Titel	Akronym	Instrument (Programm)	Laufzeit	Konsortium	Rolle TUDo im Projekt (Koordinator/Partner)	Fachbereich/Fakultät	Lehrstuhl/Institut/ Fachgebiet	Projektleiter	Projektbeschreibung
Heterogeneous quantum rod and quantum dot nanomaterials, towards a novel generation of photonic devices	HERODOT	7. RP (Marie Curie ITN)	01.09.08 - 31.08.12	8 Partner (4 Universitäten und Forschungs-einrichtungen, 4 Industriepartner)	Partner	02 Physik	Experimentelle Physik II	Prof. Bayer	Recent progress in the fabrication of colloidal semiconductor nanocrystals has led to a wide range of quantum dots with a high oscillator strength, photoluminescence efficiency and size-tunable emission spectrum. The present proposal `Heterogeneous quantum rod and quantum dot nanomaterials? aims at a comprehensive research and training program on the opto-electronic properties of heterostructured nanomaterials based on quantum rod and dot building blocks. More specifically, we will study quantum dot molecules, binary quantum dot solids, superstructures of aligned quantum rods and hybrid organic/inorganic systems with specific band alignment (type II heterostructures). The optical properties of these systems, e.g. polarizability, exciton lifetime and emission spectrum are determined by the delocalized, indirect nature of the exciton; while optical anisotropy can be achieved by alignment of quantum rods. Such systems can exhibit a large Stokes shift, enhanced nonlinear refraction, and an absorbance and emission spectrum that can be tailored by the architecture of the superstructure and external fields. This forms a direct route to applications of these materials in optimizing light sources and realizing fast and compact optical modulators and switches. The proposed training and research program is based on three research lines, synthesis and processing, characterization and modeling, and manipulation and application. With this program, we form researchers that can cope with the complex, multidisciplinary problems that the European opto-electronic industry will face in the implementation of nanotechnology and nanophotonics.
Spin effects for quantum optoelectronics	SPIN-OPTRONICS	7. RP (Marie Curie ITN)	01.10.09 - 30.09.13	10 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	02 Physik	Experimentelle Physik II	Prof. Yakovlev	We propose to join the forces of ten leading European teams in order to achieve a critical mass in the new research field of Spin-Optronics, a vast novel research area at the crossroads of fundamental physics of quantum-mechanical spin, optoelectronics and nanotechnology, and establish the European leadership in this area on a world-wide scale. All three main directions of the Network research activities ? growth and technology, spectroscopy and theory - will be concentrated on novel spin and light polarisation effects in nanostructures, utilising confinement of not only charges and spins, but also photons. In this field, the information is ultimately carried out by the spin of photons, can be encoded in the confined spin state and manipulated on the nano-scale and redelivered in a form of polarised photons. The four main project objectives are : 1) Coherence of individual spin, storage of quantum information. 2) Semiconductor entangled light sources. 3) Interaction of free and localised spins in diluted magnetic semiconductors and hybrid structures. 4) Spinoptronic devices based on cavity exciton polaritons. We are going to deliver a top level international level multidisciplinary training to 13 early stage researchers and 5 experienced researchers, offering them, in particular, a vast program of multinational exchanges and secondments. We will organise 4 project meetings, 3 schools and one final conference widely open to the whole scientific community. We expect this collaboration to achieve a breakthrough in establishing the fundament for the creation of new quantum devices and to overcome the existing severe fragmentation of research and training in this strategically important area, which is the main goal of our project.

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Single or few molecules detection by combined enhanced spectroscopies	SMD	7. RP (Collaborative)	01.07.09 - 30.06.12	8 Partner (Universitäten und Forschungs-einrichtungen)	Partner	03 Chemie	Biologisch-chemische Mikrostrukturtechnik	Prof. Niemeyer	Future breakthroughs in the understanding of fundamental biological processes causing major diseases are expected from the development of miniaturized probes or microscopes able to detect and identify a single or a small number of molecules. The SingleMoleculeDetection (SMD) proposal will develop a unique device able to perform simultaneously and in a dynamic way force and spectroscopic measurements. We will design and fabricate novel devices for the generation of plasmon polaritons as well as combine photonic crystals and plasmonic nanolenses. These new devices will be able to detect few/single molecules through Raman, InfraRed and Terahertz (THz) signals and in combination with Atomic Force Microscopy and Optical Tweezer force spectroscopy with a spatial resolution in the sub-10 nm for Raman and IR and sub-100 nm for the THz region. The complete characterization of single unknown molecule will be demonstrated through: i- investigations on the chemical and physical properties of membrane receptors, such as rhodopsin, odorant receptors and ionic channels; ii- identification of new molecules involved in cancer development and metastasis. The new devices will allow the acquisition of THz images and we will explore the possibilities of this new spectral region for biomedical scanning. The SMD proposal is based on an original idea of the coordinator, prof. E. di Fabrizio and will be exploited thanks to the complementary expertise present in the different sites and to a tight coordination between the various groups. The design, fabrication and testing will be performed at UMG, TASC and CBM Integration in a single instrument will be carried out at TASC, CBM, IIT Nanotec, RUB. Validation activities will be performed by all the partners taking advantage of the world leading expertise of the TUDO and the STRATH- AC in spectroscopy of natural and artificial biological systems. The SME NANOTEC and CBM will provide the commercial exploitation of the obtained results.
