Domain: INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)

The Domain Information and Communication Technologies covers scientific and technical research in all areas of information and communication science and technologies. The ICT research area is best summarized as treating the processing, transmission, storage, retrieval, management, usage, and exchange of information and knowledge, with emphasis on fundamental aspects and pre-competitive technology development.

The following research areas are covered in this Domain. The scope of the Domain is not restricted to these activities.

Information science and technologies. The area covers all the aspects related with the foundations, design, analysis, development, and application of hardware and software systems. Related areas are foundations of computer science, software development technologies, software engineering, intelligent systems, advanced interfaces, user aspects, information management, high performance computing, and open, embedded, and distributed systems.

Communication technologies. Research in this area concentrates on the transfer of information from source to sink. Fundamental aspects cover physical, electromagnetic and functional modelling of all elements of information and communication systems such as terminals, antennas, transmission channels, networks, devices, components and materials. Research concerning photonic devices and the modelling and synthesis of electromagnetic meta-materials involves materials research, both in the optical and the submillimeterwave region. Here, cross-border interaction with Materials, Physical, and Nanosciences is required.

Societal aspects of ICT. Research in this area covers both the influence of ICT on society and the requirements imposed by society on the ICT infrastructure. Interdisciplinary cooperation with disciplines dealing with societal needs is essential for the development of this research area. Therefore, an important area for this domain is multidisciplinary research – with an ICT core – in fields like sustainable development, health, attention to the elderly and the disabled, culture, learning, bioinformatics, and many others, performed in cooperation with the corresponding COST domains.

New ideas and initiatives are welcome as well those with high interdisciplinary elements and close links and overlaps with other domains.

Action 298 - Participation in the Broadband Society

2006 - 2010 Chair: Dr Bartolomeo SAPIO (IT)

The Action's **objectives** are: 1) to examine the modalities in which users actually use ICTs, to discover their current forms of creativity; 2) to look ahead to technology related-developments in the more medium term ; 3) to suggest new approaches and methodologies for constructing a more user- driven model of innovation in order to overcome the limitations of current models of 'user-centred' development; 4) to produce a new phase in interdisciplinary cooperation. This would provide the basis for

conceptually integrating the various ways of assessing the experience of broadband technologies from the perspective of different disciplines.

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Non-COST participation: Institute for Socio-Economic Studies of Population (RU)

Action 299 - Optical Fibres for New Challenges Facing the Information Society

2006 - 2010 Chair: Dr Luc THEVENAZ (CH)

The **purpose** of this Action is to find novel and disruptive applications of fibre optics, to define guidelines for standardisation of optical fibre applications and to combine the transdisciplinary expertise of key-players in this field to promote the invention of new optical fibre based information providing tools.

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Non-COST participation: University of Sydney - School of Physics (AU)

Action 2100 - Pervasive Mobile & Ambient Wireless Communications

2006 - 2010 Chair: Pr Roberto VERDONE (IT)

The Action wants to increase knowledge of mobile and wireless network technologies by exploring and developing new methods, models, techniques, strategies and tools that will facilitate the implementation of next generation mobile communication systems and that will foster the development of the paradigms of pervasive and ambient wireless communications.

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Action 2101 - Biometrics for Identity Documents and Smart Cards

2006 - 2010 Chair: Dr Andrzej DRYGALJO (CH)

This Action was established to investigate novel technologies for unsupervised multimodal biometric authentication systems using a new generation of biometrics-enabled identity documents and smart cards, while exploring the added value of these

technologies for large-scale applications with respect to the European requirements in relation to the storage, transmission, and protection of personal data.

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Action 2102 - Cross-Modal Analysis of Verbal and Non-verbal Communication

2006 - 2010 Chair: Dr Anna ESPOSITO (IT)

This Action aims to develop an advanced acoustical, perceptual and psychological analysis of verbal and non-verbal communication signals originating in spontaneous face-to-face interaction, in order to identitfy algorithms and automatic procedures capable of identifying the human emotional states.

