Information Bulletin

International Federation for Information Processing (www.ifip.org)

IFIP SECRETARIAT
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<th>General Secretary</th>
<th>Eduard DUNDLER</th>
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IFIP’s PAST PRESIDENTS

Isaac L. Auerbach       U.S.A.        1960 - 1965
Ambros B. Speiser       Switzerland  1965 - 1968
Anatol A. Dorodnicyn    Russia        1968 - 1971
Heinz Zemanek          Austria        1971 - 1974
Pierre A. Bobillier    Switzerland   1977 - 1983
Kaoru Ando            Japan          1983 - 1986
Ashley W. Goldsworthy  Australia     1986 - 1989
Asbjorn Rolstadas      Norway        1992 - 1995
Kurt Bauknecht        Switzerland    1995 - 1998
Peter Bollerslev       Denmark       1998 - 2001
Robert Aiken           U.S.A.         2001
Walter Grafendorfer    Austria        2001 - 2002
Klaus Brunnstein       Germany       2002 - 2007
Basie von Solms        South Africa   2007 - 2010
Leon Strous            Netherlands   2010 - 2016

IFIP’s Honorary Members

1979: Dr. Richard Tanaka    IFIP President 1974 - 1977
1989: Prof. Pierre A. Bobillier    IFIP President 1977 - 1983
1997: Prof. Asbjorn Rolstadas    IFIP President 1992 - 1995
1999: Prof. Ashley W. Goldsworthy IFIP President 1986 - 1989
1999: Mr Graham Morris        IFIP Honorary Secretary 1996 - 1999
2014: Prof. Sebastiaan von Solms    IFIP President 2007 - 2010
2017: Mr Leon Strous         IFIP President 2010 - 2016
INTRODUCTION

This publication is an edited subset of a comprehensive database which is regularly updated and is accessible through international networks. In particular the “electronic Bulletin” contains detailed statements of aims and scope for every Working Group.

A wide range of information is available electronically from the IFIP secretariat including the IFIP News, minutes of our General Assembly and Board meetings, IFIP documents and other valuable information on IFIP and its activities.

There are also links to pages of information about our Members and Technical Committees.

Access may be obtained as follows:
URL: http://www.ifip.org

IFIP’s MISSION STATEMENT

IFIP’s mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of Information Technology for the benefit of all people.

Principal Elements

1. To stimulate, encourage and participate in research, development and application of Information Technology (IT) and to foster international co-operation in these activities.
2. To provide a meeting place where national IT Societies can discuss and plan courses of action on issues in our field which are of international significance and thereby to forge increasingly strong links between them and with IFIP.
3. To promote international co-operation directly and through national IT Societies in a free environment between individuals, national and international governmental bodies and kindred scientific and professional organizations.
4. To pay special attention to the needs of developing countries and to assist them in appropriate ways to secure the optimum benefit from the application of IT.
5. To promote professionalism, incorporating high standards of ethics and conduct, among all IT practitioners.
6. To provide a forum for assessing the social consequences of IT applications; to campaign for the safe and beneficial development and use of IT and the protection of people from abuse through its improper application.
7. To foster and facilitate co-operation between academics, the IT industry and governmental bodies and to seek to represent the interest of users.
8. To provide a vehicle for work on the international aspects of IT development and application including the necessary preparatory work for the generation of international standards.
9. To contribute to the formulation of the education and training needed by IT practitioners, users and the public at large.
IFIP IN PERSPECTIVE

Origins
IFIP traces its roots to the very first major international conference on computers and computing which was held in Paris in 1959 under the auspices of UNESCO. Representatives of the main computer societies active in computing got together at that meeting to explore ways of building on the achievements of the conference. As a result thirteen national computer societies agreed to found in 1960 an international federation and named it IFIP - the International Federation for Information Processing.

IFIP’s principal aims were and are to foster international cooperation, to stimulate research, development and applications and to encourage education and the dissemination and exchange of information on all aspects of computing and communication.

IFIP’s creation was well timed. In the 1960s there began a veritable explosion in the growth of the computer industry and in the application of its products. Within the life-span of IFIP information technology (as it is widely known today) has become a potent instrument affecting people in everything from their education and work to their leisure and in their homes. It is a powerful tool in science and engineering, in commerce and industry, in education and administration and in entertainment.

Membership
Today IFIP has 41 organizations as Full Members, 2 International Members at Large and 4 Associate Members, representing countries from all regions of the world.

Organisation
A General Assembly of all its Members and TC Chairs takes place annually and has overall responsibility for all of IFIP’s strategy, finance and activities. It elects a President, four Vice-Presidents, a Honorary Treasurer, a Honorary Secretary and eight Councillors who together form the IFIP Board.

Congresses and Major Conferences
IFIP’s flagship event is its World Computer Congress, currently held biannually. The 22nd IFIP World Congress was held in Amsterdam, The Netherlands from 24 to 26 September, 2012 (http://www.wcc-2012.org/). The 23rd IFIP World Congress was held in Daejeon, Republic of Korea from 4 to 7 October, 2015 (http://www.wcc-2015.org). The 24th IFIP World Congress will be in Poznan, Poland in September 2018.

The nature of these Congresses has changed substantially over the years. They are no longer of the all-singing and -dancing variety addressing every conceivable facet of our field. Instead they consist of a number of independent conferences, each dealing with a major specialised subject. These run in parallel so that some more general keynote addresses can be attended by all participants who can also share in social and other activities.

In addition there are major international conferences organised by our Technical Committees. These include events dealing with Production Engineering, Security, Computers in Education and Human Computer Interaction.

Technical Activities
At the heart of IFIP lie its Technical Committees that, between them, count on the active participation of some two thousand people world-wide. There are thirteen such Committees. Each Technical committee is, in effect, a management team responsible for a given field of activity and for the work of from five to thirteen Working Groups, a total of 101. These Groups work in a variety of ways to share experience and to develop their specialised knowledge. These include open conferences, smaller working conferences, seminars and tutorials, circulated papers and, increasingly, as befits our subject, electronic conferencing and e-mail.
Publications
Many IFIP events are linked to publications and there are annually some 30 to 40 IFIP books. Our principal publisher is

Springer-Verlag GmbH
e-mail: ifip@springer.com

IFIP News
A vital element of IFIP’s communication with its Members and with all who participate in our work is the IFIP Newsletter. This is published quarterly in electronic form and is published on IFIP’s website www.ifip.org.

Relationships
IFIP enjoys friendly cooperation with a number of international organisations. First among these is UNESCO with which IFIP maintains a formal consultative relationship. UNESCO has commissioned from IFIP several projects and supports the participation of some people from developing countries in IFIP events. IFIP is a Scientific Associate of ICSU (International Council of Scientific Unions).

There are four international federations with which IFIP collaborates. These are IFAC (International Federation of Automatic Control), near neighbours of ours in Laxenburg, IMACS (International Association for Mathematics and Computers in Simulation), IFORS (International Federation of Operational Research Societies) and IMEKO (International Measurement Confederation).

IFIP Secretariat
The administrative hub of IFIP is our secretariat at Laxenburg, near Vienna. Eduard Dundler, the General Secretary of IFIP, with the assistance of Brigitte Brauneis and Marion Smith is responsible for the wide range of administrative tasks vital to the operation of such a far-flung international body. Good communication and information are essential and our secretariat provides a comprehensive service using up-to-date technology.
STANDARD INFORMATION

IFIP COUNCIL

EXECUTIVE BOARD

Mike Hinchey  President  Ex officio  2016 - 2019
Max Bramer  Vice President  Ex officio  2013 - 2019
Yuko Murayama  Vice President  Japan  2014 - 2020
Gabriela Marin-Raventos  Vice President  Ex officio  2016 - 2019
Kai Rannenberg  Vice President  Germany  2015 - 2018
A Min Tjoa  Secretary  Austria  2013 - 2019
Declan Brady  Treasurer  Ireland  2014 - 2020

COUNCILLORS

Yasas Abeywickrama (GA)  Sri Lanka  2015 - 2018
Jee-In Kim (GA)  Korea  2016 - 2019
Jerzy Nawrocki (GA)  Poland  2013 - 2020
Franz Rammig (GA)  Ex officio  2013 - 2019
Michael Goedicke (TA)  Ex officio  2012 - 2019
Maria Raffai (MS)  Hungary  2016 - 2019
Raimundo Macedo (Pr.)  Brazil  2015 - 2018
Anthony Wong (IP3)  Australia  2012 - 2019
IFIP GENERAL ASSEMBLY

Honorary Members

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<th>Society</th>
<th>Representative</th>
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<td><strong>AUSTRALIA</strong>&lt;br&gt;Australian Computer Society (ACS)&lt;br&gt;P.O. Box Q 534 QVB&lt;br&gt;SYDNEY, N.S.W. 1230&lt;br&gt;Australia&lt;br&gt;Tel. +61 2 9299 3666&lt;br&gt;Fax +61 2 9299 3997&lt;br&gt;e-mail: <a href="mailto:info@acs.org.au">info@acs.org.au</a>&lt;br&gt;URL: <a href="http://www.acs.org.au">http://www.acs.org.au</a></td>
<td>Mr. Anthony WONG&lt;br&gt;Australian Computer Society Inc. (ACS)&lt;br&gt;P.O. Box Q 534&lt;br&gt;QVB SYDNEY, NSW 1230&lt;br&gt;Australia&lt;br&gt;Tel. +61 2 9299 3666&lt;br&gt;Fax +61 2 9299 3997&lt;br&gt;e-mail: <a href="mailto:anthony.wong@acslink.net.au">anthony.wong@acslink.net.au</a></td>
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<td><strong>AUSTRIA</strong>&lt;br&gt;Austrian Computer Society (OCG)&lt;br&gt;Wollzeile 1&lt;br&gt;AT-1010 VIENNA, Austria&lt;br&gt;Tel. +43 1 512 0235&lt;br&gt;Fax +43 1 512 02359&lt;br&gt;e-mail: <a href="mailto:ocg@ocg.at">ocg@ocg.at</a>&lt;br&gt;URL: <a href="http://www.ocg.at">http://www.ocg.at</a></td>
<td>Prof. Erich NEUHOLD&lt;br&gt;Universität Wien&lt;br&gt;Fakultät für Informatik&lt;br&gt;Währinger Straße 29&lt;br&gt;AT-1090 WIEN, Austria&lt;br&gt;Tel. +43 1 4177 78801&lt;br&gt;Fax +43 1 4277 9780&lt;br&gt;e-mail: <a href="mailto:erich.neuhold@univie.ac.at">erich.neuhold@univie.ac.at</a></td>
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<td><strong>BRAZIL</strong>&lt;br&gt;Sociedade Brasileira de Computação - SBC&lt;br&gt;Instituto de Informatica - UFRGS&lt;br&gt;Caixa Postal 15012&lt;br&gt;BR-91501-970 PORTO ALEGRE, Brazil&lt;br&gt;Tel. +55 51 3308 6835&lt;br&gt;Fax +55 51 3308 7142&lt;br&gt;e-mail: <a href="mailto:supervisao@sbc.org.br">supervisao@sbc.org.br</a>&lt;br&gt;URL: <a href="http://www.sbc.org.br">http://www.sbc.org.br</a></td>
<td>Prof. Raimundo José de Araújo MACEDO&lt;br&gt;Universidade Federal da Bahia&lt;br&gt;Computer Science Department&lt;br&gt;BR-40170-110 SALVADOR, BA&lt;br&gt;Brazil&lt;br&gt;Tel. +55 71 3283 6142&lt;br&gt;Fax +55 71 3283 6145&lt;br&gt;e-mail: <a href="mailto:macedo@ufba.br">macedo@ufba.br</a></td>
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<td><strong>BULGARIA</strong>&lt;br&gt;Bulgarian Academy of Sciences&lt;br&gt;1, &quot;15 Noemvri&quot; Str.&lt;br&gt;BG-1040 SOFIA&lt;br&gt;Bulgaria&lt;br&gt;Tel. +359 2 981 66 22&lt;br&gt;Fax +359 2 981 66 29&lt;br&gt;email: <a href="mailto:presidentbas@cu.bas.bg">presidentbas@cu.bas.bg</a>&lt;br&gt;URL: <a href="http://www.ifip.acad.bg">http://www.ifip.acad.bg</a></td>
<td>Prof. Julian REVALSKI&lt;br&gt;President&lt;br&gt;Bulgarian Academy of Sciences&lt;br&gt;1, &quot;15 Noemvri&quot; Str.&lt;br&gt;BG-1040 SOFIA&lt;br&gt;Bulgaria&lt;br&gt;Tel. +359 2 981 66 22&lt;br&gt;Fax +359 2 981 66 29&lt;br&gt;email: <a href="mailto:presidentbas@cu.bas.bg">presidentbas@cu.bas.bg</a></td>
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<td><strong>CANADA</strong>&lt;br&gt;Canadian Information Processing Society (CIPS)&lt;br&gt;60 Bristol Rd E Unit 8, #324&lt;br&gt;MISSISSAUGA, ON L4Z 3K8&lt;br&gt;Canada&lt;br&gt;Tel. +1 905 602 1370&lt;br&gt;Fax +1 905 602 7884&lt;br&gt;e-mail: <a href="mailto:info@cips.ca">info@cips.ca</a>&lt;br&gt;URL: <a href="http://www.cips.ca">http://www.cips.ca</a></td>
<td>T B D&lt;br&gt;Canadian Information Processing Society (CIPS)&lt;br&gt;atttn. Ms. Mary Jean Kucerak&lt;br&gt;60 Bristol Rd E&lt;br&gt;Unit 8, # 324&lt;br&gt;MISSISSAUGA, ON L4Z 3K8&lt;br&gt;Canada&lt;br&gt;Tel. +1 905 602 1370&lt;br&gt;e-mail: <a href="mailto:info@cips.ca">info@cips.ca</a></td>
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<td><strong>CHINA</strong>&lt;br&gt;Chinese Institute of Electronics - CIE&lt;br&gt;Puhuinanli Building No.13, Room 308&lt;br&gt;Haidian District, P.O. Box 165&lt;br&gt;BEIJING 100036&lt;br&gt;China&lt;br&gt;Tel. +86 10 6816 0825&lt;br&gt;Fax +86 10 6823 9572&lt;br&gt;e-mail: <a href="mailto:yangxing@cie-info.org.cn">yangxing@cie-info.org.cn</a>&lt;br&gt;URL: <a href="http://www.cie-info.org.cn">http://www.cie-info.org.cn</a></td>
<td>Mr. Runhua LIN&lt;br&gt;Deputy Secretary General&lt;br&gt;Chinese Institute of Electronics - CIE&lt;br&gt;Puhuinanli Building No.13&lt;br&gt;Haidian District, P.O. Box 165&lt;br&gt;BEIJING 100036&lt;br&gt;China&lt;br&gt;Tel. +86 10 6827 6577&lt;br&gt;Fax +86 10 6823 9572&lt;br&gt;e-mail: <a href="mailto:linrunhua@cie-info.org.cn">linrunhua@cie-info.org.cn</a></td>
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<td>Croatia</td>
<td>Croatian Information Technology Association - CITA</td>
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<td>Mr. Marijan FRKOVIC President</td>
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<td>Cyprus</td>
<td>Cyprus Computer Society</td>
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<td>Mr. Costas AGROTIS Government of Cyprus</td>
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<td>Czech Republic</td>
<td>Czech Society for Cybernetics and Informatics</td>
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<td>Prof. Jaroslav POKORYN Charles University in Prague</td>
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<td>Danish IT Society</td>
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<td>Prof. Jan PRIES-HEJE Roskilde University</td>
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<td>Mr. Mika HELENIUS TIVIA</td>
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<td>France</td>
<td>Société Informatique de France - SIF</td>
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<td>Prof. Bernard CORNU</td>
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<td>Gesellschaft für Informatik e.V. (GI)</td>
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<td>ITALY</td>
<td>Associazione Italiana per l’Informatica ed il Calcolo Automatico (A.I.C.A.)</td>
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est. 1989 as SG14 / approved in 1996 as TC 1
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WG 1.3 - Foundations of Systems Specification  
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WG 1.8 – Concurrency Theory
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WG 2.5 - Numerical Software

est. 1974, revised 1991 Aims and Scopes
URL: https://wg25.taa.univie.ac.at/

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WG 2.6 - Database

URL: http://www.ifip.org/wg-2.6

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WG 2.7/13.4 - User Interface Engineering

URL: http://ui-engineering.org

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WG 2.8 - Functional Programming

est. 1987, revised 1991
URL: http://www.cs.ox.ac.uk/ralf.hinze/WG2.8

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WG 2.9 - Software Requirements Engineering

est. 1993
URL: http://www.ifip.org/wg-2.9

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WG 2.10 - Software Architecture

est. 2000
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WG 2.11- Program Generation

est. 2003
URL: http://wiki.hh.se/wg211

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WG 2.12/12.4 - Web Semantics

est. 2004, revised 2005
URL: http://www.ifip.org/wg-2.12

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WG 2.13 – Open Source Software

est. 2006
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WG 2.14/6.12/8.10 - Service-Oriented Systems
est. 2011, revised 2012
URL: http://ifip-wg-sos.deib.polimi.it/

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WG 2.15/1.9 - Verified Software

WG 2.16 – Programming Language Design
est. 2012
URL: http://program-transformation.org/WGLD
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WG 3.1 - Informatics and digital technologies in School Education

est. 2014

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**WG 3.3 Research into Educational Applications of Information Technologies**

Re-est. 1988, revised 2004
URL: http://www.ifipwg3-3.org/

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est. 1987, revised 1994, 2012
URL: http://cospace.sce.ntu.edu.sg/ifip/

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est. 1994, revised 2001, 2010  
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WG 6.9 - Communication Systems for Developing Countries

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WG 6.11 - Communication aspects of the e-World

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TC 7 - System Modeling and Optimization

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TC 10 - Computer Systems Technology
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WG 11.4 Network & Distributed Systems Security
URL: http://www.ifip.tu-graz.ac.at/TC11/WG/index.htm

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WG 11.7/9.6 - Information Technology: Misuse and the Law

WG 11.8 Information Security Education
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**US** David Nicol  
**US** Hamed Okhravi  
**US** Paul Oman  
**US** Charles Palmer  
**US** Mauricio Papa

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WG 13.2 Methodologies for User-Centered Systems Design

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URL: http://wwwswt.informatik.uni-rostock.de/IFIP_13_2/

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WG 13.5 Human Error in Resilience, Reliability, Safety

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TC 14 - Entertainment Computing

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URL: http://www.org.id.tue.nl/IFIP-TC14/index.html

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WG 14.3 - Theoretical Basis of Entertainment
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WG 14.7 – Art and Entertainment
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WG 14.9 – Game - Accessibility
est. 2015
URL: http://cedric.cnam.fr/~dupirej/IFIP-WG14.9/index.html

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Technical Committee and Working Group - Aims and Scopes

There are Aims shared by all or most Committees which are not subject specific. They are as follows:

1. To establish and maintain liaison with national and international organisations with allied interests and to foster cooperative action, collaborative research and information exchange.
2. To identify subjects and priorities for research, to stimulate theoretical work on fundamental issues and to foster fundamental research which will underpin future development.
3. To provide a forum for professionals with a view to promoting the study, collection, exchange and dissemination of ideas, information and research findings and thereby to promote the state of the art.
4. To seek and use the most effective ways of disseminating information about our work including the organisation of conferences, workshops and symposia and the timely production of relevant publications.
5. To have special regard for the needs of developing countries and to seek practicable ways of working with them.
6. To encourage communication and to promote interaction between users, practitioners and researchers.
7. To foster interdisciplinary work and, in particular, to collaborate with other Technical Committees and Working Groups.

