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Council Meets in Goa, India

Actions Taken to Fine-Tune the Federation

ome IFIP Councils and General Assemblies (GAs) are notable for the major actions taken (e.g., the admission of two Member societies from the US last September), and other meetings are notable for their inaction. In the eyes of this observer, the most recent Council and related meetings, held in Goa, India, were marked by solid progress and fine-tuning of IFIP procedures, while few outstanding new measures were taken. Most significant of the new measures were a system of financial incentives to encourage Member societies in developing countries to participate in **IFIP** to a greater extent (see the article on page 4) and the intention to facilitate membership in IFIP Working Groups (WGs) by representatives of a Japanese trade association. Another important action was the establishment of the position of Event Facilitator/Activity Manager (page 2). Major reports concerned the very healthy financial state of IFIP, the difficulties experienced during the transfer of responsibility as IFIP publisher to Kluwer Academic Publishers and the actions taken to remedy them (page 6), and progress made in the development of a university informatics curriculum, sponsored by UNESCO (page 3).

The Council itself, which opened 3 March, was preceded by two days of committee meetings. This time, the schedule seemed to provide too little time to discuss all the necessary topics. Unfortunately, only half of the twelve Technical Committee (TC) chairs were present (and one of them had to leave early), which further impeded progress. There was not even a written report from TC5. Also, one vice-president and two trustees were absent, in addition to a vice-president (Mr. Christopher Guy [ZA]) and a trustee (Prof. X. Yan [CN]) who have resigned.

At the opening session. Dr. S. Ramani. the representative to **IFIP** of the Computer Society of India (CSI) and an **IFIP** trustee, welcomed the Council to Goa. He suggested that the participants, realizing how lovely Goa is, might wish to recommend Goa or Bangalore as the sites of future **IFIP** meetings. After describing the CSI (sec the article on page 3 of the March ***IFIP*** *Newsletter)*, he pointed out that many senior leaders of India are regular users of information technology, heavily employing notebook computers and video conferencing to ensure the effectiveness of government.

Mr. Scott Delman (left), representative of Kim% er Academic Publishers, presents **IFIP** books to Dr. S. Ramani, Indian representative to **IFIP.** at Council.

Technical Activities

Dir. Peter Bollerslev (DK), the president of IFIP. reported that the federation held 71 cents in 1998, of which it was the full sponsor or main sponsor (i.e., responsible for the

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Analysis and Design for Security

New IFIP Working Group (WG1.7) Formed

*by Prof. Roberto Gorrieri (IT)**

Our society is becoming more and more dependent on computer networks: the enormous amount of data that is processed, transmitted or stored needs some form of protection. Cryptography has been envisaged as the main practical means to keep secret the information transmitted on communication networks, such as telephone lines or satellites. There is a long tradition of studies on cryptographic algorithms that validates the use of these techniques for such aims. Nowadays, however, cryptography is also used as a building block of many complex applications where the correctness of the cryptographic algorithm does not guarantee the correctness of the applications. Cryptography-based procedures are used largely for authentication of messages, per-

* secretary of TC I

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Kindly submit material for the ***IFIP*** *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.ifip.or.at
WWW: http://www.ifip.or.at

Position of Event Facilitator/Activities Manager Established in Secretariat

At the March Council meeting, in India, the **IFIP** Executive Board (EB) decided to establish the position of Event Facilitator/Activities Manager, which had been proposed by the TC Forum at the September General Assembly in Budapest. The individual in this position is to "work pro-actively with and assist organisers in their planning and preparation for **IFIP** events." A small committee drafted a job description in Budapest, which the Secretariat elaborated and forwarded to the EB, which then made its final decision.

Mr. Prins Ralston (AU), attending the Council as an observer, said that he was asked in Budapest whether the Australian Computer Society would be willing to perform this function for **IFIP** and that the ACS was willing to provide office space for the activity. The committee, however, felt that it was important that this be conducted in Laxenburg, Austria, within the **IFIP** Secretariat. The EB asked **Ms. Dorothy Hayden (AT), Administrative** Assistant in the **Secretariat, to** devote half of her time to this new position. A half-time secretary will be hired to carry out the tasks **Ms. Hayden** no longer has time to perform.

Despite the EB's having moved with unusual speed to implement the TC Forum suggestion, there was some dissatisfaction with the EB action for the following reasons: a) the EB had acted without further consultation with the suggestors; b) a full-time position was considered by some to be necessary; c) the Event Facilitator should not spend time maintaining the **IFIP** database of events; d) the Facilitator should also be determining what new initiatives **IFIP** ought to be undertaking (e.g., electronic commerce), determining where in the **IFIP** structure suggested activities belong, and taking similar actions; and e) the job description does not correspond to what the TC Forum originally specified. Nevertheless, a valuable step has been taken in establishing the position, and it will be continually evaluated and adjusted to the needs of event organizers.

Following are the key elements of the job description specified by the EB:

> The overall responsibility is to work pro-actively with and assist organisers in their planning and preparation for **IFIP** events, to ensure that our systems are effective and efficient and to ensure that **IFIP's** record-keeping requirements are met.
>
> *External:* Be the focal point on all issues relating to the organisation of **IFIP** events and event initiatives. Seek pro-actively to assist event organisers through the provision of appropriate guidance, help, information, and effective systems.
>
> *Internal:* Undertake regular reviews of the written and electronic systems that we use to manage events, and ensure that these are up-to-date, effective, and efficient.

The complete job description can be found in Annex 2 of the 1999 Council minutes on the Web at

http://www.ifip.or.at/minutes/goa99.htm

Indian Member Society Demonstrates a New Level of Hospitality

Those in **IFIP** who have attended many Councils and General Assemblies (GAs) have been **the** grateful recipients of hospitality extended by various national computer societies and other **IFIP** Member organizations. **There** may be no **one,** however, **who** can recall hospitality as extensive **and** gracious **as that** provided by the Computer Society of India (CSI) to the participants in the **March** Council meeting in Goa. Not **only** was **an excursion** or party held each day of **the Council, but** a superhuman effort was made **to help the** participants in every way possible — from making hotel and travel reservations to repairing damaged PCs. The CSI representative to **IFIP, Dr. S. Ramani,** an IFIP trustee, was always present, attending Council meetings and offering assistance. His second in command, **Mr. George Arakal,** and his large staff were equally helpful. We cannot thank them sufficiently.

Such generosity poses a problem for IFIP — namely, that other Member societies that host Councils or GAs may not be able to provide even a fraction of the social events offered by CSI. That was why the **IFIP** Executive Board established a guideline a few years ago to the effect that hosts should organize at most one simple reception. That guideline, however, has been ignored repeatedly. Although it is unlikely that any future host will match the social program provided **by** the CSI, we are confident that they **will** try to achieve the standard of helpfulness and courtesy established by **Dr. Ramani, Mr. Arakal,** and their staff.

In this world, there are **VIPs, VVIPs,** IPs, and simply Ps. The Indian hosts made us all feel like VVIPs.

IFIP/UNESCO Informatics Curriculum Framework 2000

by Prof Fred Mulder (NL) and Drs. Tom van Weert (NL)***

Early in 1998, UNESCO requested IFIP to "Elaborate a complete modular framework for training in informatics, covering the undergraduate and postgraduate programmes and courses to be provided...." Responsibility for the project was assigned to the **IFIP** Technical Committee on Education (TC3), which has undertaken to develop the framework, taking into account the needs and capabilities of developing countries. It will cover university educational programmes (from undergraduate to postgraduate) as well as training programmes and courses to be provided concerning applications in the specific fields of responsibility of UNESCO: education, science, culture and mass communication. TC3 will identify, in cooperation with other IFIP TCs, experts from all regions of the world, representing the major fields of informatics, to give input to the programme. By the end of 1999, the complete framework will be made accessible to the world's informatics education community through the UNESCO Web site and regional mirror sites, in particular in Africa.

Working Document

The **IFIP** Working Group on Higher Education (WG3.2) has started work on the project. A first working document has been produced by the authors of this article and was submitted to UNESCO in December 1998 and presented to the March **IFIP** Council meeting in India. This document is also serving as the input for a recently started common effort of WG3.2 and American computer societies (ACM, IEEE-CS, AITP, and others) under the project name "Informatics/computing curriculum patterns for the future." The working document presents the basic assumptions and underlying principles for what will be called the IFIP/UNESCO Informatics Curriculum Framework 2000 (abbreviated ICF-2000). It includes a global specification of ICF-2000 in terms of identified categories of professionals, graduate profiles, curriculum components, and implementation factors and strategies. Note that we use the term "informatics" (or "I") as an umbrella label, referring to a diverse, yet related, family of disciplines or domains.

Context and Relevant Trends

During the 1990s, the field of informatics has shown an ongoing development, extension and linkage with other knowledge domains. In parallel, we have witnessed a dramatic increase in demand for university education in informatics and informatics-related topics from a broad and diverse population. At the very same time that informatics education is emerging as an increasingly important part of core education for more and more students, we find a trend towards fragmentation within the informatics field itself This creates a need for a common vision of the core concepts in informatics education.