National Platform for Knowledge Triangle in Serbia	KNOWTS	Tempus	15.01.10 - 14.01.13	13 Partner (Universitäten und Forschungs-einrichtungen)	Partner	04 Informatik	Dekanat Informatik	Dr. Jesse	./.
Innovation and Knowledge Management towards eStudent Information System	iKnow	Tempus	15.10.2010-14.10.2012	9 Partner (Universitäten und Forschungs-einrichtungen)	Partner	04 Informatik	Dekanat Informatik	Dr. Jesse	./.
Second Generation Locator for Urban Search and Rescue Operations	SGL for USaR	7. RP (Collaborative)	01.10.08 - 30.09.12	21 Partner (10 Universitäten und Forschungs-einrichtungen, 11 Industriepartner)	Partner	04 Informatik	Informatik I	Prof. Schwentick	The Second Generation Locator for Urban Search and Rescue Operations (SGL for USaR) is mission oriented towards solving critical problems following large scale structural collapses in urban locations. The devotion, courage and expertise of rescuers need to be matched by procedures and technology that will enable safe and effective responses. This Integrated Project will combine chemical and physical sensors integration with the development of an open ICT platform for addressing mobility and time-critical requirements of USaR Operations. The project will also focus on medical issues and on the relevant ethical dilemmas. SGL for USaR has marshaled a pan-European interdisciplinary project team to produce a well-balanced consortium of 21 partners including rescue teams, researchers and SMEs along with the support of 15 LOIs. The project is formed by eight sub-projects (work packages) running in parallel. These WPs address the development of simulation environments; the development and validation of portable devices for location operations; the development and validation of smart sensors environment for monitoring the situation under the ruins; the management of medical information, including privacy and bioethics; and finally the development of an ICT platform that will integrate all the previous data, ensure interoperability and control the flow of the information from the field to the operational center. SGL for USaR will deliver methods and guidelines, as well as, tangible prototypes: a stand-alone FIRST responder device that integrates five different location methods (five in one); a networked rapid casualty location system (REDS) equipped with wireless sensor probes; an advanced environmental simulator for training and testing search and rescue units, including canine teams; and a prototype mobile operational command and control platform. These solutions can be also applied in security applications and thus they can create additional commercial opportunities.

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Optical Technologies for the Identification of Explosives	OPTIX	7. RP (Collaborative)	01.11.08 - 30.04.12	9 Partner (Universitäten, Forschungs-einrichtungen, und Industriepartner)	Partner	04 Informatik	Informatik I	Dr. Hildebrand	Terrorism is a real and growing threat to Europe and the world, and more than 60% of the terrorist attacks are carried out by the use of Improvised Explosive Devices. Security forces demand new tools to fight against this threat and the industry is making a big effort in the last few years to provide such tools. Every year a number of new products to detect and identify concealed explosives reach the market but up to the moment these new systems do not meet the full operational capabilities demanded by the end users. Probably the most demanded by the end users is the capability for standoff detection and identification of explosives, in order to be able to anticipate the threat from a safe distance and to avoid entering into the lethality area of an Improvised Explosive Device (IED). Such standoff detection capability is also very demanded for intelligence operations to identify materials, people or places involved in the preparation and transportation of explosives. In order to meet the end user?s needs, OPTIX will develop of a transportable system for the standoff detection and identification of explosives in real scenarios at distances of around 20 m (sensor to target), using alternative or simultaneous analysis of three different complementary optical technologies (LIBS, RAMAN, IR) and with the following characteristics: ? Standoff distance of at least 20 m. ? Detection of explosives in bulk, trace amounts and even liquids in certain conditions. ? Very fast detection and identification of explosives ? Very high specificity for the identification of explosives. ? Large operational availability of the system: ? Fully automated decision system (no operator dependence). In order to be successful, end user?s involvement in OPTIX is essential in the system specifications and validation, and in this sense the OPTIX consortium has put a special effort in including end users in those parts of the project where their contribution is relevant.
