Invitation
and
2nd Call for Contributions

International Federation for Information Processing

13th World Computer Congress

Computer and Communications Evolution – The Driving Forces –

IFIP CONGRESS '94

Hamburg, Germany

August 28 – September 2, 1994

Phase 1 • Information Presentation

Congress Goals

Theme: Computer and Communications Evolution – The Driving Forces –

Goal-to answer the questions:

- **Are We Developing the Right Technology and Applications?**
- **What Will Be the Impact of These Developments?**
- **What Should We Do Differently?**

Keynote Session Topic

Impact of Investment Strategies on Computer and Communications Utilization

Three distinguished speakers, one from Japan, one from the European Community and one from the USA will address the keynote session topic:

Japan: Mr. Hiramatsu, Governor, Ohita Prefecture

European Community and USA: To be announced.

Track 1

Hardware and Software Technology

Theoretical and Physical Limits
Implementation Technologies
Technology State of the Art
- Interactions Technologies
- Computing
- Communications

How Does Industry Cope with Integration?
Personal Environments
New and Important Applications
- Design Technique
- Network Management

Application Design Methods
- Database Technologies
- Multimedia Technology
- Optical and Bio Computing
- Distributed Computing in Media and the Arts

Invited Speakers:

G. Holzmann, B. Lindsay, G. Maguire, J. Midwinter, N. Terashima, A. Peled, I. Sugarbroad, R. Williams, M. Yamamoto

Track 2

Computer and Communications Applications

New and Important Applications
- Integrated Traffic Management (The Storm Project)
- A Multimedia Communication Infrastructure
- The virtual Factory
- The Mobil Office
- Intelligent Buildings

Application Design Methods
- Vendor Independent Platforms for Application Design
- Experience with Participative
- Application Development
- User Interface Design
- Domain Oriented Design Environments
- Object Oriented Management

Invited Speakers:

P. Rauleffs, G. Fischer

Track 3

Social Impacts of Computers an Communications

Impact at the National Level
- Business Practice
- Political Processes
- Work and Business
- Education

Impact at the International Level
- International Development
- Intellectual Property Protection and Patenting
- Code of Ethics and Professional Conduct
- Vulnerability and Risk
- Disability
- Computers, Media and the Arts

Pioneers in Computers and Communications
Health Care Systems

Invited Speakers:

J. Berleur, G. Brauer, G. Busby, G. Chapman, K. Duncan, G. Giroud, G. Glaser, J. Gunther, G. Holzmann, P. Jaervinen, R. King, G. Ligeti, T. Machover, S. Mandil, G. Nees, S. Nycum, M. Silverstein, L. Taylor, T. Thahane, I. Wagner, H. Zemanek, K. Zuse

Track 4

Theoretical Foundations of Computing

Algorithms and Data Structures
Automata and Formal Languages
Computability and Complexity
Computational Geometry
Cryptography
Evolving Algebras
Logic of Programs
Machine Learning
Parallel and Distributed Computations
Semantics
Specification and Verification Methods

Invited Speakers:

E. Buerger, L. Guibas, Y. Gurevich, D. Johnson, J. Hartmanis, S. Heinrich, C. Leiserson, A. De Luca, B. McColl, K. Melhorn, R. Milner, W. Paul, D. Perrin, A. Shamir, I. Simon, W. Thomas, J. Traub, L. Valiant, G. Waslikowski, A. Wigderson

Track 5

Computer and Communications and Developing Countries

Building a Local Software Industry for Domestic Needs
Dines Bjomer, United Nations Univ., Macau

Building a Local Hardware Industry for Domestic Needs and Export
Antonio A. Cunha de Souza, Brazil

Communications Hardware for Developing Countries
Farouk Kamoun, Tunesia

Shared Technology from the South-South Dialogue
Robert Tom Price, Mercosul, Brazil

Transfer, Trade, National Policy Issues
Robert Schware, World Bank

Human Resources
K. Subramanian, Government of India

Phase 2 • Assessment of Key Issues

Congress Site

Hamburg has many faces: the German centre of trade and industry, a large international port, university city, shopping paradise and leisure capital.

