IFAC International Federation of Automatic Control
Secretariat: Schlossplatz 12, A-2361 Laxenburg, Austria
Phone (+43 2236) 71 4 47, Fax (+43 2236) 72 8 59, E-mail: secr@ifac.co.at – URL: http://www.ifac-control.org

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Newsletter

Contents:

In preparation for the
IFAC 50 celebration in Heidelberg, Germany
we are seeking interesting photos from past IFAC events. The older the better! If you are willing to share a few of your old photos from IFAC history, please send them in electronic form to Professor Stephen Kahne at
s.kahne@ieee.org
Of particular interest are pictures of people and places well known to the IFAC family. These materials are needed before
May 15, 2006

The Tables of Contents of the IFAC Journals can be found respectively at

Automatica
http://www.elsevier.com/locate/automatica

Control Engineering Practice
http://www.elsevier.com/locate/conengprac

Engineering Applications of Artificial Intelligence
http://www.elsevier.com/locate/engappai

Journal of Process Control
http://www.elsevier.com/locate/jprocont

Annual Reviews in Control
http://www.elsevier.com/locate/arcontrol

Journal on Mechatronics
http://www.elsevier.com/locate/mechatronics

PLAN FOR THE FUTURE ACTIVITIES OF THE TECHNICAL BOARD

The Technical Board (TB) coordinates the different Technical Committees (TCs) through the Technical Board Members, and approves their scope, programs and activities. The main tasks of the TB in the beginning of the first year in the triennium 2005-2008 have been to set up the organization and operation of these TCs.

TB Structure
The TB consists of the chair, two vice-chairs, three members with special liaison functions, and nine Coordinating Committee Chairs. It is currently divided into 9 Coordinating Committees (CC), comprising a total of 40 Technical Committees (TC). The Technical Committees within each Coordinating Committee are given on page 2, as are the Chairs of the Coordinating Committees and the Technical Committees. They are also published on the IFAC Homepage. The current 40 TCs have altogether over 1200 listed members.

TC scopes
The main tasks of the TB at the beginning of this triennium also include fine-tuning the scopes of the individual TCs, nominating the vice-chairs, collecting the membership rosters and setting up the TC www pages. The scopes of the 40 Technical Committees are given on pages 3-5.

New TB Homepage
This first period has also been characterized by the development of the new TB homepage. The aim of the new website is to help the TB in its main activities such as the approval of the applications for IFAC events and the online exchange of other relevant TB information. More information about the TB activities can now be found at: http://kepo.hut.fi/IFAC/

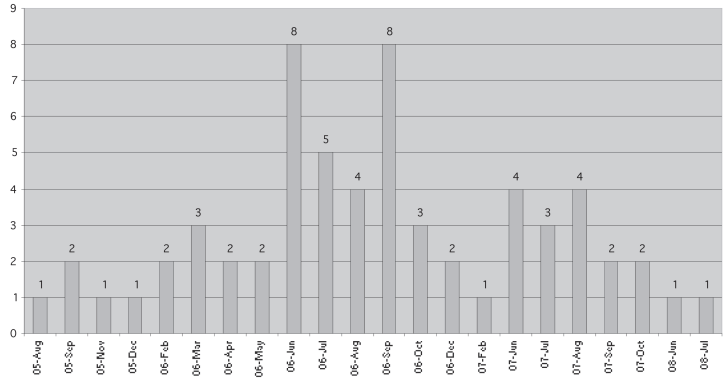
IFAC Events

The TB is also responsible for the final approval of Symposia, Conferences and Workshops. Between the Congress years, about 30-35 Symposia, Conferences and Workshops are masin-sponsored by IFAC every year and about 5 events are co-sponsored with other organizations. The Symposia are listed on the Master Plan, represent long term commitments of IFAC and are held every 3 years. The IFAC events are sponsored by dedicated Technical Committees.

Before and since the World Congress in Prague the TB has approved 38 events for 2006 and so far 18 for 2007. These events include Symposia, Conferences and Workshops, some co-sponsored events and some events which are organized in cooperation with IFAC. Distribution of the events by month is shown below and overleaf.

The list of forthcoming events is available in every issue of the IFAC Newsletter and on the IFAC Homepage at http://www.ifac-control.org

Distribution of IFAC events by month



Distribution of the IFAC events by host country

Australia:	1	Cuba:	1
Austria:	3	Czech Republic:	1
Brazil:	3	Finland:	1
Bulgaria:	1	France:	10
Canada:	2	Germany:	3
China:	1	Greece:	1

Indonesia:	1
Italy:	4
Japan:	2
Korea, Republic:	2
UN Mission in Kosovo:	1
Mexico:	4
Netherlands:	1
Norway:	1
Poland:	3
Portugal:	3
Romania:	1
Russia:	2
Singapore:	1
South Africa:	1
Spain:	3
USA:	4

Other TB activities during 2006 – 2008

Emerging areas
Evaluating technologies that are likely to play a role in the development of our field over the next few years is highly important for the future of IFAC.