Foundations of XML - Safe Processing of Dynamic Data over the Internet	FOX	7. RP (Collaborative)	01.05.09 - 30.04.12	7 Partner (Universitäten, Forschungs-einrichtungen)	Partner	04 Informatik	Informatik I	Prof. Schwentick	The web has brought fundamentally new challenges to data management. The key features that distinguish web data from traditional database applications are its structure - usually described by mark-up languages, such as XML - and its dynamic nature. The FOX research programme will study these challenges in detail and investigate ways to master them. To this end, FOX aims at a paradigm shift in the modelling of internet data. It will provide foundations of dynamic and data-oriented features of the Web, and come up with new efficient algorithms for organising, transforming, and querying Web content. Some of the prospective insights are expected to have a significant impact on the next generation of XML and Web standards. To achieve these general goals, FOX will work on a number of specific tasks. It will identify and investigate the infrastructure needed for document, schema, and constraint management for XML data with special emphasis on the handling of data and its constraints. Furthermore, the corresponding reasoning tasks will be studied. It will develop new techniques and algorithms for schema mapping, Web data exchange and for improving query evaluation by making use of schema information. These investigations will take into account that documents and schemas change over time and are distributed across multiple sites. A special focus will be on automated decision-making and on safety aspects, including verification of data-driven web services and run-time analysis. New techniques and algorithms for handling missing data and metadata in XML documents will be developed based on uncertainty management, on the one hand, and automatic recovery, on the other hand. Finally, FOX will develop a software library with prototypical implementations.
Computational Geometric Learning	CG Learning	7. RP (Collaborative)	01.11.10 - 31.10.13	8 Partner (Universitäten, Forschungs-einrichtungen)	Partner	04 Informatik	Informatik II	Prof. Sohler	High dimensional geometric data are ubiquitous in science and engineering, and thus processing and analyzing them is a core task in these disciplines. The Computational Geometric Learning project (CG Learning) aims at extending the success story of geometric algorithms with guarantees, as achieved in the CGAL library and the related EU funded research projects, to spaces of high dimensions. This is not a straightforward task. For many problems, no efficient algorithms exist that compute the exact solution in high dimensions. This behavior is commonly called the curse of dimensionality. We plan to address the curse of dimensionality by focusing on inherent structure in the data like sparsity or low intrinsic dimension, and by resorting to fast approximation algorithms. The following two kinds of approximation guarantee are particularly desirable: first, the solution approximates an objective better if more time and memory resources are employed (algorithmic guarantee), and second, the approximation gets better when the data become more dense and/or more accurate (learning theoretic guarantee). To lay the foundation of a new field---computational geometric learning---we will follow an approach integrating both theoretical and practical developments, the latter in the form of the construction of a high quality software library and application software.

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Emergent Connectors for Eternal Software Intensive Networked Systems	CONNECT	7. RP (Collaborative)	01.02.09 - 31.07.12	10 Partner (Universitäten, Forschungs-einrichtungen, und Industriepartner)	Partner	04 Informatik	Informatik V	Prof. Steffen	The CONNECT Integrated Project aims at enabling continuous composition of networked systems to respond to the evolution of functionalities provided to and required from the networked environment. At present the efficacy of integrating and composing networked systems depends on the level of interoperability of the systems' underlying technologies. However, interoperable middleware cannot cover the ever growing heterogeneity dimensions of the networked environment. CONNECT aims at dropping the interoperability barrier by adopting a revolutionary approach to the seamless networking of digital systems, that is, synthesizing on the fly the connectors via which networked systems communicate. The resulting emergent connectors are effectively synthesized according to the behavioral semantics of application- down to middleware-layer protocols run by the interacting parties. The synthesis process is based on a formal foundation for connectors, which allows learning, reasoning about and adapting the interaction behavior of networked systems at run-time. Synthesized connectors are concrete emergent system entities that are dependable, unobtrusive, and evolvable, while not compromising the quality of software applications. To reach these objectives the CONNECT project undertakes interdisciplinary research in the areas of behavior learning, formal methods, semantic services, software engineering, dependability, and middleware. Specifically, CONNECT will investigate the following issues and related challenges: (i) Modeling and reasoning about peer system functionalities, (ii) Modeling and reasoning about connector behaviors, (iii) Runtime synthesis of connectors, (iv) Learning connector behaviors,(v) Dependability assurance, and (vi) System architecture. The effectiveness of CONNECT research will be assessed by experimenting in the field of wide area, highly heterogeneous systems where today's solutions to interoperability already fall short (e.g., systems of systems of systems).