The development of a common vision was the focus of an August 1997 international working conference organised by WG3.2, which brought together experts with different backgrounds from around the world'. The IFIP/UNESCO project builds heavily on the state-of-the-art thoughts developed at this conference and its follow-up activities. Of course, there is also the rich context of earlier cooperative activities to formulate shared curricular goals for (parts of) the informatics field.

The term "curriculum framework" in ICF-2000 refers to more than just a set of modules. It comprises the following entities:

• *Categories of professionals* The identification of which categories of informatics (I) professionals are actually needed, in the perspective of current informatics and technological development, is instrumental as a start of any I-curriculum implementation.

• *Graduate profiles* Once the categories of I professionals have been selected, the corresponding *I-graduate profiles can be globally specified* to form the basis for an effective and efficient I-curriculum design that takes account of its variety.

• *Curriculum components* A well-chosen set of I-curriculum components allows one to take advantage of a maximum of commonality among the diverse educational I programmes leading to the graduate profiles; this set is complemented with specialisation I tracks. Each component describes a coherent area of content in terms of both knowledge and skills to be acquired.

• *Implementation factors and strategies* A series of implementation factors can be used to decide on strategies for full (or partial) implementation and controlled development, taking account of cultural, institutional and regional aspects.

Categories of Professionals

We distinguish three categories of professionals acting or interacting with informatics in a broad sense:

• *I users* non-I professionals using ready-made I technology or I applications in their work

• *I appliers* non-I professionals applying I knowledge and I skills in areas different from informatics

• *I workers* I professionals working in the field of informatics.

It is important to note that I appliers and I workers generally will also be I users, while I workers may or may not be I appliers too. We refer to the working document for a detailed description of these three categories of professionals and their subcategories.

Graduate Profiles

In order to efficiently and effectively cater to the educational needs of the identified categories of professionals, we find it helpful to introduce graduate profiles. ICF-2000 deals with four graduate I profiles, details of which are given in the working document:

Basic Instrumental I Profile
Basic Conceptual I Profile
Minor I Profile
Major I Profile

In each of the graduate profiles, we distinguish a generic component and components that are specifically linked to other disciplines.

continued on the following page

* member of WG3.2
** chair of WG3.2

[1] Mulder, F., van Weert, T.J. [eds.] *Informatics in higher education: Views on informatics and noninformatics curricula,* Proceedings of the IFIP/WG3.2 Working Conference on "Informatics (computer science) as a discipline and in other disciplines: what is in common?" London: Chapman & Hall, (1998)

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CURRICULUM continued from page 3

Curriculum Components

Curriculum components for the various graduate profiles are formed from building blocks (units or modules), all of which belong to one or more of the following overall themes:

- representation of information
- formalism in information processing
- information modelling
- algorithmics
- system design
- software development
- potentials and limitations of computing and related technologies
- computer systems and architectures
- computer-based communication
- social and ethical implications
- personal and interpersonal skills
- broader perspectives and context (including links with other disciplines).

This framework of twelve themes is a slightly adapted and newly edited version of the "common core" of issues, concepts and skills developed at the 1997 WG3.2 conference.

Implementation Factors

ICF-2000 does not aim at offering one ideal model curriculum. Instead, it recognises the need for a considerable degree of freedom for implementation in which one can account for specific needs, restrictions, preconditions and circumstantial opportunities, such as

- cultural and societal setting
- institutional size and scope
- specific disciplines and educational programmes offered by the educational institution
- available budget, personnel and resources
- background and potential of the faculty
- culture among faculty and management
- management commitment to informatics
- willingness to change
- student-body characteristics
- access to informatics expertise in general
- access to collaborative or transfer options with other institutes
- access to collaborative or transfer options with industry
- level of informatics penetration in the region.

The ultimate goal of the series of working documents to be produced is an elegant, state-of-the-art informatics curriculum framework, from which various curriculum implementations can be constructed in a straightforward way.

For more information, one may contact Mr. Brian Samways, chair of TC3:

Brian_Samways@birmingham.gov.uk . ❑

IFIP Provides Funds to Help Developing Countries Participate in IFIP

Recognizing that a lack of funds prevents many developing countries DCs) from participating in **IFIP,** Mr. Plamen Nedkov (BG), Executive Director of **IFIP,** devised a scheme to help alleviate this problem for **IFIP** Member societies in DCs. The plan involves an annual subsidy of 1000 Swiss francs (CHF) that the Member can use to support attendance at **IFIP** events, to support attendance of Technical Committee members at TC meetings, or to purchase IFIP books. Since there are 20 **IFIP** Full Members from DCs, this plan will cost no more than 20 000 CHF annually. The proposal was embraced by the March Council in India and will be implemented immediately on a three-year trial basis.

The 1000 CHF sums will be in the form of "matching grants"; i.e., **IFIP** will pay for half of the DC Member's acceptable expenses, up to the 1000 CHF limit. The means of administration are described in the following excerpts from the DC Support Plan:

Developing Countries Support Plan

IFIP wishes to encourage a greater involvement in its work by persons from DCs that are Full Members of **IFIP....** Some DCs are financially unable to send their national representatives to Technical Committee (TC) meetings and often find it difficult to support even one delegate per year at an **IFIP** conference. In order to encourage societies in DCs (that are Full Members of IFIP) to support their own persons, the Developing Countries Support Committee will offer a "matching grant" up to a maximum figure of 1000 CHF for each of the next three years. Allowable expenditures will be:

*1. Attendance at events organised by **IFIP** only*. This would encourage the Member society in an **IFIP** DC to offer assistance to persons able to attend **IFIP** events

2. Purchase of IFIP publications. This would enable Societies in **IFIP** DCs to purchase **IFIP** conference proceedings (currently at a 30% discount), **IFIP** publications and **IFIP** journal subscriptions. As a further opportunity, conference organisers are often pleased to sell additional copies of proceedings at the "bulk copy" purchase price that they obtain from the **IFIP** publisher.

3. *Attendance of the national representative at TC meetings.* Much of the work of **IFIP** is through its Working Groups, which are overseen by the twelve TCs. Hence attendance by the DCs' national representatives at TC meetings is to be encouraged. This will en-

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Mr. Owen Dalton

1934-1999

Owen Dalton. who died in January this year, was a most charming and gregarious individual. It was he who really brought Ireland into the **IFIP** family.

From the time he attended the 8th World Computer Congress, **IFIP** Congress '80, in Tokyo and Melbourne, **Owen** was committed to **IFIP,** and it was he who masterminded the bid for Dublin to host Congress '86, the 10th World Computer Congress.

Owen was involved in the IT industry for all of his working life and was an enthusiastic and active supporter of the Irish Computer Society (ICS). He served for many years on the Council of the ICS and was Chairman from 1978 to 1980.

He became the ICS representative to IFIP in 1980. His talents were soon recognised, and he was elected as treasurer in 1981, a position that he held until he resigned in 1987. He was awarded the **IFIP** Silver Core in 1986.

Owen enjoyed life and did his best to ensure that his colleagues enjoyed life also. As a young man, he was a superb athlete, excelling in the sprint events; he also represented his Province at rugby, with distinction. Golf was the sport that provided his relaxation in later years. Not only did he compete, but he was also the prime mover behind the organisation of golf competitions between the ICS and the Belfast branch of the British Computer Society. These were always most enjoyable events.

We sympathise with his wife Anne and his children in their sad loss.

Dudley Dolan
ICS representative to IFIP

Beckman Award Bestowed upon Dr. Willis Ware

The IFIP Technical Committee on Security and Protection in Information Processing Systems (TC11) announced in March the bestowal of the 1999 Kristian Beckman Award on **Dr. Willis Ware** (US). The Award was created in honor of **Mr. Kristian Beckman** (SE), the first Chairman of TC11, to publicly recognize an individual (not a group or organization) who has significantly contributed to the development of information security, especially by achievements with an international perspective.

Dr. Ware is a senior computer scientist emeritus with the RAND Corporation in Santa Monica, California, with which he has held various staff and management positions since 1952, following receipt of a Ph.D. from Princeton University in 1951. An electrical engineer, he has devoted his career to all aspects of computer technology.

In the late 1960s, he developed a research interest in the security of computer systems and shortly thereafter, a corresponding interest in the personal-privacy consequences of automated record-keeping systems. For 35 years, he has written extensively on both topics, testified before the US Congress, been a prominent spokesman on the impact of computer technology on society, and been active professionally as speaker, conferee, and researcher.

Most recently, his interests have turned to the vulnerabilities of highly automated and computerized information-oriented societies and the technical and policy aspects of protecting their national information infrastructure.

In the late 1960s, he chaired a Federal committee that created the first definitive discussion of computer security and treated it as both a technical matter and a policy issue, and in the early 1970s, he chaired a cabinet-level committee whose report was the foundation for the US Federal Privacy Act of 1974. Subsequently, **President Gerald Ford** appointed him to the Privacy Protection Study Commission, whose report remains the most extensive examination of private sector record-keeping practices.

Dr. Ware currently chairs the US Computer System Security and Privacy Advisory Board, a statutory body created by the Computer Security Act of 1987, which advises the US government on societal impacts of computer technology and is involved with both information system security and cryptography.

Dr. Ware is a Fellow of several professional societies and has received many other awards and honors.

He has been the United States representative to TC11 from 1984 to the present and was its vice-chairman from 1985 to 1994. In 1995, he received the **IFIP** Outstanding Service Award.