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Action 2103 - Advanced Voice Function Assessment

2006 - 2010 Chair: Pr P.H. DEJONCKERE (NL)

This Action wants to combine previously unexploited techniques with new theoretical developments to improve the assessment of voice for as many European laguages as possible, while acquiring in parallel data with a view to elaborating better voice production models.

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Action IC0601 - Sonic Interaction Design (SID)

2007 - 2011 Chair:

Sonic Interaction Design is the exploitation of sound as one of the principal channels conveying information, meaning, and aesthetic/emotional qualities in interactive contexts. The Action pro–actively contributes to the creation and consolidation of new design theories, tools, and practices in this innovative and interdisciplinary domain. While being advanced through a few sparse projects, this field relies on the COST – SID Action to strengthen the links between scientists, artists, and designers in the European Research Area. The COST – SID platform stands on four legs: (i) perception, cognition, and emotion; (ii) design; (iii) interactive art; (iv) information display and exploration. These are each supported by the research and development of the requisite new interactive technologies. Due to the breadth of its application spectrum, the COST – SID Action has the potential of affecting everyday life through physical and virtual interactive objects, as today there is the possibility to design and actively control

their acoustic response so that it conveys an intended aesthetic, informational, or emotional content.

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Action IC0602 - Algorithmic Decision Theory

2007 - 2011 Chair:

The Action aims to put together researchers coming from different fields such as Decision Theory, Discrete Mathematics, Theoretical Computer Science and Artificial Intelligence in order to improve decision support in presence of massive data bases, combinatorial structures, partial and/or uncertain information and distributed, possibly interoperating decision makers. Such problems arise in several real world decision problems such as humanitarian logistics, homeland security, epidemiology, risk assessment and management, e-government and the implementation of recommender systems. The Action will coordinate ongoing research projects and provide a more solid framework to already existing networked activities.

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Action IC0603 - Antenna Systems & Sensors for Information Society Technologies (ASSIST)

2007 - 2011 Chair:

Antennas are a key constituent of all terrestrial, airborne and space based wireless multimedia, communications and sensor systems. Antenna functions are fast evolving, driven by the demanding needs of the Information Society Technologies. Traditional antenna areas still demand research and innovation efforts. But also, new unforeseen and challenging problems are appearing. Antennas and electromagnetic sensors are also becoming a major system component in areas such as Consumer Electronics, Health Care, Biology, Radio Astronomy, Earth Sciences, and Earth Resources Monitoring. Cooperation towards a deeper understanding of antenna operation in these new complex environments and for the corresponding development of adequate modelling and measuring tools are the main scientific objectives of this Action. These trans-disciplinary oriented goals will benefit both antenna specialists and researchers working on the above mentioned domains. Additional benefits include university-industry collaborations, mobility of young researchers and support of Pan-European initiatives (European Conference and European School of Antennas).

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Action IC0604 - Anatomic Telepathology Network (EURO-TELEPATH)

2007 - 2011 Chair:

Coordination of research efforts to develop the most adequate technological framework for the management of multimedia electronic healthcare records (data and images) through the Internet. The Action will consolidate the most renowned research references in the field of informatics applied to Anatomic Pathology in order to eventually develop, with support of national and other European programs, the fusion standards to represent, interpret, browse and retrieve digital medical images while preserving their diagnostic quality as needed for clinical, learning and research purposes. In a latter stage, this coordinated research shall bring about a comprehensive R&D project which will deliver a much needed world wide search engine based on WebServices. This will definitively open the path to integration, search, access, exchange and upgrade of digital pathological images and associated reports among different hospital information systems regardless of their location. Based on common standards developed by European Normalization Committee (CEN), the World Wide Web Consortium (W3C) and other bodies (DICOM, HL7, SNOMED), the direct result of this Action shall be a new Pathology Technical Framework (IHE Pathology) to be taken as a new reference standard by the specialized E-health industry as well as the entire medical community.

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