster than can be done with keyboard and mouse; paper is a light and flexible medium which can easily be angled to take maximum advantage of bad lighting conditions and which does not require any external power supply. Paper is here to stay — but almost certainly as a secondary, rather than a primary, medium for the scholarly journals of the future.



View of Canterbury Cathedral from the University of Kent, site of the Conference

A major consideration in EP is the prestige of the publication. **Prof. Brailsford** considered the question of whether pure electronic journals will have the stature of printed journals — even when both are refereed:

> (Before electronic journals) achieve full respectability, they have to provide adequate substitutes for the following attributes still enjoyed by bound journals:
>
> 1. A sense of "archive" and "continuity."
> 2. A sense of worth conferred by high-quality paper and glossy bindings.
> 3. The protection from fraud (in the sense of replicating a complete issue of a prestigious journal with an author's rejected paper inserted into it ...
>
> Academic and commercial publishers have made a start in addressing these issues for e-journals and hybrid (both electronic and printed) journals, but **it** needs some more time yet of continued Web presence by the reputable journal publishers ... as a foundation of trust. ... Any e-journal administered solely by an editorial board of academics, with no element of publisher involvement, still has to challenge the perception — no matter how distinguished the board and how impeccable the peer review policy — that it might all disappear from the Web overnight, either in some monumental disk crash or by the Editor-in-Chief walking off **in a** huff to take up some newly-tenured post at the University of Southern Antarctica.

Economic considerations are also significant. The paper contains the following passage on this topic:

> It is absolutely true that an e-journal can be produced at low cost provided that there is no necessity *even to contemplate* a high quality version at any stage in the future. Given these conditions, Web journals can quickly use the present HTML approach. ... Alternatively, authors can submit electronic copy ... that is of pre-print quality and will not adhere to any particular journal style. ... If the electronic corpus has to be provided in a form compatible with present or future bound-journal publication,... the "electronic" costs are much higher: copy editing and proof reading has to be undertaken; the author's submission has to be formatted into the standard journal layout; the new pagination may require diagrams to be relocated; "widows" and "orphans" have to be eliminated; diagrams of inadequate quality have to be re-scanned and passed through software ... and so on. All of these need lengthy human intervention, costing time and money.

This difference in approach may explain the widely different estimates of the cost savings that can be achieved by electronic journals (20-70%).

The paper also deals with the role of university libraries (whose librarians find electronic media "a nightmare"), copy protection, authors' concerns (including wide availability of their papers, page charges, and prestige of the journals), payments for electronic publications, and other issues. The paper concludes with future plans for *EP–odd:*

continued on following page

EP CONFERENCE cont. from prior page

> Although *EP-odd* has been a hybrid journal from the outset, and its entire archive has been converted to PDF, ... the Web availability of its material has been limited to just seven test papers. The low volume of its subscription base did not encourage any experiments with electronic subscription models. The proposal now is to make the eight volumes of the existing archive freely available on the Web and, furthermore, to apply this policy also to accepted drafts of papers in the current volume. ... The investment of effort in getting the papers into "print ready" format will be tested by marketing each volume, at the end of a year, as a sort of yearbook — i.e., containing not just the accepted papers but also a linking commentary, edited feedback on the papers from the Web site and so on. ... The novelty of our proposal is that we want to try satisfying the need for a bound volume with a compendium of "what has happened in electronic publishing in 1997," sold more in the spirit of conference proceedings or workshop papers and at a price that is closer to an expensive textbook than a journal subscription.

Economics of Electronic Journals

In the second presentation of the opening session, **Dr. Andrew Odlyzko** (USA) discussed the slow evolution of EP. The section of his paper on the economics of electronic journals opens as follows:

> It is now practically universally accepted that scholarly journals will have to be available in digital formats. What is not settled is whether they can be much less expensive than print journals. Most traditional print publishers still claim, just as they have claimed for years, that switching to an electronic format can save at most 30% of the costs, namely the expenses of printing and mailing. Prices of electronic versions of established print journals are little, if any, lower than those of the basic paper versions. What publishers talk about most in connection with electronic publishing are the extra costs they bear, not savings. On the other hand, there is also rapid growth of electronic-only journals run by scholars themselves, and available for free on the Internet.
>
> Will the free electronic journals dominate? Most publishers claim that they will not survive and will be replaced by electronic subscription journals. Even some editors of the free journals agree with that assessment. My opinion is that it is too early to tell whether subscriptions will be required. It is possible that we will have a mix of free and subscription journals. However, I am convinced that even the subscription journals will be much less expensive than the current print journals. The two main reasons are that modern technology makes it possible to provide the required services much more cheaply, and that in scholarly publishing, authors have no incentive to cooperate with the publishers in maintaining a high overhead system.

He then proceeded to estimate the average costs associated with a single paper in a print journal: publisher's revenue ($4000), libraries' costs other than purchase of journals or books ($8000), editorial and refereeing costs ($4000), and costs of preparing a paper ($20,000), noting that the publisher's revenue is among the smallest of these. He estimated the publisher's revenue to range from $1000 to $8000 per article, but it is difficult to determine what the larger amounts buy:

> There is some positive correlation between quality of presentation (proofreading, typography, and so on) and price, but it is not strong. In the area that masters the most to scholars, that of quality of material published, it is hard to discern any correlation. In mathematics, the three most prestigious journals are published by a commercial publisher, by a university, and by a professional society, at widely different costs. In economics, the most prestigious journals are published by a professional society, and are among the least expensive ones in that field.
>
> Many publishers argue that costs cannot be reduced much, even with electronic publishing, since most of the cost is the first-copy cost of preparing the manuscripts for publication. This argument is refuted by the widely differing costs among publishers. The great disparity in costs among journals is a sign of an industry that has not had to worry about efficiency. Even in the print medium, costs can be reduced. That they have not been is due to the strange economics of scholarly publishing. ... However, even the least expensive print publishers still operate at a cost of around $1,000 per article. Electronic publishing offers the possibility of going far below even that figure.

He next considered the cost of electronic journals:

> There are hundreds of electronic journals that are operated by their editors and are available for free on the Net. They do provide all the filtering that their print counterparts do. However, although their ranks appear to double every year, they are all new and small. The question is whether a system of free journals is durable, and whether it can be scaled to cover most of scholarly publishing.
>
> Two factors make free electronic journals possible. One is advances in technology, which make it possible for scholars to handle tasks such as typesetting and distribution that used to require trained experts and a large infrastructure. The other factor is a peculiarity of the scholarly journal system. ... The monetary cost of the time that scholars put into the journal business as editors and referees is about as large as the total revenue that publishers derive from sales of the journals. Scholarly journal publishing could not exist in its present form if scholars were compensated financially for their work. Technology is making their tasks progressively easier.

He then discussed the conflicting view of editors concerning the value of extensive editing and other costly processes. As a result, the cost of processing an article for an electronic-only journal can vary widely.