The goals of our emerging area project are
1) to identify emerging trends within the control system and automation field;
2) to forecast tomorrow's most significant applications that will result in higher performance, increase efficiency, lower costs, or other benefits, and
3) to identify the control methodologies and implementations that will most likely permit future improvements.

The third emerging areas workshop will be held in Heidelberg in connection with the IFAC Council- and Related Meetings, on September 13, 2006. Participants in the workshop will be the members of the TB and selected Invited Guests.

Milestone reports
The TB also plans to prepare a series of Milestones reports in order to assess the current state of the control and automation technology field during the 2005-2008 triennium. The reports will describe recent accomplishments, identify developing trends & challenges and forecast anticipated future directions. The reports will be prepared prior to the World Congress, and the results will be discussed in the proper forum at the Congress.

IFAC 50th Anniversary
IFAC was founded in Heidelberg, Germany, in 1956. The Celebratory Event "IFAC Conference on Present and Future of Automatic Control" will take place in Heidelberg on Friday, September 15, 2006. Many projects related to this Anniversary event are currently underway and the TB is playing an active role in most of them. The TB will organize the panel discussion "Emerging areas in automatic control and its role for engineering" as part of the celebration event.

Review of the TB Structure
In the course of this triennium, activities are also underway to adapt the structure of the Technical Board to the requirements of today's world of automatic control. The need to form some new Technical Committees and to merge or close down others as well as to regroup them within the Coordinating Committees, will be studied in depth. This activity is scheduled for the second year period.

IFAC World Congress 2008

The IFAC World Congress is the occasion for keeping up with worldwide developments in the theory and applications of automatic control. The third year of the triennium is mainly dedicated to the preparation of this Congress in Seoul, for which the papers have to be reviewed, accepted and organized in the technical sessions. This is a comprehensive activity, in which all the TCs , CCs, the Congress IPC and NOC are involved, and we greatly appreciate all who contribute actively to this event. The success of the event will require efficient and fluent co-operation among all the IFAC bodies and organizations in the host country.

IFAC and Tomorrow's Experts

The future of automatic control lies with young experts and their research, and it is therefore imperative to get these people to participate in the activities of IFAC. The TB formulated a strategy for this project during the last triennium (please find the report at http://kepo.hut.fi/IFAC/), and a plan to put this strategy into action has already started. It will be a delight to see more and more young people at our meetings and events in the future.

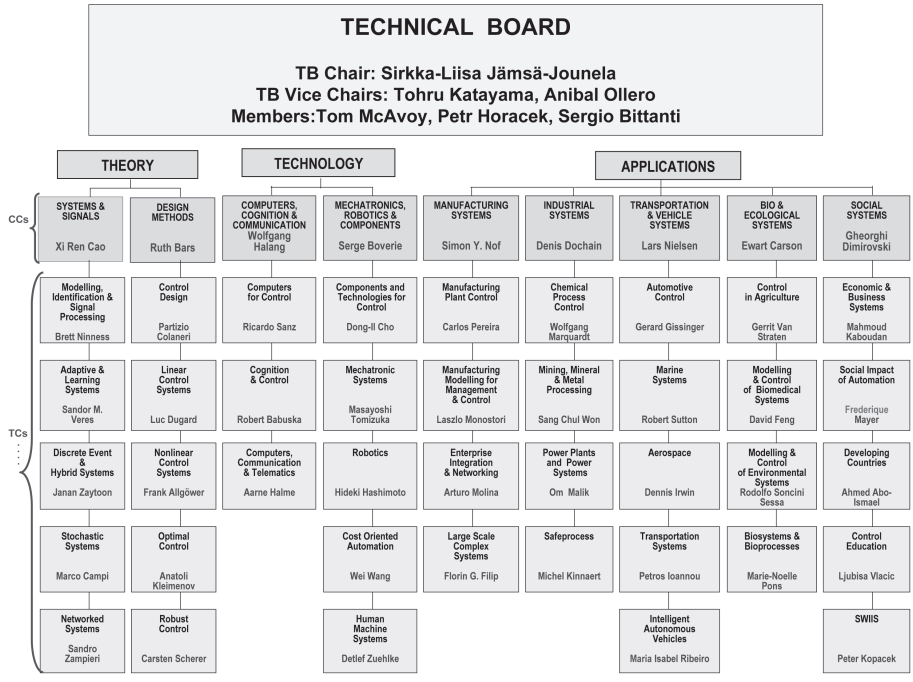
Women in Control in IFAC

The Second Joint IFAC-IEEE CSS Women in Control Luncheon was held in conjunction with the 16th IFAC World Congress in Prague, in July 2005. Forty women scientists and engineers from twenty different countries enjoyed the meeting and had the possibility to exchange experiences. IFAC activities were introduced and more female colleagues were invited and ecouraged to join IFAC. Currently only 2 % of the TC members are female.

Looking Ahead

The number of IFAC events has increased during the last decades and, as presented in this article, we can look forward to as many successful events also in the future. This shows us that IFAC has kept up to date with developments and continues to be highly active and widely recognized over and beyond its 50 years of operation.