Hamburg's international significance is underlined by the large number of diplomatic representations. No other city in the world, apart from New York, has more consulates.

The CCH with its city-centre site in a park landscape and leading hotels close by, it is just a short stroll away from the shopping arcades and the Alster, Hamburg's famous city-centre lake.

Exhibition

How does present technology limit participate design? How can users become more involved in design of new applications?

Link 1

Technology <—> Applications

Issue 1: What Should we Build?
- What new applications are enabled by new computer technologies?
- What people opportunities are created by pocket size personal Computer and Communications devices?
- What technology is missing for applications we want?

Issue 2: How Much Applications Knowledge Should a Technologist Have?
- Is it really possible for users to create applications from off-the-shelf building blocks?
- How can the language gap between technologist and application builders be bridged?

Link 2

Technology <—> Impacts

Issue 3: When Virtual Reality Becomes Real...
- What technology will emerge from current research into **virtual realities**?
- What are some likely impacts of this technology?
- What should be done to maximize the benefits?

Issue 4: Utopia? or Chaos? How Should We Control Technology Development?
- The life cycle of technology is typically four years and decreasing. How far can the life cycle go?
- Does all this new technology really benefit society?
- Or has it introduced permanent instability?
- How should we foster **right** concepts and products?
- Can/should development be controlled?

Link 3

Foundations <—> Technology

Issue 5: How Much Is Safety Worth?
- Large investments continue to be made in control technology to ensure safety in such areas as transport, nuclear power production, and others. Given our current knowledge, how safe could it be made?
- How much does it cost to reduce hazards by any order of magnitude?
- Is it worth the cost?

Issue 6: Should We Invest In Intellectual Elegance or Computer Power?
- How should we decide whether to invest in fundamental research or technology development?
- Are there known but untapped areas of research with high potential value in technology development and application?
- How are developers made aware of discoveries in foundation?
- Are researchers and developers communicating?

Link 4

Applications <—> Impacts

Issue 7: Who Is In Control? User Or Application System?

Designers of applications systems approach design based on their understanding of the way the system will be used. A good design can free users from drudgery, allowing them to bring real human creativity to their job, while a bad design can virtually eliminate creativity, and may even restrict the users ability to do the job. What should be done to maximize the former and minimize the latter?

Issue 8: Is Application Development Focused On Real Problems?

Much technology has been introduced into health care and into education and training. Much medical knowledge goes unused in practice. Health care is information intensive. Significant health care computer applications have been only on the business side. Much technology has been introduced into education and training, but with little impact. How can/should Computer and Communications application development be focused on real problems?

Link 5

Developing Countries <—> all Tracks

Many Countries require local production of Computer and Communications hardware and software. Manufacturers cannot manufacture in every country. Technology transfer laws may create vital manufacturing jobs, or they may impede the creation of information sector jobs, by denying imports. Is there a right balance?

Congress Message

This Congress will send a **message to the computer and communications community**. The Congress is not just a meeting where one listens to papers; rather, it is a true **Congress** where the participants will actually deliberate the important linkage issues and develop recommendations for the community. Thus participants will work together to reshape the future of computers and communications in the early part of the 21st century. Their deliberations and recommendations will form the basis for the **message** (optional, depending on space: which will be delivered on the final day of the Congress and disseminated widely after the Congress).

What to submit: Papers (20 minute presentations addressing tracks or issues); posters, videos (12 minute maximum), and non-commercial demonstrations fitting track or link themes.

When to submit: Papers by January 14, 1994 (camera-ready manuscripts of accepted papers are due April 22, 1994); poster, video, and non-commercial demonstration descriptions by April 22, 1994.

Where to submit: All contributions should be sent to the responsible chairperson for the relevant track or link:

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Track 3 / Link 2
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Track 4 / Link 3
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Track 5 / Link 5
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