TC 1 - Foundations of Computer Science - Aims and Scopes

est. 1989 as SG14 / approved in 9/96 as TC 1

AIMS

- to support the development of theoretical computer science as a fundamental science that has similar scientific goals in understanding the information processing world as physics has in understanding the energy processing world and similar goals in developing methodology for science and technology as mathematics does;
- to support the development and exploration of fundamental concepts, models, theories, systems, and other basic tools and the understanding of laws, limits, and possibilities of information processing as well as to develop bridges with other sciences and their applications.

SCOPES

To encourage, organise, support, and unify the development of the following areas:

- frontiers, laws, and limits of information processing;
- fundamental formal systems;
- efficiency and complexity of information processing;
- formal systems to specify, design, verify, analyse, and manipulate complex information processing systems;
- theoretical foundations of various other parts of computer science and its main application areas;
- scientific paradigms of informatics and their relations to other disciplines;
- information processing fundamental concepts, models and theories to support the development of other sciences. With the goal to develop foundations and to make use of them.
WG1.1 - Continuous Algorithms and Complexity
est. 1992

AIMS

To provide a forum for international collaboration and for the dissemination of research and applications of continuous algorithms and complexity.

SCOPES

Many problems in natural science, engineering, social science and business have continuous models. Hence the scope of WG 1.1 is algorithms and especially computational complexity of algorithms for solving continuous models. By computational complexity is meant the intrinsic difficulty of solving such problems. Examples of the problems that are being studied include: ordinary and partial differential equations, continuous optimization, multivariate integration and approximation, matrix multiplication, and systems of polynomial equations.

Of special interest is the solution of continuous problems on parallel and distributed computer systems.

WG1.2 - Descriptional Complexity
est. 1992, revised 2017

AIMS

Descriptional complexity has historically been a multidisciplinary area of study, with contributions from automata theory, computational complexity, cryptography, information theory, probability, statistics, pattern recognition, machine learning, computational learning theory, computer vision, neural networks, formal languages and other fields. The aims of the working group are therefore:

- To promote research in all aspects of descriptional complexity through conferences, publications, and more informal means of scientific interaction such as electronic news groups;
- To promote interaction and the exchange of information across traditional discipline boundaries;
- To provide a point of contact for all researchers in all disciplines interested in descriptional complexity and its applications.

SCOPES

The scope of the working group encompasses all aspects of descriptional complexity, both theory and application. These aspects include but are not limited to:

- Algorithmic and other descriptional theories of randomness;
- The use of descriptional randomness and associated descriptional complexity measures in computational complexity, cryptography, information theory, probability, and statistics;
- The minimum description-length principle, stochastic complexity, algorithmic probability, and other descriptional complexity measures related to inductive inference and prediction;
- The use of such descriptional complexity measures in statistical inference, pattern recognition, machine learning, computational learning theory, computer vision, and neural networks;
- Generalized descriptional complexity measures and their properties, including resource-bounded complexity, structural complexity, hierarchical complexity, and the complexity of sets, languages, grammars, automata, etc.;
- Program complexity and reliability of software.
WG1.3 - Foundations of Systems Specifications  
est. 1992

AIMS

- To support and promote the systematic development of the mathematical theory and the foundations of systems specifications;
- To investigate the theory of formal models for systems specifications, development, transformation and verification;

SCOPES

The theoretical aspects of the specification and development of computing systems that are based on algebraic and logic concepts and can be studied systematically within a theory of systems specifications.

WG 1.5 - Cellular Automata and Discrete Complex Systems  
est. 1994, dissolved 2004, re-established 2008, revised 2009

AIMS

The Working Group 1.5, on Cellular Automata and Discrete Complex Systems, has the following attributions:
- To establish and maintain a permanent, international, multidisciplinary forum for the collaboration of researchers in the field of Cellular Automata (CA) and Discrete Complex Systems (DCS).
- To provide a platform for presenting and discussing new ideas and results.
- To support the development of theory and applications of CA and DCS (e.g. parallel computing, physics, biology, social sciences, and others) as long as fundamental aspects and their relations are concerned.
- To identify and study within an inter- and multidisciplinary context, the important fundamental aspects, concepts, notions and problems concerning CA and DCS.

SCOPES

The scope of the working group encompasses all fundamental aspects of cellular automata and discrete complex systems, including:

- Dynamics
- Algebraic aspects
- Complexity issues
- Emergent properties
- Formal language processing
- Models of parallelism and distributed systems
- Phenomenological descriptions
- Scientific modeling
- Practical applications
WG 1.6 - Rewriting
est. 1998, revised 1999

AIMS

- To promote research efforts in rewriting and its applications.
- To establish close cooperation between existing groups and to facilitate the emergence of new ones.
- To increase awareness of rewriting techniques in the computer science community at large.
- To foster development of applications of theoretical advances.

SCOPES

- Rewriting for computing and reasoning
- Theoretical studies of the rewriting relation of different orders.
- Complexity issues of rewriting.
- Compilation techniques and applications.
- Theory and applications of rewriting logic and calculus
- Application of rewriting to constraint solving, theorem proving and algebraic specifications
- The design, promotion and teaching of rewrite based techniques and applications.

WG 1.7 - Theoretical Foundations of Security Analysis and Design
est. 1999

AIMS

- To investigate the theoretical foundations of security as an independent discipline with firm grounds 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 amenable 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, also with industry.

SCOPES

The main research topics relevant for the Working Group include:

- formal definition and verification of the various aspects of security: confidentiality, integrity, authentication and availability;
- new theoretically-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.
WG 1.8 - Concurrency Theory  
est. 2005

AIMS

- To develop theoretical foundations of concurrency, exploring frontiers of existing theoretical models like process algebra and various process calculi, so as to obtain a deeper theoretical understanding of concurrent and parallel systems.
- To promote and coordinate the exchange of information on concurrency theory, exchanging ideas, discussing open problems, and identifying future directions of research in the area.

SCOPES

The activities of this WG will encompass all aspects of concurrency theory and its applications. The themes of the WG include:

- process algebras and calculi,
- expressiveness of formalisms for concurrency,
- modal and temporal logics for concurrency and their extensions,
- resource sensitive approaches to concurrency and their developments,
- tools for verification and validation of concurrent systems,
- reactive models for real-time and hybrid systems,
- calculi and typing systems for mobile processes and global computing,
- stochastic and probabilistic models of concurrent processes,
- behavioral relations for processes,
- decidability and complexity issues in concurrency theory,
- semantic frameworks for concurrency such as structural operational semantics,
- integration of concepts from concurrency theory into specification, modeling and programming languages, and (global) concurrent systems, and
- exploration of the frontiers of concurrency theory in connections to various branches of computer science, including theories of operating systems, internet languages, Petri nets and their applications, communication protocols, security issues on the internet, global ubiquitous computing, distributed algorithms, embedded systems, software architectures and engineering, automata theory; information theory, various formal methods, control theory and robotics, bio-computing, quantum computing, and other emerging areas.

WG1.9/2.15 Verified Software  
est. 2010

AIMS

- To contribute to a comprehensive theory of programming that covers the features needed to build practical and reliable programs.
- To contribute to a coherent toolset that automates the theory and scales up to the analysis of industrial-strength software.
- To collect realistic, verified programs as part of the Verified Software Initiative (VSI) Repository. It will do this using the following means:
  * By encouraging members to solve agreed theoretical problems, adapt tools to advance the state of the art, and to populate the VSI’s Repository by conducting experiments using the VSI’s open problem collection.
  * By having a sharply focused common sense of purpose.
  * By being committed to making progress on the VSI roadmap.
  * By producing deliverables determined by the membership.
  * By further developing the research agenda, collecting open problems, recording progress with appropriate milestones, etc.
AIMS and SCOPES

We will focus in String Algorithmics (combinatorics on words, string algorithms) and applications. We propose a unique forum for the best available research that will provide sustained inspiration within the stringological community for still better research. There is no other group that specializes in the area that the SA would cover.
**TC 2 - SOFTWARE: Theory and Practice - Aims and Scopes**
est. 1962, revised 1982, 1990

**AIMS**

To obtain a deeper understanding of programming concepts in order to improve the quality of software by studying all aspects of the software development process, both theoretical and practical.

**SCOPES**

The scope of the committee encompasses all aspects of the software development process including the specification, design, implementation and validation of software systems. Areas of present activity are:

- formal models of software concepts
- programming languages and techniques
- models for information storage and processing
- program support environments
- user interfaces to software systems
- software quality

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**WG2.1 - Algorithmic Languages and Calcu**i
est. 1962, revised 1963, 1990, 1992

**AIMS**

To explore and evaluate new ideas in the field of programming, possibly leading to the design of new languages.

**SCOPES**

- the study of calculation of programs from specifications;
- the design of notations for such calculations;
- the formulation of algorithm theories, using such notations;
- the investigation of software support for program derivation;
- continuing responsibility for ALGOL 60 and ALGOL 68.

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**WG2.2 - Formal Description of Programming-Concepts**
est. 1965, revised 1991

**AIMS**

The aim of the Working Group is to explicate programming concepts through the development, examination and comparison of various formal models of these concepts.

**SCOPES**

The Working Group will investigate formalisms and models which represent different approaches to formal specification of programming concepts. The models of concern must, at least in part:

- apply to the actual computing milieu;
• have sufficient generality to describe total systems or useful subsystems;
• treat either:
  - problem specification or
  - solution specification;
• provide practical guides towards derivation of:
  - capabilities,
  - correctness,
  - equivalence,
  - implementability,
  - performance;
• assist in standards development and specification;
• have a pedagogical utility.

WG2.3 - Programming Methodology
est. 1969, revised 1991

AIMS

To increase programmers' ability to compose programs.

SCOPES

• identification of sources of difficulties encountered in present day programming;
• the interdependence between the formulation of problems and the formulation of programs, and the mapping of relations existing in the world of problems into relations among programs and their components;
• intellectual disciplines and problem-solving techniques which can aid programmers in the composition of programs;
• the problem of achieving program reliability;
• the consequences of requirements for program adaptability;
• the problem of probability of program correctness and its influence on the structure of programs and on the process of their composition;
• guidelines for partitioning large programming tasks and defining the interfaces between the parts;
• software for mechanized assistance to program composition.

WG2.4 - Software Implementation Languages

AIMS

To promote the exchange of information between researchers and users of languages for the description of software systems at all stages of development and support. The particular focus of the group is upon the pragmatic engineering aspects of the problem: measurements, evaluation, critical comparisons, and development of economically viable techniques.

SCOPES

• experience in the actual use of systems implementation languages;
• the relation of language design to the problems of system maintenance and enhancement;
• impacts of programming methodology on system implementation languages;
• compilation techniques for system implementation languages;
• software and hardware environments to facilitate the design, construction and maintenance of large software systems;
• software portability and reusability, and their relationship to machine dependence.

WG2.5 - Numerical Software

AIMS
To improve the quality of scientific computation by promoting the development and availability of sound numerical software.

SCOPES
1. Environment. The definition from a numerical standpoint of a set of hardware and software features for a computing system.
2. Tools. The development and improvement of programming languages and other tools for numerical computation.
3. Algorithms. The establishment of guidelines for the assessment of numerical algorithms and their implementations.
4. Software. The establishment of guidelines for the preparation, interoperability, verification, validation, documentation, distribution and maintenance of numerical software.
5. Data. The establishment of guidelines for the validation, documentation, preservation, and distribution of numerical data.
6. Communication. The exchange of information concerning numerical software and the determination of the needs of computer users.

WG2.6 - Database

AIMS
For the benefit of society, to promote visibility and to increase the impact of research and development in the database area, especially in the fields defined in the scope of the working group.

• To promote quality and relevance of academic and industrial research and development in the database area.
• To promote ethical behavior and appropriate recommendations or guidelines for research related activities, e.g. submission and selection of publications, organization of conferences, allocation of grants and awards, and evaluation of professional merits and curricula.
• To promote cooperation between researchers and with other established bodies and organizations pursuing the above aims.
• To contribute to assessing the scientific merits and practical relevance of proposed approaches for data and knowledge management.

SCOPES
The notion of database has evolved to include systems that accept, describe, store and enable manipulation and presentation of data, information and knowledge in a wide spectrum of forms, ranging from tuples to rules, text, images, sounds and others, with their corresponding operators, usage and management.

The group’s interests cover formalisms, models, architectures, techniques and methodologies for the purpose of designing and realizing such database systems.
These currently include in particular:

- new models, languages and theories for database design and representation
- new architectures and techniques, e.g. data warehouses, data mining, multimedia and spatio-temporal databases
- impact of new communication technologies, such as Internet, broadband networks or wireless communications
- understanding, reuse and interoperation of existing data stores
- visual user interfaces and information visualization
- new methodologies for building database applications

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**WG2.7 - User Interface Engineering**

**AIMS**

To investigate the nature, concepts and construction of user interfaces for software systems.

**SCOPES**

- increase understanding of the development of user interfaces based on knowledge of system and user behaviour.
- provide a framework for reasoning about interactive systems;
- provide an engineering model for the development of user interfaces.

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**WG2.8 - Functional Programming**
est. 1987, revised 1991

**AIMS**

To study the design, implementation, and use of functional (applicative) languages.

**SCOPES**

- semantic theories for functional languages;
- specification and correctness for functional programs;
- data and demand driven execution models;
- programming with higher-order functions;
- functional approaches to input-output and persistent memory;
- programming systems based on functional languages;
- novel architectures for functional programming systems;
- implementation based on combinator graph reduction;
- multiple processor implementations;
- programming styles and techniques appropriate for functional languages;
- applications and experience.

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**WG2.9 - Software Requirements Engineering**
est. 1993
AIMS

The aim of the Working Group is to develop a better understanding of:

- the elicitation, specification, analysis and management of the requirements for large and complex software intensive systems;
- the interpretation and documentation of those requirements in such a way as to permit the developer to construct a system which will satisfy them.

SCOPES

The Scope of the WG includes all aspects of requirements engineering. Some examples of areas of special interest are:

- formal representation schemes and requirements modelling;
- descriptions of the requirements engineering process;
- tools and environments to support requirements engineering;
- requirements engineering methods;
- requirements analysis and validation;
- requirements elicitation, acquisition and formalisation;
- methods and tools for verification of implementations compliance with requirements;
- reuse and adaptation of requirements;
- domain modelling and analysis;
- requirements engineering for distributed, safety-critical, composite, real-time and embedded systems.

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WG2.10 - Software Architecture
est. 2000

AIMS

The purpose of WG 2.10 is to further the practice of software architecture by integrating software architecture research and practice.

Software architecture is concerned with

- the structure and organization by which components and subsystems interact to form systems, and
- the properties of a system that can best be designed and analyzed at the system level, for example end-to-end performance and system-family compatibility.

Software architecture is important because

- it captures and preserves designers' intentions about system structure, thereby providing a defense against design decay as a system ages, and
- it is the key to achieving intellectual control over the enormous complexity of a sophisticated system.

Some of the concerns of a software architect are

- early analysis of critical whole-system properties and
- preservation of the integrity of design over time in the face of system modifications and the creation of families of related systems.

SCOPES
The aspects of software architecture within the working group’s scope are:

- identifying common problems encountered by practitioners,
- investigating notations, languages, techniques, tools, and methodologies for improving the practice of software architecture; current areas for improvement are describing software architectures, supporting reuse at the architectural level, interoperability and integration, evaluating and analyzing software architectures (e.g. for fulfillment of requirements or properties, comparing design alternatives, etc.), supporting the correspondence between the architecture and the implementation, reverse-engineering the architecture of an implemented system,
- training, education, and certification of software architects.

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**WG2.11 – Program Generation**
est. 2003

**AIMS**

Generative approaches have the potential to revolutionize software development as automation and components revolutionized manufacturing.

At the same time, the abundancy of current research in this area indicates that there is a host of technical problems both at the foundational and

engineering levels. As such, the aim of this Working Group of researchers and practitioners is to promote progress in this area.

**SCOPES**

The scope of this WG includes the design, analysis, generation, and quality control of generative programs and the programs that they generate.

Specific research themes include (but are not limited to the following areas):

- Foundations: language design, semantics, type systems, formal methods, multi-stage and multi-level languages, validation and verification.
- Design: models of generative programming, domain engineering, domain analysis and design, system family and product line engineering,
- model-driven development, separation of concerns, aspect-oriented modeling, feature-oriented modeling.
- Engineering: practices in the context of program generation, such as requirements elicitation and management, software process engineering
- and management, software maintenance, software estimation and measurement
- Techniques: meta-programming, staging, templates, in-lining, macro expansion, reflection, partial evaluation, intentional programming,
- staged configuration, stepwise refinement, software reuse, adaptive compilation, runtime code generation, compilation, integration of
- domain specific languages, testing.
- Tools: open compilers, extensible programming environments, active libraries, frame processors, program transformation systems,
- program specializers, aspect weavers, and tools for domain modeling.
• Application: IT infrastructure, finance, telecom, automotive, aerospace, space applications, scientific computing, health, life sciences, manufacturing, government, systems software and middle-ware, embedded and real-time systems, generation of non-code artifacts.

WG2.12/12.4 - Web Semantics
est. 2004, revised 2005

AIMS

The aim of the WG2.12 is to obtain a deeper understanding of the semantic web, and help in the development of its theoretical foundations and technological underpinning, as well as its impact on computing in general.

SCOPES

The scope of the working-group includes:

• Study of the formal and practical knowledge representation issues of the semantic web
• Provide input into developing standards for adding semantics to the web and their enabling technologies
• Design, evaluation and use of ontologies
• Study of the semantics of agent and web interaction
• Issues related to the development, design and deployment of web services particularly the impact of semantic aspects
• Metrics for evaluation of the quality of web semantics
• Studies of human centered aspects specifically for the semantic web
• Study of the impact of semantic web computing on organizations and society
• Interoperability of data and Web Services including aspects of Trust and Security
• Content-based information and knowledge retrieval
• Metadata and knowledge markup
• Information extraction, automatic and semi-automatic generation of meta data

WG2.13 – Open Source Software
est. 2006

AIMS

To enable a diverse community of researchers and practitioners to rigorously investigate the technology, work practices, development processes, community dynamics within free, libre and open source software (OSS) systems, complementing appropriately other IFIP Working Groups where OSS is increasingly relevant.

