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Scope

Areas of particular interest include 12 thematic Technical Tracks:

- Track 1 Grid Computing, and Virtual Organization Systems
- Track 2 Service Oriented Architectures in Computing and Communications
- Track 3 High Performance Autonomous Computing
- Track 4 Internet, and Web Services
- Track 5 Emergence, Self-Organization, and Adaptation
- Track 6 Open Dynamic Multi-Agent Systems
- Track 7 Distributed Intelligence and Systems
- Track 8 Self-Organization and Self-Management in Distributed and Grid Computing
- Track 9 High Performance Autonomous Networking
- Track 10 Wireless Networks, and Mobile Communications and Computing
- Track 11 Self-Organization and Self-Management in Communications
- Track 12 Industrial System Applications

Full lists of indicative topics in each Technical Track are [downloadable](#)

Track 1 Grid Computing, and Virtual Organization Systems

- collaborative computing
- community grids
- distributed collaborative computing
- distributed problem solving environments
- distributed workflow management
- e-science
- grid architectures and systems
- grid based problem solving environments
- grid based scalable collaboration
- grid dependability, survivability and reliability
- grid economies
- grid interoperability
- grid middleware
- grid monitoring and accounting
- grid programming environments
- grid QoS, performance and deployment issues
- grid resource management
- grid resource virtualization
- grid scheduling and load balancing
- grid service composition and orchestration
- grid service virtualization
- grid trust and security
- grid usage models and portal tools
- grid workflow management
- interoperation between heterogeneous virtual organizations
- knowledge grid
- large-scale distributed knowledge management

- middleware for clusters and grids
- mobile grid
- novel grid architectures
- open grid service architectures
- P2P architectures
- resource virtualization
- scalability and adaptability in P2P and grid systems
- semantic based virtual organizations
- semantic web
- utility computing models for clusters and grids
- virtual community
- virtual organization architectures
- virtual organization environments
- virtual organization frameworks
- virtual organization management systems
- virtual organization platforms
- virtualization methodologies
- workflow interoperation

Track 2 Service Oriented Architectures in Computing and Communications

- ad hoc service provision frameworks
- adaptive service frameworks
- agent based negotiation and management of QoS
- agent based service composition, orchestration, and choreography
- agent based service description, advertisement, matchmaking, discovery, and brokering
- agent based service level agreements frameworks
- communications service architectures
- computing service architectures
- distributed service oriented software
- end-to-end QoS in converging access networks
- enterprise service oriented architectures
- event-driven service oriented architectures
- interoperation of heterogeneous services
- on-demand service architectures
- ontology automatic generation and maintenance
- ontology learning and reasoning
- ontology matching for service discovery, negotiation, orchestration, composition, and execution
- organic QoS management
- personalized services and applications

- policy based frameworks for service level agreements
- policy based frameworks of service oriented architectures
- policy based management of heterogeneous services
- policy based programming for service oriented architectures
- policy repository management for service oriented architectures
- problem solving service architectures
- QoS and context-aware service adaptation
- QoS aware middleware and web services
- QoS selection algorithms
- service automatic capturing and analysis
- service automatic configuration and composition
- service creation and deployment
- service discovery protocols and frameworks
- service infrastructures
- service interaction and negotiation
- service level agreements frameworks in communications
- service level agreements frameworks in computing
- service life cycle management
- service management
- service ontology
- service orchestration, coordination and choreography
- service oriented computing
- service oriented distributed problem solving environments
- service oriented knowledge based systems
- service oriented programming and user interfacing
- service platforms and frameworks
- service simulation and visualization
- service validation and test
- user level service programming
- web services and middleware for mobile environments

Track 3 High Performance Autonomous Computing

- ad hoc computing environments
- agent based computing
- autonomous computing
- cluster architectures
- cluster computing
- context-aware computing