S.L. Jämsä Jounela, TB Chair



Offenlegung:

Das Medienwerk 'IFAC Newsletter' wird als Organ der 'International Federation of Automatic Control' (IFAC) verlegt und ist Eigentum dieser Internationalen Föderation, deren Tätigkeit der Förderung von Wissenschaft und Technik automatischer Regelung und Steuerung dient. Die Föderation hat ihren Sitz in Zürich und ist nach Schweizer Recht als gemeinnütziger Verein angemeldet. Sie verfolgt weder wirtschaftliche noch praktische Ziele.

Das Sekretariat der IFAC befindet sich seit 1978 aufgrund eines Übereinkommens mit der Österreichischen Bundesregierung mit der Österreichischen Akademie der Wissenschaften in Laxenburg.

Der 'IFAC Newsletter' erscheint sechsmal jährlich in englischer Sprache unter der Redaktion des Generalsekretärs der IFAC, Univ.Prof.Dr. Kurt Schlacher. Die Zeitschrift dient der Information über die Aktivitäten der IFAC. Sie wird kostenlos an Abonnenten in 50 Länder versandt. Die Kosten werden von der IFAC aus Beiträgen der derzeit 48 Mitgliedsländer getragen.
Präsident der IFAC für 2005-2008 ist Prof. Wook Hyun Kwon (Korea-Republik), Vizepräsidenten sind Prof. Sirkka-Liisa Jämsä Jounela (Finnland) und Prof. Peter Fleming (Grossbritannien). Alle Funktionen werden ehrenamtlich ausgeübt.

(To our readers: To comply with the Austrian 'Media Act', every publication must contain a declaration once a year concerning ownership and purpose, as above.)

IFAC TECHNICAL BOARD
Technical Committees and their Scopes

1 Systems and Signals

1.1. Modelling, Identification and Signal Processing

Long scope:
Addresses all aspects of system modelling and identification, from theoretical and methodological development to practical applications. Considers model selection, model fitting, identification methods, robust estimation, tracking and adaptation, measures of model fit, model validation, fault detection, linear/nonlinear models, experiment design, and automatic methods. Includes non-parametric, state-space, and frequency domain methods, as well as distributed parameter models.
Short scope:
All aspects of system modelling and identification, from theoretical and methodological development to practical applications.

1.2. Adaptive and Learning Systems

Long scope:
Addresses continuous and discontinuous adaptation and learning rules for prediction, control, optimisation and signal processing. Focuses on model-based and data-based adaptive control, adaptation schemes for prediction, filtering, modelling, and decision making. Facilitates migrating intelligence into adaptive systems, gain scheduling including linear parametrically varying (LPV) methodologies, autotuning, iterative schemes, switching control, fault detection and isolation.
Short scope:
Continuous and discontinuous adaptation and learning rules for prediction, control and signal processing.

1.3. Discrete Event and Hybrid Systems

Long scope:
Focuses on the design, analysis and control of Discrete Event Systems (DES) and Hybrid Systems (HS). Discrete event systems are characterized by countable state spaces and state trajectories evolving through "jumps" (discrete events) from one state to another. Hybrid systems combine event-driven dynamics with conventional, time-driven dynamics. Issues involved in the design, analysis and controller synthesis for such systems include synchronization, concurrency, optimization and conflict of events.
Short scope:
All aspects of analysis and control of Discrete Event Systems (DES) and Hybrid Systems (HS).

1.4. Stochastic Systems

Long scope:
Promotes and disseminates knowledge related to probabilistic and statistical methods in modeling, identification, estimation and control. Fields of interest include: stochastic control, estimation theory, system identification, realization theory, synthesis of stochastic systems, learning theory, randomised methods, statistical analysis and simulation of dynamic systems. The emphasis is on methodological and conceptual aspects, in both theory and applications. One of the primary goals of the Committee is to act as a catalyst to bring together the expertise and knowledge developed by different communities and in different contexts.
Short scope:
All aspects related to probabilistic and statistical methods in modeling, identification, estimation and control.

1.5. Networked Systems

Long scope:
Focuses on two main topical areas: Control OF Networks and Control OVER Networks. In the former, control theory provides the tools for regulating the flow of packets on communication networks, through the design of routers, source laws and associated protocols. In the latter, communication theory tools are used to design effective controllers for remote control applications where the loop is closed over an unreliable communication link.
Short scope:
Application of control tools for regulating the flow of packets on communication networks and to design effective controllers operating over unreliable communication links.

2 Design Methods

2.1 Control Design

Long scope:
Considers a wide variety of aspects in the design of control systems, ranging from methodologies to computational techniques and simulation studies. Includes issues on controller constraints and structure, decentralization, digital implementation, model validation, supervision and testing. Addresses also topics on parametric optimization, analytical design, data-based control system design, fault tolerant and switching control. Moreover, it also considers the new challenging fields of synthetic biology and modeling and the control of biochemical networks.
Short scope:
Various topics in the design of feedback systems, including data-based control, fault tolerant control, switching control, supervision and computational techniques, biochemical networks, and synthetic biology.