SCOPES

Software engineering perspective

• OSS architecture, configuration and release management, environments
• Testing and assuring OSS quality and security
• Mining and analyzing OSS project repositories
• Lessons from OSS for conventional development
• OSS and standards
Studies of OSS deployment

- Case studies of OSS deployment, migration models, success and failure
- Role of OSS in the public sector (government, education, health etc) and 'secondary' (automotive, telco, medical devices etc) software sector
- OSS-compatible IT governance architectures
- Open sourcing – offshore sourcing of development
- OSS applications catalog (functionality, platforms, support providers, training needs)

Social science perspective

- Diversity and international participation in OSS projects
- Learning, knowledge sharing, collaboration, control or conflict in OSS projects
- Dynamics of OSS project communities – building and sustaining

External perspectives & influences

- Diffusion and adoption of OSS innovations
- Economic analysis of OSS – business and migration models
- OSS and alternative intellectual property regimes
- Stimulation of OSS development in vertical domains

WG2.14/6.12/8.10 – Service-Oriented Systems
est. 2011, revised 2012

AIMS and SCOPE

The new working group is proposed as a TC2, TC6, and TC8 initiative. Its goal is to organize and promote the exchange of information on fundamental as well as practical aspects of service-oriented systems. In doing so, the working group will consider service-oriented systems from a technological perspective, but it will also address their business aspects and economic impact. The aim also is to structure a research community that comprises both academia and industry (maybe through living labs) and become an active, permanent, and international forum on services-oriented systems. Besides the technological underpinnings, the working group will address the different facets of the discipline. It will also try to organize current initiatives and research, and propose suitable and sustainable future research directions.

WG2.15 – Verified Software
est. 2011

AIMS

To explore and evaluate new ideas in programming language design. Our stance is that programming languages are foremost a medium for expressing the structure and intention of software, and communicating these to other programmers. As such human factors must weigh heavily in language design decisions, requiring a well-judged balance between conflicting goals that are qualitative in nature.

WG2.16 – Programming Language Design
est. 2012

AIMS

To explore and evaluate new ideas in programming language design. Our stance is that programming languages are foremost a medium for expressing the structure and intention of software, and communicating these to other programmers. As such human factors must weigh heavily in language design decisions, requiring a well-judged balance between conflicting goals that are qualitative in nature.
SCOPES

- exploring programming paradigms and major language features, both established and novel;
- co-designing programming environments with such language features;
- articulating more clearly the problems of programming that language features are designed to address;
- identifying key design decisions that balance conflicting goals such as usability, expressivity, and the ability to provide tool support;
- combining experiences and perspectives from the full spectrum of language paradigms and communities;
- conversing at a conceptual level that practicing language designers find useful, not restricted to mathematical formalisms or empirical hypotheses;
- meta-discussion of techniques for evaluating language design decisions;
- promulgating the appreciation of design considerations among researchers, practitioners, students, and teachers.
TC 3 - Education - Aims and Scopes


AIMS

- To provide an international forum for educators to discuss research and practice in:
  - teaching informatics
  - educational uses of communication and information technologies (ICT)
- To establish models for informatics curricula, training programs, and teaching methodologies.
- To consider the relationship of informatics in other curriculum areas.
- To promote the ongoing education of ICT professionals and those in the workforce whose employment involves the use of information and communication technologies.
- To examine the impact of information and communication technologies on the whole educational environment:
  - teaching and learning
  - administration and management of the educational enterprise
  - local, national and regional policy-making and collaboration.

WG3.1 - Informatics and digital technologies in School Education

est. 2014

AIMS

- To provide an international viewpoint to the debate of informatics education in all levels of school pedagogies including research activities and best practice experience.
- To promote the acquisition and updating of appropriate knowledge and expertise by all who’s teaching environment requires contact with computer-based systems.
- To consider the nature, content and method of delivery for school education, within informatics (computer science) and digital technologies (digital humanities, media literacy), which will enable learners to become discerning digital citizens who are able to act in a complex and digitalized world.

SCOPES

- Early childhood and school education, including related informal learning contexts.
- Informatics education and digital literacy.
- The integration of digital technologies in education.
- The professional development of teachers.
- The provision of pre-service and in-service teacher education to enable educators to use and contribute to the development of digital educational resources, including professional learning networks.

WG3.3 - Research on Education Applications of Information Technologies

re-est. 1988, revised 2004

AIMS

To provide a forum to identify issues and priorities for research and to map research policies arising from the differing cultures in IFIP Member countries.
SCOPES

- Identification of research needs and topics in the field of education
- Improvement of research approaches and methods
- Production of synthesis of research on major topics in the field
- Dissemination of research, in partnership with educational research communities.

WG3.4 Professional and Vocational Education in ICT

AIMS

- WG3.4 is focused on professional and vocational education in ICT – education leading towards careers or professional development in some form of computing, rather than on specific teaching of informatics or use of computers in different subject areas in primary and junior secondary schools.
- Our goal is to promote the acquisition and updating of appropriate ICT knowledge and expertise by all whose working environment requires contact with computer-based systems.
- To consider the nature, content and method of delivery of professional and vocational education within the ICT sector, which will enable learners to achieve their employment expectations.
- To promote the effective use of ICT as a medium for the delivery of professional and vocational education.
- To foster life-long learning in ICT-related areas.
- To examine the activities of ICT professional bodies concerning the professional development and certification of their members.

SCOPES

- The integration of ICT knowledge and practice with other vocational and professional education.
- The provision of initial and on-going IT training and education for non-ICT professionals to enable them to use and contribute to the development of ICT systems.
- The use of computer–based training methods in the delivery of professional and vocational education.
- The on-going professional development and life-long learning of ICT practitioners.
- The membership of WG3.4 comprises academics (Computer Science, Information Systems, etc.) ICT Trainers and ICT Practitioners.
- Members’ interests include the use of computer-mediated education, the on-going professional education of both ICT and non-ICT professionals, the activities of national ICT professional bodies, the delivery of effective ICT vocational education to post-secondary learners and the integration of ICT into other tertiary curricula.

WG3.7 - Information Technology in Educational Management

AIMS

- To promote effective and efficient use of Information and Communication Technologies (ICT) within the management and policies, development of and planning for educational institutions;
- To promote the use of ICT, including current and emerging technologies to support school and institutional improvement and accountability;
- To promote the use and advancement of decision support systems and knowledge management within educational management;
- To investigate the potentials of mobile technologies to support managerial and administrative work for educational institutions:
To investigate human, social, and ethical aspects of ITEM systems and to provide recommendations for their adequate integration in educational settings;

To investigate aspects of security and privacy of ITEM systems and to provide recommendations for their adequate integration in educational settings;

To develop and improve qualitative and quantitative empirical methods to understand the role of digital literacy and ICT in the management of teacher and tutor education in educational organizations;

To encourage international exchanges of information and co-operation on state of the art research, development and implementation of ITEM systems;

To propose themes for international, collaborative research and development in ITEM and to seek funding for such research and development from national and international bodies;

To provide advice and support to countries, educational systems and institutions in the developmental stages of their ITEM systems.

SCOPES

- The whole range of educational institutions concerned with education, from kindergarten to higher education, adult education, professional development and training settings;
- The educational management of ICT used within lifelong, formal and informal settings;
- Local education authorities, school districts and those concerned with developing and integrating educational policies, including policy makers, advisers, parents, administrators, teachers other and education providers, and learners;
- Local, regional, national, international research and development institutions;
- Academic, government, non-profit and commercial organizations.
TC 5 - Information Technology Applications - Aims and Scopes

est. 1970, rev. 2004

AIMS

To promote research and the development of fundamental concepts, models, and theories to support applications of Information Technology.

- **Research:** To identify and study advanced issues related to the application of techniques and information technologies that automate, integrate, and optimize the processes of innovation, design, production and management, including environmental issues.

- **Communication:** To provide an international forum for government, academia, research and industry for the dissemination, publication and peer review of information, research, education and practices.

- **Collaboration:** To foster interdisciplinary work and to collaborate with other Technical Committees, Working Groups and global professional organizations with allied interests.

SCOPES

This Technical Committee provides a focus for multi-disciplinary research into the application of information technologies and practices to facilitate information management - that is, to make it easier for people to have up-to-date knowledge, to be flexible, and to adapt. Some non-exclusive examples are:

- Product Lifecycle Management
- Digital Engineering / Digital Modeling and Simulation / Digital Manufacturing
- Computer Aided Product Realization
- Integrated Manufacturing / Production Management including Data Management for Production, Process Planning and Tools
- Virtual Product Creation, Visualization and Digital Verification of Product and Process
- Environmental Information and Decision Support Systems for Environmental Monitoring, Management, Research and Policy, including Risk and Crisis Management
- Virtual collaboration supporting the interaction between product, production, supply chain management, recycling and end of life disposal

Enterprise integration to facilitate product realization.

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WG5.1 – Global Product Development for the whole life-cycle

est. 2006, revised 2009

AIMS

The aim of the WG is to understand the impact of the whole product life-cycle on product development. One of the major issues is to analyze and take into account the interaction of products with the environment which has a strategic importance for the sustainability of future economic development. The reason is that a product’s life-cycle costs (the total costs and impacts of ownership), which play a key role in the move toward product-service systems (PSS), become more and more important in the new economic environment. The objectives are to propose new approaches for product development taking account of the importance of life-cycle issues, and to develop IT systems supporting product information in a sustainable way through the product life-cycle. These approaches would include the consideration of “Green Technology,” so important for our world’s future.
SCOPES

The scope of the WG concerns all aspects of Product Development for the whole life-cycle, including rapid product development and concept validation, CAD tools for early design, collaborative product development, capture and reuse of design information, feedback from the supply chain, usage and product recycle management, etc. More specifically, the following topics are included in the scope of the WG:

- Global Product Development (global products, global teams, global processes).
- Product Life-cycle Management (PLM) (product life-cycle phases, PLM systems architecture, distributed PLM systems).
- Product Life-cycle Engineering concepts and methods (design for the life cycle, life-cycle analysis, through-life aspects – feedback from users and service, knowledge lifecycle management and long-term knowledge sustainment, product-service systems).
- New organizational issues within Product Life-cycle Engineering (collaboration strategies, business strategies and benefits, infrastructure and environment, support tools, collaboration environments and platforms, virtual and simulation environments, infrastructure and implementation processes, interoperability and security issues).
- Generic issues (value, risk and cost management, emerging standards and best practices, metrics and benchmarking, performance evaluation, educational and training approaches).

WG5.4 - Computer-Aided Innovation
est. 2005, revised 2008

AIMS

1. To contribute to identify the underlying scientific foundation of Computer Aided Innovation and also to evaluate their effectiveness and efficiency.
2. To identify the state of the art and trends of Computer Aided Innovation Software and its tools and methods by discussing organizational, technological and cognitive aspects of the application of CAI methods and tools.
3. To promote the development of Computer Aided Innovation Software focusing on end-to-end product creation process with methods and tools to ensure the feasibility and success of innovations.
4. To address the main motivations of the industrial sector, regarding the engineering innovation activity with computer tools and methods.
5. To address the main motivations of the academic community regarding theoretical foundations of computer aided innovation.

SCOPES

- The Working Group will promote regular working conferences, seminars and workshops on Computer Aided Innovation calling for contributions for clarifying the role of computer aided innovation tools.
- The Working Group will focus in connecting together managers, engineers, scientists and academics interested in pushing forward the development of this new kind of tools and methods.
- The Working Group will promote that the best papers presented at its conferences, seminars and workshops will be further developed and enhanced for being published in selected journals with high impact.

WG5.5 – COVE: Cooperation Infrastructure for Virtual Enterprises and electronic Business
est. 2001

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AIMS

To promote and encourage the research and technological development on many aspects of business practices, advanced tools and mechanisms, and forthcoming standards, in the areas of virtual organizations, virtual enterprises, and advanced electronic business models.

To contribute to the harmonization and knowledge dissemination of world-wide research results on virtual organizations and collaborative networks, and to foster needed collaborative developments.

SCOPES

- Reference architectures for virtual organizations including life cycle models
- Collaboration models in networked organizations
- Interoperability infrastructures in collaborative web-based environments
- Safe communications and authentication frameworks
- Distributed/federated information and knowledge management
- Assessment of the role of ontology and standards
- Planning and supervision of distributed business processes
- New value systems and assessment methods
- Collaboration coordination and management
- Supporting functions for the full life cycle of virtual organizations
- Novel paradigms and methods to support distributed collaborative processes.

WG5.7 Advances in Production Management Systems


AIMS

The aim of WG 5.7 is to promote and encourage the advancement of knowledge and practice in the field of Integrated Production Management and to maximize global dissemination of this knowledge.

This broad aim is achieved by:

- Continuous development and refinement of a research agenda.
- Developing a research culture that nurtures research that addresses industrial need whilst maintaining academic excellence.
- Disseminating R&D results and best practices globally to both academics and practitioners through the groups annual conference and the activities of its special interest groups.

SCOPES

- design and implementation of new production planning and control systems taking into account new technology and management philosophy;
- CAPM in a CIM environment including interfaces to CAD and CAM;
- project management and cost engineering;
- knowledge-engineering in CAPM;
- CAPM for Flexible Manufacturing Systems (FMS) and Flexible Assembly Systems (FAS);
- methods and concepts in CAPM;
- economic and social implications of CAPM.
- Supply Chain Management
- Operations and manufacturing strategy
- Enterprise Requirements Planning
- Simulation
- Business Process Management
- Performance Measurement and Benchmarking
- Knowledge Management
AIMS

The purpose of this Working Group is to progress and to disseminate research and development results in the area of Enterprise Interoperability.

The goal of this group is to bring together experts of multiple disciplines that contribute to this field.

The result of this research is to enable enterprises (networked enterprise, extended enterprise, administration, virtual organizations) or organizational units, applications to interoperate seamlessly with each other either inside and enterprise or among independent enterprises.

Specifically, the goals of the WG are:

**G1**: to identify the scientific foundation of enterprise interoperability and promote its acceptance by the scientific community and all stakeholders;

**G2**: to identify and to classify the key problems of interoperability to contribute to the elaboration of roadmaps through identifying new research challenges and to facilitate the creation of research projects;

**G3**: to identify practical tools, methods, architectures and solutions and promote their usage;

**G4**: to promote the activities and to disseminate the vision of the WG through organizing conferences, workshops and other related activities;

**G5**: to promote education and to promote the development of the discipline interoperability;

**G6**: to contribute to the standardization.

SCOPES

Activities

**Activity 1: to define and characterize “Enterprise Interoperability”**

1.1 describe/define enterprise interoperability
1.2 define glossary of terms used in enterprise interoperability
1.3 Review periodically

**Activity 2: to identify and characterize key interoperability problems and research issues, deriving them from case studies and practical solution tools and architectures**

2.1 to analyze existing project results to identify key interoperability problems, Kai Mertins
2.2 to collect industrial experience scenarios (use cases) using the defined template
2.3 to collect and classify practical tools, methods, architectures and solutions to be used in the framework

**Activity 3: to contribute to the scientific foundation of Enterprise Interoperability**

3.1 Use a defined framework for classification of the issues
3.2 to create, maintain and use a conceptual structure of enterprise interoperability issues
3.3 to classify previous research results using the framework to identify open research problems
3.4 to use the template to structure the key interoperability problems
3.5 to identify new theoretical contribution to enterprise interoperability area by other research disciplines
3.6 to develop metrics and maturity model for enterprise interoperability

**Activity 4: Provide a roadmap for Enterprise Interoperability**
4.1 to identify and analyze the existing roadmaps and other strategic programs on the field of enterprise interoperability
4.2 to provide recommendations on the definition of a new roadmap based on the results of the analysis and the outcome of activities related to goal 1. The roadmap should identify barriers, opportunities and challenges related to the field of enterprise interoperability and a time plan to address topics related to these challenges
4.3 to facilitate the creation of research projects

**Activity 5: to identify subjects for standardization and the standardization bodies that (could) cover these subjects**

5.1 to propose certain subjects for the standardization to standardization bodies and offer support

**Activity 6: Education**

6.1 to identify and collect existing courses at Bachelor and Master level, Academic and professional
6.2 to define reference curricula for enterprise interoperability education
6.3 organize and sponsor summer schools for master and doctoral students and for professionals

**Activity 7: Dissemination of the results of the WG**

7.1 to publish and disseminate all the results of our activities in order to promote the work performed,
7.2 to organize and sponsor conferences, workshops and seminars in the field of enterprise interoperability
7.3 Dissemination of definition and terms

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**WG5.10 - Computer Graphics and Virtual Worlds**
est. 1987, revised 1994, 2012

**AIMS**

To promote and encourage the advancement of the field of computer graphics, visualization, and virtual reality in science and technology.
To organize and coordinate the International Conference on Cyberworlds as the workgroup's annual conference.

**SCOPES**

Computer graphics and web visualization; Geometric and Solid modeling; Computer Animation; Real-time rendering;
Virtual humans and avatars; Shared virtual worlds; Virtual collaborative spaces; Telepresence; Haptic rendering and haptic interaction;
Simulation and training in virtual environments; Augmented and mixed reality; Computer games; Multi-user internet games; Art and heritage in cyberspace;
Cyber-museums; Cyberworlds and their impact on the real worlds; Information visualization; Visual analytics;
Interactive techniques; Applications.

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**WG5.11 - Computers and Environment**

**AIMS**

The goal of the WG is to foster the improved application of Information Technology in environmental research, monitoring, assessment, management and policy.

**SCOPES**

The WG tries to achieve this goal by:
establishing a platform/forum amongst and between ICT and environmental professionals,
performing knowledge-centric conferences worldwide to exchange information about state-of-the-art technology and prepare the ground for future,
providing expert advice to government, multinational organisations and industry,
providing strategy and policy makers with intuitive ICT concepts and solutions

WG5.12 - Architectures for Enterprise Integration
est.1995, revised 2008

AIMS

- To foster research into enterprise architecture, and in particular enterprise architecture frameworks, enterprise engineering methodologies, enterprise modeling and generic enterprise models/ontologies;
- To identify theoretically sound and practically viable techniques for the process of change toward the integrated enterprise.
- The multi-disciplinary perspective of this working group requires the synthesis of relevant results from other disciplines, such as Manufacturing Engineering and Management, Industrial Engineering, Management Science, Information Systems and Systems Engineering as well as can build on results from the Software Engineering discipline.
- Active involvement and liaison with relevant standardisation bodies, such as
  - ISO TC184 Industrial Automation Systems and Integration SC5 WG1 on Modeling and Architecture
  - ISO/IEC JTC1/SC7 Software and Systems Engineering WG42 on Architecture

SCOPES

The scope of this working group is intended to foster information exchange and evaluation of Enterprise Architecture Frameworks and associated

Enterprise modeling tools and languages (language specifications, ontological theories, computer-aided enterprise engineering tools);

Enterprise engineering methodologies and meta-methodologies;

Generic building blocks and reference models applicable to EA, such as intra- and inter-enterprise integration, agent-based integration, information integration infrastructure, organisational models, self-similar structures, and reusable industry-specific models.