- co-scheduling in distributed computing
- data-intensive and I/O computing
- dependable computing
- design for high reliability
- distributed and parallel algorithms
- distributed and parallel operating systems
- distributed architecture
- distributed database management
- distributed file systems
- distributed information security
- distributed object oriented systems
- distributed operating systems
- distributed programming environments and tools
- distributed resource management
- distributed software systems and tools
- disturbed storage systems
- fault-tolerant architectures
- fault-tolerant computing
- high performance computational biology and bioinformatics
- intelligent computing
- interoperable systems
- job scheduling and load balancing in distributed computing
- middleware
- models and algorithms of high performance computing
- multi-core and multi-threaded architectures
- multimedia systems and applications
- on-demand computing
- organic computing
- parallel and distributed architectures
- parallel and distributed processing
- parallel and distributed software
- parallel computing
- parallel I/O and storage systems
- parallel programming languages
- performance modeling and evaluation
- power-aware computing
- real-time operating systems
- re-configurable computing
- re-configurable problem solving
- re-scheduling in distributed computing
- resource management in distributed computing
- safety critical systems
- self-configuration of computing environments
- self-configuring computing
- self-healing systems
- self-management of computing resources

- self-managing computing
- self-monitoring, self-configuration, self-optimization, self-healing, and/or self-protection systems
- self-optimizing computing
- servers dynamic configuration
- shared memory, distributed memory
- stability, scalability, and fault tolerance of distributed systems
- trustworthy systems
- utility computing
- wired and wireless distributed systems

Track 4 Internet, and Web Services

- adaptive web services
- automatic semantic annotation
- denial of service issues
- enterprise intranets
- internet based decision support systems
- internet based systems engineering
- internet caching algorithms
- internet computing
- internet engineering
- internet protocols analysis and design
- internet QoS and performance evaluation
- internet scalability
- internet security and trust
- internet telephony
- internet traffic models and statistics
- internet video technologies
- internetworking
- java applications on internet
- knowledge web
- markup languages: HTML/XML/VRML
- meta-computing
- next generation internet
- reactive web
- semantic brokering
- semantic interoperability
- semantic knowledge portals
- semantic normalization
- semantic searching and querying
- semantic visualization and modeling
- semantic web
- semantic web mining
- semantic web services
- web based computing
- web based mobility
- web based software engineering
- web browsers and user interfaces
- web data mining

- web documents management
- web engineering
- web firewall
- web interface technologies
- web knowledge discovery
- web monitoring
- web ontology
- web QoS
- web scalability
- web search
- web security, privacy, and ethics
- web server performance
- website design and coordination
- websites evolution and re-engineering

Track 5 Emergence, Self-Organization, and Adaptation

- autonomy based interactions
- cellular automata approaches to emergence
- cellular automata model of multi-agent systems
- controllability of emergence
- convergence of multi-agent systems
- decentralized control of multi-agent systems
- emergence and interactions
- emergent behaviors in multi-agent systems
- entropy approaches to self-organization and adaptation
- feedback and control in multi-agent systems
- feedback control of chaos in complex systems
- feedback loops in self-managing systems
- hierarchical self-organization and adaptation
- holonic architectures for self-organization
- interaction mechanisms for self-organization and emergence
- models of emergent behaviors
- self-organizing software
- self-stabilization of multi-agent systems

Track 6 Open Dynamic Multi-Agent Systems

- ad hoc multi-agent systems
- adaptation and evolution in complex networks
- agent based complex networks
- dynamic coalition formation
- dynamic formation of supply chain management
- emergence in complex networks
- emergent intelligence in multi-agent systems

- evolution of multi-agent systems
- infrastructure for large-scale coordination
- internet-scale multi-agent systems
- large groups of heterogeneous agents
- learning and evolution in multi-agent systems
- massively multi-agent coordination and control
- massively multi-agent infrastructures
- massively multi-agent models of social worlds
- massively multi-agent simulation
- massively multi-agent systems
- multi-agent based collaborative networks
- multi-agent based social networks
- multi-agent based supply chain management
- multi-agent based supply networks
- multi-agent based virtual enterprises
- multi-agent federation
- multi-agent knowledge discovery
- multi-agent learning
- multi-agent models of supply chain management
- multi-agent models of virtual enterprises
- multi-agent service discovery and composition
- multi-agent societies
- network-centric multi-agent systems
- re-configurable multi-agent systems
- scalability of open dynamic multi-agent systems
- scale-free agent networks
- self-organization of open dynamic multi-agent systems
- strategic adaptation of multi-agent systems
- web dynamics as complex networks