Two New **IFIP** Awards

Two new IFIP awards were announced at the March Council meeting in **In**dia.

The first is an annual prize of $3000 US and a certificate for achievement in information-based complexity, to be awarded by the Working Group on Continuous Algorithms and Complexity (WG1.1).

The second is the **Brian Shackel** Award, named for the founding chair of the **IFIP** Technical Committee on Human—Computer Interaction (TC13). Consisting of a plaque and certificate, the Award will be made to recognize the most outstanding paper submitted to the biennial INTERACT conference of TC13. The purpose is to draw attention to the need for a comprehensive, human-centered approach in the design and use of information technology, in which the human and social implications have been taken into account. TC13 requested the approval of the IFIP Executive Board and Technical Assembly for making the Award, and both bodies agreed to the proposal, although no formal approval was necessary.

The question was raised during the Council meeting whether some mechanism should be established to grant approval for awards. For example, it could be an embarrassment to IFIP if a TC or WG were to make an inappropriate award or memorialize an inappropriate individual. The consensus of so small that it was not desirable to establish a bureaucratic mechanism that might discourage TCs or WGs from making awards.

Namur Award to Rogerson

In addition, the latest Namur Award recipient has been announced: **Prof. Simon Rogerson** (GB). The Award, presented by WG9.2 (Social Accountability and Computers), is for outstanding contributions with international impact to the awareness of social implications of information technology.

Other Awards

The main activity of the WG on Computational Learning Theory (WG1.4) has been to promote computational learning theory by giving best student-paper awards at each of the three primary learning conferences. A scholarship was given to Mr. **Andras Antos** (HU) at the recent EuroCOLT meeting. **WG1.4** is searching for ways to fund its awards without requiring further contributions from **IFIP.**

Other **IFIP** awards (see the article on page 6 of the June 1997 ***IFIP*** *Newsletter)* are as follows:

Isaac L. Auerbach Award
Informatics Olympiad Trophy
Kristian Beckman Award (see the article on this page)
Silver Core Award
Outstanding Service Award

Sponsors of awards that have not been mentioned are requested to notify the *Newsletter* editor (address in the masthead on page 2). ❑

National Abbreviations Used in Newsletter

AT	Austria	DK	Denmark	MY	Malaysia
AU	Australia	ES	Spain	NL	The Netherlands
BE	Belgium	Fl	Finland	NO	Norway
BG	Bulgaria	FR	France	NZ	New Zealand
BR	Brazil	GB	United Kingdom	PT	Portugal
CA	Canada	GR	Greece	SE	Sweden
CH	Switzerland	HU	Hungary	TH	Thailand
CL	Chile	IE	Ireland	US	USA
CN	China	IN	India	ZA	South Africa
CZ	The Czech Republic	IT	Italy		
DE	Germany	JP	Japan		

Progress with Publications Reported to Council

Good news with respect to IFIP publications was reported to the March Council in India. The new IFIP publisher, Kluwer Academic Publishers, has agreed to reduce the guaranteed "lead time" for IFIP books to 12 weeks — from the time of delivery of perfect camera-ready copy to the publisher to the time of delivery of the printed books anywhere in the world. Also, Kluwer has hired an Assistant Editor, **Ms. Yana Lambert** (US), with responsibility solely for IFIP books. Her contact information is

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She is preparing guidelines for authors and editors, which should be available soon. Also, royalty income for 1999 is expected to exceed that for 1998. It was also pointed out that very few potential **IFIP** books have been turned down by the publisher owing to insufficient anticipated sales.

There were "some bumps along the road" as the production and distribution of the **IFIP** book series was integrated into Kluwer's North American office in Boston, and, unfortunately, a few proceedings were not printed in time for their conferences. Because of positive steps being taken by Kluwer, however, it is expected that these problems are well in our past.

Despite the difficulties, 29 I**FIP** books were published in 1998, only 3 fewer than the number anticipated. Sales (consequently, royalties earned) in 1998 were significantly less than those for 1997 (by 20%), owing in part to lack of promotion of IFIP books during the transition to Kluwer from the prior publisher, Chapman & Hall, which was purchased by Kluwer last year. **Mr. Scott Delman** (US), the Kluwer representative, expressed the hope that some of these missed sales will be made up as a result of more aggressive marketing. (Kluwer plans to actively promote the sale of **IFIP** books in the institutional library market in North America — a market largely untapped by Chapman & Hall.) Between 25 and 30 **IFIP** books are expected to be published in 1999.

Finally, it was reported that the journal of the Technical Committee on Education (TC3), *Education and Information Technology*, has attracted fewer subscribers than planned. The editorial team has been reorganized, and further discussions are taking place between IFIP and Kluwer to ensure that the journal fulfils its potential.

Some interesting information can be gleaned from the publisher's report on 1998 sales of "frontlist" books (published in 1998) and "backlist" books. Approximately 4700 frontlist books were sold — 3300 as bulk sales of proceedings to event organizers and 1300 as individual sales. Approximately 1800 backlist books were sold. The leaders in total sales were TC6 (Communication Systems) with 2100 books and TC5 (Computer Applications in Technology) with 1700 books, the total being more than half of all I**FIP** books sold. The biggest sellers in terms of individual sales were *Data Mining and Reverse Engineering*, edited by **Spaccapietra** and **Maryanski,** and *Protocol Test Specification*, edited by **Mizuno,** both with sales between 80 and 90. Further information on **IFIP** books published by Kluwer can be found on the Kluwer Web page at http://www.wkap.com/ifip.

IFIP Welcomes Two New Full Members

Organizations from Armenia and Slovenia Join

IFIP welcomes two new Full Members. The National Academy of Sciences of the Republic of Armenia, which was formally admitted to Membership in IFIP in 1995, has now satisfied all the requirements. The Slovenian society INFORMATIKA was admitted by the 1998 General Assembly (GA) in Budapest (but technically must still fulfill the requirement of attendance at a GA by a representative). We present here information about both new Members.

National Academy of Sciences of the Republic of Armenia

The Institute for Informatics and Automation Problems is one of 42 scientific research organizations constituting the National Academy of Sciences of the Republic of Armenia. The Institute is the newly admitted Member of **IFIP.** It was founded in 1957 to work in the area of computer science and information technologies. The main fields of activity of the Institute are automata theory and computer aided design, theory of algorithms and automated design of programs, pattern recognition systems and distributed processing, artificial intelligence and management support systems, mathematical logic and automated logical deduction, digital signal and image processing, algebraic coding theory, information theory and statistics, linear programming, theory of graphs, software engineering, and telecommunications and networking. The Institute cooperates with fellow organizations in Belgium, Finland, Germany, Greece, Hungary, Italy, Japan, the Netherlands, Russia, Switzerland, the UK, Ukraine, and the US.

Its parent organization, the Academy, was founded in November 1943, from the Armenian branch of the USSR Academy of Sciences, which was organized in 1935. The Academy is a scientific, self-governing state organization, which unites Academy members with the scientific staffs of affiliated scientific and research institutions. The Academy promotes and carries out fundamental and applied research in different scientific fields, as well as coordinating research carried out throughout Armenia. It is an official scientific consultant to the highest governing bodies of Armenia. It is financed primarily from the state budget, although additional finances come from different state and private foundations, as well as from contracts between the Academy and other organizations in Armenia and abroad.

Slovenian Society INFORMATIKA

The Slovenian society INFORMATIKA is a nonprofit society of individuals from various areas of information technology and information sciences—in business, academia, and administration—who care to exchange

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ANALYSIS FOR SECURITY from page 1

sonal identification, digital signatures, electronic money transfer, credit card transactions and many other critical applications. Recent technological developments, including mobile code, mobile agents, Java applets and the like, have raised a supplementary, increasing demand for security in computer networks. The main issues, in this respect, are related to protection of the host resources from damage caused by imported, possibly malicious, code. Many browser-based applications are critically dependent on the security of the applets they are using.

Surprisingly enough, such a pervasive phenomenon has not been accompanied by widespread development and use of formal tools that allow analysts and designers to describe faithfully, analyse in detail and prove the correctness of such applications or architectures. This is partially because of a lack of theoretical understanding of the phenomena. Nonetheless, even when such techniques are available, there is a widely perceived difficulty in learning and applying formal methods. They are not seen as cost-effective. But the increasing number of reports of security flaws in software shows that we ignore the problem of assuring correctness at our own risk. Notable examples range from academic cryptographic protocols, such as a significant key-distribution protocol, which was believed to be correct for several years until shown to be flawed, to industrial applications, such as a widely used programming language, which was found to have type flaws leading to security holes, and the recently announced security holes in the major Internet browsers. Many of these could conceivably have been prevented by the use of a careful formal design and analysis.

Why Formal Methods?

The detection and the prevention of bugs is indeed one of the main motivations for using formal methods and related approaches, and the specification of a system is an indispensable analysis tool, which may help in discovering many design errors. Furthermore, if the specification is given in an executable language, it is also possible to simulate the execution of the system, making easy the verification of properties (early prototyping). Typically, other motivations for the use of formal specifications include the need for expressing user requirements unambiguously, and for producing a reference guide for the implementor of the real system during the various development phases. Eventually, the system will be certified to be free of bugs.