> All the estimates fit in the range $30041000 per article and do not come close to the $4000 per article charged by traditional publishers. Why is there such a disparity in views on costs? It is not caused by a simple ignorance of what it takes to run a viable journal on the part of advocates of free or low-priced publications, since many of them are running successful operations. The disparity arises out of different views of what is necessary. ... Established publishers are increasingly providing electronic versions of their journals, but usually only in addition to the print version. It is no surprise therefore that their costs are not decreasing. The approach of the free electronic journal pioneers has been different, namely to provide only what can be done with the resources available.

He went on to discuss "the perverse incentives in scholarly publishing":

> Libraries purchase journals from ... the publishers, usually in response to requests from scholars. These requests are based overwhelmingly on the perceived quality of the journals, and price seldom plays a role (although that is changing under the pressure to control growth of library costs). The budgets for libraries almost always come from different sources than the budgets for academic departments, so that scholars as users do not have to make an explicit tradeoff between graduate assistantships and libraries, for example. ... As an extreme example, in the late 1970s, *Nuclear Physics B,* published by Elsevier, took over as the "journal of choice" in particle physics and field theory from *Physical Review D,* even though the latter was much less expensive. This happened because *Phys. Rev. D* had page charges, and physicists decided they would rather use their grant money for travel, postdocs, and the like.

Dr. Odlyzko gave his view of the future as follows:

> Although scholars have no incentive to maintain the current journal system, they currently also have no incentive to dismantle it. ... Until the academic library system is modified, with the costs and tradeoffs made clear to

scholars and administrators, it is unlikely there will be any drastic changes. ... Electronic journals will become almost universal but most of them will be versions of established print journals, and will be equally expensive. Free or inexpensive electronic journals will grow, but probably not too rapidly. However, this situation is not likely to persist for long. I have been predicting that change will come when administrators realize just how expensive the library system is, and that scholars can obtain most of the information they need from other sources, primarily preprints.

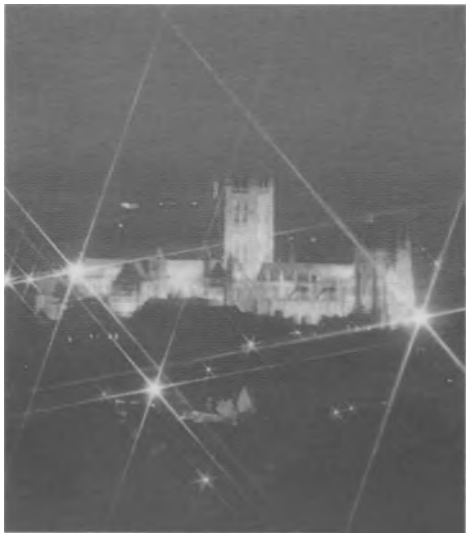
The world is paying several billion dollars per year just for one year of current journals, and the Harvard libraries alone cost around 60 million dollars per year to operate. (He also pointed out that the annual cost of a good mathematics library is approximately $150 000 for journal subscriptions and $30 000 for books.) Over the decade from 1982 to 1992, library expenditures have grown by over a third even after adjusting for general inflation. ... At some point in the near future, more drastic cuts are likely.

The Deconstructed Journal

In a semi-formal evening session the first day of the Conference, **Mr. Smith** presented some thought-provoking ideas on the next generation of scientific journals made possible by computer networking. He first summarized the main roles of the scientific journal: editorial (selection of material), quality control (refereeing for content, and copy editing for form), dissemination, and conferring recognition on the authors. In addition, he pointed out certain "hidden" roles: defining the subject (by means of editorial decisions), defining the community of scholars, and archiving.

Asserting that all these roles need not be carried out by the same organization, he proposed one possible "publication model," which he called the "Deconstructed Journal," that fulfills the roles of the scientific journal in the era of the computer network. The selection of material would still be performed by the editors of the new type of journal. Refereeing would be performed by individuals or organizations that are independent of all journals. Copy editing would be done by the author, intelligent software, experts recruited by the author, and commercial organizations. Dissemination would be through computer networks. Conferring recognition would still be the role of the editors of the journals, as would definition of the subject and the community. Archiving could be done at various places.

One possible paradigm for the publication process would begin with the author placing a manuscript on a computer-network server and notifying one or more refereeing individuals or organizations. The author would subsequently revise the manuscript on the basis of the reviews, until the referees approve, and then notify the relevant journals, which would place the paper on their list of approved articles. The same article could be included in all journals that find it acceptable and within their areas of interest. In effect, journals would become primarily lists of pointers to approved articles. A consequence of this model is that a new journal could be started by including relevant existing articles (already pointed to by existing journals) as well as newly accepted articles. Furthermore, producing journal issues according to a schedule no longer makes sense. **Mr. Smith's** model was probably the most visionary one for EP presented at the Conference; however, it did not totally break from the current publication model. One participant suggested a different model: creating dynamic journals that would contain not only accepted articles but commentaries on them (perhaps dialogs between authors and commentators), additional results produced by the author and other researchers after the initial "publication," and other radical features.



Canterbury Cathedral

Other interesting material was also presented at the evening session. **Mr. Paul Evans** (GB) of Elsevier, the world's largest publisher of scientific, technical, and medical journals, said that by the end of this year, Elsevier will have more than 1100 of its publications on the Web. **Prof. Jean-Claude Guedon** (CDN) argued that research publication should not be a commercial activity, that electronic journals produced by publishers should not cost as much as print journals, as they now do, that publisher profits are too large, and that publishers should leave this marketplace.

Journal of Humanitarian Assistance

One of the more memorable papers, by **Dr. Jim Whitman** (GB) and **Dr. David Pocock** (GB), discussed the *Journal of Humanitarian Assistance (JHA),* a two-year-old electronic journal, available on the Web for free. The authors described the motivation for this journal as follows:

In a field of endeavour so often driven by emergencies and assessed in terms of on-the-ground effectiveness, our initiative ran against the grain — at least in terms of our intentions. From the start, we never considered establishing another academic journal, at least in the ordinary sense. We said of *JHA* that it was to be "a resource that contained a journal." However, this determination was formed on the basis of quite hard-edged conclusions reached through our researches and field observations. It is not only that the well-meaning but uninformed abundant good will generated by humanitarian emergencies can create as much chaos as order, but that even the range of professional organisations were a "community" only in the generic sense. After the fighting in Rwanda ceased in the summer of 1994, for example, 130 NGOs (nongovernmental organizations) descended on the country in a single month. In this and related disasters, one must add national militaries, the specialised agencies of the United Nations, diverse professions and nationalities, conflicting remits, assertions of independence and a poor grasp of shared or related tasks.