2.2 Linear Control Systems

Long scope:
Fosters analysis and synthesis for dynamic systems described by linear differential and difference equations. This includes the study of finite-dimensional time-invariant and time-variant systems, descriptor systems, n-dimensional systems, systems with time-delays, infinite-dimensional systems, complex systems, fractional systems and positive systems. Promotes investigation of the structural properties of linear control systems. Considers also control methods and structural properties for decoupling, disturbance rejection, model following, fault detection and diagnosis.
Short scope:
Analysis and synthesis of linear dynamic systems (finite and infinite dimensional, n-dimensional, time variant and invariant, complex etc.) with emphasis on structural properties for control, fault diagnosis and detection.

2.3 Non-Linear Control Systems

Long scope:
Fosters methods for analysis and design of control systems described by nonlinear differential or difference equations. Considers all nonlinear controller design methods including, but not limited to, methods of asymptotic stabilization, regulation, tracking, disturbance rejection and output feedback control. Includes robust control of nonlinear systems, control of constrained systems, nonlinear observer and filter design and the application of nonlinear analysis and design techniques to all fields.
Short scope:
Methods for analysis and design of control systems described by nonlinear differential or difference equations, including the application of these methods.

2.4 Optimal Control

Long scope:
Fosters classical and modern optimization methods used for solving optimal control problems (calculus of variations, dynamic programming, nonlinear programming, optimal control, differential games, evolutionary algorithms). Includes modeling of control optimization, large-scale optimization problems and methods, static optimization problems, non-smooth and discontinuous problems of control and optimization, optimization under uncertainties, singularities in optimization, algorithms and software and industrial applications of optimal control.
Short scope:
Methods for optimal control, including large-scale optimization, nonsmooth and discontinuous optimization, optimization under uncertainties, singularities, algorithms and software.

2.5 Robust Control

Long scope:
Focuses on the analysis and optimal controller synthesis for systems affected by uncertainties. Includes the development of tools for investigating the fundamental trade-off between uncertainty size and achievable controller performance, with particular emphasis on suitable relaxation schemes resulting in efficient numerical algorithms even for systems of high complexity. Covers the whole chain of practical controller design from system modeling by identification via optimization-based controller synthesis up to real-life control system implementation, with robustness guarantees for all sources of potential uncertainties.
Short scope:
Focuses on modeling of systems affected by uncertainty and the development of computational techniques for analysis, optimal controller synthesis and implementation.

3 Computers, Cognition and Communication

3.1 Computers for Control

Long scope:
Considers all aspects of computer-based control, including real-time computing systems, real-time communications and distributed control systems, hardware and software architectures and platforms, development methodologies, software engineering and software tools, hardware and software in safety-critical applications, as well as control of the operational processes in computing systems themselves.
Short scope:
Computer-based control systems for real-time computing and communications, for distributed control and safety-critical applications, and their development methodologies.

3.2 Cognition and Control

Long scope:
Considers all aspects of knowledge-based, fuzzy and neural systems relevant to control, including modelling, identification, stability analysis, design, learning, adaptation, evaluation, implementation, optimisation of structure and parameters by means of genetic algorithms, definition of performance objectives and operation constraints, as well as awareness for computational issues and computer-aided design tools.
Short scope:
Knowledge-based, fuzzy and neural systems relevant to control, structure optimization by genetic algorithms, performance objectives, operation constraints, and awareness for computational issues.

3.3 Computers, Communication and Telematics

Long scope:
Considers all aspects of computerised and telecommunication-based automation systems, providing services to remote equipment, partially methods of remote and distributed control, remote sensor data acquisition, the Internet, and tele-presence, for tele-operation, tele-maintenance, tele-diagnosis, tele-medicine, tele-education, traffic control, robots for hazardous environments, remote industrial production, maritime and aerospace systems, and smart homes.

Short scope:
Computerised and telecommunication-based automation systems providing services to remote equipment for tele-operation, tele-maintenance, tele-medicine and tele-education, and their methodologies.

4 Mechatronics, Robotics and Components

4.1 Components and Technologies for Control

Long scope:
Deals with components (sensors, actuators and instruments) and technologies (generic methodologies, techniques, new developments, and subsystems) for advanced control and measurement applications. Topics of interest include functionalities, quality of service and performance, data handling techniques, design methods and tools, implementation and modeling of components and instruments, mechatronics, MEMS, communication networks and fieldbuses, and applications to various engineering systems.
Short scope:
Deals with components (sensors, actuators and instruments) and technologies (generic methodologies, techniques, new developments, and subsystems) for various control systems.