Formal methods are, however, not always easily applicable to security. Lack of theoretical formalisation of the basic aspects of the subject matter (e.g., absence of widely accepted definitions) makes it difficult to use formal methods and related approaches. So, research in recent years has mainly focused on specific aspects (e.g., attacks on security protocols) that have been more clearly understood.

The vitality of research in foundations of security has propelled researchers to seek better ways to exchange and disseminate research results. Recently, there has been a proliferation of meetings devoted to this subject.

With these considerations in mind, there has been some recent discussion among researchers about the possibility of forming an organization to further the research and development of foundations of security. We feel that WG1.7, under the auspices of **IFIP,** is ideal for this purpose. This WG will provide an informal forum for researchers to freely exchange ideas and preliminary research results and to discuss and debate which directions and applications are most worth pursuing. Furthermore, the WG Web site will serve as a repository, which may include links to different research groups, noncommercial software packages, and a list of open problems, posted by the members as challenges to the community. We hope that the WG will result in better research coordination, the forming of new research collaborations, and the creation of a new horizon in security research and applications.

Following are the Aims and Scope of the new WG:

WG1.7 on Theoretical Foundations of Security Analysis and Design

AIMS

- To investigate the theoretical foundations of security as an independent discipline, with firm grounding in logic, semantics and complexity.
- To discover and promote new areas of application of theoretical techniques in computer security.
- To provide a platform for presenting and discussing emerging ideas and trends.
- To strengthen research efforts in current and emerging applications of formal methods and related approaches to the design and analysis of secure systems and applications.
- To make formal methods accessible to the security practitioners, hence increasing awareness of formal verification techniques for security in the computer science community at large.
- To support and promote the systematic use of formal techniques in the development of security-related applications.
- To encourage researchers, especially younger ones, to enter this field.
- To promote or support the organization of meetings in this and related areas.
- To provide a clearinghouse for dissemination of information and publications, including dissemination to industry.

SCOPE

The main research topics relevant for the WG include:

- formal definition and verification of the various aspects of security: confidentiality, integrity, authentication and availability;
- new theory-based techniques for the formal analysis and design of cryptographic protocols and their manifold applications (e.g., electronic commerce);
- information-flow modelling and its application to the theory of confidentiality policies, composition of systems, and covert channel analysis;
- formal techniques for the analysis and verification of mobile code;
- formal analysis and design for prevention of denial of service. ❑

NEW MEMBERS continued from page 6

their experience with each other as well as make it publicly available. Membership is not restricted to Slovenian citizens. The Society has a president, two vice-presidents, an Advisory Board, and an Executive Board. The members of the Advisory Board represent the major Slovenian users and providers of information technology goods and services. The Society was established in 1976. At present, it has about 300 members.

The Society publishes a quarterly professional journal, *Uporabna informatika (Applied Informatics),* and a scientific periodical, *Informatica.* Another opportunity to exchange opinions, achievements, and information is provided by an annual conference, *Dnevi slovenske informatike* (The Days of Slovenian Informatics), which began in the late 1970s and has since succeeded in earning the reputation of being the most comprehensive event of the year in the field of information sciences in Slovenia. It is a national conference with an international participation, and notable guest speakers are invited. Over 400 participants registered for the 1998 Conference.

Human Error, Safety, and System Development

New **IFIP** Working Group (WG13.5) Formed

*by Prof Chris Johnson (GB)**

Recent accidents in a range of industries have increased concern over the management and control of safety-critical systems. Although we have developed techniques to cope with failures in individual components, it has proven far more difficult to predict and prevent accidents that are caused by an interaction between component failure, system-level complexity and human—machine intervention.

There are two reasons why it is important for researchers in human—computer interaction (HCI) to become involved in the development and operation of safety-critical systems:

• Operator "error" causes or exacerbates most major accidents.
• Designer "error" often creates the conditions or precursors for those operator errors.

There are a number of lesser reasons why the field of HCI ought to offer more direct support to the development and operation of safety-critical, interactive systems. Not the least of these is that both governmental and commercial organisations are appealing to research institutions to provide advice and guidance in this area. With more and more accidents being blamed on "operator error," the organisations are being urged by public pressure to treat these topics seriously. As a result, there are numerous national initiatives in this area but little international integration. This creates considerable problems for the dissemination of research results and for the coordination of research activities. Further problems arise because many initiatives relate to specific industries, and research on one industry is not known in the other. For instance, the findings of research into nuclear safety rarely reach interface designers within major aircraft manufacturers. This is significant because many interaction problems cross industry divisions.

All of these problems will be addressed by the new **IFIP** Working Group on Human Error, Safety, and System Development, which was approved by the Technical Assembly last September in Budapest. The Aims and Scope follow:

WG13.5 on Human Error, Safety, and System Development

AIMS

This Working Group aims to support practitioners, regulators and researchers in developing leading-edge techniques in hazard analysis and the safety engineering of computer-based systems. Particular emphasis will be on the role of human error, both in the development and in the operation of complex processes, and on techniques that can be easily integrated into existing system engineering practices. Specifically, the aims are:

• to provide a framework for studying human factors that relate to systems failure;
• to provide a forum for practitioners, regulators and researchers interested in the "human contribution" to major accidents and incidents;
• to identify leading-edge techniques for the development of safety-critical interactive systems and to integrate them with existing systems engineering techniques;
• to support and guide international accreditation activities in the area of safety-critical systems.

SCOPE

To build on existing work in **IFIP** member countries in the following areas:

• techniques for analysing human, managerial and organisational factors that relate to the occurrence of accidents;
• the integration of human factors concerns into risk analysis and assessment;
• the integration of human factors concerns into systems engineering techniques for safety-critical systems development;
• the ergonomics of human—computer interaction with safety-critical applications;
• the role of human error both in the development and in the operation of complex processes. ❑

* WG13.5 chair

ITApplication in India

*by Prof. Subhash Bhatnagar (IN)***

[The following is the editorial by **Prof. Subhash Bhatnagar** in the January 1999 issue of *Information Technology in Developing Countries*, the newsletter of the **IFIP** Working Group on Social Implications of Computers in Developing Countries (WG9.4). The complete newsletter can be found at
!

For the IT professionals in India, 1998 was a very good year. Amidst aslowdown in all the sectors of the Indian economy, IT was the lone exception. The new government has done a lot to provide an impetus to the IT industry. Many state governments are vying with each other to attract investments in the IT sector. The shares of leading IT companies are doing very well. Many Indian companies are planning to establish a bigger presence in other countries. Several new educational institutions have been announced.

Dr. Robert Schware from the World Bank and I thought we would contribute to the general upbeat mood by documenting in a book the impact of IT on rural development in India. The book is sponsored by the Indian Institute of Management, Ahmedabad and the World Bank jointly. We set about scouting for IT applications that have been implemented at the lowest level of administrative hierarchy (for a cluster of a hundred villages) and have produced significant benefits for the population. The search was exciting, and we were able to locate fifteen applications of this kind.

For example, in 600 milk-collection centres located in the rural hinterland of [the state of] Gujarat, IT has helped to reduce queues of people who bring in their milk, to provide immediate payment to such people and to prevent inaccuracies in measurement of weight and fat content of the milk. People drop a plastic card in a reader, which identifies them to the computer, and pour the milk into a shallow trough kept over a weigh bridge, which immediately displays the weight. A 50-gm. sample is tested in a semi-automatic machine, and the fat content is displayed in 20 seconds. The data is logged into a PC, which calculates the payment due to the farmer, who is then paid at an adjoining window. Three customers are handled per minute. I have rarely seen this kind of speed in even the most automated customer service counters. The total cost of the integrated equipment, which is being supplied by a private entrepreneur is $2000. This is a

continued on the following page

** former chair of WG9.4

COUNCIL MEETS continued from p. 1

technical content) of 45. These numbers are approximately the same as those for 1997. So far, the number of events approved for 1999 indicates that there are likely to be fewer events this year than last.

The project on Harmonization of Professional Standards, an activity run under the auspices of TC3 (Education), is an attempt

> ...to clearly set out an international standard for professional practice in information technology....The standard is primarily focused on practitioners involved in the development of software-based systems and related services.... Harmonization means that the standards of different countries would be brought together to be substantially the same. Any extremes from the commonality of these standards would gradually be pruned away until each country has the same standard by mutual consent....This definition is focused on practitioners, persons who actually develop, maintain and operate software systems for commercial or governmental purposes. Standards are clear statements that reflect the minimum qualifications for mastery and knowledge of processes, skills and practice that a professional should have before undertaking work which may put an employer or client at risk, either physical or financial.

The initial report of the group preparing this standard was presented to Council and caused concern among some members because it should be more specific. With virtually no change, it could be applied to a variety of professions from chemical engineer to accountant or physical therapist, for example. Nonetheless, the majority of Council members favored the continuation of the activity. The project group has been working with the International Standards Organization (ISO) to establish a cooperative venture. Originally, the World Trade Organization (WTO) had expressed interest in the project, but this has not developed.

The work of the **IFIP** TCs and WGs was discussed in some detail. A new WG, Theoretical Foundations of Security Analysis and Design (WG1.7), was approved by the Technical Assembly (TA); its Aims and Scope can be found in an article on page 1. WG12.2 (Machine Learning) was suspended because of inactivity. That leaves only two of the six WGs in TC12 (Artificial Intelligence) still active, which is the source of some concern. Despite this unsatisfactory situation, the consensus of the Council was that the TC12 chair should be given more time to energize it.