In particular the WG is mainly involved in the following types of activities:

- Scholarly evaluation of enterprise architecture frameworks that capture the life-cycle of the enterprise and its constituent entities. This aspect of the WG activity is addressed through the active liaison and co-sponsorship activities with other relevant Working Group and Technical Committees of IFIP, and other organisations conducting research and development in this area, such as IFAC, and the continued organisation of the ICEIMT conference series.
- Evaluation of the physical and functional architectures of information systems, industrial production – or service systems, as well as EA program architectures (such as Information-, Process-, Applications- and Technical Architecture, as well as models of the Organisation) for complete enterprise live-cycle development and management. This aspect of the WG activity is mainly addressed through liaison and participation in relevant standard bodies.

WG5.13 – Bioinformatics and its Applications
est. 2010, revised 2015

AIMS
1. To understand and identify the challenges of Bioinformatics, and its Applications for development of skills, softwares, tools, databases and solving real life problems related to health, food, energy, environment and agriculture etc.

2. Develop theoretical and technological foundations for meeting the challenges of bioinformatics and its applications

3. Global integration of biological data and knowledge resources for meeting the challenges of bioinformatics

4. Create & promote Inter disciplinary teams/groups for developing new educational training programs, technology dissemination, research and development with focus on bioinformatics

SCOPES

- WG will serve as platform to create expertise and pool of scientists in various areas of bioinformatics from institutions all over the world to understand the new challenges and opportunities.
- Encourage sharing of knowledge and resources like biotech infrastructure, grid computing infrastructure, databases, softwares and other electronic resources
- To develop and enhance excellence through new educational training programs in various areas of bioinformatics
- It will serve as forum with central focus to improve understanding and R & D on various aspects of bioinformatics
- To provide a forum for dissemination of Scientific and technological knowledge in the field of bioinformatics by organizing seminars, conferences, need based faculty training programs
- To provide support for research & development and establish linkages with biotech, pharmaceutical and IT industry
- Provide a platform for interaction among scientists from various disciplines like IT, computer science, mathematics, life sciences, agricultural sciences and medical sciences for research and development of biological databases, bioinformatics softwares, integration of resources and applications in areas of health, energy, food, environment and agriculture

WG5.14 - Advanced Information Processing for Agriculture

AIMS

The IFIP Work Group on Advanced Information Processing for Agriculture (AIPA) encourages the scientific and technological development of IT enhanced agriculture. The specific aims are:

- to promote the use of knowledge sources and methods offered by computer and computing science in the agriculture.
- to identify subjects and priorities, stimulating fundamental research for challenging future developments of the agriculture and of the related food industrial, energetic and environmental activities.
- to disseminate the experiences of farmers, managers and researchers about the profitable technologies and policies in agriculture.
- to provide business opportunities by communicating with stakeholders, including agriculture researchers, IT professionals, consultants and government officials.
- to support exchange of knowledge, strategies and experiences between stakeholders.
- to promote and encourage interactions among agriculture scientists, meteorologists, biologists with IT professionals and other collaborators to develop implement methods, techniques, tools, as well as information and knowledge management systems enhancing agricultural technology.
- to organize a global advisory group of R&D experts for using IT methods and tools in the agriculture.
- to develop and enhance excellence through new educational training programs and technology dissemination among faculty members, professionals and students.
to establish and strengthen the link between academia, R&D companies, development agencies, governmental organizations, etc. for knowledge based resource utilization.

to support teaching and learning process and to develop a platform for the knowledge transfer in agriculture and the related fields between professionals, faculties, students and organizations.

to serve as the platform for IT based dissemination of scientific and technological knowledge in the field of agricultural advisory systems.

to organize workshops, conferences, symposia and seminars in the various areas of IT applications in agriculture.

SCOPES

The AIPA Work Group will serve as platform to organize a global advisory group of R&D experts for using IT methods and tools in the agriculture in various areas of agricultural and related sciences from institutions all over the world. This information will be provided for online use by various user communities.

to develop and enhance excellence through new educational training programs in various areas of crop/soil modeling & other IT applications which can be delivered to agricultural institutions and individuals across the world through standalone and hosted programs.

It will serve as a platform to provide information and other resources of professionals, faculty and students for the promotion of agriculture oriented bioinformatics activities

to provide a forum for developing teaching and learning processes in different disciplines with the central focus to improve the IT understanding and R&D on various aspect of agricultural and related sciences.

to provide a forum for dissemination of scientific and technological knowledge in the field of agricultural and related sciences by organizing seminars/conferences and developing databases, web sites, etc.

Organize various, need based faculty training programs in various areas of agricultural and related sciences.

Provide a platform for interaction among scientists from various disciplines like IT, computer science, mathematics, life sciences, agricultural sciences, and meteorological sciences for the development of agricultural solutions.

Promote and encourage the collaborations among scientists to create inter disciplinary groups for research and development of agricultural databases, bioinformatics software and application in areas of weather, pest/disease and agriculture.

Encourage sharing of knowledge and resources like agro-meteorological infrastructure, data communication, grid computing, open (source) software and other electronic resources.
TC 6 - Communication Systems - Aims and Scopes

est. 1971, revised 1987 and 1991

AIMS

- to promote the international exchange of information related to communication systems;
- to bridge gaps existing between users, telecommunication operators, service providers and computer and equipment manufacturers;
- to establish working contacts with international bodies concerned with data communication, such as ITU, ETSI, ISO, IEEE, IETF, ITC and ATM Forum.

SCOPES

The Scope of its work includes all aspects of communication systems, such as research on and design, manufacture and operation of products, systems, concepts and architectures related to information exchange. Some examples of areas of special interest are:

- Work fostering the development of standards;
- Formal protocol specification and verification techniques;
- National and international communication networks;
- Local and wide area communication networks;
- Integrated services digital networks;
- Network management;
- Distributed computing and information interchange between databases within a network of computers;
- Communication systems in the office and manufacturing area;
- Communications tools and communication services;
- Promotion of existing and innovative communication concepts both in developing countries and in developed countries;
- Teleservice architectures;
- Multimedia communications;
- New applications of communication systems, e.g. electronic commerce.

WG6.1 - Architecture and Protocols for Distributed Systems


AIMS

- To identify and study questions associated with the development of distributed systems and the communications and middleware protocols that support distributed applications.
- To support convergence of information processing systems, communication and networking technologies into a distributed infrastructure that is open for application to all members of the global society.
- To investigate rigorous methods applicable to the specification, verification, implementation and testing of distributed systems and applications.
- To support and promote the systematic use of these methods, and make them amenable to the practitioners, hence increasing awareness of formal methods in the distributed networking and computer networking areas at large.
- To bring together researchers, developers, and practitioners working in these areas to discuss recent innovative results and future directions by promoting and supporting the organization of meetings, workshops and conferences.
- To disseminate information and publications, foster an active participation of industry and encourage the transfer of knowledge between academia and industry.
- To encourage young researchers to enter this field.

SCOPES
This WG provides a framework for the launching and the continued organization of activities in areas that include:

- **Formal Description Techniques**: including rigorous models, methods and tools applicable to the design, specification, validation, verification, implementation, easy prototyping, efficiency evaluation, and testing of communicating systems and object-based distributed systems.
- **Open Distributed Systems**: including the design, implementation, deployment and evaluation of distributed systems platforms and architectures for networked environments and distributed applications.
- **Quality of Service**: including architectures, services, multimedia, operating systems and middleware in a networked or distributed environment.

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**WG6.2 – Network and Internetwork Architectures**  
est. 1994, revised 2001, 2009

**AIMS**

To identify and study advanced issues related to networking and internetworking design, with main emphasis on the provision of services at the network layer, on the integration of present and future technologies for physical and data link layers, and on techniques for providing network-wide internetwork services.

**SCOPES**

This WG provides a framework for the launching and the continued organization of activities in the area of Network and Internetwork architectures, namely:

- **Network Architectures**: including architectures for the Future Internet, architectures of local area networks, wide area networks, access networks, mobile IP networks, internetworking.
- **Network Protocols**: including transport and network layer protocols, and protocols for Internet evolution.
- **Network control and Quality of Service**: including traffic engineering and control, signalling, network quality of service.
- **Network Components Design**: including switch and router design, techniques for the transport of packetized voice and video.
- **Parallel processing of network protocols**: including multi-core architectures for network elements.
- **Overlay Services and Systems**: including Peer-to-Peer communication services and virtualisation.
- **Network resilience**: robust and survivable networks.
- **Network measurements**: traffic monitoring and analysis.
- **Network Science**: including models, tools and techniques to design and analyze complex networks.
- **Energy-efficient network protocols and architectures**: including network core nodes and cloud computing aspects.
- **Network protocols and transport protocols for Delay-tolerant networks and space internetworks**.

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**WG6.3 - Performance of Communication Systems**  
est. 1994, revised 2001, 2010

**AIMS**

WG 6.3 is aimed at promoting the use of the performance evaluation techniques for studying and optimizing existing and future communication systems.

**SCOPES**

The WG organizes and promotes activities related to modeling, analysis, simulation and measurement of computer communication systems, with a special attention to studying and optimizing the performance of:
WG6.6 - Management of Networks and Distributed Systems

AIMS

To facilitate cooperation between different organizations and individuals internationally in the areas of distributed operations and management, integrated network management, systems management, and service engineering. To be an effective conduit in the technology transfer between the academic and research communities, industry and the standard bodies.

SCOPES

Our planet is increasingly being networked using a variety of media, a variety of protocols and a variety of services. On the other hand, computers are becoming increasingly pervasive in a variety of forms and architectures ranging from large scale high performance systems to micro computers in any type of appliances, cars, etc. The scope of WG 6.6 is Operations and Management paradigms and technologies for these novel and complex systems and networks continuously evolving over different levels of abstraction such as element, network, service, and business level. The Operations and Management encompass different function areas such as configuration, fault, accounting, performance and security. This includes new technologies such as autonomic computing, distributed and policy based management as well as already established management protocols and information models. The scope of the working group encompass the operation and management of existing networked systems including enterprise networks and multi-provider networks as well as emerging ad-hoc and sensor networks, Grids, peer to peer networks and interplanetary networks.

WG6.7 - Smart Networks

AIMS

To identify and study current issues related to the state-of-the-art and the development of intelligent capabilities in networks. These issues include the distribution, the management, the control of every kind of algorithms inside the network. These intelligent capabilities lead to the concept of autonomic networking. Consequently to identify future trends of the network performance from industrial as well as the academic point of view.

SCOPES

Smart Networks is concentrated on research on tools and services able to be placed on top of network algorithms in order to adapt them. The concept of smart networks was developed as a step to give the network a way to adapt itself to changes within the environment and following network conditions. New emerging research
and technologies include autonomic networking, Intelligent Agents, knowledge plane, situated view, Configurable Architectures for Software and Hardware, Dependable Reconfigurable Networks, Mobility Management, QoS Management, Security Management, Flow Control, Mobility and Network Integration Issues.

WG6.8 - Mobile and Wireless Communications

AIMS

To organise and promote the exchange of information on wireless communication systems and networks, fixed and mobile, terrestrial and space, local and global. To help in the research, development, design, standardisation and applications for mobile and wireless modules, equipment and systems. To examine technical operational capabilities of the future mobile and wireless networks for voice, data, text and image communications. The results of the work will be made available to individuals as well as organisations concerned, such as manufacturers, operators, common carriers, standardisation bodies, users.

SCOPES

The scope of the Working Group includes:

- Wireless LANs.
- Wireless Sensor Networks.
- Wireless Actor Networks.
- Mobile computing.
- Cellular networks.
- Ad-hoc networks.
- Mobile and wireless personal communications.
- Short range communications and applications.
- Digital microwave systems and networks.
- Digital radio and TV broadcasting.
- Satellite networks.

All topics should be examined from the viewpoint of architecture and protocols, modulation, coding and decoding, methods of communication functions (multiple access, error control, flow control, routing, etc.), security, implementation, user aspects, legal, economic, social and human related issues.

WG6.9 - Communication Systems for Developing Countries
est. 2002

AIMS

To identify and study technical problems related to the access to, understanding of and application of network and telecommunications technology in developing countries or regions. To encourage cross-fertilisation of concepts and techniques among developing countries, and between developing countries and developed countries. To promote activities oriented to the diffusion of the methods and techniques for accessing computer networks in developing countries or regions.

SCOPES

The areas of study include models and methods for transfer of concepts and methods in communication systems and establishment of new applications in developing regions for existing technologies. The requirements of the users of those regions include cost-effective technologies for global access, rural
access to services and social development in those regions through appropriate applications of communication systems.

The problems of human resources, sharing of experience and cost of technology are particularly acute, and are to be examined in detail.

Although not limited to, the following items are of particular significance in the scope of the Working Group:

- Satellite systems
- Applications for cellular technology
- Alternative network technologies
- Technologies for distance learning, e-business, tele-meeting and any other reducing the distance effect between partners
- Global access and interconnectivity technologies
- Internet services.

**WG6.10 - Photonic Networking**

**MOTIVATION**

Photonic Communication networks hold the promise of solving several problems in the current generation of networks, among them restricted transmission capacity and limited performance capability.

**AIMS**

To strengthen research on photonic networks, to explore the potentials of photonic networks and to accelerate their early development. Additionally, the Working Group provides a platform for presenting and discussing research activities, major achievements and trends involving the all-optical communication networks.

**SCOPES**

The Working Group scope includes:

- Architectures, system design, control mechanisms and applications that exploit the abundant transmission capacity and flexibility of photonics.
- Development of analytical and simulation tools as well as methods for analysing, operating, dimensioning, and planning photonic networks.

**WG6.11 – Communication aspects of the e-World**
est. 2000, revised 2001, 2010

**AIMS**

To organise and promote the exchange of information on communication protocols and information exchange mechanisms for Electronic Commerce. To foster research, development, standardisation, and applications for communication platforms and services for pre-sales support, sales and service management, settlement, and virtual enterprises in an open trading environment.

**SCOPES**

The scope of the work encompasses all aspects of communication and information exchange in Electronic Commerce, including:

- Navigation, brokerage, advertising, and catalogue exchange in pre-sales activities.
Negotiation and contract making protocols in interactions between consumers, businesses, and public administration.
Secure exchange of documents, content and value in open trading protocols.
Communication platforms for the e-Economy, including e-commerce, e-business and e-government.
Application of mobile agent technology.
Advanced devices and protocols for the support of mobility and the ubiquitous access to electronic markets.

WG6.12 – (joint with WG2.14/8.10, see TC2)
est. 2011, revised 2012
**TC 7 - System Modeling and Optimization - Aims and Scopes**
est. 1972

**AIMS**

- to provide an international clearing house for computational (as well as related theoretical) aspects of optimization problems in diverse areas and to share computing experience gained on specific applications;
- to promote the development of necessary high-level theory to meet the needs of complex optimization problems and establish appropriate cooperation with the International Mathematics Union and similar organisations;
- to foster interdisciplinary activity on optimization problems spanning the various areas such as Economics (including Business Administration and Management), Biomedicine, Meteorology, etc., in cooperation with associated international bodies.

**SCOPES**

Computational aspects of optimization problems arising in such areas as Aerospace, Biomedicine, Economics, Meteorology, and Public Services (Health, Environment, Police, Fire, Transportation, etc.).

Some specific examples are:

- on-line and off-line computational techniques in modelling and control of dynamic systems;
- trajectory analysis and computation;
- optimization of decentralized systems (macro-economic systems) and systems with multicriteria;
- optimization of resource allocation in urban systems;
- optimization of pollution-control systems;
- optimization of man-machine systems;
- optimization of power systems operation.

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**WG7.1 - Modeling and Simulation**
est. 1972

**AIMS**

To foster cooperation and information interchange among those engaged in the simulation of large and complex systems including specialists in:

- Modelling and Identification Methodology;
- Simulation Methodology;
- Computer Simulation Languages;
- Interactive On-Line Computation;
- Hybrid Computation.

**SCOPES**

The work will include three major classes of problems:

- Environmental Systems
- Biological Systems
- Societal Systems

using various approaches such as:
new simulation languages for digital simulation;
new computer graphics techniques;
application of pattern recognition and feature extraction methods;
new mathematical techniques (e.g. finite elements);
new data base organisations and simulations of data bases.

WG7.2 - Computational Techniques in Distributed Systems
est. 1973

AIMS
To foster the international exchange of ideas and experience in the area of Computational Techniques with
particular emphasis on distributed systems arising in diverse disciplines such as Mechanics, Economics,
Biomedical Engineering, Geophysics, etc.

SCOPES
Computational Techniques for Identification and Optimal Control of Systems Modelled by Partial Differential
Equations;
Computational Techniques for Structural Problems, Elasticity, Plasticity, etc., including various approaches such
as: Finite Element Approximation Techniques, Decomposition Techniques, Interactive and Graphic Computer
Techniques.

WG7.3 - Computer Systems Modeling
est. 1973

AIMS
The work of the Group is directed toward improving the art of analyzing and optimizing performance and costs of
data processing systems through the use of analytical models.

SCOPES
- optimized allocation of resources (such as memory, telecommunication lines, computer power, and
  points of concentration and switching), in distributed information processing systems;
- analyses of throughput and response time;
- analyses of reliability in the presence of failures of hardware, software or telecommunications;
- analyses of CPU main memory and I/O channel scheduling and allocating procedures;
- analyses of storage systems including memory hierarchies and geographically distributed data bases;
- comparison with simulations and with performance indices measured experimentally.

WG7.4 - Inverse Problems and Imaging
est. 2014

AIMS
To foster cooperation between experts in the fields of inverse problems and imaging on the development of
reliable and efficient reconstruction methodologies and the convergence analysis of algorithms. To also stimulate
exchange with other working groups in TC7, e.g., on optimization and control methods, modelling with differential
equations, and stochastic aspects.
SCOPES

A core topic of common interest of this working group is variational methods for solving inverse and imaging problems. The members of the working group additionally contribute to the technical committee their specific expertise on aspects related to these areas of, e.g., mathematical modelling, optimization techniques, partial differential equations, harmonic analysis, regularization techniques, parameter identification, recovery of interfaces, and stochastic noise modelling.