We believed that by fostering knowledge and comprehension through the dissemination of information, we could serve the work of humanitarianism *before* emergencies... We therefore concluded that there was a requirement for a world-wide and near real-time resource, common to policy-makers, practitioners and analysts. Located on the world wide web, the *JHA* (http://www-jha.sps.cam.ac.uk) would enable us to post information that could be consulted, shared, responded to and easily re-disseminated — all in the shortest possible time.

In considering how they could use the electronic medium most effectively, the authors reached the following conclusions:

...the most useful piece of advice we received was not all technical in the usual sense, nor about electronic publishing *per se,* but about the difference between electronic and print formats. The wisdom of, "Don't treat it like a horseless carriage" became apparent only as we faced the issues that beset the establishment of a traditional journal: periodicity, copyright and the payment of contributors, cir-

continued on following page

EP CONFERENCE cont. from prior page

> culation, limit on the length of submissions, organisational, professional and national inclusiveness, responsiveness and flexibility. In these and other areas, we have been able to employ or adapt the strengths of the electronic medium to keep our operation simple, and useful for our readership....
>
> We established *JHA* with a very simple structure, with a title page that leads the reader to a few explanatory pages and to the contents page. The contents page offers access to about 10 different sections, each with its own contents page, and then to the items themselves. The content varies from pieces a few lines long to entire books complete with footnotes, tables and illustrations. ... The electronic format allows us a flexibility and range not open to printed journals, which we have exploited. (Aside from the cost-based advantages: no outlay for marketing, advertising, paper, printing, distribution or postage.) Because the material we publish is wide-ranging and occasionally lengthy or time-urgent, we publish continually rather than to fixed periods. There is only one "edition" and an archive of older material, which continues to be accessible.... One of the unique strengths of *JHA* is that we are able to post material with little delay, often within twenty four hours of receipt....
>
> Much of the material ... could not be produced in a print journal because of its length. ... A particularly striking example of this aspect of the *JHA* was our ability to post the five-volume "Joint Evaluation of Emergency Assistance to Rwanda" report. Within a week of its publication, the print run had been completely taken up. Whatever its current availability, it is also expensive. We are naturally delighted to have received consent to republish it as an open-access document available throughout the world.

The phrase "don't treat it like a horseless carriage" echoed again and again during the Conference. Unfortunately, few of the papers described truly revolutionary approaches to EP. The authors returned to this theme in the following passage:

> Our own "resource that contains a journal" approach still appears relatively novel, and we are mildly surprised that the electronic journals we do encounter make little use of the opportunities presented by the medium. It is rather like the early film makers whose theatre backgrounds inclined them to place the camera in a fixed position, with the actors moving in and out of its range.

Library Issues

Many are the problems that librarians face in the EP age. In his paper, **Prof. John Buschman** (USA) gave a few chilling examples, as illustrated by the following passages. The first deals with "technology refreshing."

> In 1995, we had a complete collapse of our online library system, including the catalog. The company from which we purchased the system in the early 1980s was in some financial trouble by the middle 1990s, and the processor that ran our database was eleven years old. There were no means of repairing it further, and the database itself — our library catalog on magnetic tape — was in an obscure, obsolete program language and record format. As a result, we were an academic library without a book catalog for one entire semester. The conversion of our old database, and its successful loading into a new library system, simply took that long. As Stoll has said, the replication of the information into a more current format is very expensive itself (it was for my institution). If libraries rely even more on electronically published formats, there will have to be a complete conversion of hardware, software, and records (or some combination of these) every decade or so, and this promises to break library budgets. ...
>
> We subscribe to a product (that) is an index with links to approximately 450 journals contained on compact discs, to which we subscribe. We rely on the supplier's equipment and software for access to read and copy these journals. Three years after cancelling approximately $9,000 worth of print subscriptions that overlap this CD journal collection, we are now faced with some problems. The supplier willy-nilly drops and adds journals to the list provided on CD. Effectively, this drops and adds journals to our library collection without any selection input from us. It may be a valuable addition, or worthless. It may result in a significant subject gap, or insignificant. The point is that we have ceded selection and preservation control to the supplier. Should we choose to drop this product and resubscribe to the journals we deem necessary, I am unsure that our former subscription carries with it subsequent rights to the software to search for, view, and make a copy from the back issues of journals we now own on the supplier's compact discs. ...
>
> Publishers are moving rapidly toward making their standard reference works or journals available in electronic forms. As numerous authors have noted, "the biggest challenge that is facing electronic publishers is how to best protect their data, and therefore their investment" when recopying and redistributing those products over networks is so easy. There is a structuring of access — licensing, subscriptions, etc. — which is designed to maximize income for the publisher, resulting in what is generally estimated to be one-third higher costs to libraries for these resources. In the meantime, as one author put it, many such agreements make libraries renters of information without permanent retention rights, forcing libraries to pay for the same source several times over, only to relinquish everything if the lease is terminated.

Other difficulties faced by libraries include decreasing budgets and increasing numbers of journals and other publications.

Subscription Agents

Many of the Conference participants had been unaware of the role played by subscription agents. Several papers at the Conference, however, discussed how the agents' activity is now changing, with the advent of EP. One of these papers, by **Mr. Albert Prior** (GB), not only described the new services offered by agents but indicated additional chores faced by libraries with regard to EP. We include some excerpts from that paper here:

> Agents are in the business of service and added value. Apart from some exceptions, such as the creation of their own databases, they are generally neither owners nor producers of primary information. They exist to make things easier for their customers, who on the whole are libraries. The service is in the area of journal subscriptions — as a link between publishers and libraries. Libraries use agents as a single source for ordering, paying, dealing with missing and damaged issues, delivering journals etc. ... (Some libraries use more than one agent. — Ed.)
>
> (Agents) have also developed a number of major automated products and services for libraries. For example, their comprehensive databases of journals information have proved to be attractive to libraries looking for up-to-date bibliographical details of journals, journal prices, publications dates etc. ...
>
> In recent years, (agents) have launched services based on electronic tables of contents of journals (ETOCs), creating very up-to-date electronic files of the contents pages of anything between 10,000 and 28,000 serials titles. In part, this was to meet the anticipated demand from libraries moving to policies of "access rather than holdings," a situation in which a library would rely heavily on comprehensive information services on what articles were being published, backed up by facilities to obtain the document or article if required — as opposed to subscriptions to large numbers of journals at considerable expense, many of which might remain unread. Technology also made such services possible, through the arrival of electronic scanning systems and services from organisations set up to handle conversion of vast amounts of scholarly information into electronic format.

A number of these electronic current awareness services from agents have been supported by document delivery services, usually not developed by the agents themselves but through the investment in document delivery companies or links to existing document delivery suppliers. Whilst one or two of the agents have moved heavily into this area,... paper-based document delivery has on the whole, not become a major activity for agents, although ETOCs have been considerably more successful. ETOC services have been offered on CD ROM, as batch files for loading on institutions' networks and more recently via the World Wide Web. ...