Other technical activities include the following:

• The TA expressed the desirability of forming a new Specialist Group on Electronic Commerce. Although TC6 (Communication Systems) has already formed a task group in this area, it seems desirable that the activity have representatives from more **IFIP** TCs.

• The Developing Countries Support Committee sponsored tutorials in Latin America by **Prof. Ramon Puigjaner** (ES), a TC6 member, in September 1998. Other tutorials are scheduled for August and September of this year, in Paraguay and Argentina, and one is planned for Thailand in November.

Council members hard at work in Goa.

• TC1 (Foundations of Computer Science) will organize its first conference on Theoretical Computer Science (TCS) in the year 2000. The organizers intend to provide the opportunity during the conference for young, bright scientists to give their views on the development of TCS in the next century. WG1.1 (Continuous Algorithms and Complexity) held two week-long meetings in 1998. A survey book, *Algebraic Foundations of System Specification,* which is not the proceedings of a conference, was written by members of WG 1.3 (Algebraic Specification of Languages) and will be published by Springer—Verlag as an **IFIP** State-of-the-Art Report. Because **IFIP** has less stringent requirements on workshops than other types of events, most of the WGs in TC1 hold only workshops. (Only one of the 1998 TC1 workshops appeared in the IFIP database.)

• TC2 (Software: Theory and Practice) may form a new WG on Software Architecture, as a result of a recent conference on that topic, attended primarily by people from industrial research groups.

• TC7 (System Modelling and Optimization) plans new WGs: Discrete Event and Monte Carlo Simulation, and Fractals and Chaos Theory.

• TC9 (Relationship between Computers and Society) may form a WG on Women, Work, and Computerization. The activity is presently carried out by a Special Interest Group in WG9.1. TC9 is also planning "...a kind of 'Club of Rome,' expanding TC9 ideas and recommendations about the shaping of the information science." WG9.4 (Social Implications of Computers in Developing Countries) is planning a textbook in its subject area. WG9.4 has also created standards for full membership, which have resulted in reducing the membership to 40. The hundreds of remaining members will be called "Associate Members."

• The numbers were interesting for a recent conference held by WG10.4 (Dependable Computing and Fault Tolerance): 62 papers submitted, 20 papers accepted, and an attendance of 55.

• TC13 (Human—Computer Interaction) held its first electronic meeting over a period of 23 days in November. This year, the biennial TC13 INTERACT conference (in Edinburgh) will include a Doctoral Consortium, which

> ...provides an opportunity for a group of Ph.D. students to explore together their interests in an interdisciplinary workshop with a group of established researchers. The consortium will operate in a workshop format, providing feedback on the participants' current research and guidance for future directions.... Extended abstracts by the selected students will be published in the conference proceedings. Candidates for the consortium will be selected by a panel of experts. Where the panel considers the work to be appropriate, the student may be invited to submit a full paper.

WG13.2 (Methodology for User-Centered System Design) held a workshop with the interesting title Personalised and Social Navigation in Information Spaces.

• Awards were established by TC 13 and WG1.1 (see the article on page 5).

Congresses

The sixteenth World Computer Congress, **IFIP** Congress 2000, was at the forefront of Council discussion of **IFIP** Congresses. Basically, plans are progressing smoothly. The Congress logo was revealed. The organizers expect an attendance of at least 2000. It is hoped that the disparity between the common 80% acceptance rate for submitted papers at Chinese conferences and the much lower number typical of **IFIP** Congresses will

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triumph of public—private partnership and a sensible use of technology.

We invite readers to contribute articles about similar successes from other countries. D

COUNCIL MEETS continued from p. 9

not create problems with regard to attendance. Unfortunately, the chair of the International Program Committee (IPC) was not present at Council, and no information was available about keynote speakers planned. Neither was a written report presented for either the IPC or Organizing Committee (OC); however, a verbal report by **Prof. Xiaoming Li** (CN), the assistant to a co-chair of the IPC, supported by computer slides, was delivered for both the IPC and the OC. One potential problem was considered in India: namely, whether the proceedings will be published by the IFIP publisher, in order to ensure widespread availability, advertising, and distribution. This was not the case with respect to the 1998 Congress, the proceedings of which were published by the Austrian Computer Society. Also, it was decided to include a conference on security (IFIP/Sec 2000) in the Congress. Further information is on the Congress Web site at http://www.wcc2000.org.

The final report by the OC for Congress '98 in Vienna and Budapest indicated that there will be virtually no income to **IFIP** beyond the minimum guarantee of 40 000 Swiss francs (CHF) already paid. The report also gave the distribution of the registrations for the individual conferences:

Teleteaching '98	28%
SEC '98	17%
Telecooperation	11%
ICCHP '98	10%
IT&KNOWS	10%
KnowRight '98	7%
Fundamentals	4%
undeclared	13%

Of the total revenue of 1.2 million Swiss francs (CHF), subsidies from Austrian and Hungarian governmental units and corporations accounted for approximately 41%, while registration fees accounted for 52%, the balance coming from other participant fees and exhibition income.

With regard to Congress 2002, to be held in Montreal, **President Bollerslev** pronounced everything to be "perfect." **Mr. George Boynton,** representative to **IFIP** of the Canadian Member society, was appointed as chair of the OC by **President Bollerslev.** An IPC chair has yet to be named.

Council also discussed the frequency of Congresses as well as the desirability of continuing to hold Congresses. (See the article on page 11 of the March *IFIP Newsletter.)* The Executive Board is in favor of continuing on a biennial basis and will prepare a position paper for discussion at the September GA in Kuala Lumpur.

Membership

The **IFIP** secretary, **Mr. Graham Morris** (GB), reported that there are now 37 Members with full voting rights, three members without voting rights because of late payment of dues (the societies from Belgium, Brazil, and France), and four suspended because of back dues owed for three years (from Albania, Greece, Ireland, and Russia). These four are not permitted to be represented in the GA or TCs. Also, **IFIP** events should not be organized in conjunction with suspended or terminated Member societies. They will be expelled at the end of 1999 if their dues are not paid. In addition, the offer of Membership to Belarus has been withdrawn because the candidate society has failed to meet the admission criteria. Because of financial problems, the Computer Society of Zimbabwe has requested to change its status to Corresponding Member, which will be considered by the GA. As reported previously, the French Member society will now be Societe des Electriciens et des Electroniciens (SEE), which has assumed the membership of the former French Member society, AFCET, which was dissolved.

Financial Matters

Prof. Dipak Khakhar (SE), **IFIP's** treasurer, had good news to report with regard to the 1998 financial result, which was a surplus of 240 K CHF of income over expenses, approximately the same as for 1997. The assets of **IFIP** now amount to over two million CHF, which equals more than five years of operating expenses. The income was significantly greater than the budgeted amount, while expenses were significantly below budget. Royalties were less than in 1997, although above budget. TC6 had the largest TC fund balance as well as the largest amount of royalties and event proceeds. TC3 had by far the greatest expenses of *all* TCs in both 1997 and 1998 and a TC-fund balance of 0, although special circumstances may justify this situation.

Mr. Josè Granado (PT), chair of the Finance Committee, reported that the income on investments (primarily bonds) had increased significantly because of improved management. The total return (income + appreciation) was approximately 5%, which is satisfactory for conservative investments. The plan to keep only the minimum amount necessary in **IFIP** checking accounts had not been implemented in a timely manner, resulting in the failure to earn approximately 10 K CHF. This situation, however has been remedied. Also, cash flow management will soon be initiated. The IFIP portfolio and some accounts have been "re-denominated" from CHF to euros, and, from the beginning of the year 2000, all remaining **IFIP** accounts will be maintained in euros. (The investments were made in Swiss currency when **IFIP** headquarters were physically located in Switzerland. Officially, the **IFIP** "seat" is still in Switzerland.) For countries wishing to avoid the perils of currency fluctuation, **IFIP** will accept advance payment of up to three years' dues, with no extra payment necessary if dues are increased.

Organizational Issues

The TC Forum called the attention of Council to the perception that

> **IFIP** will not financially support its own events or those it runs jointly with others. **IFIP** acts more as an endorser than an organizer of events. This situation generates problems, especially for co-organized events with other societies. The consequences are missed opportunities, from both the scientific and financial viewpoints...

The TA then proposed that

> **IFIP** introduces standard procedures to allow **IFIP** TCs and WGs to provide financial support to their own events and, in particular, those organized co-jointly with other societies. The proposal is aimed at clarifying the current situation, facilitating the organization of co-sponsored events, and giving tangible evidence of **IFIP's** willingness to provide real support to its activities. The outcome we expect will be an increase in **IFIP**-related activities and an increase in **IFIP** revenue.

A task group was formed to make a concrete proposal based on the recommendation. In addition, the group will consider how to make the **IFIP** nomenclature concerning events ("sponsor," "organizer," etc.) consistent with other organizations' nomenclatures.