Track 7 Distributed Intelligence and Systems

- ant colony optimization
- artificial immune systems
- artificial life
- behavioral models of social insects and other animal societies
- biological social systems
- biologically inspired computing
- biologically inspired interaction mechanisms
- cellular automata
- coalition operation management
- collective adaptation
- collective evolution
- collective intelligence

- collective robotics
- computational economy
- computational pheromones
- cooperative environment exploration
- culture algorithm
- distributed collaborative systems
- distributed knowledge systems
- distributed problem solving
- emergent collaborative systems
- empirical and theoretical research in swarm intelligence
- evolutionary computation
- evolutionary learning systems
- grid based problem solving environments
- holonic manufacturing
- holonic virtual enterprises
- industry applications of distributed and agent-based systems
- knowledge grids
- molecular computing
- multi-agent based coalition formation
- particle swarm optimization
- quantum computing
- reproduction machines
- self-organization in biological systems
- self-organized intelligence
- social intelligence
- stigmergy
- swarm intelligence
- swarm robotics
- team behavior

Track 8 Self-Organization and Self-Management in Distributed and Grid Computing

- adaptive control in service management
- adaptive service deployment
- architectures and algorithms for self-* systems
- automated distributed resource allocation
- context-aware systems
- controllability and observability in distributed and grid computing
- decentralized control of distributed and grid computing
- distributed load balancing
- feedback control frameworks of grid resource management
- fundamentals of self-managing systems
- middleware architectures of self-managing systems

- overlay networks
- P2P systems
- queuing models of grid services
- self-configuring grid infrastructures
- self-diagnosis, self-healing and self-protection in grid/distributed computing environments
- self-management in grid/distributed computing
- self-management of computing services
- self-management of grid resources and services
- self-organization in P2P applications
- self-organizing architectures of grid/distributed computing
- self-organizing control and management of distributed computing infrastructures
- self-organizing service oriented architectures
- self-repairing distributed systems
- stochastic self-adaptive/organizing control of distributed computing systems

Track 9 High Performance Autonomous Networking

- ad hoc networking
- adaptive networking systems
- all IP networks
- application-aware networking
- behavior and self-configuration of network elements
- complex network and resource management
- congestion control and queue management in networking
- context awareness and self-adaptation of networking
- context-aware networks
- control architectures of active networks
- distributed network management
- high performance networking systems
- high-speed networks
- intelligent networks
- internetworking architectures
- manageability of network components
- multimedia networks
- network adaptation
- network centric computing
- network intrusion detection and protection
- network operating systems
- network privacy and security
- network protocols