Design for Predictability and Efficiency	PREDATOR	7. RP (Collaborative)	01.02.08 - 31.01.11	7 Partner (4 Universitäten und Forschungs-einrichtungen, 3 Industriepartner)	Partner	04 Informatik	Informatik XII	Prof. Marwedel	The project proposal is concerned with embedded systems that are characterized by efficiency requirements such as average-case performance, resource utilization, and power consumption on the one hand and worst-case constraints on the other. This combination of requirements typically occurs in application domains such as automotive, aeronautics, multi-media and industrial automation. Embedded systems with critical constraints need offline guarantees for the satisfaction of these constraints. Unfortunately, it can be observed that in computer system design the gap between average case and worst-case behaviour increases rapidly. This entails a decreasing precision of performance-analysis results, even for combination of the strongest analyses available. Therefore, a new research and design discipline is proposed that looks at predictability and efficiency in a synergistic manner and that involves all levels of abstraction and implementation in embedded-system design. This paradigm shift overcomes the tendency to either optimize efficiency only or predictability only in favour of an approach that takes into account the multi-objective nature of the problem. □ The proposed approach consists of a combination of several methods, i.e.□ (a)design-space exploration on the hardware architecture level to identify good designs offering combinations of strong performance with good predictability, □ (b)a synergistic development of models, design methods and matching analysis tools that extract precise system-behaviour properties, and □ (c)a transformation of the established separation-of-concerns abstraction principle into a new principle, resource-aware abstraction.□ Partners from the automotive and aeronautics domains pose design challenges based on experience in the design of time-critical embedded systems. These challenges will be taken up by the academic partners. Prototype architectures, design methods and analysis tools will be developed to solve the challenges

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Design for Embedded Systems	ArtistDesign	7. RP (NoE)	01.01.08 - 31.12.11	31 Partner (hauptsächlich Universitäten und Forschungs-einrichtungen)	Partner	04 Informatik	Informatik XII	Prof. Marwedel	The ArtistDesign NoE is the visible result of the ongoing integration of a community, that emerged through the Artist FP5 Accompanying Measure and that was organised through the Artist2 FP6 NoE. The central objective for ArtistDesign is to build on existing structures and links forged in Artist2, to become a virtual Center of Excellence in Embedded Systems Design. This will be mainly achieved through tight integration between the central players of the European research community. Also, the consortium is smaller, and integrates several new partners. These teams have already established a long-term vision for embedded systems in Europe, which advances the emergence of Embedded Systems as a mature discipline. ArtistDesign will become the main focal point for dissemination in Embedded Systems Design, leveraging on well-established infrastructure and links, such as a web portal and newsletter. It will extend its dissemination activities, including Education and Training, Industrial Applications, as well as International Collaboration. ArtistDesign will establish durable relationships with industry and SMEs in the area, especially through ARTEMISIA/ARTEMIS. ArtistDesign will build on existing international visibility and recognition, to play a leading role in structuring the area. The research effort aims to integrate topics, teams, and competencies, grouped into 4 Thematic Clusters: Modelling and Validation, Software Synthesis, Code Generation, and Timing Analysis, Operating Systems and Networks, Platforms and MPSoC. Transversal Integration covering both industrial applications and design issues aims for integration between clusters. ArtistDesign has defined a four-year workprogramme, with a strong commitment to integration and sustainability. To achieve the aims, the estimated support from the EC is approximately 4.5 MEuros. This support is a very small proportion of the overall investment by the core partners.