4.2 Mechatronic Systems

Long scope:
Covers the integrated design of mechanical parts with the embedded control system, and includes software tools, modelling, identification and control methods, hardware-in-the-loop simulation, human-machine interfaces, and specific design methodologies. Mechatronic principles are applied in a wide variety of areas, such as vehicles (aircraft, automobiles, ships, spacecraft and trains), engines, medical systems, information storage systems, precision mechatronic systems (optical systems, machine tools), robots, and micro-/nano-systems. Examples of other focal points are active bearings, MEMS, motion and vibration control, smart structures and education for mechatronic systems.
Short scope:
The synergetic combination of precision mechanical engineering, electronic control and systems thinking in the design of products and processes.

4.3 Robotics

Long scope:
Covers actual robotics topics from the viewpoint of theory and applications, including RT (Robot Technology), robot manipulators, mobile robots, flying robots, autonomous systems, telerobotics, networked robotics, embedded robotics, intelligent robotics, perception and sensing, information and sensor fusion, guidance, navigation and control. Application fields address daily life, transportation, service, medicine, agriculture, manufacturing, underwater, mining, space, and entertainment.
Short scope:
RT (Robot Technology) as a strong engine to drive robotics fields embedded in our environments, to ensure safety and security, assist humans, increase intellectual productivities and improve manufacturing. Fusion of IT and RT into IRT (Information and Robotics Technology).

4.4 Cost Oriented Automation

Long scope:
Promotes reference architectures, development approaches and maintenance strategies for cost savings in manufacturing processes, transportation, and building automation. It also promotes intelligent maintenance systems wth the integration of human skills, decentralized process control strategies, and addresses automation integrated with information processing.
Short scope:
Promotes reference architectures, development approaches and maintenance strategies for cost savings in manufacturing processes, transportation, and building automation.

4.5 Human Machine Systems

Long scope:
Considers all conditions where humans (individuals as well as groups) use, control or supervise tools, machines or technological systems. Fosters analysis, design, modelling and evaluation of HM- systems and includes decision making and cognitive processes, modelling of human performance (reliability, mental load, predictability), real and virtual environments, design methodology, task allocation-sharing and job design, intelligent interfaces, human operator support, work organisation, and selection and training criteria.
Short scope:
All conditions where humans (individuals as well as groups) use, control or supervise tools, machines or technological systems.

5 Manufacturing Systems

5.1 Manufacturing Plant Control

Long scope:
Addresses the scientific challenges of automation and issues raised by the integrated manufacturing systems (IMS) paradigm in order to apply micro electro-mechanical systems (MEMS), mechatronics, manufacturing execution systems (MES), multi-agents systems (MAS), holonic manufacturing systems (HMS) and e-technologies to digitally control with more agility in the entire manufacturing chain, from design through manufacturing, to maintenance and service, over the whole product and process life cycle.
Short scope:
All applications of automation. Information and communication technologies for controlling the manufacturing plant within the e-enterprise.

5.2 Manufacturing Modelling for Management and Control

Long scope:
Addresses theory and application of descriptive and prescriptive models of e-manufacturing and supply chain systems, from simulation and information to optimisation, analytic and knowledge-based models oriented to production and service management, including enterprise and multi-enterprise resource planning, communication-, agent-, and Internet-based manufacturing.
Short scope:
Models of e-manufacturing and supply chain systems, for production and service management, design, and control in communication and Internet based enterprises.

5.3 Enterprise Integration and Networking

Long scope:
Fosters research in enterprise networking and integration; in particular, enterprise networking reference architectures, enterprise engineering methodologies, and enterprise modelling and application protocols. Aims are to identify theoretically sound and practically viable techniques for enterprise Internet-based collaboration, enterprise networking, and Unified Enterprise Modelling Language to support the exchange of enterprise models among various user communities and of modelling tools.
Short scope:
Reference models, modelling methodologies and tools for enterprise networks design and implementation. Unified Enterprise Modelling Language. Verification, validation, documentation and storage of enterprise models.

5.4 Large Scale Complex Systems

Long scope:
Focus on manufacturing and related systems characterised by a large number of variables, non-linearities, uncertainties, and/or a networked structure of interconnected subsystems. It aims at developing new hierarchical control methods, decision-making and risk analysis techniques together with practical solutions based on new advances in computer and communication tools.
Short scope:
Theory of complex systems, decentralised control and estimation, decision-making, hierarchical optimisation and control, networked/interconnected systems, communication-based information systems.

6 Industrial Systems

6.1 Chemical Process Control

Long scope:
Focuses on development of new chemical process control techniques and algorithms for application in pilot and industrial-sized plants. Processes of interest include all techniques used in petroleum, chemical, petrochemical, specialty chemical, and pharmaceutical processes, as well as in the food, cement, and paper and pulp industries. Has a strong interest in the treatment of biological processes. Also considers system descriptions, component selection, sensors, actuators, monitoring, local control, plant-wide control, real-time optimisation, planning and scheduling and technology transfer.
Short scope:
Development of new control techniques and algorithms for application in pilot and industrial-sized plants that involve the knowledge of chemistry and, increasingly, biology.