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WG7.5 - Reliability and Optimization of Structural Systems
est. 1986

AIMS and SCOPES

Promote modern structural system reliability and optimization theory;

- Advance international cooperation in the field of structural system reliability and optimization theory;
- Stimulate research, development and application of structural system reliability and optimization theory;
- Disseminate and exchange the information on reliability and optimization of structural systems;
- Encourage education in structural system reliability and optimization theory.

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WG7.6 - Optimization-Based Computer Aided Modeling and Design
est. 1989, revised 1999

AIMS

The Working Group 7.6 considers high-performance computer-aided systems to support modelling, decision analysis, optimization and multi-criteria decision making.

The Working Group is focused on

- Policy and Management (Application Focus)
- Optimization, Multi-Criteria Decision Analysis and Simulation (Methodological Focus)
- Design, Planning and Scheduling (Problem Type Focus)
- Modelling and Implementation of Intelligent Systems (Information Technology Focus)

SCOPES

Any methodological approach or combination of solution techniques, which solves real world problems successfully. Thus, the following problem types are examples of application areas in policy and management the WG will deal with:

- Network Design (Communication, Transportation, Traffic)
- Planning and Scheduling in Transportation Logistics
- Production Planning and Scheduling
- Environmental. Planning Problems
AIMS

To foster international cooperation among experts in stochastic optimization, and to spread information about the achievements of the field into areas of possible applications.

SCOPES

Subject of this WG are all problems involving in an essential way stochastic components (variables or processes) and the task of optimizing functions. In particular this includes:

- Theoretical investigation of stochastic optimization models;
- Design, development and analysis of solution methods;
- Modelling practical problems by stochastic optimization problems, e.g. in agriculture, industrial production, finance, power systems, water reservoir management, and implementing stochastic optimization models into decision support systems.
TC 8 - Information Systems - Aims and Scopes

est. 1966, revised 1990

AIMS

To promote and encourage interactions among professionals from practice and research and advancement of investigation of concepts, methods, techniques, tools, and issues related to information systems in organisations.

SCOPES

The planning, analysis, design, construction, modification, implementation, utilization, evaluation, and management of information systems that use information technology to support and coordinate organisational activities including:

- effective utilization of information technologies in organisational context;
- interdependencies of information technologies and organisational structure, relationships and interaction;
- evaluation and management of information systems;
- analysis, design, construction, modification and implementation of computer-based information systems for organisations;
- management of knowledge, information, and data in organisations;
- information systems applications in organisations such as transaction processing, routine data processing, decision support, office support, computer-integrated manufacturing, expert support, executive support and support for strategic advantage plus the coordination and interaction of such applications;
- relevant research and practice from associated fields such as computer science, operations management, economics, organisation theory, cognitive science, knowledge engineering, and systems theory.

WG8.1 - Design and Evaluation of Information Systems

est. 1976, revised 1990 and 1992

AIMS

The planning, analysis, design and evaluation of information systems for organisations.

SCOPES

- Identify concepts and develop theories relevant to the planning, analysis, design and evaluation of information systems;
- Develop languages, techniques, tools and methods for applying these concepts and theories to the:
  - planning
  - requirements analysis and determination, and specification
  - design
  - evolution of information systems, and their verification, validation and overall evaluation;
- Develop methodologies for the analysis, evaluation and selection of information systems development methods;
- Take cognizance of relevant work from associated fields - such as computer science, software engineering, knowledge engineering, cognitive science, management science, organisation theory and systems theory - and apply the findings to the development of information systems.
WG8.2 - The Interaction of Information Systems and the Organization
est. 1977, rev. 2005

AIMS

- To develop integrative frameworks that facilitate recognition and transfer or relevant knowledge about the role and uses of IT. Such frameworks can be based on a wide range of disciplines. These frameworks should be open to all research traditions and lines of research which further the study of the uses of IT in organizational contexts, and can also include the critical questioning of their relevance for the scope and aims of WG 8.2.
- To build theories and generate evidence about the role and impact of IT in specific organizational contexts.
- To improve the ways and means by which organizations design, implement and maintain IT.
- To nurture a critical discourse about the role which IT plays in the lives of people as individuals and as members of complex social institutions such as government, community, business, professional societies and other forms of social associations.
- To engage in ethical discourse about the practices and dilemmas which arise in the development, use and consequences of IT, or in research about such technology.

SCOPES

Working Group 8.2 is concerned with the generation and dissemination of descriptive and normative knowledge about the development and use of information technologies in organizational contexts, both broadly defined. By information technology (IT), we mean technologies that can be used to store, transfer, process or represent information. By organizational context, we mean the institutional arrangements in which information is used or created. Descriptively, the WG seeks to generate and disseminate knowledge about and improve understand of the role and impact of information technology across a range of social levels (society, organization, individual) and across a diversity of spheres (marketplace, workplace, home, community). Normatively, it seeks to improve the design and application of information technologies that are both useful and effective for individuals, groups, organizations and society at large.

WG8.3 - Decision Support
est. 1981

AIMS

The development of approaches for applying information systems technology to increase the effectiveness of decision-makers in situations where the computer system can support and enhance human judgements in the performance of tasks that have elements which cannot be specified in advance.

SCOPES

To improve ways of synthesizing and applying relevant work from resource disciplines to practical implementations of systems that enhance decision support capability;

The resource disciplines include

- information technology
- artificial intelligence
- cognitive psychology
- decision theory
- organisational theory
- operations research and modeling.
WG8.4 - E-Business Information Systems: Multi-disciplinary research and practice

AIMS

To promote collaboration across disciplines in E-Business research and practice.

SCOPES

This working group provides a reference point and a focus for multi-disciplinary research and practice in E-Business. The intention is to extend the community’s focus on E-Business to recognize, acknowledge and facilitate research and practice as it crosses the boundaries of IS, organizational, consumer, community, industry and national domains.

Where researchers and practitioners focus on specific issues and technologies, eg smart-card developments, mobile technologies or organizational adoption of IT practices then that research is more properly located within existing working groups. Where that work is cross or multi-disciplinary it can be located here.

WG8.5 Information Systems in Public Administration
est. 1988

AIMS

To improve the quality of information systems in public administration at international, national, regional and local levels. The Working Group's special emphasis is on the relationship between central and local use of information systems and the provision of citizen services, together with the accomplishment of social goals.

SCOPES

- analyse information processing policies in public administration;
- discuss specific applications of information systems in public administration;
- analyse the impacts of information systems on public administration;
- apply the results of other IFIP Working Groups, and specifically of TC 8 Working Groups, to public administration.

WG8.6 - Transfer and Diffusion of Information Technology
est. 1994

AIMS

To foster understanding and improve research in practice, methods, and techniques in the transfer and diffusion of information technology within systems that are developed and in the develop-ment process.

SCOPES

- Diffusion, transfer, and implementation of both mature and immature information technologies and systems in organizations and among organizations, sectors, and countries.
- Transfer of technology to be incorporated in systems for customers and clients.
- Transfer of both system and development technologies to technologists, developers, managers, and sponsors of systems.
- Development of frameworks, models, and terminology for information technology transfer and diffusion.
- Identification of risk factors and barriers to success in technology transfer and strategies for addressing them.
Conditions or scenarios under which specific transfer and diffusion techniques are applicable.
Methods to evaluate the efficiency, effectiveness, and value of technology transfer programs and approaches, including time and effort estimators and metrics.
Organization design and process issues related to technology transfer and diffusion.
Case studies of technology transfer and diffusion to provide instances to guide research, development, and practice.
Standards and intellectual property issues that inhibit or facilitate information technology transfer.

WG8.8 - Smart Cards
est. 1998, rev. 2001

AIMS

Smart cards are to be understood as personal, portable, flexible, secure tokens that form an integral part of a larger information infrastructure. Therefore the aims of WG 8.8 are:

- to encourage interaction between the numerous actors in the smart card area.
- to create a common and coherent approach of a specific methodology.
- to address the background technologies of component architectures; for example dedicated chips, security devices, memory management.
- to specify and design smart card operating systems.
- to identify and develop relationship between different themes of information systems and smart cards, for example promote the theme of smart cards as a widely distributed data base.
- to identify interfaces between smart cards as an active components of distributed systems and networks.
- to promote a global security analysis of information systems using smart cards.
- to investigate the field of applications of smart cards and propose a scheme for a design methodology.
- to create new models for information systems which use smart cards.
- to participate to advanced standardization discussions and propositions.

SCOPES

The study of smart cards as an innovative component of widely distributed systems. The scope includes all the aspects of smart cards design and applications:

- Technology with hardware, software and security specific requirements.
- Application design with a special emphasis on development methodology of distributed systems.
- Service providing including analysis of transactions, protocols and more generally speaking, the process of a top down design of smart cards projects.
- The interaction of smart card related technology with society, economics, public services and organizations.

WG8.9- Enterprise Information Systems
est. 2006, revised 2016

AIMS

- Provide a forum for international collaboration and dissemination of research and best practices in the enterprise information systems (EIS) area
- Establish close cooperation between academics and practitioners in the area of EIS
- Increase the impact of research and use development in the area of EIS
Study and share the results of methodologies, design, implementation and use of EIS and increase the efficiency of innovation

SCOPES

- Concepts, theories, techniques, and implementation relevant to enterprise information systems
- Management of Enterprise Information Systems
- Utilization of Enterprise Information Systems solutions in small and medium size enterprises, in the public sector and also in the supply chain environment
- Identification and sharing of best practices encountered in the use of present day EIS
- Integration of enterprise wide applications

WG8.10 – (joint with WG2.14/6.12, see TC2)
est. 2011, revised 2012

WG8.11/11.13 – Information Systems Security Research
est. 2010, revised 2013

AIMS

The aim of the working group is the creation, dissemination, and preservation of well-formed research about information systems security. While relevant for advanced practical development, our primary audience consists of researchers in this area. We value research products with highly reliable and validated theory, empirical data, or quantitative/qualitative social scientific methodology.

SCOPES

Anchoring to information systems means our research will attend and extend the social, organizational, and managerial literature in this area. While we assume an effective foundation in information security technology, we regard information systems risks broadly, for example crime, employee misconduct, warfare, terrorism, error, accident, natural events, etc. We also address information systems security broadly, for example, privacy, awareness, policies, strategy, audit, planning and control.
TC 9 – ICT and Society - Aims and Scopes

est. 1976, revised 2008, 2009

AIMS

The TC9 aims:

- To develop understanding of how ICT innovation is associated with change in society;
- To influence the shaping of socially responsible and ethical policies and professional practices.

SCOPES

The TC9 fosters multidisciplinary discourse into:

- The role of ICT in the change of particular domains of human activity, including work; the home and private life; governance.
- Ethical, political, economic and cultural dimensions of ICT innovation.
- Issues stemming from ICT innovation, such as gender, the phenomenon of virtuality, sustainable development.

WG9.1 - Computers and Work

est. 1977

AIMS

- to study and report on how computers have affected employment levels, job content and structure, working conditions, career patterns, and participation problems;
- to give an account of problems relating to computers and work, and of proposed measures for dealing with these problems;
- to encourage and support the design and development of systems which promote not only efficiency but provide job satisfaction, for example through interesting work and reduction of stress.

SCOPES

The effects of computerization on the lives of three distinct groups of person:

- computer professionals,
- users of computers,
- non-users affected by computers.

WG9.2 - Social Accountability

est. 1977, revised 2009

AIMS

- To provide an international forum for assessing the social consequences of ubiquitous Information and Communication Technologies (ICT) and its applications
- To promote the safe and socially beneficial development and use of ICT
To encourage a human-centred and inclusive approach in the design and implementation of ICT, together with responsible long-range planning.

To foster academic discussion on the use of ICT in its capacity to enhance the quality of life.

**SCOPES**

Those aspects of ICT development and implementation that impact on society in general and which affect the public interest in particular, such as:

- Privacy and confidentiality
- Inclusion, access for all, and choice
- Equality in system relationships
- User and IT professional education and awareness
- Social consequences of future technologies
- Ethical, legal and regulatory issues

**WG9.3 - Home-Oriented Informatics and Telematics**

*est. 1988, revised 1989*

**AIMS**

- Foster benevolent design, development, implementation, applications and use of Home-Oriented Informatics and Telematics (HOIT).
- Encourage surveys and studies on HOIT.
- Develop methodologies for studying social implications of HOIT.
- Establish a global platform for interaction, exchange, joint initiatives and co-operation between such groups as:
  - the end of users of HOIT: members of households
  - industrial developers and designers of HOIT technology and related services
  - implementation designers
  - policy, decision making, social and consultative bodies
  - architects and urban planners
  - scientists.

**SCOPES**

The social implications of informatics, communications and telematics in the home, the family and its environment (HOIT); including:

- actual and potential human usefulness of HOIT;
- social impact of these technologies and their applications;
- developments of the underlying infrastructure;
- rationale in innovation and design processes;
- dynamics of technology development.

WG 9.3 explicitly cares about the position of and the potentials for vulnerable groups like children, less-educated, disabled, elderly and non-employed people, paid and non-paid workers at home, cultural minorities, unaware users and others.
WG9.4 - Social Implications of Computers in Developing Countries
est. 1989, revised 2007

AIMS

- to collect, exchange and disseminate experiences of information and communications technology (ICT) implementation in developing countries;
- to develop a consciousness amongst professionals, policy makers and public on social implications of ICT in developing nations;
- to develop criteria, theory, methods, and guidelines for design and implementation of culturally adapted information systems;
- to create a greater interest in professionals from industrialized countries to focus on issues of special relevance to developing countries through joint activities with other Technical Committees.

SCOPES

- national ICT policy issues;
- culturally adapted computer technology and information systems;
- role of transnational corporations, regional and international cooperation and self-sufficiency in informatics;
- social awareness of ICT and ICT literacy.

WG9.5 – Virtuality and Society

AIMS

The IFIP Working Group 9.5 (Virtuality & Society) sees information and communication technologies as being intertwined with society. In this sense, virtuality is taken as constituting both the social and the technical modes of existence. The aim therefore of this WG is to explore the globality of virtuality, the complex, emergent and changing nature of this field and to act as a location for transdisciplinary work on virtuality. Through workshops and conferences the WG will promote a dialogue and mutual exchange from a diverse set of disciplines such as computing, information systems, media studies, social theory and philosophy but also anthropology, organizational studies, gender studies, politics and ethics.

SCOPES

The scope of the working group is all aspects of virtuality as evident in a multiplicity of empirical sites and social phenomena. Given its scope, we welcome contributors from, but not limited to, the following areas:

- Ethics of virtuality
- Virtual media and art
- Computing games
- Telemedicine
- Internet studies
- Organizational Aspects of Virtuality
- Virtual politics and political web-sites
- Virtual reality
WG9.6/11.7 - Information Technology Mis-Use and the Law
est. 1990, revised 1992, 2001

AIMS

- To foster co-operation between the "Computers and Society" and "Information Security" communities on issues of "IT misuse and the law".
- To develop an understanding in IFIP committees and national bodies of:
  - threats associated with IT systems and the related legal concerns.
  - risks to people and organisations arising from these threats.
  - responsibilities of people and organisations arising from legal and other provisions for information security.
  - risks arising from incoherency between legal, technical and managerial provisions.
  - the impact of IT systems on the current law, e.g. (criminal and civil law) and potential problems.
- To propose and/or evaluate legal and other prescriptions to combat these threats and their associated risks.
- To engender information exchange on threats, their origins, and possible consequences.
- To propose and/or evaluate legal and other appropriate courses of action.

SCOPES

- Analysis of existing and emerging threats to IT systems security, and the associated risks to people, organisations and society.
- Analysis of security principles.
- Aspects of the law where the use or introduction of IT on a global scale has rendered the current law (and/or its interpretations) obsolete or obsolescent or made it unenforceable.
- Analysis of potential means of countering and mitigating threats, e.g. legal frameworks, ethical standards, managerial procedures, and other social factors applicable to behaviour and responsibilities in the context of IT systems.
- Possible solutions.
- New legal, social and organisational consequences of the development and use of IT systems.

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WG9.7 - History of Computing
est. 1992

AIMS

- To provide a central vehicle for information interchange regarding the methods and techniques of historio-graphy, especially as related to the opportunities for the studies of contemporary history.
- To provide expertise for the design, implementation and operation of archives and displays related to the history of information processing.
- To encourage the development of national archives.
- To develop a program of "Pioneers' Days" which recognize the contribution of pioneers and anniversaries of major events.
- To identify pioneers worthy of an appreciation and distinction and make "IFIP Pioneer Awards".
- To develop publication plans for histories of Information Processing.
- To promote the inclusion of historical modules in appropriate curricula.

SCOPES

The history of computing and informatics with a view to providing the impetus to preserve the records and artifacts of information processing inventions, practices and activities throughout the world under the auspices of
IFIP and its constituent organizations. One special focus is the socio-historical context and consequences of Information Technologies.

**WG9.8 Gender Diversity and ICT**  
est. 2001, 2009

**AIMS**

This WG is dedicated to research and action how different areas of society being transformed by computer technology with particular emphasis on changes in women’s work and life and how these have come about. It is based on the integration of gender studies and computer science. Membership is open to both women and men.

In this context the WG aims

- to serve as an international, interdisciplinary communication forum and to hold discussions in workshops and conferences,
- to exchange women’s experiences as scholars and professionals in information technology,
- to integrate feminist perspectives into computer science,
- to develop an understanding in the IFIP communities and national bodies of the gendered aspects in design, realisation, and implementation of information systems,
- to propose and/or evaluate appropriate courses of action.

**SCOPES**

The topics cover the transitions from women’s traditional work to work based on modern technology, from communication within personal communities to virtual communities, from traditional gendered life to new gendered perspectives. Computerisation is understood in the narrow sense of computing systems as well as in the broader sense which includes the organisational, ethical, and social context of design and usage.

Discourses are linked to

- the analysis of the effects of computer technology on women’s status as citizens,
- the analysis of opportunities and risks of computerised technologies for women’s work in the paid labour force and in domestic spheres,
- the analysis of gender perspectives in the formative and constructive processes of computers and information systems,
- the analysis of gender in computing education and educational strategies for girls and women.

**WG9.9 ICT and Sustainable Development**  
est. 2005

**AIMS**

- To contribute to the development of an information society that meets the human needs of the present without compromising the ability of future generations to meet their own needs.
- To be actively involved in the development of ICT applications which involve the goal of sustainable development.
- To investigate the interaction among social, environmental and economic issues in the development of ICTs and their applications.
- To promote worldwide research and practice for further advancement of ICT towards a safe and sustainable self-developing World.
To strengthen inter-disciplinary research efforts in technology assessment for ICTs with a focus on ICT-induced opportunities and risks for the individual, for social systems and for the global ecosystem.
To provide a platform for presenting and discussing emerging ideas and trends in the intersection of the topics 'information society' and 'sustainable development'.
To promote or support the organization of meetings as well as easy access to high-quality data, information and knowledge in this area and related areas.