More recently, agents have been committing considerable time and resources to developing services for full text electronic journals. Over the last two years electronic journals have moved from being more than just experiments, with the launch by commercial publishers of electronic versions of existing print titles, so-called parallel editions. The "electronic only" journals which have existed for some time and more of which have been introduced recently have had relatively lithe impact on subscription agents or library purchasing, generally because they have either been experimental, free or directed at a very limited user group. Major publishers, however,... have now offered electronic editions of major commercial print titles already purchased in large numbers by libraries. ...

Electronic journals, (however,) have also resulted in administrative difficulties and challenges for libraries: it has been necessary for libraries to work with each individual publisher to set up electronic access arrangements on behalf of users, to obtain passwords, to handle registration and license arrangements etc. Users themselves have been faced with a variety of different interfaces and search services from each of the publishers. Whilst the numbers of electronic titles has been small in relation to the total numbers of journals being purchased, these administrative and access difficulties become of major concern as numbers of titles grow. Libraries are now looking for services to streamline and simplify access to electronic journals: single points for ordering, access, information and payment — intermediaries who can offer a comprehensive support service. ...

It might be argued at this point that neither subscription agents nor indeed libraries will be needed (eventually,) as producers and users of scholarly information will interact directly with each other in the electronic environment. Different services will be needed and different players may be involved, but there are no major signs that disintermediation is imminent and that the agent is about to disappear. It will be more a case of re-intermediation, as each player now redefines his or her role and the relationship with the other players. ...

(Agents) are of course competing with other intermediaries in the delivery of electronic fulltext. These include library cooperatives, ... as well as information providers and database hosts ... Universities themselves are also offering services, ... A number of major systems companies have entered the field ... Publishers themselves have also offered services which go beyond coverage of their own titles, ...

(Agents) will increasingly link to, or add in, secondary information databases, to offer end users seamless access to full texts from a range of resource discovery tools. Customised information services will become more important, with profiles of users' subject interests delivering information from the "electronic warehouses" to users as it is published. Intelligent-agent technology will be used to support this. Agents may also see opportunities to "package" information from their electronic warehouses in subject packages to meet the particular requirements of their various customer types. In the coming twelve months or so, agents will also define their position more clearly regarding longer term archiving, and access to, the growing volume of electronic serials information. ...

The scale of serials information available electronically is small and covers recently published information or that which is available from the larger publishers who have invested in "electronification" programmes. Libraries and institutions have a growing demand however for broader based and earlier material in digital form, in order, for example, to create electronic courseware, short loan reserve collections or indeed as part of larger-scale moves towards the creation of digital libraries.

If unavailable electronically from the publisher, it is necessary to convert the material from paper to digital form, using for example electronic scanning systems. It also involves seeking the permission of publishers, if material is under copyright, to allow the digitisation to be undertaken, with agreements as to how the information may then be used and what payment may need to be made to publishers. My own company is involved in the ACORN Project at Loughborough University in the U.K., which is a research project ... in which print versions of articles on course reading lists are made available electronically to students via the university network.

Summary

Some areas of EP were not discussed at the Conference at all. Although criticism of commercial publishers was voiced, leading one to believe that publishers do nothing more than print, bind, and make money, their role in promoting publications, advertising, and providing assistance to the editors was not mentioned. Neither was much said about technical and copy editing. Many believe that high quality technical and copy editing add great value to a publication. Naturally, these entail significant cost, which a free electronic journal cannot afford. Archiving was mentioned frequently but not dealt with in detail. Today, libraries serve as the archives for the print publications of the world. Who will provide the archives for electronic publications? — libraries, commercial publishers, editors, subscription agents, government agencies, or other organizations? This major issue has yet to be resolved. Another concern was mentioned by more than one speaker: the effect that providing a free electronic version of a publication has on the revenue from the print version. Some speakers asserted that free electronic versions of books had actually increased the sales of the print versions. Although this may apply to books, it may not apply to journals. Little beyond hearsay was offered to resolve this question.

Some participants would have preferred less concentration on electronic journal publication on the Internet and more papers on publication of books and other material in other electronic media, e.g., CD–ROM.

Speakers' estimates of the number of electronic journals in existence varied dramatically, from as few as 750 to as many as 12 000. Of course, the number depends upon whether one counts electronic-only or hybrid journals and upon one's definition of a journal. Also, many electronic journals have been short lived.

Another matter that arose several times was the preference for printed material when reading long documents. One speaker confessed to being "wedded to paper" and unable to read documents from a computer screen. Another said he prefers to print a copy of a paper he wants to study. "Who wants to go to bed with an 800-page volume?" he asked. Perhaps this is a matter of belonging to a generation that was not raised with readily available computers. Maybe our children or grand-children will be better able to read from the "tube."

Anyone coming to the Conference expecting to gain a clear, unequivocal view of what the future holds with regard to EP might have been disappointed. The mul-

continued on page 5

CALLS FOR PAPERS

IFIP TC1 International Colloq. on **Universal Machines and Computations — MCU/UMC'98**
23-27 Mar 98, Metz, France
papers due: 30 Sep 97
contact: Maurice Margenstern
Colloque International
"Machines et calculs universels"
I.U.T. de Metz
Département d'Informatique
Ile du Saulcy
F - 57045 METZ CEDEX, France
e-mail: mcu98@iut.univ-metz.fr
http://mcu98.iut.univ-metz.fr/—mcu98
http://www.iut.univ-metz.fr/—mcu98
http://kelp.ke.sys.hiroshima-u.ac.jp
/mirror/mcu98/
fax: (33 3) 87 31 54 96

Seventh IFIP/ICCC Conf. on **Information Networks and Data Communications — INDC'98**
15-17 Jun 98, Aveiro, Portugal
papers due: 9 Jan 98
contact: Prof. Dr. Jose Ruela
INESC
Pr. da Republica, 93
4000, Porto, Portugal
tel: +351 2 209 42 36
e-mail: jruela@inescn.pt

15th **World Computer Congress (IFIP Congress '98)**
31 Aug — 4 Sep 98, Vienna, Austria, and Budapest, Hungary
papers due: 16 Jan 98 (for all component conferences)
contact: (see page 4, column 3)

Twelfth **IFIP** WG11.3 Work. Conf. on **Database Security**
15-17 Jul 98, Chalkidiki, Greece
papers due: 10 Mar 1998
contact: Prof. Sushil Jajodia
Mail Stop 4A4
George Mason University
Fairfax, VA 22030-4444, U.S.A.
tel: +1 703-993-1653
fax: +1 703-993-1638
e-mail: jajodia@gmu.edu
http://www.isse.gmu.edu/ csis/faculty
/jajodia.html

Will event organizers please send calls for papers to both the **IFIP** Secretariat and the *Newsletter* editor. Note that calls cannot be listed in this column until the events have been approved by **IFIP.**