6.2 Mining, Mineral and Metal Processing

Long scope:
Fosters all aspects of process control in the fields of mining, mineral and metal processing, by providing a forum for discussion and dissemination of information on related control theory and applications, measurements, automation and optimisation. Also includes exploration of fossil materials, recycling system control and internet-based control.
Short scope:
All aspects of process control in the fields of mining, mineral processing and metal processing.

6.3 Power Plants and Power Systems

Long scope:
Addresses all aspects of modelling, operation, and control of power plants and power systems. Includes load forecast and flow calculation, dynamic interactions of power plants and power systems, constraints and security control concepts, tools for control system design, testing and documentation, real time simulation and dispatching, technical impact of deregulation on power system control, and security monitoring as well as analysis and control in deregulated power systems.
Short scope:
All aspects of modelling, operation, and control of power plants and power systems.

6.4 Fault Detection, Supervision & Safety of Techn. Processes — SAFEPROCESS

Long scope:
Promotes on-line fault detection and isolation (FDI), estimation and diagnosis, with a view to predictive maintenance and supervision, as well as fault tolerant control. Addresses residual generation, residual evaluation, performance monitoring, statistical hypothesis testing, on-line change detection, software sensors, active input signal generation for FDI, decision making, controller reconfiguration and switching. Promotes analysis tools such as failure mode effect analysis (FMEA), severity analysis and reliability theory to achieve fault tolerant designs.
Short scope:
On-line fault detection and isolation, fault decision theory, diagnosis, monitoring and supervision based on hardware and analytical redundancy, reliability, availability and maintenance planning.

7 Transportation and Vehicle Systems

7.1 Automotive Control

Long scope:
Considers modelling, supervision, control, and diagnosis of automotive systems, automobile power trains, propulsion, vehicle dynamic systems, and electrical and alternative drive vehicles. Includes integrated traffic management, general automobile/road-environment strategies, and distributed discrete-event systems. Considers also automotive sensors, in-vehicle communication networks, man-machine interfaces, and information displays/systems.

Short scope:
Modeling, supervision, control, and diagnosis of automotive systems, power trains, vehicle dynamic systems, automotive sensors, integrated traffic, and in-vehicle communication.

7.2 Marine Systems
Long scope:
Considers theory and application of automatic control engineering and artificial intelligence techniques to the maritime field. To include surface vessels, floating structures, subsea systems, underwater vehicles, human factors, autonomous craft, and other devices within the marine environment. Addresses navigation, guidance and control, monitoring and surveillance, fault diagnosis, optimization, planning, modelling, identification, and control architectures. Interests also span total vessel control to computer systems for marine applications, and detailed control of ancillary and auxiliary subsystems.
Short scope:
Theory and application of control engineering and artificial intelligence techniques to the maritime field. Navigation, guidance, and control, monitoring and surveillance, fault diagnosis, optimisation, planning, modelling, identification, human factors and control architectures.

7.3 Aerospace
Long scope:
Deals with every aspect of dynamics, control, and mission control of aeronautical and space-related systems including missiles, launch and re-entry vehicles, aircrafts, satellites, space stations, helicopters, and autonomous aerospace systems. Addresses conceptual definition, design, simulation, testing, verification, operations and post-operational analysis. Also includes systems in vehicles (e.g. pointing systems and manipulators), man-in-the-loop systems, guidance, navigation and vehicle control, and mission control and operations.
Short scope:
Dynamics, control, and mission control of all aeronautical and space related vehicles and vehicle systems.

7.4 Transportation Systems
Long scope:
Addresses ground transportation systems (road and guided transport) and air traffic control systems for both passengers and transported goods with regard to modelling, simulation, surveillance, control, optimisation, real-time operations, information processing, and decision support. Also addressed are common aspects and genetic techniques for all transportation modes (road, rail, air, maritime, and intermodal) in the areas of system engineering, human-machine interface, human factors navigation, logistics, safety, simulation, surveillance, control, and intelligent transportation systems (ITS).
Short scope:
Ground transportation systems (road, and guided transport) and air traffic control systems for both passengers and transported goods.

7.5 Intelligent Autonomous Vehicles
Long scope:
Considers generic methodologies and techniques applicable to intelligent autonomous vehicles. Includes mobile robots on land, at sea, in air or in space, multi vehicle systems and networks of autonomous vehicles. Addresses sensing, sensor integration and perception, architectures, planning, mission and motion control, navigation and cooperative navigation techniques, SLAM, teleoperation, human and vehicle interaction and practical applications. Interests span from intelligent vehicle control to auxiliary systems support.
Short scope:
Methodologies and technologies applicable to intelligent autonomous vehicles, including mobile robots and multi-vehicle systems, on land, at sea, in air or in space.

8 Bio-and Ecological Systems

8.1 Control in Agriculture
Long scope:
Fosters modelling and control aspects of agriculture. Methodologies for agricultural production lines such as photosynthesis of crops under environmental stresses, soil-plant atmosphere cycle and metabolism of farm animals. Post-harvest processes such as grading, drying, storage of crops including fruits and vegetables. Food processing (quality and safety). Environmental and climate control of greenhouses, warehouses and animal houses. Energy issues in agriculture such as heating, cooling, lighting, and energy saving.
Short scope:
Control aspects of agricultural processes. Methodologies for crop production and animal husbandry, post-harvest processes (grading, drying, storage of crops), food processing (quality and safety). Environmental and climate control of greenhouses, warehouses and animal houses, energy issues.