Dr. Takeo Miura (JP), a trustee, proposed to the Council that some sort of arrangement be made for the Japan Electronic Industry Development Association (JEIDA), an influential nonprofit organization representing the electronics and information industry in Japan, as well as similar organizations in other countries, to have membership in **IFIP** WGs. This was seen as a means of forging links between **IFIP** and industry. **Dr.** Miura said that "JEIDA wants to grasp market needs and [leading technology developments] through the 'give and take' activities of **IFIP.**" The consensus of Council was to move forward rapidly with WG memberships for JEIDA. Since membership in a WG is by invitation from the WG, this requires no change in **IFIP** statutes. The Executive Board will consider the wider implications,

including financial considerations.

The outcome of a long strategic-planning process was unveiled at this Council. That process began at the 1995 GA, in Calgary, where a task force was formed to consider an optimum way to restructure the TA in order to eliminate duplication of reports and encourage consideration of strategic issues. During the 1996 GA in Canberra, a "brainstorming" session of all GA participants resulted in a list of "visions" of the future of **IFIP,** and a Strategic Planning Committee was formed to make proposals concerning the strategic direction of the Federation. That committee subsequently proposed that one vision be adopted: that **IFIP** become the most desirable global body for all national computer societies. The result of all this deliberation is the formation of two two-man teams one "devoted to rethinking **IFIP's** current working processes; another devoted to evaluating new ways of cooperation between **IFIP** and its Member societies." As part of the process changes, two procedural measures will be instituted at the 1999 GA in Kuala Lumpur: a Member Society Forum to be held during the GA will air problems and issues of mutual interest to Member societies, and a preliminary session comprising briefings by the president and major committee chairs summarizing significant developments since the March Council meeting will start off the four days of GA and committee meetings. Also, the position of Event Facilitator/Activity Manager (see the article on page 2) is another outcome of the strategic-planning process.

Other Matters

Other developments at the Council include the following:

• **IFIP** has been reelected as one of nine members of the NGO-UNESCO Liaison Committee, representing over 200 nongovernmental organizations with ties to UNESCO.

• A new *This Is **IFIP*** brochure will be printed.

• Procedures will be instituted for appropriately recognizing I **FIP** Supporters.

• Several participants in the Council gave lectures in Goa and elsewhere in India before and after the Council.

• Advertisements will be accepted for the ***IFIP** Newsletter* (see the article on page 12).

• Council supported the submission to the GA of an amendment to the statutes regarding what shall constitute a majority vote in certain situations.

• Event organizers were reminded that **IFIP** does not carry any insurance protection for IFIP-sponsored events, so it is the responsibility of the organizers to insure the events locally.

President Bollerslev thanked the Computer Society of India, a very active participant in **IFIP,** for the fine facilities provided, the extensive social program (see the article on page 2), and the very friendly support during the meetings, and adjourned the Council.

The **IFIP** Working Group on Smart Cards

*by Prof. Vincent Cordonnier (FR)**

In 1991, I proposed to the **IFIP** General Assembly the creation of a group to study smart-card technology and applications and to organize scientific events on smart cards, with the **IFIP** label. A working conference was held in 1993, and a series of biennial "CARDIS" (CARD Information Systems) conferences was inaugurated in 1994. The attendance at the most recent one, in Belgium last year, was 100. The group has evolved from a Task Force to a Specialist Group to a Working Group (WG8.8) under the aegis of the Technical Committee on Information Systems (TC8). We present here the major themes of the WG.

Architecture: For many reasons, the chips that are embedded in smart cards present original features, including the following: special-purpose microprocessors, cryptographic and possibly biometric co-processors, security features, devices for tamper resistance, memory management for the RAM, the ROM and the EEPROM or flash memory, and communication devices including contactless cards.

Operating system: Many of the presently available cards do not draw a clear line between the operating system and the application software. It is likely that future cards will require well-identified operating systems. The first reason is standardization and inter-operability. Another reason is the requirement for the card issuers to be independent from manufacturers. The trend toward multiapplication cards will force the operating system to be designed before any application is imported.

Application software: The software of an application is responsible for organizing an appropriate data management and an efficient security scheme that can take into account the specific requirements of the application. That part of the software is also responsible for providing the set of primitives that allows the card to be personalized by including information related to the bearer: PIN code, biometrics, individual profile and privileges etc..

Integration ofsmart cards as components of information systems: A set of smart cards for a given application may be seen as a widely distributed data base or as a large network with dynamic connection. In many circumstances, the decision to store data either in the card or somewhere else in the information system is not simple and relies on a specific methodology of application design. Furthermore, the development of networks leads to new requirements in security. The card looks like the best tool for including individual profiles, personal data and requirements in a distributed system.

Security: Security appears as a major argument for choosing this technology. It has to be studied from many different points of view: tamper resistance, protection of data, and privileges management when more than one sort of service is provided. Security is also mandatory for communication between the card and the information system. Many well-identified techniques such as authentication and signature encryption will apply in the smart card area.

Application design: As smart cards are used for an increasing number of applications, the need for a methodology is obviously required by application designers. This theme will also include application management and dynamic application loading.

Smart cards and society: So far, this theme has not been discussed, either in the WG or in its conferences. However, it could represent an interesting area, as the card looks like a new and widely distributed tool for accessing a large spectrum of distributed services.

It is quite evident that these aims and goals cover a wide spectrum of techniques, so many of the activities of WG8.8 will be organized in conjunction with other groups in **IFIP.** For further information, one may contact the WG chair:

Vincent Cordonnier
Université de Lille (France)
e-mail: vincent.cordonnier@univ-lillel.fr

* chair of WG8.8

CALLS FOR PAPERS

Sixteenth World Computer Congress (**IFIP** Congress 2000)
21-25 Aug 2000, Beijing, China
papers due: 16 Jan 2000
contact: Li Xiaoming
Dept. of Computer Science and Technology
Peking University
Beijing 100871, China
tel: +86-10-62756231
fax: +86-10-62751792

Seventh **IFIP** WG9.1 Conference on Women, Work and Computerization
8-11 June 2000, Vancouver, BC, Canada
papers due: 28 Feb 2000
contact: Deborah Kirby
IFIP-WWC 2000
c/o School of Communication
Simon Fraser University
Bumaby, British Columbia
Canada V5A 1S6
tel: +01 604 291.3764
fax: +01 604 291.4024
e-mail: wwc2000@sfu.ca or
dkirby@sfu.ca
Web: www.sffi.ca/-wwc2000/

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.** ➭

Advertisements Now Accepted for the **IFIP Newsletter**

The ***IFIP*** *Newsletter* will now accept advertisements that are appropriate for this publication. The quarterly *Newsletter* is mailed worldwide, free of charge, to over 3000 members of the **IFIP** community, as well as to 44 Member society headquarters, organizers of **IFIP** events, and other recipients. It is also available on-line at the Web address
http://www.ifip.or.at/newsletters/newsl.html.
Potential advertisers can get further details, including rates and schedule, from the **IFIP** Secretariat (address in masthead on page 2).

This Issue's Suggestion

For a list of **IFIP** books available from the **IFIP** publisher, please visit the Web page at
http://www.wkap.nl/series.htm/IFIP ➭

ASSISTANCE TO DCs cont. from p. 4

able the DCs to contribute to **IFIP** planning.

Not allowable will be:

A. Any support for the IFIP General Assembly representative

B. Any support for events organised with other organisations

C. Any support for non-IFIP events. ❑

FUTURE IFIP MEETINGS

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

GA	5-9 Sep 99 (Sun.-Thurs.)	Kuala Lumpur, Malaysia
Council	5-9 Mar 2000 (Sun.-Thurs.)	Washington, DC, USA
GA	Executive Board 24 Aug	Beijing, China
	GA 26-29 Aug (Sat.-Tues.)	