SCOPES

To create a network of experts working on ICT applications or implications related to sustainable development
To support the coordination of policies related to information society issues with policies related to sustainable development
To support applications of ICT for global environmental and development issues
To facilitate research assessing the environmental and health impacts
a) of ICT hardware life cycles; production, use, recycling and final disposal
b) of ICT applications with respect to the resource efficiency of processes they influence
c) of ICT-induced long-term changes of consumption patterns or lifestyles.

To promote the communication between computer professionals and other experts on relationships between ICT and sustainable development
To promote prospective studies to disseminate early warnings on consequences of applications of ICT that could compromise the goal of sustainable development, and encourage the development of strategies to ensure that ICT applications will contribute to sustainable development.

WG9.10 ICT Uses in Peace and War
est. 2013

AIMS

The aim of this working group is to focus the efforts of academia and research institutions, industry, governments, civic society, and the military to promote creative thinking in this field and to encourage viable solutions to so-far unanswered questions. This group will encourage dialogue by providing a platform for the presentation of research papers, current research or the result of research in progress, case studies, use cases, lessons learned, and risk assessment/impact assessment.

SCOPES

The scope of the working group includes any aspects that pertain to how ICT may influence, affect, or threaten individuals, society or nations in relation to either war or peace, as well as how these concerns are perceived by these three levels of grouping (persons, society or nations).

The following themes are all relevant in terms of their orientation in their use in war and peace. The items which are listed in alphabetic order do not reflect the eventual prioritization of the subjects to be covered:

- Cyber warfare
- Cyber security awareness
- Forensic applications and solutions
- Governance and standards
- Hacking, cracking and other technical challenges
- ICT, critical infrastructure and society
- Social aspects of critical infrastructure protection
ICT strategies from a holistic, peaceful, and humane perspective
ICT uses to prevent conflicts and contribute to peace
ICT uses from a military perspective
Legal, ethical and social issues related to information security
Promotion of democratic practices through ICT uses
Social networking
Socio-technical aspects of ICT uses in peace and war
Strategic information security
Vulnerability assessments
Research and education on the impact of ICT in peace and war

While it is anticipated that this working group will build associations with other working groups in TC9, and possibly with working groups in TC11 or TC3, it is also feasible that it could become associated with work undertaken by such international and national associations as the International Telecommunications Union, United Nations and UNESCO.
TC 10 - Computer Systems Technology - Aims and Scopes

est. 1976, revised 1987

AIMS

The Aims of the Committee are the promotion of the State-of-the-Art and the coordination of information exchange on concepts, methodologies, and tools in the stages in the life cycle of computer systems.

SCOPES

- system and component concepts, architecture and organisation;
- specification, design and verification methodologies of computer systems;
- logical design and fabrication of components and systems;
- evaluation of the parameters of computer systems and components;
- reliability;
- assessment of emerging technologies;
- application specific computer systems and components including peripherals.

WG10.2 – Embedded Systems

est. 2006

AIMS

The WG10.2 shall be constituted as a group under the sponsoring organization with the following basic aims:

- to be the internationally open reference group for all aspects of embedded system design promoted and sponsored by the sponsoring organization of the WG10.2:
- to further the dissemination and exchange of information and experience on research and applications in the area of embedded systems;
- to address ES designers and researchers from both, industry and academia;
- to encourage education in all areas of embedded systems;
- to further the interdisciplinary character of embedded systems, that encompasses hardware (system on a chip), real-time software, real-time operating systems, control theory, intelligent features, dependability issues.

SCOPES

Embedded systems are gaining increasing importance in all aspects of engineering. It is expected that in the near future roughly no technical artifact will exist without embedded information technology. There is a tendency to software oriented embedded and/or dependable systems, based on standardized micro-controller cores. This implies that the design of embedded real-time software and real-time operating systems will play a dominant role in this field. As more and more networks of micro-controllers are applied, real-time communication systems and in general the design of distributed embedded systems will gain importance. As high-performance embedded computing components have become available the challenges of designing embedded systems have become more acute.

The scope of WG10.2 comprises in detail to:

- organize events in the area of ES (e.g. DIPES (Distributed and Parallel Embedded Systems));
- seek co-operation with user and interest groups as well as with ES-oriented groups within IFIP and other societies;
- discuss, disseminate and exchange information on ES-related standardization activities;
- study and encourage curricula on ES design;
- initiate and organize new ES-related activities.
**WG10.3 - Concurrent Systems**  
est. 1978, revised 1979, 1988, 2006

**AIMS**

The study of computer systems, having several computing elements, with the goal of improving the quality of attributes such as cost, performance, programmability, extendability and functionality.

The study includes the interrelation software/firmware/hardware in specification, design and implementation.

**SCOPES**

- Exploration of problem areas and solutions pertaining to the interrelation between the hardware functions and the software functions in systems such as supervisors, data management, language translators, I/O systems, and user interfaces.
- Evaluation of the implementation of trends in computer systems technology on the interrelation of software, firmware and hardware.
- Evaluation of the implication of this interrelation in the trends in computer systems technology.

**WG10.4 - Dependable Computing and Fault Tolerance**  
est. 1980, revised 1988

**AIMS**

Increasingly, individuals and organizations are developing or procuring sophisticated computing systems on whose services they need to place great reliance. In differing circumstances, the focus will be on differing properties of such services - e.g. continuity, performance, real-time response, ability to avoid catastrophic failures, prevention of deliberate privacy intrusions. The notion of dependability, defined as that property of a computing system which allows reliance to be justifiably placed on the service it delivers, enables these various concerns to be subsumed within a single conceptional framework. Dependability thus includes as special cares such attributes as reliability, availability, safety, security. The Working Group is aimed at identifying and integrating approaches, methods and techniques for specifying, designing, building, assessing, validating, operating and maintaining computer systems which should exhibit some or all of these attributes.

**SCOPES**

Specifically, the Working Group is concerned with progress in:

- understanding of faults (accidental faults, be they physical, design induced, originating from human interaction; intentional faults) and their effect;
- specification and design methods for dependability;
- methods for error detection and processing, and for fault treatment;
- validation (testing, verification, evaluation) and design for testability and verifiability;
- assessing dependability through modelling and measurement.

**WG10.4 SIG on Education in Resilient Computing**  
est. 2009

**AIMS**

The primary aims of the SIG are:
To acquire knowledge on how Resilient Computing is taught today in different worldwide higher educations institutions;
To compare the experiences so to provide an incremental process towards the structuring of an educational track in Resilient computing;
To promote the outcomes of the SIG to update or change or start proper tracks in Resilient Computing in higher educations institutions;
To interact with international bodies working on educational issues i.e. ACM, IFIP, etc., to present the outcomes of the SIG;
To collect and make accessible, through the web, support material useful to cover the several disciplines relevant to Resilient Computing;
To build and maintain a comprehensive database of material, available to the community of students, scientists, industrial designers and regulatory bodies.

SCOPES

The adjective resilient has been in use for decades in the field of dependable computing systems essentially as a synonym of fault-tolerant, thus generally ignoring the unexpected aspect of the phenomena the systems may have to face. These phenomena become of primary relevance when moving to systems like the future large, networked, evolving systems constituting complex information infrastructures – perhaps involving everything from super-computers and huge server “farms” to myriads of small mobile computers and tiny embedded devices, with humans being central part of the operation of such systems. Such systems are in fact the emergence of the ubiquitous systems that will support Ambient Intelligence.

From an educational point of view, very few Universities, if any, are offering a comprehensive and methodical curriculum that is able to provide students with a multi-disciplinary preparation that makes them able to cope with the challenges posed by the design of ubiquitous systems. Multi-disciplinarily spans over dependability, security, usability, human factors, legal issues and ethics. Thus, from the educational point of view there is the need to scale-up the spectrum of topics offered, to identify the best curricular structure to make successful both teaching and learning processes.

It is thus relevant to have an open worldwide forum in which the different educational approaches to teaching Resilient Computing are presented, compared and discussed to reach an agreed approach to this issue.

In addition it will be very valuable to collect together in an open and public database all available support material (as lecture’s slides, textbooks, relevant literature, links to useful sites, etc.) that covers the different facets of multi-disciplinarily.

A first attempt to offer to our community a proposal for an MSc curriculum in Resilient Computing and gather extended support material has been done very recently in a European Network of Excellence ReSIST; the material is accessible at http://resist.isti.cnr.it/home.php.

WG10.4 SIG on Concepts and Ontologies

est. 2009

AIMS

1. To take part in the development of the updated Computing Classification System (CCS) that is undertaken by the ACM to assure that our domain of interest is properly represented, since that was not the case in the two previous versions (1988 and 1998) of the CCS.
2. To develop a thesaurus and an ontology that integrates the concepts of dependability, security, resilience, robustness, trustworthiness, survivability, high confidence, information assurance, self-healing (and possibly other related terms) and identifies their similarities and differences.
3. To employ document clustering algorithms and other classification techniques in order to create a methodology for automatic identification of related documents from all the domains listed in Aim 2 above. To use the methodology in developing automatic tools that assist researchers and referees in creating and evaluating new research results.
4. To use advanced natural language processing (NLP) tools and to collaborate with artificial intelligence experts of the computational linguistics and knowledge representation domains in the pursuit of the above Aims 2 and 3.
5. To use our experience in order to promote the formation of an IFIP activity aimed to create a thesaurus, an ontology and a classification system for the entire field of informatics (computer science and engineering), possibly in collaboration with the ACM.
Dependability has naturally concerned most disciplines of computer science and engineering (informatics) since the early days. As a consequence, significantly different terminologies were developed by different communities to describe the same aspects of dependability. The terminologies became entrenched through usage at annual conferences, in books, journals, research reports, standards, industrial handbooks and manuals, patents, etc. As an illustration, we have the concepts of dependability, security, trustworthiness, survivability, high confidence, resilience, information assurance, robustness, self-healing, etc., whose definitions appear to be identical or to overlap extensively. In many cases the definitions themselves have multiple versions that depend on a given author’s preference.

An example of a long-term effort to create a framework of dependability and security concepts is the effort within IEEE CS TC/DCFT and IFIP WG 10.4 that since a special session at FTCS-12 in 1982 has resulted in a series of papers, a six-language book, and in 2004 a “Taxonomy” paper in vol.1, no.1 of the *IEEE Transactions on Dependable and Secure Computing*. No other community has produced such a taxonomy.

The description of a domain by several synonyms or near-synonyms that lack well-defined distinctions is a source of continuing confusion that leads to re-inventions and plagiarism, impairs the transfer of research results to practical use in industry and impairs the recognition of related documents.

The orderly progress of dependability research and its practical applications requires that past work as well as new results should be classified on the basis of a single ontology and thus made accessible to the entire profession. However, it is unreasonable to expect that a committee formed by the different communities could by volunteer effort create a taxonomy document from which a single consensus ontology could be generated. It must be concluded that today the purely “intellectual” (i.e., human) process of ontology building for dependability concepts is reaching its limits. The complementary solution is to augment the human effort by the use of automatic natural language processing tools that have been developed by computer linguists. The next step must be computer-aided building of a consensus ontology.

During the past decade much progress has been made in the development of computer tools for human language processing. Such tools have been developed for the extraction of term candidates from a corpus (set of texts). A thesaurus (list of important terms with related terms for each entry) is constructed from the term candidates. The ontology for a given domain is a data model that represents those terms and their relationships. Automatic indexation of the texts is carried out using the thesaurus, followed by clustering analysis using statistical and linguistic techniques. A measure of similarity between texts is computed that serves as a basis for automatic classification. The applicability of the above listed techniques to texts in the dependability domain has been part of research supported by the European Network of Excellence ReSIST (Resilience for Survivability in Information Society Technologies) in 2006-2009. The corpus is composed of the texts of nearly 2000 papers presented at all 29 FTCS and 7 DSN conferences (1971-2006). The encouraging results of the processing of texts from the FTCS/DSN community leads to the conjecture that similar processing of texts from other conferences, journals, books, industrial documents, etc., will produce other ontologies that can be merged into a consensus ontology that covers the entire domain of dependability and its near-synonyms.

A dependability ontology is an integral part of an (still non-existent) ontology for all of computer science and engineering. The only existing and widely used taxonomy that could be used to build it is the ACM Computing Classification System (CCS). The CCS was created in 1988 and was last revised in 1998. It has fallen far behind the evolution of CS&E and information technology. The concepts of dependability are treated very inadequately, and many significant dependability terms are altogether missing in the 1998 ACM CCS taxonomy. The coming update of the CCS is a challenge to the dependability community: we must take part in the process of creating an up-to-date and evolvable version of the CCS that adequately incorporates dependability concepts. The new CCS would allow the computer-aided construction of a thesaurus and an ontology for the entire CS&E profession. However, a consensus dependability ontology with explicit synonymy relations must be available to the CCS builders.

Finally, it is very appropriate for IFIP to take part in the building of a CCS. The experience of the SIG can serve as a starting point for such an effort within IFIP.

**WG10.5 - Design and Engineering of Electronic Systems**

**AIMS**
Electronic system design demands a tight integration on a very large profile of knowledge and skills ranging from hardware and software system architecture to semiconductor physics. Functionality of complex embedded or stand-alone systems, to be applied in areas such as general-purpose computing, telecommunications, automotive, entertainment, and multimedia, may be realized by various combinations of analog and digital hardware and software parts. Systems can be implemented by single or multiple integrated circuits and software modules that can be either of special purpose, programmable or reconfigurable.

The working group aims at providing a forum amongst creative experts to explore problem areas and solutions for the design of such complex electronic systems and also disseminating the solutions to a broader industrial and educational sphere.

**SCOPES**

The Working Group is interested in a broad range of topics related to the design and engineering of heterogeneous systems, containing hardware, software, and even mechanical parts.

- System Design Methods
- Embedded Systems
- Modeling and Specification
- Design Validation
- Formal Methods in Design
- Synthesis
- Design Environments
- Reconfigurable Computing
- VLSI Systems and Applications
- Physical Design
- Test and Testability
- Power-aware Design
- Analog and Mixed-Signal Systems
- Fundamental CAD Algorithms
TC 11 - Security and Privacy Protection in Information Processing Systems - Aims and Scopes

est. 1984, revised 2006, 2009

AIMS

To increase the trustworthiness and general confidence in information processing and to act as a forum for security and privacy protection experts and others professionally active in the field.

SCOPES

Work towards:

- the establishment of a common frame of reference for security and privacy protection in organizations, professions and the public domain;
- the exchange of practical experience;
- the dissemination of information on and the evaluation of current and future protective techniques;
- the promotion of security and privacy protection as essential elements of information processing systems.
- The clarification of the relation between security and privacy protection.

WG11.1 - Information Security Management

est. 1985, revised 1992

AIMS

As management, at any level, may be increasingly held answerable for the reliable and secure operation of the information systems and services in their respective organizations in the same manner as they are for financial aspects of the enterprise, the Working Group will promote all aspects related to the Management of Information Security.

These aspects cover a wide range, from purely managerial aspects concerning Information Security, (like upper management awareness and responsibility for establishing and maintaining the necessary policy documents), to more technical aspects (like risk analysis, disaster recovery and other technical tools) to support the Information Security management process.

SCOPES

- to study and promote methods to make senior business management aware of the value of information as a corporate asset, and to get their commitment to implementing and maintaining the necessary objectives and policies to protect these assets
- to study and promote methods and ways to measure and assess the security level in a company and to convey these measures and assessments to management in an understandable way;
- to research and develop new ways to identify the Information Security threats and vulnerabilities which every organization must face;
- to research and identify the effect of new and changed facilities and functions in new hardware and software on the management of Information Security;
- to study and develop means and ways to help information security managers to assess their effectiveness and degree of control;
- to address the problem of standards for Information Security.

STATEMENT OF CASE
There is a growing trend for senior business management to be held answerable for the reliable and secure operation of their information systems, as they are for control of their financial aspects. Information Security is, and should always be upper management responsibility. Information security professionals, and WG 11.1 in particular, should therefore be responsible for the development of all types of tools, mechanisms and methods to support top management in this new responsibility.

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**WG11.2 – Pervasive Systems Security**  

**AIMS**

To investigate methods and issues in the area of information security related to pervasive systems; and to advance knowledge and awareness of the subject through publications, conferences and other means. The aim is to address pervasive systems security from both a functional, technical, and societal perspective.

**SCOPES**

The scope of the working group shall be to:

- Promote the design of the new information security techniques and methods in pervasive systems.
- Investigate and report on the information security aspects of information technology products and information services for pervasive systems.
- Design guidelines and promote methodologies for the implementation of information security in pervasive systems.
- Investigate intelligent token and smart card applications in information security with the aim of making the user less dependent on single fixed environment.
- To foster public debate on the security and privacy issues that emerge when pervasive systems are deployed on a large scale.

**STATEMENT OF CASE**

Pervasive systems shall be defined to be large scale systems that are comprised of nodes ranging from RFID tags, through embedded systems, to personal mobile devices, interconnected by a mixture of short range wireless and wide are wired networks. The typical characteristics of a pervasive system are: resource constrained nodes, often physically unreachable or without user interface, whose interconnections often span a large number of administrative domains with conflicting interests. Security of such systems is therefore an emergent property.

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**WG11.3 - Data and Application Security and Privacy**  
est. 1987, revised 2001, 2011

**AIMS**

To promote wider understanding of the risks to society of operating data management systems that lack adequate measures for security or privacy.

To encourage the application of existing technologies for enhancing the security and privacy of data management systems.

**SCOPES**
To advance technologies that support:

- the statement of security and privacy requirements for data management systems;
- the design, implementation, and operation of data management systems that include security and privacy functions; and
- the assurance that implemented data management systems meet their security and privacy requirements.

WG11.4 - Network & Distributed Systems Security

AIMS

- To study and promote internationally accepted processes which will enable management and technicians to fully understand their responsibility in respect of the reliable and secure operation of the information networks which support their organizations, their customers or the general public.
- To study and promote education and training in the application of security principles, methods, and technologies to networking.

SCOPES

The scope of the working group is:

- To promote the awareness and understanding of the network aspect of information systems security.
- To provide a forum for the discussion, understanding and illumination of network security matters.
- To study and identify the managerial, procedural and technical aspects of network security; and hence to define the network security issues.
- To study and describe the risks that arise from embedding an information system in a network environment.
- To advance technologies and practices that support network security controls, make possible the statement of requirements for network security, and in general, advance the foundation for effective network security.
- To contribute, as feasible and appropriate, to international standards for network security.

STATEMENT OF CASE

Management in any organization is responsible for the reliable and secure operation of the information systems that support the organization. As inter and intra-organization networking between information systems become the rule as well as the daily operational environment, the scope of concern takes on new aspects and new technical details come into play. Management must not only address the security issues of wholly internal systems together with any networks to which they might be connected, but also must assure that the protective mechanisms installed in them are not accidentally or intentionally thwarted or subverted by other systems with which data exchange connections are established.