8.2 Modelling and Control of Biomedical Systems
Long scope:
Considers applications of systems, modelling, informatics and control concepts, methodologies and techniques in biology, physiology, medicine and healthcare. Specific topics include drug delivery and pharmacokinetics, control of physiological and clinical variables in high dependency medicine and in managing chronic disease, signal and image analysis, rehabilitation engineering, healthcare delivery, clinical decision support, telemedicine and e-Health.
Short scope:
Applications of systems, modelling, informatics and control concepts, methodology and techniques in biology, physiology, medicine and healthcare.

8.3 Modelling and Control of Environmental Systems
Long scope:
Promotes the development of modelling and control methodologies for natural systems. Emphasis is placed on the synergistic role of risk analysis, impact evaluation, management of natural resources with the design of planning and management systems for participatory decision making, to ensure an effective integration of technology and environment through a multi-objective approach.
Short scope:
Modelling and control methodologies for reliable management of natural resources and prevention and mitigation of environmental hazards and disasters.

8.4 Biosystems and Bioprocesses
Long scope:
Covers all major areas of biosystems and bioprocesses where computers are used to aid bioprocess design, supervision, diagnosis, operation, optimisation and control, in monitoring, modelling, estimation, fault diagnosis and monitoring, data mining tools, bioinformatics, control, scheduling, optimisation, life cycle analysis with applications in microbial and (any) cell technology; pharmaceutical, food processes waste biotreatment, and in downstream processing and integrated bioprocessing.
Short scope:
Promotion of research and development in all major areas of biotechnology where computers are used to aid bio-process design, supervision, diagnosis, operation, optimisation and control.

9 Social Systems

9.1 Economic and Business Systems
Long scope:
Addresses modelling techniques for economic systems. It bridges the gap between economics and engineering by encompassing areas of research in econometrics, statistics, computer science, artificial intelligence, and other useful tools for decision and control in economics and management. The focus topics include (but are not limited to) modelling techniques (econometrics, time-series, agent-based, and financial engineering), computational intelligence (neural networks, wavelets, decision support systems, and evolutionary and genetic programming), and planning and control (forecasting, management, optimal control, and geographic information sciences).
Short scope:
Modelling, control and optimisation of economic, management, and business systems. Interface between system engineering and economic techniques and approaches.

9.2 Social Impact of Automation
Long scope:
Addresses relationships between automated systems and social environments. This includes the social effects of automation, socially desirable requirements for automation development, and socially acceptable alternatives for automation design. Also addressed are environmental, health, and safety implications of automation, engineering ethics, professional responsibility, and public policy.
Short scope:
Relationships between automated systems and social environments, including the social effects of automation, requirements for automation development, and environmental and heath implications.

9.3 Developing Countries
Long scope:
Fosters the development of automation and related topics, such as education and training for automation, in developing countries. Control and automation compatibility with social and economic structures of developing countries. Stimulates developing countries interest in IFAC, invites and assists NMOs to organize workshops, symposia and regional conferences to bring together scientists and specialists for the purpose of sharing and comparing experiences.
Short scope:
Automation and related topics in developing countries, fostering developing countries interest in IFAC, invitation and assistance to NMOs in the organisation of workshops, symposia and regional conferences.

9.4 Control Education
Long scope:
Addresses university education and continuing education issues in control engineering. Methodology for improving the theory, practice, and accessibility of control systems education. Control engineering laboratories, experiments, computer aided design, distance and virtual education technologies, e-learning and internet-based teaching technologies. Cooperation and technology transfer between academia and industry. Control engineering education in developing countries (in collaboration with the TC on Developing Countries). Control Engineering Textbook Prize nomination.
Short scope:
Education issues in control engineering. Methodology for improving the theory, practice, accessibility of control systems education. Control Engineering Textbook Prize nomination.

9.5 Supplemental Ways of Improving International Stability — SWIIS
Long scope:
To identify, define, and improve factors that significantly influence international stability. To outline ways in which IFAC can use its own systems and control capabilities to enhance international stability and build a more peaceful world. To interact with other organisations having similar goals. To cooperate with other IFAC TCs regarding SWIIS activities.
Short scope:
Identification, definition, and improvement of factors that significantly influence international stability. Cooperation with related groups to improve SWIIS effectiveness.