FUTURE IFIP MEETINGS

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

GA	31 Aug — 4 Sep 97 (Sun.—Thurs.)	Canela, Brazil
Council	1-5 Mar 98 (Sun.—Thurs.)	Manchester, U.K.
GA	5-8 Sep 98 (Sat.—Tues.)	Budapest, Hungary
GA	(contiguous to **IFIP** Congress '00)	Beijing, China

TECHNICAL COMMITTEE AND WORKING GROUP MEETINGS

WG1.1	autumn 98	Berkeley, CA, U.S.A.
TC2	13-14 Jun 98	Shelter Island, NY, U.S.A.
WG2.1	5-9 Jan 98	Oxford, U.K.
	Sep 98	Beijing, China
WG2.2	22-26 Sep 97	Graz, Austria
WG2.3	22-26 Sep 97	Alsace, France
	Jun 98	Bloomington, IN, U.S.A.
WG2.4	22-26 Sep 97	Estes Park, CO, U.S.A.
	Feb 98	Berlin, Germany
WG2.5	16-19 Oct 97	Albuquerque, NM, U.S.A.
WG2.6	7-10 Oct 97	Leysin, Switzerland
	May 98	L' Aquila, Italy
	15-18 Dec 98	New Zealand
WG2.7/WG13.4	13-15 Sep 97	Siena, Italy
	14-19 Apr 98	Los Angeles, CA, U.S.A.
WG2.9	Jan 98	West Indies
	Jan 99	Dublin, Ireland
TC3	Sep 98	Vienna, Austria
	99	Copenhagen, Denmark
TC5	4 Nov 97	Detroit, MI, U.S.A.
WG5.7	14 Sep 97	Ascona, Switzerland
WG5. I 0	Sep 97	Geneva, Switzerland
	Jun 98	Hannover, Germany
WG5.12	3 Nov 97	Detroit, MI, U.S.A.
TC6	Oct 97	Sofia, Bulgaria
	3-4 Apr 98	Ladenburg, Germany
	24-25 Oct 98	Tunisia
TC7	Jul 99	Cambridge, U.K.
WG7.2	20-24 Apr 98	Chemnitz, Germany
	28 Apr — 1 May 98	Daytona Beach, FL, U.S.A.
	19-22 Jun 98	Hanghzhou, China
	17-21 Aug 98	Montreal, Canada
	31 Aug — 6 Sep 98	Moscow, Russia
WG7.5	11-13 May 98	Krakow, Poland
WG7.7	24-27 Mar 98	Neubiberg, Germany
TC8	29-30 Aug 98	Vienna, Austria
	99	Israel
WG8.1	Nov 97 (with QSSE)	Delhi, India
	15-17 Jul 98	Beijing, China
WG8.2	Dec 97 (with ICIS)	Atlanta, GA, U.S.A.
	10-12 Dec 98	Helsinki, Finland
	Jun 99	St. Louis, MO, U.S.A.
	Aug 00	Jutland, Denmark
WG8.3	12-15 Jul 98	Bled, Slovenia
WG8.4	2-4 Oct 97	Perth, Australia; Tucson, AZ, U.S.A.; and Delft, the Netherlands
WG8.6	10-12 Dec 98	Helsinki, Finland
WG8.7	12-13 Oct 97	Washington, DC, U.S.A.
	Dec 97	Atlanta, GA, U.S.A.
	Jan 98	Hawaii, U.S.A.
TC9	Aug 98	Geneva, Switzerland
WG9.2	10-11 Jan 98	Namur, Belgium
WG9.5	2-3 Oct 97	
TC 10	Sep 97	Gramado, Brazil
	Sep 98	Vienna, Austria, or Budapest, Hungary
	Sep 99	Toulouse, France
WG10.4	Jun 98	Munich, Germany
	Jun 99	Madison, WI, **U.S.A.**
	Jun 00	New York, NY, U.S.A.
TC11	Sept 98	Vienna, Austria, or Budapest, Hungary
WG13.4/WG2.7	13-15 Sep 97	Siena, Italy
	14-19 Apr 98	Los Angeles, CA, U.S.A.

NEW BOOKS IN

COMPUTER APPLICATIONS IN TECHNOLOGY

Published by CHAPMAN & HALL

Information Infrastructure Systems for Manufacturing

Edited by **J.B.M. Goossenaerts,** Eindhoven University of Technology, Netherlands; **F. Kimura,** University of Tokyo, Japan and **H. Wortmann,** Eindhoven University of Technology, Netherlands

This important new work elaborates on the information infrastructure needed by manufacturing enterprises in order to share information and to coordinate decisions and control. This infrastructure should feature common methods and integrated applications for shop floor control, order processing, contract negotiation and cooperation in product and process development.

Contents: Introduction: Towards an information infrastructure for manufacturing industry. Keynote and invited papers. Modelling of products, processes and systems. Integration frameworks and architectures. Information infrastructure and business processes. Information infrastructure and engineering processes. Shop floor systems. Global networks and their applications. Towards intelligent manufacturing systems. Indexes.

Apr '97: *234x 156: 480pp: 183 line illus*
Hardback: 0.412-78800-4: £85.00

Knowledge Intensive CAD

Volume 2

M. Mäntylä, Helsinki University of Technology, Finland, **S. Finger,** Carnegie Mellon University, Pittsburgh, USA and **T. Tomiyama,** University of Tokyo, Japan

This state of the art text aims to extend the concept of intelligent CAD (computer-aided design) to the concept of 'knowledge intensive engineering'. The concepts focus on the systemization and sharing of knowledge across the life-cycle stages and organizational boundaries. Will be essential reading for researchers, engineers and technical managers involved in the development of advanced applications for engineering and manufacturing.

Contents: Architecture for knowledge intensive CAD. Methodologies for knowledge intensive CAD. Design knowledge representation. Knowledge intensive Design for the Life-Cycle. Report on working groups.

May '97: *234x156: 312pp:* 117 *line illus*
Hardback: 0-412-81450-1: £65.00

Chapman & Hall
an imprint of
Thomson Science

Modelling Techniques for Business Process Re-engineering and Benchmarking

Edited by **G. Doumeingts,** Université Bordeaux, France and **J. Browne,** University College, Ireland

This title evaluates the new developments in modelling techniques and their use, presents the results of the latest European Esprit Technology for Business Process projects and discusses implementation of the latest modelling, business process and benchmarking techniques.

Contents: Overview of European TPB Projects. The modelling of business process. Case studies in business processing re-engineering. Performance and benchmarking. Case studies in benchmarking.