The range of subjects includes local area networks, regional and wide area networks, homogeneous and heterogeneous networks, and the networks which can arise for varying periods of time as a result of operational requirements for temporary or semi-permanent interconnections which can exist for varying periods of time.

Such networks will include dial-up or other connections which permit an organization's employees to work from their homes, and those external connections enabling organizations to transact mutually linked business activities e.g. such as will take place under EDI agreement.
WG11.5 – IT Assurance and Audit  
est. 2013

AIMS

The aim of the Working group (hereinafter referred to as WG) as part of TC-11 is to study and develop detailed knowledge on IT assurance and audit models, standards, processes and techniques to meet the needs of organizations from a wider business perspective. The WG provides professionals operating in the field thorough insight into the IT audit function in financial reporting and compliance, and offers pragmatic ideas, approaches, instruments, guidelines and tooling that contribute to responsibly utilizing a demand driven way of IT assurance in addition to the existing and common practices.

Although the application and benefits of IT assurance and audit services are definitely in no doubt, it is essential to advance these necessary products to the next and more actual and mature level with a broad organizational focus that also possesses a risk and future based characteristics

SCOPES

The following topics are initially part of the WG:

- IT audit in financial statement review.
- IT assurance reporting standards.
- IT risk management and Enterprise Risk Management (ERM)
- Continuous assurance and audit.
- Information assurance.
- Software assurance.
- Governance, Risk and Compliance (GRC).
- Service assurance tooling.

The WG seeks collaboration with other working groups inside and outside IFIP. Examples include, but are not limited to, Information Systems Audit and Control Association (ISACA).

WG11.6 – Identity Management  
est. 2006

AIMS

The aim is to promote through education, research and outreach, the awareness and understanding of:

1. Identity management in general, and, in this context:
   - identity management applications and methodologies;
   - optical and electronic document security;
   - potential and actual role and function of biometrics in particular;

2. Methods and techniques that can help to evaluate (specific) biometric technologies;
   - operational aspects of biometrics;
   - legal aspects of the application of biometrics;
   - impact of biometrics on society;
   - methods and techniques that can help to improve the quality of biometric technology (performance, privacy, compliance); and

3. National identity management in particular:
   - national identity management as (a kind of) federated identity management;
   - national identity management as a part of multilateral identity management;
   - (possible) role and effectiveness of identity management in fighting (inter)national fraud, crime and terrorism;
   - methods and techniques that can help to improve the quality of national identity management.
SCOPES

1. To establish and expand a common identity management lexicon so that the international community speaks the same language.
2. To propose, define and evaluate identity management applications and methodologies that will meet the standards of decision-makers in the public and private sector.
3. To propose, define and evaluate optical and electronic document security technologies that will meet the standards of decision-makers in the public and private sector.
4. To propose, define and evaluate biometric technologies and methodologies to be incorporated in (national) identity management that will meet the standards of decision-makers in the public and private sector.
5. To promote through education, research and outreach, a wider understanding of the legal, social and operational issues related to (national) identity management in general and the technologies mentioned above in particular.
6. In order to promote discussion related to research in the field, WG 11.6 will foster cooperation between:

   - International communities
   - Stakeholders, scientists and industry.
   - Technicians, sociologists, biologists, philosophers, psychologists and political scientists.

WG11.8 - Information Security Education
est. 1991

AIMS

To promote information security education and training at the university level and in government and industry.

SCOPES

The scope of the working group shall be to:

   - establish an international resource center for the exchange of information about education and training in information security.
   - develop model courses in information security at the university level.
   - encourage colleges and universities to include a suitable model course in information security at the graduate and/or undergraduate level in the disciplines of computer science, information systems and public service.
   - develop information security modules that can be integrated into a business educational training program and/or introductory computer courses at the college or university level.
   - promote an appropriate module about information security to colleges and universities, industry and government.
   - collect, exchange and disseminate information relating to information security courses conducted by private organizations for industry.
   - collect and periodically disseminate an annotated bibliography of information security books, feature articles, reports, and other educational media.

WG11.9 - Digital Forensics
est. 2004

AIMS
The aim of the IFIP WG11.9 group is to promote through education, research and outreach, the awareness and understanding of (i) the scientific methods and techniques that help to tell about a computer related security incident (including those that involve converging digital technology), what occurred, when it occurred, how it occurred, what resources were affected and who initiated the incident, in a manner that will support a legal action, and (ii) the operational and legal aspects of new and emerging digital technology so as to help develop such methods and techniques.

SCOPES

- To establish and expand a common digital forensics lexicon so that international community speaks the same language.
- To propose, define and evaluate core technologies that assist in the discovery, explanation and presentation of conclusive and persuasive digital evidence that will meet the heightened scrutiny of the courts and other decision-makers in military and civilian environments.
- To promote through education, research and outreach, a wider understanding of the legal, social and operational issues related to digital forensics.
- To foster cooperation between international communities so as to promote scholarly discussion related to digital forensic research and its application.

WG11.10 – Critical Infrastructure Protection

est. 2006

AIMS

The principal aim of IFIP WG 11.10 is to weave science, technology and policy in developing and implementing sophisticated, yet practical, solutions that will help secure information, computer and network assets in the various critical infrastructure sectors. Information infrastructure protection efforts at all levels – local, regional, national and international – will be advanced by leveraging the WG 11.10 membership’s strengths in sustained research and development, educational and outreach initiatives.

SCOPES

- To identify information security challenges and implementation issues that are common (as well as unique) to infrastructure sectors.
- To elucidate the interdependencies existing between infrastructure sectors and their information security implications.
- To identify core security principles and techniques that can be applied to address problems in information infrastructure protection.
- To develop sophisticated information infrastructure protection solutions that blend scientific methods, engineering techniques and public policy.

WG11.11 – Trust Management

est. 2006

AIMS

Working Group 11.11 aims to provide a forum for cross-disciplinary investigation of the application of trust as a means of establishing security and confidence in the global computing infrastructure, recognizing trust as a crucial enabler for meaningful and mutual beneficial interactions. The working group will bring together researchers with an interest in complementary aspects of trust, from both technology oriented disciplines and the field of law, social sciences and philosophy. In this way the working group will provide the common background
necessary for advancing towards an in-depth understanding of the fundamental issues and challenges in the area of trust management in open systems.

The main membership will most likely be specialized researchers, both from universities and company laboratories. Government organizations and IFIP member societies and their members will be the main users of the results of the group.

Working Group 11.11 has a link to the area of other groups, both inside and outside IFIP and the group will seek actively for close cooperation with these groups.

**SCOPE** of the working group (non-exhaustive and non-exclusive):

- semantics and models for security and trust;
- trust management architectures, mechanisms and policies;
- trust in e-commerce, e-service, e-government;
- trust and privacy; (link with wg 9.6 / 11.7)
- identity and trust management; (link with wg 11.6)
- trust securing digital as well as physical assets;
- social and legal aspects of trust (link with wg 9.6 / 11.7)

**WG11.12 – Human Aspects of Information Security and Assurance**
est. 2010

**AIMS**

The Human Aspects of Information Security and Assurance Working Group seeks to promote all aspects of research that can better support and inform our use of security within information systems.

**SCOPES**

The scope of the WG11.12 includes any aspects that pertain to the attitudes, perceptions and behavior of people, and how human characteristics or technologies may be positively modified to improve the ease of use and level of protection provided. Indicative themes within this remit will include:

- Information security culture
- Awareness and education methods
- Enhancing risk perception
- Public understanding of security
- Usable security
- Psychological models of security software usage
- User acceptance of security policies and technologies
- User-friendly authentication methods
- Automating security functionality
- Non-intrusive security
- Assisting security administration
- Impacts of standards, policies, compliance requirements
- Organizational governance for information assurance
- Simplifying risk and threat assessment
- Understanding motivations for misuse
- Social engineering and other human-related risks
- Privacy attitudes and practices
- Computer ethics and security

It is anticipated that the activity of this Working Group will have many cross-disciplinary aspects with other groups, both inside and outside of IFIP and the group will actively seek close cooperation.
AIMS
The Working Group 11.14 aims to provide a forum for cross-disciplinary investigation of “secure services engineering” with attention also at the software-services and system aspects. The working group will bring together researchers with an interest in several area of computer science, including, security, security engineering, service engineering, software engineering, formal methods and related fields. The WG will leverage on the experience and community developed by the NESSoS Network of Excellence (www.nessos-project.eu) on Engineering Secure Future Internet Software Services and Systems.

We can list the main aims as:

- The creation of a long lasting research community on engineering secure services and software systems.
- Maintaining a research roadmap in the area of secure service engineering.
- Maintaining a workbench for secure service engineering tools.
- Contribution to education, training, dissemination.
- Reduction of gap between industry and research best practices.

SCOPES

The main membership will most likely be specialized researchers, both from universities and corporate laboratories. Government organizations and IFIP member societies and their members will be the main users of the results of the group.

Working Group 11.14 has a link to the area of other groups, both inside and outside IFIP (as the ERCIM WG on security and trust management) and the group will seek actively for close cooperation with these groups.

Scope of the working group

- Security requirements engineering
  - Emphasis on identity, privacy and trust
  - Requirements languages for managing legislative constraints and socio-technical and economic aspects
  - Conflicts resolution between security requirements and other requirements
  - Privacy requirements engineering

- Secure Service Architectures and Design
  - Reasoning about security in multi-concern design models
  - Security design patterns
  - Support for model-driven security dynamic adaptation
  - Integrate security modelling in domain-specific modelling languages

- Security support in programming environments
  - Service creation
    - Security support for service creation (by composing services or by programming new services from scratch)
  - Service execution
    - Security enforcement at runtime
  - Middleware
    - Monitoring of business compositions
  - Secure service programming
    - Adherence to programming principles and best practices
    - Verifiable concurrency
  - Platform support for security enforcement
    - Secure cross domain interactions
    - Finely grained execution monitoring
    - Supporting security assurance for FI services

- Service composition and adaption
  - Evolution of security contracts during the whole life of software
- Trustworthy market of composable services
- Assessing risk of a service composition
- Test bed for comparing service adaptation by contracts approaches

**Runtime verification and enforcement**
- Run-time monitoring of data flow
- Usage control properties monitoring

**Risk and Cost-aware Secure Service Development**
- Risk and cost analysis process: towards incremental and iterative process through Secure Service Development
- Risk composition and aggregation
- Risk and cost evolution
- Risk validation and integration
- Applying formal methods to risk management
- Runtime re-configurability of security based on risk management

**Security assurance for services**
- Early assurance
  - Step-wise refinement of security (from policies down to mechanisms)
  - Formal verification of security policies models
  - Certification and audit frameworks for scenarios involving outsourcing of services
- Implementation assurance
  - Secure programming
  - Security testing and debugging
  - Penetration testing (specially model-based penetration testing)
  - Automatic generation of test for web applications
  - Debugging
  - Secured session management for web service security

**Quantitative security for assurance**
- Formal security metrics
- Metrics for privacy and isolation in cloud computing
- Validation and comparison frameworks for security metrics
- Compositional calculation in service-oriented systems
TC 12 - Artificial Intelligence - Aims and Scopes

est. 1989, revised 1991, 2004

AIMS

- To foster the development and understanding of Artificial Intelligence and its applications worldwide.
- To promote interdisciplinary exchanges between Artificial Intelligence and other fields of information processing.
- To contribute to the overall aims and objectives and further development of IFIP as the international body for Information Processing.

SCOPES

Artificial Intelligence covers a wide range of techniques, which can be applied to a very wide range of application areas. Its subfields include (but are not restricted to) the following:

- Automated Reasoning
- Belief Revision
- Case-Based Reasoning
- Computer Vision
- Constraint Satisfaction
- Data Mining
- Evolutionary Algorithms
- Intelligent Agents
- Intelligent Planning and Scheduling
- Intelligent Robotics
- Knowledge Acquisition
- Knowledge Discovery and Data Mining
- Knowledge Engineering
- Knowledge-Based Systems
- Knowledge Management
- Knowledge Representation and Reasoning
- Machine Learning
- Machine Translation
- Model-based Reasoning
- Natural Language Processing
- Neural Nets
- Pattern Recognition
- Qualitative Reasoning
- Search
- Semantic Web
- Temporal Reasoning

WG12.1 - Knowledge Representation and Reasoning

est. 2004

AIMS

To study and develop theory and techniques for knowledge representation and reasoning.

SCOPES

The scope of the Working Group's activities includes (but is not restricted to) the following:
WG12.2 - Machine Learning and Data Mining
est. 2003, revised 2005

AIM

To explore computer methodology and algorithms that improve automatically through experience. Applications range from data mining programs that discover general rules in large data sets, to information filtering systems that automatically learn users' interests.

SCOPES

- Concept Learning and Inductive Learning
- Association Rules
- Case-based Learning
- Artificial Neural Networks
- Bayesian Learning
- Uncertainty Learning
- Reinforcement Learning
- Evolutionary Learning
- Perceptual Learning
- Computational Learning Theory
- Population-based Learning
- Data Mining
- Application Case Study

WG12.3 - Intelligent Agents
est. 2003

AIMS

To study and develop theory and techniques for intelligent agents.

SCOPES

- Theory and agent modeling
Agent architectures
Agent-based software engineering
Coordinating, cooperation and negotiation
Evolution, adaptation and learning
Multiple agents
Mobile agents
Agent-based grid computing
Agent-based applications

WG12.4 - (joint with WG2.12, see TC2)

WG12.5 - Artificial Intelligence Applications
est. 1993, rev. 2003

AIMS
To explore the use of Artificial Intelligence techniques for applications development.

SCOPES
All areas of application in which Artificial Intelligence techniques can give benefits to users.

Techniques for application development including:
- Conceptual frameworks for application specification and design
- User interface design
- Integration of AI software and systems with conventional databases, programming languages, and operating systems
- Related research issues such as knowledge acquisition, learning, validation and implementation techniques.

WG12.6 - Knowledge Management
est. 1993, revised 2003, 2008

AIMS
- To develop advanced methods for organizing, accessing and exploiting multidisciplinary knowledge within organizations and enterprises.
- To bring together various areas of KM research and technology to meet this challenge, e.g. knowledge transfer and modeling, optimisation, natural language understanding, speech and image processing and understanding, reasoning methods, learning methods, communication methods, social aspects, complex problem solving, decision support, human-machine interaction, serious games.
- To develop technology for intelligent support of Knowledge Cultivators, e.g. intelligent knowledge navigation systems, multi modal interface, automatic translation, competency management, e- and m-activities such as learning, collaborative research and design, business, process control.
- To share worldwide experience in the above domains.

SCOPES
Methodology, technologies, processes, and systems for supporting all aspects of knowledge management as communication, collaboration, learning, innovation, decision making, investigation, embedding and archiving.
Knowledge thinking.

Knowledge Holonomy – the interplay between individual, organizational, enterprise and society levels. Cross organisational.

Technology trends include:

- Intelligent multimodal knowledge acquisition and retrieval
- Knowledge discovery
- Technology for sustainable development
- Convergence of intelligences
- Technology for Knowledge Innovation
- Human machine interaction and collaboration
- Virtual reality and Games for KM

WG12.7 – Social Networking Semantics and Collective Intelligence
est. 2010

AIMS

- To become a multidisciplinary group that searches for and studies the theoretical foundations, new paradigms, methodologies and technologies needed for the specific support by intelligent computer systems of the knowledge aspects of social processes, community-based elicitation and specification of semantics, and the use of such knowledge e.g. as linked data in applications;
- To investigate and promote the applications of such systems in science, industry, and society at large, including opportunities for standardisation;
- To meet and communicate regularly, to endorse and create scientific forums of exchange in order to achieve these aims;
- To interact productively with selected other working groups and research projects within and outside of IFIP, in particular but not limited to TC2 (Software Theory and Practice), TC5 (Information Technology Applications), TC8 (Information Systems) and other Working Groups of TC12 (Artificial Intelligence).

SCOPES

An initial but not comprehensive list of topics of study includes

- theory, formal models, e.g. ontologies, and emerging new paradigms of organized and informal communities, of social and collaborative processes, and of semantics of data and knowledge;
- elicitation of ontologies and semantic content creation in general by social processes, expertise sharing and agreement; methodologies for same;
- auto-emergence of social semantics; harvesting and mining collective intelligence from community interactions; pragmatic web;
- engineering and prototyping of supporting knowledge-based systems for collective intelligence;
- collective intelligence in linked data; evolution and quality assurance of such linked data;
- the interaction of formal semantics with informal social semantics; social web interoperability issues;
- modeling of situational awareness; hybrid socio-technical systems;
- identity and authentication of entities and services on the (social) semantic web; related issues of trust, privacy and security;
- implementation and exploitation of social semantics as web services; self-organizing services tailored to communities; methodologies for adoption of such services;
- scalability issues for web-sized collective intelligence;
- interoperability of heterogeneous and autonomous knowledge sources from multiple disciplines through their respective communities.
WG12.8 – Intelligent Bioinformatics and Biomedical Systems
est. 2010

AIMS

To obtain a deeper understanding of the Bioinformatics, Biomedical Systems and its Applications and help in the development of its theoretical foundations and technological underpinning, as well as its global integration from molecular analysis to clinical diagnosis.

SCOPES

The scope of the Working Group's activities includes (but is not restricted to) the following:

- Study of the formal and practical knowledge representation issues of the Bioinformatics, Biomedical Systems and its Applications.
- Design, evaluation and use of ontologies for the various layers we would like to integrate, including genome, proteins, molecular pathways and clinical diagnosis.
- Evaluation and state of the art data mining tools for inferring new information from existing and new biological and biomedical databases.
- Studies of human centred aspects specifically for the Bioinformatics, Biomedical Systems and its Applications, including discovery of early cancer stages, such as through genomic predispositions and/or functional medical imaging.
- Information extraction, automatic and semi-automatic generation of meta data.
- Advanced string technology applications to Bioinformatics, Biomedical Systems and its Applications.

WG12.9 – Computational Intelligence
est. 2011

AIMS

- To obtain a deeper understanding of Computational Intelligence and its Applications and help in the development of its theoretical foundations and technological underpinnings.