TECHNICAL COMMITTEE AND WORKING GROUP MEETINGS

WGI.1	18-27 Jul 99	Oxford, UK
	4-8 Oct 99	Hong Kong, China
WG1.2	12 Jun 99	Bergen, Norway
	18-22 Jul 99	Magdeburg, Germany
	1-4 Nov 99	Boca Raton, FL, USA
	Nov 2000	San Jose, CA, USA
WG1.3	13-14 Sep 99	Bonas, France
WG1.5	1999	Lyon, France
	2000	Japan
WG1.6	1 Jul 99	Trento, Italy
TC2	19-20 Jun 99	Munich, Germany
WG 2.1	14-18 Jun 99	Potsdam, Germany
WG2.2	May/Jun 99	Udine, Italy
WG2.3	21-25 Jun 99	Munich, Germany
WG2.4	Sep 99	Canada
	Jun 2001	Pisa, Italy
	Apr 2002	Paderborn, Germany
WG2.7/13.4	4-6 Sep 99	Edinburgh, UK
WG2.8	Sep 99	France
WG2.9	Oct/Nov 99	Brazil
TC3	1-2 Aug 99	Irvine, CA, USA
	24-25 Nov 2000	Copenhagen, Denmark
	28 Jul & 3-4 Aug 2001	Copenhagen, Denmark
WG3.1	14 Jun 99	Haemeenlinna, Finland
	Apr 2000	Villa del Mar, Chile
	Jul 2001	Copenhagen, Denmark
WG3.2	5 Aug 99	Irvine, CA, USA
	Aug 2000	Magnetic Island, Australia
WG3.3	21 Jul 99	Le Mans, France
WG3.4	Jul/Aug 99	Baltimore, MD, USA
	2000	Sunderland, UK
WG3.5	17 Jun 99	Haemeenlinna, Finland
	Aug 2000	Beijing, China
WG3.6	4 Aug 99	Irvine, CA, USA
WG3.7	27 Nov 99	Palmerston, New Zealand
	Jul 2000	New Zealand
TC5	11 Sep 99	Berlin, Germany
WG5.7	5 Sep 99	Berlin, Germany
TC6	29-30 Aug 99	Szentendre, Hungary
	Jan 2000	Paris, France
	Aug 2000	Beijing, China
TC7	13 Jul 99	Cambridge, UK
WG7.5	Sep 2000	Ann Arbor, MI, USA
TC8	26-27 Jun 99	Copenhagen, Denmark
	18-19 Aug 2000	Hong Kong, China
WG8.1	14-15 Jun 99	Heidelberg, Germany
	20-22 Sep 99	Leiden, the Netherlands
WG8.2	20-22 Aug 99	St. Louis, MO, USA
	May/June 2000	Aalborg, Denmark
WG8.3	Jul 2000	Stockholm, Sweden
WG8.5	14-15 Jun 99	Kista, Sweden
WG8.6	Apr/May 2000	Sydney, Australia
WG8.8	Sep 2000	UK
TC9	12-13 Jun 99	Stockholm, Sweden
WG9.I	14-16 Sep 99	Copenhagen, Denmark
WG9.2	2-4 Jul 99	Bergen-aan-Zee, the Netherlands
	14-16 Jan 2000	Namur, Belgium
WG9.4	15-16 Sep 99	Kuching, Malaysia
WG9.6	13 Jun 99	Stockholm, Sweden
TC10	30-31 Aug 99	Toulouse, France
WG10.3	Oct 99	Newport Beach, CA, USA
WG10.4	19-22 Jun 99	Lake Geneva, WI (near Chicago, IL), USA
	Jan 2000	Cape Verde
TC11	29 Sep 99	Amsterdam, the Netherlands
WG11.1	30 Sep-1 Oct 99	Amsterdam, the Netherlands
WGII.2	30 Sep-1 Oct 99	Amsterdam, the Netherlands
WGII.5	18-19 Nov 99	Amsterdam, the Netherlands
TC12	2 Aug 99	Stockholm, Sweden
TC13	29 Aug 99	Edinburgh, UK
	28-29 Mar 2000	Eindhoven, the Netherlands
WG13.1	I Sep 99	Edinburgh, UK
WG13.2	1 Sep 99	Edinburgh, UK
WG13.3	1 Sep 99	Edinburgh, UK
WG13.4/2.7	see WG2.7 above	
WGI3.5	1 Sep 99	Edinburgh, UK

This information is furnished to the *Newsletter* by the Secretariat. Will TC and WG chairs kindly keep the Secretariat advised of the dates and locations of their future administrative meetings and also send a copy of the minutes to the Secretariat.

Some meetings are scheduled in conjunction with Working Conferences, for which the conference dates are listed. ❑

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New!

DISTRIBUTED APPLICATION AND INTEROPERABLE SYSTEMS II

edited by **Lea Kutvonen, Hartmut König, and Martti Tienari**

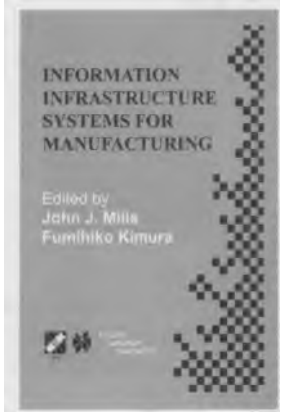
Mastering interoperability in a computing environment consisting of different operating systems and hardware architectures is a key requirement which faces system engineers building distributed information systems. Distributed applications are a necessity in most central application sectors of the contemporary computerized society, say, in office automation, banking, manufacturing, telecommunication and transportation. This book focuses on the techniques available or under development with the goal to ease the burden of constructing reliable and maintainable interoperable information systems.

The topics covered in this book include:
- Management of distributed systems;
- Frameworks and construction tools;
- Open architectures and interoperability techniques;
- Experience with platforms like CORBA and RMI;
- Language interoperability (e.g. Java);
- Agents and mobility;
- Quality of service and fault tolerance;
- Workflow and object modelling issues; and
- Electronic commerce.

The book contains the proceedings of the International Working Conference on Distributed Applications and Ieroperable Systems II (DAIS'99), which was held June 28-July 1, 1999 in Helsinki, Finland. It was sponsored by the International Federation of Information Processing.

The conference program presents the state of the art in research concerning distributed and interoperable systems. This is a topical research area where much activity is currently in progress. Interesting new aspects and innovative contributions are still arising regularly. The DAIS series of conferences is one of the main international forums where these important findings are reported. Lea Kutvonen and Martti Tienari are at the University of Helsinki, Finland; Hartmut König is at the Brandenburg University of Technology, Cottbus, Germany.

1999 472 pp. Hardbound
ISBN 0-7923-8527-6 $150.00



INFORMATION INFRASTRUCTURE SYSTEMS FOR MANUFACTURING

edited by **John J. Mills** and **Fumihiko Kimura**

New!

This book elaborates on the information infrastructure needed by manufacturing enterprises in order to share information and to coordinate decision 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.

Topics Include:
• The coordination and organization of information system requirements and their synthesis into comprehensive conceptual models • The development of reconfigurable information infrastructures, combining the conceptual models with computing, communication and storage technologies • The development of intelligent manufacturing systems • The design of models for extended enterprises and product life cycles; and • The definition of related infrastructure services.

The book contains the selected proceedings of the Third International Conference on the Design of Information Infrastructure Systems for Manufacturing (DIISM'98), sponsored by the International Federation for Information Processing and held at Fort Worth, Texas, USA in May 1998. This valuable new book will be essential reading for researchers and all those working in production engineering, information technology for industrial enterprises, shop-floor computing and software engineering.

John J. Mills is the Director of the Automation & Robotics Research Institute, and is a Professor at The University of Texas at Arlington, Texas, USA.

Fumihiko Kimura is a Professor at The University of Tokyo, Japan.

1999 404 pp. Hardbound
ISBN 0-412-84450-8 $175.00

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New!

MACHINING IMPOSSIBLE SHAPES

edited by **Gustav J. Olling, Byoung K. Choi, and Robert B. Jerard**

This book provides a comprehensive treatment on the subject of sculptured surface machining in terms of user needs, CAM software solutions and theoretical research results and issues. State-of-the-art capabilities of the best commercial CAM systems are compared to user needs, and advanced academic research is presented.

Among the topics covered are the following:
- Generative NC for dies and molds;
- 5-axis machining of impellers;
- Cutting simulation and NC verification;
- Virtual machining;
- CAPP for die and mold machining;
- NURBS-based CNC interpolators.

It contains the proceedings of the International Conference on Sculptured Surface Machining: Machining Impossible Shapes (SSM'98), sponsored by the International Federation for Information Processing and held at the Chrysler Technology Center, Michigan in the USA, November 1998. This book is essential reading for researchers and practitioners in computer science, technical managers and software specialists.

Gustav Oiling is an Executive with Daimler Chrysler, Michigan, USA. **Byoung Choi** is a professor at the Korea Advanced Institute for Science and Technology (KAIST), Korea. **Robert Jerard** is a professor at the University of New Hampshire, Durham, USA.

1999 400 pp. Hardbound
ISBN 0-412-84680-2 $175.00

EDUCATING PROFESSIONALS FOR NETWORK-CENTRIC ORGANIZATIONS

New!

edited by **Peter Juliff, Tsurayuki Kado and Ben-Zion Barta**

This state-of-the-art book examines the changes in IT education which are imposed by the proliferation of networked applications within commercial organizations.

Topics covered include but are not limited to:
• Review of the state-of-the-art in network-centric, multimedia IT applications;
• Positive and negative impact of network-centric, multimedia IT on business and professional educational activities;
• Security and rights management of computer-based information systems;
• Ethics of network uses;
• The applications of the Internet and Intranet in business, industry, public administration, professional education and training;
• Cooperation between the educational system and industry;
• Providing competencies for professional education stakeholders to cope with drastic changes in **IT;**
• Measurement and analysis of IT education and training.

This volume contains the proceedings of the International Conference on Educating Professionals for Network-Centric Organizations sponsored by the International Federation for Information Processing and held in August 1998 in Saitama, Japan. The book will prove invaluable to teachers and curriculum designers working in informatics or related disciplines in education. Peter Juliff is Head of the School of Management and Information Systems, Deakin University, Burwood, Australia. Tsurayuki Kado is part of the Information & Telecommunications Systems Group with Hitachi **Ltd.,** Japan. Ben-Zion Barta is with Bar-Code Computers Ltd., Israel.