Feb '97: 234x 156: 408pp
Hardback: *0-412-78910-8: £65.00*

Product Modelling for Computer Integrated Design and Manufacture

Edited by **M.J. Pratt** and **R.D Sriram,** both of National Institute of Standards and Technology, U.S.A and **M.J. Wozny,** Rensselaer Polytechnic Institute, U.S.A

This leading edge resource explores the developments in geometric modeling, product modeling and their applications. In particular, it looks at the means by which product geometry emerges from the conceptual stages of design, and the use of geometric reasoning for applications downstream of design, including manufacture and assembly.

Contents: Design issues. Model representations. Geometric design. Form features and related topics. Reverse engineering. Assembly modelling and tolerance. Modeling techniques and algorithms. Design for manufacture and cost. Index of contributors. Keyword index.

Jan '97: 234x 156: 456pp: 249 *line Mtn, 3 halftones*
Hardback: 0-412-80980-X: f75.00

Visit our IT and Applied Computing Resource Centre at: www.IT-CH.com

Re-engineering for Sustainable Industrial Production

Edited by L.**M. Camarinha-Matos,** Universidade Nova de Lisboa, Portugal

A major goal of this publication is the discussion of tendencies and experiences regarding: industrial strategies for peripheral regions, engineering and penetration of new markets, engineering and industrial survival in open markets, regional protection against newcomers, globalization of the economy and achievement of the appropriate combination of automation and human-centred manufacturing.

May '97: *234x 156: 552pp: 214 line illus,* 9 *halftones*
Hardback: 0-412-79950-2: £99.00

Reliability, Quality and Safety of Software-intensive Systems

Edited by **D. Gritzalis,** Athens University of Economics and Business, Greece

This is a contemporary view of current software-intensive systems. The information is sourced from several different domains. The unique presentation of information provides the reader with a way of approaching the subject which they will not find in other texts.

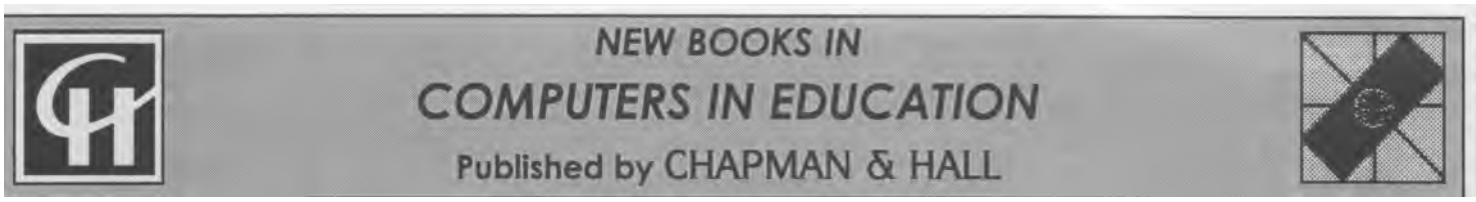
Contents: Preface. Part one: Software testing. Part two: Software quality. Part three: Software reliabilty. Part four: Software reusability. Part five: Safety critical and safety monitor systems. Part six: Software-intensive systems security. Part seven: Applications and experiences. Part eight: Poster papers. Index of contributors. Keyword index.

May '97: 234x 156: *288pp: 50 line illus*
Hardback: 0-412.80280-5: £60.00

35% discount available to members of IFIP member societies.

For further information, or to order, please contact: Emma Rogers, Marketing Department, Thomson Science, 2-6 Boundary Row, London SE1 8HN, UK

Tel: *+44 (0) 171 865 0066*
Fax: *+44 (0) 171 865 0014*
emaikemma.rogers@chall.co.uk



Information and Communications Technologies in School Mathematics

D. Tinsley, formerly UK Chief Inspector for Training and **D.C. Johnson**, King's College London, UK

The book aims to record the proceedings of an international conference of invited experts and is based on 4 themes: curriculum, teachers, learners and human and social issues. The conference is a sequel to 2 earlier ones held 10 and 20 years ago, and will give an unique insight into developments in secondary schools across the world over 3 decades.

May 1998: ***234x 156: 500pp: line illus:***
Hardback 0-412-82100-1: c. £60.00

Informatics in Higher Education

Views on informatics and non-informatics curricula

F. Mulder, Open University, The Netherlands and **T. van Weed**, University of Nijmegen, The Netherlands

This book addresses two main themes. The first is, "the discipline of informatics". Two major questions will be discussed: How can we obtain and keep track of a systematic and objective overview of the vast landscape in higher informatics education, both nationally and internationally? and Would it be useful to rationalize and redesign the informatics curricula, leading to less fragmentation and more communality? The second theme is the relation between informatics and other disciplines, with the following main questions: What informatics do we need to offer a coherent curriculum which suits the needs of the actual information society with respect to specific disciplines? What is relevant in informatics and CIT to provide to others? and What informatics concepts, methods and techniques form the hard core needed in every other discipline?

March 1998 **234x 156:** ***approx. 304pp :30 line illus:***
Hardback:0-412-80790.4: c. £55.00

Capacity Building for IT in Education in Developing Countries

Edited by **G. Marshall**, Gail Marshall & Associates, USA and **M. Ruohonen**, Institute of Information Systems Science, Finland

This volume examines the needs, peer support, practices, experiences and accessibility of resources, both human and technical, for IT in developing countries. Seven main themes are presented in the book: experiences from various national policies, strategies and initiatives; IT as a tool for teaching and learning at all levels; the role of vocational education in information technology; IT as a teaching subject; IT as a tool for educational administration and support; building physical resources, skills and knowledge as well as access to those resources in developing countries; and action plans for proposed projects at local and national levels.

February 1998 234x 156: **approx. 416pp:**
Hardback:0-412-81460-9: **c. £69.00**

Information Technology in Educational Management for the Schools of the Future

Edited by **A.C.W. Fung**, Hong Kong Baptist University, Hong Kong, **A.J. Visscher**, University of Twente, Netherlands, **B.Z. Barta**, formerly of Ministry of Education, Culture and Sport, Israel and **D.C.B. Teather**, Hong Kong Baptist University, Hong Kong

This book portrays the potential of IT in the educational management of schools. It collates and presents research results from all over the world and discusses the latest developments for the future. This book will be of interest to all those concerned with ITEM, especially school management staff, researchers and system designers.

January **1997** ***234x 156: 208pp*** *:20* ***line illus:***
Hardback:0-412-79970-7: £55.00

The Place of Information Technology in Management and Business Education

Edited by **B.Z. Barta**, formerly of Ministry of Education, Culture and Sport, Israel, **P. Juliff**, Deakin University, Australia and **A. Tatnall**, Victoria University of Technology, Australia

The education of managers at professional, undergraduate and postgraduate levels must take recognition of their need to understand the impact of IT on the practice of their profession. Furthermore it should seek to educate and to provide the knowledge needed for these people to plan for, and adopt information technology techniques in business and management. Computer-based management information systems provide not merely a passive means of retrieving and presenting information, but an active enabling technology redefining the role of the manager. This book examines the relationship between business, management and IT and, in particular, the impact of that relationship on those responsible for the design and delivery of education programmes at all levels.