1) Novel concepts of computational Intelligence approaches and their adaptation for handling real world applications.
2) Investigation of techniques of modification of computational Intelligence approaches so as to produce more effective computational Intelligence approaches.
3) Enhancement of the computational Intelligence approaches by co-operating with classical or statistical methods.
4) Using computational Intelligence approaches for handling constrained, multi-objective and large scale optimization problems for real world applications.
5) Application of computational Intelligence approaches in real industrial applications.
6) Parallel computational Intelligence approaches for practical applications in real world.
7) Using computational Intelligence approaches for solving dynamic optimization or time-varying problems in real world.
8) The following computational intelligence approaches include, but are not limited to:
   - Neural Networks
   - Fuzzy Systems
   - Evolutionary Computation
   - Particle swarm optimization
   - Multi-agent systems
- Intelligent control systems
- Support vector machine
- Bayesian networks
- Global and constrained optimization
AIMS

To encourage development towards a science and a technology of human-computer interaction, the Technical Committee will pursue the following Aims:

- to encourage empirical research (using valid and reliable methodology, with studies of the methods themselves where necessary);
- to promote the use of knowledge and methods from the human sciences in both design and evaluation of computer systems;
- to promote better understanding of the relation between formal design methods and system usability and acceptability;
- to develop guidelines, models and methods by which designers may be able to provide better human-oriented computer systems;
- to co-operate with other groups, inside and outside IFIP, so as to promote user-orientation and “humanization” in system design.

SCOPES

The main orientation is toward the users, especially the non-computer-professional users, and how to improve the human-computer relationship for them.

Areas of study include:

- the problems people have with computers;
- the impact of computers upon people in both individual and organizational contexts;
- the determinants of utility, usability and acceptability;
- the appropriate allocation of tasks between computers and people;
- modelling the user as an aid to better system design;
- harmonising the computer to the characteristics and needs of the user.

While the Scope is thus set wide, with a tendency towards general principles rather than particular systems, it is recognised that progress will only be achieved through both general studies to advance theoretical understanding and specific studies on practical issues (e.g. interface design standards, software system consistency; documentation, appropriateness of alternative communication media, human factors guidelines for dialogue design, the problems of integrating multi-media systems to match user needs and organizational practices etc.).

WG13.1 - Education in HCI and HCI Curriculum

AIMS

- to improve HCI education at all levels of higher education;
- to coordinate and unite efforts to enhance the development of HCI curricula;
- to recommend fundamental structures for curricula and course materials and for their adaptation to the various national educational systems;
- to advance international recognition of qualifications in this field, and
- to promote the teaching of HCI

SCOPES
The scope of the Working Group will build upon existing work in IFIP member countries to include:

- the evaluation of the needs of industry to enhance the qualifications of HCI, based upon societal objectives to improve the work environment;
- the collation of existing curricula, course literature and other relevant materials developed by member societies or institutions who are contributing to their work;
- the design of recommendations and guidelines for HCI curricula at different levels of higher education, and the adaptation of the guidelines to the cultural situation within which the respective education systems are based.

WG13.2 - Methodologies for User-Centered Systems Design
est. 1992

AIMS

The principal objective of the Working Group will be:

- to foster research, dissemination of information and good practice in the methodical application of HCI to software engineering.

This objective decomposes into two sub-goals:

- to encourage research into and development of HCI principles, methods and techniques applied to system design and integrated with principles, methods and tools in software engineering, and
- to encourage research into human action within the system development process and to promote knowledge transfer from such studies into the construction of integrated HCI-SE design methods.

SCOPES

- evaluation and synthesis of HCI specification and design methods;
- implications of cognitive psychology for the design of human-computer interfaces;
- evaluation and study of different approaches to design delivery: cognitive models, design rationales, task artifact cycles, engineering principles, development methods;
- methods and techniques of human factors in software engineering as practised in industrial environments;
- human behaviour in software development, i.e. cognitive studies of software engineering;
- cooperative work techniques applied to software development.

WG13.3 - Human-Computer Interaction and Disability

AIMS

The principal objectives of the Working Group will be:

- to make HCI designers aware of the needs of people with disabilities;
- to recommend guidelines for the design of HCI to facilitate the use of computers by people with disabilities;
- to monitor the latest developments in the design of HCI and their impact on accessibility and usability;
to encourage the development of information systems and complementary tools which permit the adaptation of the human interface for each specific user.

SCOPES

There are over 500 million people with disabilities in the world. Social exclusion and many other problems often result from their situation. It is recognised that developments in IT/HCI can often help with problems, for example to maximise choice and integration. However, there is also a danger that such developments can lead to the further exclusion of this user group if they are not designed from the beginning with universal access as an aim.

Working Group 13.3 intends to make designers of information systems and complementary tools aware of the needs of this group in order to encourage the development of more appropriate tools for access and usability. As a result, systems will become universally accessible, and the market for them will increase.

Specifically the scope of WG13.3 will include the following activities:

- coordination and exchange of information with other relevant bodies;
- collaboration with institutions interested in this field of HCI and disability;
- focussed HCI orientation to enable people with disabilities to use information systems and complementary tools for positive advantage.

WG13.4 - (joint with WG2.7; see TC2)

WG13.5 – Human Error in Resilience, Reliability, Safety
est. 1998, revised 2014

AIMS

This working group aims to support practitioners, regulators and researchers to develop leading edge techniques in resilience engineering, hazard analysis and safety engineering of interactive 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 integrate them with existing systems engineering techniques;
- to support and guide international accreditation activities in the area of safety-critical systems.
- to address system design within its whole socio-technical and environmental context.

SCOPES

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 interactive 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.

WG13.6 - Human-Work Interaction Design
est. 2005

AIMS

The aims of the HWID working group are:

- To encourage empirical studies and conceptualisations of the interaction among humans, their variegated social contexts and the technology they use both within and across these contexts.
- Promote the use of knowledge, concepts, methods and techniques that enables user studies to procure a better apprehension of the complex interplay between individual, social and organisational contexts and thereby a better understanding of how and why people work in the ways they do.
- Promote a better understanding of the relationship between work-domain based empirical studies and iterative design of prototypes and new technologies.
- Establish a network of researchers, practitioners and domain/subject matter experts working within this field.

Thus on an overall level the working group aims at establishing relationships between extensive empirical work-domain studies and HCI design.

SCOPES

To provide the basis for an improved cross-disciplinary co-operation and mutual inspiration among researchers, but it will also lead to a number of new research initiatives and developments, as well as to an increased awareness of HWID in existing HCI educations. Complexity will be a key notion in the working group, it is not a priori defined or limited to any particular domains. A main target of the work group is the analysis of and the design for the variety of complex work and life contexts found in different business. Technology is changing human life and work contexts in numerous, multi-faceted ways:

- Interfaces between collaborating individuals; advanced communication networks
- Small and large-scale distributed systems
- Multimedia and embedded technologies
- Mobile technologies and advanced "intelligent" robots
- With this evolution, toward new ways of working, has followed an intensive demand for techniques and technologies that address contemporary issues connected to:
  - Communication, collaboration, and problem solving
  - Large information spaces, variability, discretion, learning, and information seeking

This evolution toward new ways of working and living must be embraced as a challenge to current knowledge and practice and one, moreover, which presents exciting new opportunities in:

- Epistemology, with knowledge acquisition, knowledge creation, management and knowledge sharing
- The symbiosis of users and contexts of use, between work and life-quality and with both professional and individual development.

It is a challenge to design applications that support users of technology in complex and emergent organisational and work contexts, and thus opportunities exist to focus on methods, theories, tools, techniques and prototype design on an experimental basis. Under these circumstances, the primary question is less whether we choose to study the use of a particular computer application or prefer, instead, to conduct bottom up empirical experiments of work contexts. The new problem is how we can understand, conceptualise and design for the complex and emergent contexts in which human life and work are now embroiled. This problem calls for cross disciplinary, empirical and theoretical
approaches that focus on Human-Work Interaction Design, meaning that the technology itself and particularly the design and use of technologies mediates the interaction between humans and specific work contexts.

WG13.7 – Human - Computer Interaction & Visualization (HCIV)
est. 2008

AIMS

- To establish a study and research program that will combine both scientific work and practical applications in the fields of Human – Computer Interaction and Visualization.
- To promote the development of “effective” visualizations that benefit from the capabilities and functionalities of the human visual system, e.g. visual perception and other cognitive abilities.
- To promote the development of practical applications, e.g. in engineering, which benefit from the newly developed concepts and which provide the necessary fields for evaluation.
- To integrate several additional aspects of further research areas, such as Scientific Visualization, Data mining, Information Design, Computer Graphics, Cognition Sciences, Perception Theory, or Psychology, into this approach.

Thus the WG will provide a creative work environment for performing innovative research at the interface between Human – Computer Interaction and Visualization.

WG13.8 – Interaction Design and Children

AIMS and SCOPES

- To support and develop the research, practice and education capabilities of HCI in institutions and organisations based around the world taking into account their diverse local needs and cultural perspectives;
- To promote application of interaction design research, practice and education to address the needs, desires and aspirations of people across the developing world;
- To research and promote interaction design practice in cross-cultural settings, with a special focus on new and emerging economies;
- To develop links between the HCI community in general and other relevant communities involved in international development and cross-cultured aspects of ICT development.

WG13.9 – Interaction Design and Children
est. 2013

The focus of the work within Working Group 13.9 is on promoting high quality coordinated research in child computer interaction and in interaction design with children.

AIMS

This working group aims to support practitioners, regulators and researchers to develop the study of interaction design and children across international contexts. Specifically it will seek – as a working group – to develop a mature tested set of methods and practices that this academic and practitioner base can use. It will aim:
To promote high quality research in child computer interaction and in interaction design with children
To provide an accessible international forum and information site for researchers interested in HCI and Interaction
Design where the users are children
To coordinate and manage events for IDC researchers and practitioners including, but not limited to, the annual IDC conference and the IDC workshops.

SCOPES

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

- The development and refinement of methods for engaging with children in the design of interactive technologies
- The development and refinement of methods for engaging with children in the evaluation of interactive technologies
- The role of children as participants in Interaction Design
- Designing for children from all cultures, with all abilities, talents and economics.

WG13.10 – Human-Centered Technology for Sustainability
est. 2015

AIMS

This working group aims:

- to promote research, design, development, evaluation of human-centred technology to encourage sustainable use of resources in various domains. These technologies would include interaction techniques, interfaces and visualizations for applications, tools, games, services and devices.
- to bring together and stimulate exchanges between, researchers, practitioners, and policy-makers from across different disciplines involved in sustainability through regular events. These disciplines would include computer science, engineering, design, social sciences, etc.
- to coordinate publication and dissemination of related research output, information, policies, etc.
AIMS

To encourage computer applications for entertainment and to enhance computer utilization in the home, the technical committee will pursue the following aims:

- to enhance algorithmic research on board and card games
- to promote a new type of entertainment using information technologies
- to encourage hardware technology research and development to facilitate implementing entertainment systems, and
- to encourage non-traditional human interface technologies for entertainment.

SCOPES

(1) Algorithm and strategy for board and card games
   -- algorithms of board and card games
   -- strategy control for board and card games
   -- level setup for game and card games

(2) Novel entertainment using ICT
   -- network-based entertainment
   -- mobile entertainment
   -- location-based entertainment
   -- mixed reality entertainment

(3) Audio
   -- music informatics for entertainment
   -- 3D audio for entertainment
   -- sound effects for entertainment

(4) Entertainment human interface technologies
   -- haptic and non-traditional human interface technologies
   -- mixed reality human interface technologies for entertainment

(5) Entertainment robots
   -- ICT-based toys
   -- pet robots
   -- emotion model and rendering technologies for robots

(6) Entertainment systems
   -- design of entertainment systems
   -- entertainment design toolkits
   -- authoring systems

(7) Theoretical aspects of entertainment
   -- sociology, psychology and physiology for entertainment
   -- legal aspects of entertainment

(8) Video game and animation technologies
   -- video game hardware and software technologies
   -- video game design toolkits
   -- motion capture and motion design
   -- interactive story telling
   -- digital actors and emotion model
(9) Interactive TV and movies
-- multiple view synthesis
-- free viewpoint TV
-- authoring technologies

(10) Edutainment
-- entertainment technologies for children’s education
-- open environment entertainment robots for education

WG14.1 – Digital Storytelling

SCOPES

Storytelling is one of the core technology of entertainment. Especially with the advancement of information and communication technologies (ICT), new type of entertainment called video games have been developed where interactive story development is the key that makes those games really entertaining. At the same time, however, it has not been studied well what is the difference between the interactive storytelling and the conventional storytelling. Also as the development of interactive storytelling need a lot of time and human power, it is crucial to develop technologies for automatic or semiautomatic story development. The objective of this working group is to study and discuss these issues.

WG14.2 – Entertainment Robot
est. 2004, rev. 2006

SCOPES

Robot is becoming one of the most appealing entertainment. New entertainment robot and/or pet robot is becoming popular. Also, from theoretical point of view, compared with computer graphics based characters/animations, robot is an interesting research object as it has physical entity. Taking these into considerations, it was decided at the SG16 annual meeting that a new working group on entertainment robot is to be established.

WG14.3 – Theoretical Basis of Entertainment
est. 2003, rev. 2006

AIMS

- For the benefit of society, to promote visibility and to increase the impact of research and development in the entertainment computing area, especially in the fields defined in the scope of this working group.
- To promote quality and relevance of academic and industrial research and development in the entertainment computing area.
- To promote ethical behavior and appropriate recommendations or guidelines for research related activities, for example, submission and selection of publications, organization of conferences, allocation of grants and awards, and evaluation of professional merits and curricula.
- To promote cooperation between researchers and with other established bodies and organizations pursuing the above aims.
- To contribute to assessing the scientific merits and practical relevance of proposed approaches for entertainment technology and applications.
Although there are huge entertainment industries already such as video games, toys, movies, etc., little academic interest has been paid on such questions as what is the core of entertainment, what is the technologies of entertainment can be applied to other areas such as education, learning and so on. The main objective of this WG is to study these issues.

WG14.4 – Entertainment Games

AIMS

To research and develop computing techniques for the improvement of computer games and other forms of computer entertainment.

SCOPES

The scope of this workgroup includes, but is not limited to the following applications, technologies and activities.

Applications:

- Analytical games (e.g., Chess, Go, Poker)
- Commercial games (e.g., Action games, Role-playing games, Strategy games)
- Mobile games (e.g., Mobile phones, PDA's)
- Interactive multimedia (e.g., Virtual reality, Simulations)

Technologies:

- Search Techniques
- Machine Learning
- Reasoning
- Agent Technology
- Human-Computer Interaction

WG14.5 - Social and Ethical Issues in Entertainment Computing
est. 2005, rev. 2006

AIMS

1. Foster the ethical design, development, implementation, applications and use of entertainment computing.
2. Encourage surveys and studies on social, ethical and cultural aspects of entertainment computing.
3. Develop methodologies for studying social, ethical and cultural implications of entertainment computing.
4. Establish a global platform for interaction, exchange, joint initiatives and co-operation between such groups as:

   - the end users of entertainment computing
   - industrial developers and designers of entertainment computing
   - policy, decision making, social and consultative bodies
   - academics and scientists.

SCOPES
The social and ethical implications of entertainment computing including:

- actual and potential human usefulness or harm of entertainment computing
- social impact of these technologies
- developments of the underlying infrastructure
- rationale in innovation and design processes
- dynamics of technology development
- ethical development
- cultural diversity and other cultural issues
- education of the public about the social and ethical implications of entertainment computing, and of
  computer professionals about the effects of their work.

WG 14.5 explicitly cares about the position of, and the potentials for, vulnerable groups such as children, the
less-educated, disabled, elderly and non-employed people, cultural minorities, unaware users and others.

WG14.6 – Interactive TeleVision (ITV)
est. 2007

AIMS

- To promote visibility and to increase the impact of research and development in the ITV field
- To bring together interdisciplinary approaches to ITV research and development issues (e.g. content
  production, computer science, media studies)
- To encourage cooperation between researchers and other established bodies and organizations,
  through the development of joint project proposals
- To facilitate the development of suitable academic and practical teaching programs

SCOPES

- Alternative content distribution (mobile TV, peer-to-peer TV, IPTV)
- Interactive storytelling, user contributed content
- Interactive and personalized advertising systems
- Applications for t-commerce, t-learning, t-health, entertainment
- Ethical, regulatory and policy issues
- Interoperability of middleware, standards, multimedia metadata
- Authoring, production and virtual reality systems
- Content management, digital rights management
- Multimedia, graphics, broadcast and video technology
- Content enriched communication services, video conferencing
- Personalization, user modeling, intelligent user interfaces
- Usability, accessibility, universal access, multimodal interaction

WG14.7 – Art and Entertainment
est. 2007

AIMS

- To explore the way art and cinema aesthetics can play a role in different areas of computer science.
One of its goals is to modify computer science by the application of the wide range of definitions and categories normally associated by making art and cinema. To go beyond the usual definition of art and cinema aesthetics in computing, which most often refers to the formal, abstract qualities of such structures – a beautiful proof, or an elegant diagram. To research the broader spectrum of aesthetics – from abstract qualities of symmetry and form to ideas of creative expression and pleasure – in the context of computer science. To prove the assumption behind art and cinema aesthetic computing that the field of computing will be enriched if it embraces all of aesthetics.

SCOPES

The influence of technology and scientific innovation is profoundly changing how we express ourselves. Arts and Entertainment is a new field that represents the exciting convergence of technology with the established design discipline. The Media Arts and Cinema offers a comprehensive approach to design that encourages innovation by media artists, scientists and engineers. The working group will pursue the following activities:

WG14.8 – Serious Games
est. 2012

AIMS

To promote serious games research, development and assessment, and to encourage and facilitate wider adoption and use of serious games, the working group will pursue the following activities:

- to establish a shared understanding and arena for current and emerging serious games
- to connect interdisciplinary approaches/groups and encourage cooperation and collaboration in research and development projects
- to encourage investigation of entertainment in its various forms in serious games (e.g. stimulating, thought provoking, pleasurable, etc.)
- develop methodologies to inform design, development and assessment of serious games
- facilitate the development of suitable academic and practical teaching programs

SCOPES

- video games, simulations, virtual environments, interactive art/media, mixed reality/media for purpose
- interactive narrative and storytelling (e.g. to participate in scenarios and social situations and make ethical, moral and strategic judgments and decisions)
- virtual heritage (e.g. to experience cultures, customs and values of past and present civilizations)
- mobile platforms for serious games
- digital development tools, authoring environments and game engines
- development of methodologies & guidelines for design, development and assessment
- incorporation of learning/pedagogical theories
- social, cultural and ethical impact/considerations of these technologies

WG14.9 – Game Accessibility
est. 2015

AIMS

To promote software and hardware research on game accessibility
To provide, encourage and facilitate the use of methods and tools for inclusion in the game industry
To establish a shared understanding of current and emerging requirements for users with special needs in the
field of video games
To connect interdisciplinary approaches/groups and encourage cooperation and collaboration in research and development projects
To develop methodologies and guidelines for game designers and game developers for accessible games
To build a common knowledge base, making it available for practitioners and for academics/lecturers, for teaching purposes.

SCOPES

Games, video games and entertainment objects, in their broadest sense
Simulations and virtual/augmented or mixed reality
Transmedia and crossmedia
Mobile phones, tablets and emerging platforms and devices
Development tools, game engines
Social, cultural and ethical impact and considerations
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