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Calendar of Events

(continued from page 16)

Event	Date	Location	Sponsored by	Org. Contact
IFIP WG9.4 Conf. on The Social Implications of Computers in Developing Countries	15-16.9.1999	Kuching, MY	IFIP WG9.4, Univ.Malay.Sarawak	roger@fit.unimas.my, Fax: +82672301
Work.Conf. on Communications and Multimedia Security	20-21.9.1999	Leuven, BE	IFIP TC 11	Fax: +32 16 321986
FM'99: World Congress on Formal Methods	20-24.9.1999	Toulouse, FR	FME, IFIP WG2.3, ACM, AMAST	db@it.dtu.dk, Fax: +45 45884530, http://www.it.dtu.dk/—db/fm99/FM99M
Work.Conf.on Information System Concepts: An Integrated Discipline Emerging	20-22.9.1999	Leiden, NL	IFIP WG8.1	alexander.verrynstuart@wxs.nl, Fax: +31 71 5276985 http://www.wi.leid
10th IFIP WG10.5 Work.Conf.on Correct Hardware Design Verification Methods	27-29.9.1999	Bad Herrenalb, DE	IFIP WG10.5	kropf@ira.uka.de, Fax: +49 721 6083962
Symposium on Integrated Circuits and System Design	29.9.-2.10.1999	Natal, BR	SBC, IFIP WG10.5, SB Micro	luba@iee.ufrgs.br, Fax: +55 51 3191576
7th Annual Work.Conf. on Information Security Management & Small System Security	30.9.-1.10.1999	Amsterdam, NL	IFIP WG11.1/11.2,TNO	rossouw@ml.petech.ac.za, Fax: +27 41 5043313 http://www.rau.ac.za/ifi
Symposium on Agent Systems and Applications	3-6.10.1999	Palm Springs,	IEEE, IFIP TC6, USENIX	danny@acm.org, http://www.generalmagic.com/asa
IFIP TC6/WG6.1 Joint Intl.Conf.on Formal Description Techniques (FORTE XII) and Protocol Specifications, Testing Verfication (PSTV XIX)	5-8.10.1999	Beijing, CN	IFIP WG6.1, National Natural Science Foundation of China, Chinese Inst. of Electronics	jianping@cernet.edu.cn, Fax: +8610 62785933
1999 Intl. Conf. on Parallel Architectures and Compilation Techniques	12-16.10.1999	Newport Beach, CA	IFIP WG10.3, IEEE	nader@ece.uci.edu, http://www.rose-hulman.edu/PACT
Work.Conf. on Infrastructures for Virtual Enterprises	27-28.10.1999	Oporto, PT	IFIP WG5.3, Esprit Prodnet	cam@uninova.pt, Fax: +351 1 2941253
Conf. on Broadband Communications '99	10-12.11.1999	Hong Kong, CN	IFIP WG6.2, Hong Kong Telecom	eetsang@ee.ust.hk, Fax: +852 2358 1485
3rd Intl.Work.Conf. on Integrity and Internal Control in Information Systems	18-19.11.1999	Amsterdam, NL	IFIP WG11.5	strous@iaehv.nl, Fax: +31 492 548636
5th IFIP Conf. on Intelligence in Network	22-26.11.1999	Pathumthani, TH	IFIP WG6.7	vw@cs.ait.ac.th, Fax: +66 2 5245721 http://www.cs.ait.ac.th/smartnet
9 Intl.Conf. on Very Large Scale Integration	1-4.12.1999	Lisbon, PT	IFIP WG10.5, API, FLAD	lms@inesc.pt, Fax: +351 1 3145843
Work.Conf. "Chile 2000-the bookmark of the School of the Future"	10-14.4.2000	Vina del Mar, CL	IFIP WG3.1, UNESCO, CONICYT Fund. ANDES	elagos@umce.cl, Fax: +56 2 2412728
7th IntI.IFIP Conf. on Women, Work and Computerization	8-11.6.2000	Vancouver, BC,CA	IFIP WG9.1 on Women and Comp.	ebalka@sfu.ca, Fax: +1 604 2914024 http://www.sfu.ca/~wwc2000/
IT at Home: Virtual Influences on Everyday Life	28-30.6.2000	Wolverhampton,GB	IFIP WG9.3	cm1950@wlv.ac.uk, Fax: +44 1902 321453
IFIP World Computer Congress 2000	21-25.8.2000	Beijing, CN	IFIP	mqzhou@public.bta.net.cn, Fax: +861 06828 3458 http://www.cie-china.o
Work.Conf. on Software Architecture for Scientific Computing Application	2-6.10.2000	Ottawa, CA	IFIP WG2.5	morven.gentleman@iit.nrc.ca, Fax: +1 613 9520074
IFIP TC6 WG6.1 Joint Intl.Conf. on Formal Description Techniques for Distributed Systems & Communication Protocols (FORTE) and Protocol Specification, Testing & Verfication (PSTV)	11-13.10.200	Pisa, IT	IFIP WG6.1, C.N.R., I.E.I.	t.bolognesi@iei.pi.cnr.it, Fax: +39 050 554 342

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

Calendar of Events

Event	Date	Location	Sponsored by	Org. Contact
4th IEEE Intl. Symposium on Requirements Engineering	7-11.6.1999	Limerick, 1E	IEEE, IFIP WG2.9, ACM	kevin.ryan@ul.ie, Fax: +353 61 202561 http://www.ul.i&-isre99
Conf.on Communications & Networking in Education	13-18.6.1999	Aulanko, Fl	IFIP WG3.I /3.5, Univ. of Helsinki Comp. Soc. of Finl., Min. of Edu.	matti.sinko@helsinki.fi, Fax: +358 9 8574328 http://www.hyvan.helsink
15th IMEKO World Congress	13-18.6.1999	Osaka, JP	IMEKO, IFIP, RELA, BIPM, OIi	90415@sinetad.jp, Fax: +81 3 38144699
User Identification and Privacy Protection	14-15.6.1999	Kista, SE	IFIP WG8.5/9.6	simone@dsv.su.se, Fax: +46 8 7039025 http://www.dsv.su.se/IFIP-WG-9.6
Intl.Enterprise Modelling Conf.	14-16.6.1999	Verdal, NO	Aker, IFIP WG5.12, ICIMS-NO	bjorn.andersen@protek.ntnu.no, Fax: +47 73 5971 17 http://www.sintef.n
IFIP WG 1I.8 First World Conf.on Information Security	17-19.6.1999	Kista, SE	IFIP WG 11.8, Stockholm Univ	louise@dsv.su.se, Fax: +46 8 7039025
Intl. Work.Conf. on Distributed Applications & Interoperable Systems	28.6.-1.7.1999	Helsinki, FI	IFIP WG6. I	dais99@cs.helsinki.fi, Fax: +358 9 7084 4441 http://www.cs.Helsinki.F
1st Intl. Work.Conf. on Active Networks	30.6.-2.7.1999	Berlin, DE	IFIP TC6	covaci@fokus.gmd.de, Fax: +49 30 34638171 http://www.fokus.gmd.de/cc/
19th IFIP Conf. on System Modelling & Optimization	12-16.7.1999	Cambridge, GB	IFIP TC7	m.j.d.powell@damtp.cam.ac.uk, Fax: +44 1223337918
13th IFIP WG11.3 Work.Conf.on Database Security	26-28.7.1999	Seattle, WA, US	IFIP WG 11.3	samarati@dsi.unimi.it, Fax: +39 0373 898253
Work.Conf. on Building University Electronic Educational Environments	3-6.8.1999	Irvine, CA, US	IFIP WG3.2/3.6	IFIP conf@uci.edu, Fax: +1 949 8242069
Conf.on Protocols for High-Speed Networks	25-27.8.1999	Salem, MA, US	IFIP WG6.1/6.4, USC, IEEE	touch@isi.edu, Fax: +1 310 8236714 http://www.isi.edu/pfhsn99/
INTERACT '99 - Human Computer Interaction	29.8.-3.9.1999	Edinburgh, GB	IFIP TC13	kilgour@bcs.org.uk, Fax: +44 1314513327 http://www.bcs.org.uk/hci/i99
3rd Intl. Symposium on Environmental Software Systems	30.8.-2.9.1999	Dunedin, NZ	IFIP WG5.11, CRLE Guelph, CA	ralf.denzer@eii.hd.shuttle.de, Fax: +49 6223 970236
IFIP WG6.3 Workshop	30.8.-1.9.1999	Rethymnon, GR	IFIP WG6.3	ioannis@cdsp.neu.edu, Fax: +1 617 373 8970
Workshop on HCI - Theory or Practice in Education	30-31.8.1999	Edinburgh, GB	IFIP WG 13.1	rauterberg@ipo.tue.nl, Fax: +31 40 2431930
Workshop on HCI Impact on Special Needs	30-31.8.1999	Edinburgh, GB	IFIP WG13.3	geoffrey.busby@gecm.com, Fax: +44 1245 478317
Forum on Design Languages	30.8.-3.9.1999	Lyon, FR	ECSI, IFIP WG10.5, VI, OVI,	jean.mermet@imag.fr, Fax: +33 476 428787
12th IFIP Work.Conf. on Testing of Comm. Syst.	1-3.9.1999	Budapest, HU	IFIP WG6.1	sarolta.dibuz@lt.eth.ericsson.se, Fax: +36 1 4377219
Intl.Conf.on Advances in Production Management Systems	6-10.9.1999	Berlin, DE	IFIP WG5.7, VDI, Partner f. Berlin	APMS99@ipk.fhg.de, Fax: +49 30 393902503

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IFIP Congress 2000 - 16th World Computer	21-25.8.2000	Beijing, CN	IFIP

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