January **1997:** ***234x156: 240pp :21 line illus:***
Hardback:0-412- 79960-X159.00

Information Technology

Supporting change through teacher education

Edited by **D. Passey**, Lancaster University, UK and **B. Samways**, Birmingham City Council, UK

This book considers how the fundamental issues relating to the use of IT in education, are being tackled across the world. It features international perspectives on the challenge that information and communications technology poses to teacher education; views of trainee teacher experiences with computers; insights into the ways in which communication technologies are being used to link teachers and students; consideration of the impact of change with information and communications technology; discussion of the roles of those involved in developing teacher education with information and communications techology at national, institutional and teacher levels.

June 1997: 234x 156: 408pp: 50 line illus:
Hardback:0-412-79760-7: £65.00

The Impact of Information Technology

From practice to curriculum

Y.J. Katz, Bar-Ilan University, Israel, **D. Millin**, Culture and Sport, Israel and **B. Offir**, Bar-Ilan University, Israel

The aim of this book is to present readers with state-of-the-art options which allow pupils as well as teachers to cope with the social impacts and implications of information technology and the rapid technological developments of the past 25 years.

July **1996: 234x 156: 192pp** *:20 line illus:*
Hardback: 0-412-78470-X: £50.00

Visit our IT and Applied Computing Resource Centre at:
www.IT-CH.com

35% discount available to members of IFIP member societies.

For further information, or to order, please contact: Emma Rogers, Marketing Department, Thomson Science, 2-6 Boundary Row, London SE1 8HN, UK

Tel: +44 (0) 171 865 0066
Fax: *+44 (0) 171 865 0014*
emaikemmarogers@challco,uk

Chapman & Hall
an imprint of
Thomson Science

Event	Date	Location	Sponsored by	Org. Contact
The Virtual Campus: Trends for Higher Education & Training	27-29.11.1997	Madrid, E	IFIP WG3.3/3.6	Fax: +341 3986028 felisa@ieec.uned.es
1st IFIP TC11 WG11.5 Working Conf. on Integrity and Internal Control	4-5.12.1997	Zurich, CH	IFIP WG11.5	Fax: +31 492 548636 strous@iaehv.nl
Intl. Conf. on Information Systems	14-17.12.1997	Atlanta, GA, USA	SIM, IFIP TC8, Informs, ACM, MS, IAIM	Fax: +1 404 651 3842 emclean@gsu.edu
Systems Implementation 2000: Languages, Methods & Tools	23-26.2.1998	Berlin, D	IFIP WG2.4, German Natl. Org.	Fax: +27 12 436454 ibishop@cs.up.ac.za
Intl. Colloquium Universal Machines and Computations	23-27.3.1998	Metz, F	Metz IU, IFIP TC 1	Fax: +33 3 87315496 mcu98@iut.univ-metz.fr
Muenchener Stochastik-Tage	24-27.3.1998	Neubiberg, D	FAFU, IFIP WG7.7, Friends of the Univ., GAMM	Fax: +49 89 6004 4092/3560 kurt.marti@unibw-muenchen.de
4th Intl. Conf. on Broadband Communications '98	1-3.4.1998	Stuttgart, D	IFIP WG6.2, IEEE, GI, ITG	kuehn@ind.uni-stuttgartde
3rd Workshop on Personal Wireless Communication	8-9.4.1998	Tokyo, J	IPSJ, IFIP WG6.8, Ministry of Post & Telecommunication, Inst. of Electr., Inf. & Comm. of Japan	Fax: +81 3 5684 3983 saito@sail.t.u-tokyo.ac.jp
IFIP WG7.2 Conf. on Optimal Control of PDE's	20-24.4.1998	Chemnitz, D	IFIP WG7.2, Univ. of Chemnitz	Fax: +1 804982 4555 il2v@virginia.edu
2nd Intl. Conf On Information Infrastructure (Information Super Highway)	26-29.4.1998	Beijing, PRC	MEI, CAST, IFIP	Fax: +8610 68283458 mqzhou@public.bta.net.cn
Nonlinear Problems in Aviation and Aerospace	28.4.-1.5.1998	Daytona Beach, FL, USA	IFNA, IFIP TC7, Emory Riddle Aeronautical Univ.	Fax: +1 904 226 7050 siva@db.erau.edu
8th IFIP WG7.5 Work.Conf. on Reliability & Optimization of Structural Systems	11-13.5.1998	Krakow, PL	IFIP WG7.5, Wroclaw Univ. of Techn.	Fax: +48 71 3137644292
Design of Information Infrastructure & Systems for Manufacturing 1998	18-22.5.1998	Fort Worth, TX, USA	IFIP WG5.7/5.3, Autom. & Robotics Inst./The Univ. of Texas at Arlington	Fax: +1 817 272 5952 jmills@arri.uta.edu
Intelligent Assembly & Disassembly	21-23.5.1998	Ljubljana, SLO	IFAC, IFIP TC5, IFORS	Fax: +386 61218567 dragica.noe@fs.uni-lj.si
4th IFIP 2.6 Work. Conf on Visual Database Systems	28-30.5.1998	L' Aquila, I	IFIP WG2.6	Fax: +41 21 6935195 spaccapietra@di.epfl.ch
IFIP Work. Conf. on Programming Concepts & Methods	8-12.6.1998	Shelter Island, NY, USA	IFIP WG2.2/WG2.3	Fax: +1 516 6328334 sas cs.sunysb.edu
Control of Distributed Parameter & Stochastic Systems	19-22.6.1998	Hanghzhou, PRC	IFIP WG7.2, Chin. Natl. Science Found., Zheijang Univ., Fudan Univ.	Fax: +1 804 9824555 il2v@virginia.edu
IFAC Symposium on Information Control in Manufacturing	24-26.6.1998	Nancy-Metz, F	IFAC, IFIP TC5, AFCET, CIRP, CNRS, INRIA	Fax: +33 383 912390 incom98@cran.u-nancy.fr
Intl. Work. Conf. on Information Technology in Educational Management	6-10.7.1998	South Bristol, Maine, USA	IFIP WG3.7, OR/Ed Lab., Univ. of Maine & South. Maine, Maine Dept. of Education	Fax: +1 919 7455771 nidrg+2@unity.ncsu.edu
Asia-Pacific Conf. on Human-Computer Interaction	15-17.7.1998	Hayama-machi, Kanagawa, J	IPSJ, IFIP TC13	Fax: +81 53 4781481 PFD00343@niftyserve.or.jp
Optimal Control of PDE's	17-21.8.1998	Montreal, CDN	IFIP WG7.2, CRM, Univ. of Montreal	Fax: +1 804 9824555 il2v@virginia.edu
Work. Conf. on Educating Professionals for Network-Centric Organizations	23-28.8.1998	Saitama, J	IFIP WG3.4, Jap.Soc. of Educ. Techn., Jap. Soc. f. Inf. Systems	Fax: +61 3 92446928 pjuliff@deakin.edu.au
Prague Stochastics '98 - Section on Stochastic Programming	23-28.8.1998	Prague, CZ	Charles Univ., IFIP WG7.7	Fax: +420 2 6884702 stoch98@utia.cas.cz
IFIP Congress '98 Fifteenth World Computer Congress	31.8.-4.9.1998	Vienna/Budapest, A/H	IFIP	Fax: +43 1 51202359 ifip98@ocg.org.at
Intl. Conf. dedicated to the 90th Anniv. of L.S. Pantryagin	31.8.-6.9.1998	Moscow, RUS	RAS, IFIP TC7, Math. Steklov Inst., Moscow State Univ.	Fax: +1 804 982 4555 il2v@virginia.edu
Engineering the Human Computer Interface	14-18.9.1998	Iraklion, GR	IFIP WG2.7, ICS-FORTH	Fax: +1 412 268 5758 ljb@sei.cmu.edu