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FORTHCOMING EVENTS

February – August 2006

For a complete list of forthcoming IFAC events, go to http://www.ifac-control.org/generated/fcevents.htm

Title	2006	Place	Further Information
IFAC Symposium Mathematical Modelling – 5th MATHMOD	February 08 – 10	Vienna Austria	http://www.mathmod.at email: inge.troch@tuwien.ac.at
IFAC Workshop Programmable Devices and Embedded Systems – PDeS	February 14 – 16	Brno Czech Rep.	www.pdes2006.feec.vutbr.cz e-mail: pdes2006@feec.vutbr.cz
Interop/IFAC Intl. Conference Interoperability for Enterprise Software and Applications	March 22 – 24	Bordeaux France	www.i-esa.org e-mail: program@i-esa.org
IFAC Workshop Control Applications in Post-Harvest and Processing Technology CAPPT 2006	March 26 – 29	Potsdam Germany	http://CAPPT2006.atb-potsdam.de e-mail: cappt2006@atb-potsdam.de
IFAC Symposium System Identification – SYSID 2006	March 29 – 31	Newcastle Australia	http://sysid2006.org e-mail: secretariat@sysid2006.org
IFAC Sympoisum Advanced Control of Chemical Processes –ADCHEM 2006	April 2 – 5	Gramado Brazil	http://www.adchem.org e-mail: adchem@enq.ufrgs.br
IFAC Workshop Control Applications of Optimization	April 26 – 28	Cachan-Paris France	http://www.ens-cachan.fr/cao06 e-mail: sec.ifac.cao06@ens-cachan.fr
IFAC Symposium Information Control Problems in Manufacturing – INCOM 2006	May 17 – 19	St. Etienne France	http://www.emse.fr/incom06 e-mail: incom06@emse.fr
IFAC Symposium Automated Systems Based on Human Skill and Knowledge	May 22 – 24	Nancy France	http://www.ensgsi.inpl-nancy.fr/ASBoHS06/ e-mail: Laure.Morel@ensgsi.inpl-nancy.fr
Intl. Workshop Variable Structure Systems – VSS06	June 05 – 07	Alghero Italy	http://www.diee.unica.it/vss06/ e-mail: vss06@diee.unica.it
IFAC Conference 6th Analysis and Design of Hybrid Systems ADHS'06	June 07 – 09	Alghero Italy	http://www.diee.unica.it/adhs06/ e-mail: adhs06@diee.unica.it
2006 American Control Conference - in cooperation with IFAC -	June 14 – 16	Minneapolis MN, USA	http://www.a2c2.org/conferences/acc2006/ e-mail: misawa@ceat.okstate.edu
IFAC Conference Improving Stability in Developing Nations through Automation – ISA'06	June 15 – 17	Prishtina UN Mission in Kosovo	http://www.ihrt.tuwien.ac.at/swiis2006/ e-mail: mwhan@ihrt.tuwien.ac.at
IFAC Symposium 7th Advances in Control Education – ACE 06	June 21 – 23	Madrid Spain	http://www.dia.uned.es/ace2006/index.html e-mail: ace2006@dia.uned.es
IFAC/IEEE Symposium Power Plant and Power System Control	June 25 – 28	Kananaskis/Alberta Canada	http://ifacpps2006.org/ e-mail: ifacPPS2006@ucalgary.ca
IFACConferences Analysis and Control of Chaotic Systems	June 28 – 30	Reims France	http:// www.univ-reims.fr/chaos06 e-mail: chaos06@univ-reims.fr
IFAC Workshop Intelligent Solutions in Embedded Systems	June 30	Vienna Austria	http://clara.tuwien.ac.at/wises06/ e-mail: to be announced
IFAC Symposium 5th Robust Control – ROCOND	July 05 – 07	Toulouse France	http://www.laas.fr/rocond06 e-mail: rocond06@laas.fr
IFAC Workshop 6th Time Delay Systems – TDS06	July 10 – 12	L'Aquila Italy	http://www.diel.univaq.it/IFACTDS06 e-mail: invtds06@ing.univaq.it
Asian Control Conference – in cooperation with IFAC	July 18 – 21	Bali Indonesia	http://www.ascc2006.com e-mail: secretariat@ascc2006.com
IFAC Workshop Lagrangian and HamiltonianMethods for Nonlinear Control	July 19 – 21	Nagoya Japan	http://www.robot.kuass.kyoto-u.ac.jp/lhmnlc06/ e-mail: lhmnlc06@haya.nuem.nagoya-u.ac.jp
IFAC Workshop Fractional Differentiation and its Applications	July 19 – 21	Porto Portugal	http://www.gecad.isep.ipp.pt/FDA06 e-mail: fda06@dee.isep.ipp.pt
INSTCC/IFAC Conference Informatics in Control, Automation and Robotics – ICINCO-2006	August 01 – 05	Setubal Portugal	http://www.icinco.org e-mail: secretariat@icinco.org
IFAC Symposium Control in Transportation Systems	August 29 – 31	Delft Netherlands	http://www.rws-avv.nl/ifac-cts2006 e-mail: ifac-cts2006@avv.rws.minvenw.nl
IFAC Workshop Applications of Large Scale Industrial Systems – ALSIS'06	August 30 – 31	Helsinki, FI cruise liner	http://ntsat.oulu.fi/index.php?286 e-mail: office@atu.fi