- network QoS and performance evaluation
 - network routing algorithms
 - network service level agreements
 - network stability in the presence of inconsistency
 - next generation network architectures
 - novel network architectures
 - on-demand networking
 - policy based frameworks for self-managed networks
 - policy based management of network resources and services
 - policy based models for access control, resource allocation, systems management
 - policy based self-organization and self-management architectures for networking
 - policy based systems, platforms, and languages for networking
 - policy specification processes and languages
 - programmable networks
 - rich semantic network modeling
 - self-configured networks
 - self-defending networks
 - self-healing and self-protection in network systems
 - self-managed networks, systems and services
 - self-management in networking
 - self-management of network resource and service
 - self-management of network resources and service
 - self-monitoring of network operations
 - self-optimization of network performance
 - self-organization and emergent behavior in P2P networks
 - self-organization and self-configuration of networks
 - self-organized ad hoc and sensor networks
 - self-organized service deployment
 - self-organizing control and management of networking infrastructures
 - self-protection, self-diagnosis, and self-healing of networking
 - SLA/contract based network management for next generation networks
 - user level programming of network services
 - 3G/4G bandwidth on demand
 - cognitive radio
 - congestion and admission control
 - cross-layer design in wireless networks
 - dynamic spectrum access networks
 - emergency wireless communications
 - encryption and cryptography in wireless and mobile environment
 - end-to-end QoS
 - heterogeneous wireless networks
 - home and personal area networks
 - integrated wireline/wireless networks
 - interference mitigation and management techniques
 - internetworking heterogeneous wireless/wireline networks
 - location based services and positioning
 - media and content distribution over wireless networks
 - micro and macro-mobility
 - middleware for handhelds and mobile services nodes
 - mobile ad-hoc networks
 - mobile and pervasive collaboration systems
 - mobile and wireless applications and services
 - mobile and wireless IP
 - mobile communication system architecture
 - mobile database access
 - mobile multimedia applications
 - mobile networks and applications
 - mobile radio networks
 - mobile software architecture and programming
 - mobile/wireless networks modeling and simulation
 - mobility, location and handoff management
 - multi-hop wireless networks
 - multimedia QoS and traffic management
 - multiple access algorithms and schemes
 - network monitoring and accounting in wireless and mobile environment
 - networks convergence and integration
 - performance of end-to-end protocols over wireless networks
 - pervasive computing and applications
 - policy based management in wireless LANs and MANs
 - power and interference control
 - privacy, authentication, and authorization in wireless and mobile environments
 - protocols for wireless networks and mobility
- Track 10 Wireless Networks, and Mobile Communications and Computing**
- 2G/3G/4G integration

- proxies and middleware for wireless networks
- QoS in wireless networks
- QoS management mobile systems
- QoS profiling and pricing
- radio communications systems
- robustness in wireless networks
- routing in multihop, ad hoc and sensor networks
- security and privacy in wireless and mobile environment
- service portability and mobility
- software defined radio and re-configurability
- spectrum allocation and management
- topology control in wireless networks
- traffic and congestion control, QoS, resource management in wireless networks
- traffic modeling and analysis in mobile and wireless networks
- ubiquitous computing
- wearable computing
- wireless and mobile network planning
- wireless broadband mobile access
- wireless LANs
- wireless MAC protocols
- wireless MANs
- wireless mesh networks
- wireless multicasting
- wireless networks managements
- wireless protocols and architectures
- wireless real-time communications
- wireless sensor networks
- wireless WANs: 2G/3G/4G
- wireless-wireline convergence

Track 11 Self-Organization and Self-Management in Communications

- accountability and self-organization in communications
- bio-inspired approaches for communications and networking
- communication and synchronization protocols
- context awareness of communication services
- fault-tolerant communication systems
- group forming networks
- heterogeneous network convergence via self-organization
- human in the loop of self-organizing

- networks
- policy based self-organization and self-management architectures and frameworks for communications
- policy based systems, platforms, and languages for communications
- robust communication systems
- self-adaptation of communications
- self-configuring mobile networks
- self-evolution of the internet
- self-management, self-configuration, and self-optimization in communications
- self-managing networking
- self-organization and self-management of QoS / service level agreement
- self-organization in role based and multi-level systems
- self-organization of over- and underlays and in cross layering
- self-organization of overlay networks
- self-organization of P2P networks
- self-organization of wireless networks (sensor, ad-hoc, mesh networks)
- self-organized service deployment in communications
- self-organizing satellite networks
- self-protection, self-diagnosis, and self-healing of communication systems
- service level agreements in communications

Track 12 Industrial System Applications

- agent-based computing for enterprise collaboration
- business information systems and web services
- collaborative peer-to-peer information systems
- distributed collaboration
- distributed enterprise systems
- distributed intelligence for industrial applications
- distributed simulations
- distributed workflow management and interoperation
- emerging technologies for next generation grids
- enterprise collaborative architectures and reference models
- enterprise distributed computing
- enterprise grids

- industrial applications of multi-agent systems
- industrial decentralized control systems
- industrial fieldbus systems
- industrial information standards
- industrial intelligent automation
- industrial process/manufacturing scheduling and planning
- industry strength internet technologies
- intelligence optimization for industrial applications
- manufacturing execution systems
- network infrastructures of virtual enterprises
- virtual collaborative environments
- virtual enterprise enabling technologies