A schedule of administrative meetings can be found elsewhere in this *Newsletter.*

Calendar of Events

Event	Date	Location	Sponsored by	Org. Contact
Intl. Conf. on Intelligent Networks	2-5.9.1997	Versailles, F	IFIP WG6.7	Fax: +33 1 39254057 guy.pujolle@prism.uvsq.fr
Symposium on Robot Control	3-5.9.1997	Nantes, F	IFAC, IFIP TC12, IEEE Robotics & Automation, IMACS	Fax: +33 40747406 Khalil@lan.ec_nantes.fr
10th International Workshop on Testing of Communicating Systems	8-10.9.1997	Cheju Island, ROK	IFIP WG6.1	Fax: +82 25265567 mckim@sava.kotel.co .kr
Virtual Systems and Multimedia '97	10-12.9.1997	Geneva, CH	ISVS, IFIP WG5.10, MIRALab-CUI, Univ. of Geneva	Fax: +41 22 70580 thalmann@cui.unige.ch
Organisational Transformation and Decision Support	14-16.9.1997	La Gomera, Can.Isl., E	IFIP WG8.3, LSE	Fax: +44 171 955 7565
Organizing the Extended Enterprise	15-19.9.1997	Ascona, CH	IFIP WG5.7	Fax: +41 1 6321040 sch@bwi.bepr.ethz.ch
2nd Workshop on Traffic management & Synthesis of ATM Networks	24-26.9.1997	Montreal, CDN	IFIP WG6.2, INRS-Telecommunications, Ecole Polytechn.de Montreal	Fax: +1 514 3404440 bureau. congres@ mail.polymtl.ca
Cellular Automata Workshop 97	25-27.9.1997	Gargnano, I	Univ. Milan, IFIP WG1.5	Fax: +39 2 55006205 mauri@dsi.unimi.it
3rd International Conf. on Communications & Multimedia Security	25-26.9.1997	Athens, GR	IFIP TC 11	Fax: +30 1 3645154 dgrit@aegean.gr
Intl. Workshop on Distributed Applications & Interoperable Systems 1997	30.9.-2.10.1997	Cottbus, D	BTU Cottbus, IFIP WG6.1, GI	Fax: +49 355692236 koenig@informatik.tu-cottbus.de
The Intl. Office of the Future: Design Options & Solution Strategies	2-4.10.1997	Perth, Delft, Tucson	IFIP WG8.4, Curtin Univ., Delft Univ., Univ. of Arizona	Fax: +6189266 3076 glassonb@cbs.curtin.edu.au
7th IFIP WG2.6 Work. Conf. on Database Semantics	7-10.10.1997	Leysin, CH	IFIP WG2.6	Fax: +41 21 6935195 andersson@di.epfl.ch
Intl. Conf. on Computer Applications in Shipbuilding	13-17.10.1997	Yokohama, J	SNAJ, IFIP TC5	Fax: +81 3 56847746 koyama@nakl.tu-tokyo.ac.jp
Network Information Processing Systems	14-16.10.1997	Sofia, BG	IFIP TC6, BAS, OSF	Fax: +359 2 703260 boyanov@bgcict. acad.bg
IFIP WG10.5 Advanced Research Work. Conf. on Correct Hardware Design & Verification Methods	16-18.10.1997	Montreal, CDN	IFIP WG10.5	Fax: +1 5143435834 cemy@iro.umontreal.ca
8th IFIP/IEEE Intl. Workshop on Distributed Systems: Operations & Management	21-23.10.1997	Sydney, AUS	IFIP WG6.6, IEEE CNOM	Fax: +61 2 9514 2435 aruna@eng.uts.edu.au
Secondary School Mathematics in the World of Communication Technology: Learning, Teaching and the Curriculum	26-31.10.1997	Grenoble, F	IFIP WG3.1	Fax: +33 76871947 comu@grenet.fr
Intl. Conf. on Enterprise Integration Modelling Technology	28-30.10.1997	Torino, I	NIST, IFIP WG5.12, IFAC	Fax: +49 703 1276698 kosanke@ipa.ffig.de
IFAC Workshop on Safety & Reliability in Emerging Control Technologies	29-31.10.1997	Tallinn, EE	IFAC, IFIP WG5.4, IEE	Fax: +372 6543343
Intl. Workshop on situated Method Engineering	3-4.11.1997	Delhi, IND	Univ. Twente, IFIP WG8.1, Delhi Inst. of Techn, Indira Gandhi Natl. Centre f. Arts	Fax: +31 53 4892159 cvs@sms.utwente.nl
Computer Application in Production Engineering	5-7.11.1997	Detroit, USA	IFIP TC5, SME	Fax: +815 987 6725
1997 Intl. Conf. on Parallel Architecture & Compilation Techniques	11-15.11.1997	San Francisco, CA, USA	IFIP WG10.3, IEEE, ACM SIGARCH	Fax: +1 206 325 2433
IFIP TC6/Wg6.1 Joint Intl. Conf. on Formal Description Techniques: Protocol Specification, Testing & Verification	18-21.11.1997	Osaka, J	IFIP WG6.1, IPSJ	Fax: +81 6 8506609 higashino@ics.es.osaka-u.ac.jp

(continued on page 15)

IFIP Congress '98 - 15th World Computer Congress	31.8.-4.9.1998	Vienna, A and Budapest, H	IFIP
IFIP Congress 2000 - 16th World Computer Congress	Sep 2000	Beijing, PRC	IFIP

This calendar information is furnished to the *Newsletter* by the Secretariat. It contains only approved IFIP events, arranged by the local Organizing Committees. IFIP does not assume any financial or legal liability. A schedule of IFIP administrative meetings can be found elsewhere in this *Newsletter.*