Security Engineering for lifelong Evolvable Systems	SecureChange	7. RP (Collaborative)	01.09.09 - 31.01.12	13 Partner (Universitäten und Forschungs-einrichtungen)	Partner	04 Informatik	Informatik XIV	Prof. Jürjens	There is growing demand to continuously evolve systems to meet changing business needs, new regulations and policies, novel technologies and computing infrastructures. Unfortunately, the pace of required change affects our ability to ascertain and maintain the quality of a system. Our objective is thus to develop techniques and tools that ensure "lifelong" compliance to security, privacy and dependability requirements for a long-running evolving software system. This is challenging because these requirements are not necessarily preserved by system evolution. The project will develop processes and tools that support design techniques for evolution, testing, verification, re-configuration and local analysis of evolving software. Our focus is on mobile devices and homes, which offer both great research challenges and long-term business opportunities. Concrete achievements will include: - Architectural blueprint and integrated security process for lifelong adaptable systems - Methodology for evolutionary requirements with tools for incremental requirements models evaluation and transformation - Security modelling notation for adaptive security with formally founded automated security analysis tools. - IT security risk assessment with tool-support for lifelong adaptable systems - Techniques and tools to verify adaptive security while loading on-device - Model-based testing approach for evolution The results are continuously validated jointly with key industry players.

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Integrated Multi-formalism Tool Support for the Design of Networked Embedded Control Systems	MULTIFORM	7. RP (Collaborative)	01.09.08 - 31.05.12	8 Partner (6 Universitäten und Forschungs-einrichtungen, 2 Industriepartner)	Koordinator	06 Bio- und Chemie-ingenieurwesen	Systemdynamik und Prozessführung	Prof. Engell	The focus of the project MULTIFORM is on the integration and the interoperation of tools and methods based on different modelling formalisms in order to make a significant step towards integrated coherent tool support for the design of large complex controlled systems from the first concept to the implementation and further on over their entire life cycle. By addressing the issue of multi-level multi-formalism control systems modelling and design, this project represents a definite advance over the traditional approach pursued by the control community that focuses solely on the design of control algorithms and, to some extent, their interaction with communication protocols. The multi-formalism approach pursued here reflects the heterogeneous nature of the functionality and of the implementation of controlled systems. The key contribution of the project towards the goal of integrated model-based control systems design is the connection of tools that support the design of different layers of the control hierarchy and on different levels of abstraction. Integration of tools is pursued both along the axes of re-use and consistency of models and data generated in the design process and of feedback and feedforward of results between different levels of abstraction addressed by tools that are based on different formalisms. The project MULTIFORM will address the following issues: - Interchange formats between different tools - Integrated specification and synthesis of logic controllers - New ways of connecting techniques for analysis and design that are based on different levels of abstraction - Integration of the tools into a common framework - Application of multi-formalism analysis and design to challenging real-world case studies.
Continuous Annular Electro-Chromatography	CAEC	7. RP (Collaborative)	01.09.08 - 31.08.12	8 Partner (4 Universitäten und Forschungs-einrichtungen, 4 Industriepartner)	Koordinator	06 Bio- und Chemie-ingenieurwesen	Fluidverfahrenstechnik/Systemdynamik und Prozessführung	Prof. Górak/Prof. Engell	Capillary electrochromatography (CEC) combines the high separation efficiency of capillary electrophoresis with high performance liquid chromatography (HPLC) and provides a powerful tool for the separation of a wide range of both neutral and charged components. The proposed integration of this technology and the rotating system of annular chromatography into a continuous annular electrochromatography (CAEC) would increase the throughput up to 20,000 times whilst maintaining an efficiency of more than 100,000 theoretical separation stages per meter. This extends the range of applicability from analytical purposes towards safe and flexible ultra small-scale production of extremely high-value-added products early on in the development stages. The project is thus expected to significantly enhance the sustainability of pharmaceutical and chemical production by providing equipment for highly intensified purification processes. The development of CAEC units as a new generation of extremely flexible high-performance process equipment requires specialised engineering skills and high-precision manufacturing techniques. A wide range of applications will be offered by the development of tailored stationary phases while an improved understanding of the complex processes occurring at different scales is used to model the performance of the CAEC system. An elaborated prototype including on-line sensors and a sophisticated process control concept will be developed and validated under industrial conditions during a demonstration phase. This will guarantee a fast uptake of the projects results and allow for an approved industrial production of the new process equipment within 1 to 2 years after the end of the project. The consortium includes an end user from pharmaceutical industry to ensure the relation to practice as well as highly innovative equipment manufactures capable of producing the required devices and standardised components at affordable costs.

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Embedded Optimization for Resource Constrained Platforms	EMBOCON	7. RP (Collaborative)	15.01.10 - 14.01.13	10 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	06 Bio- und Chemie-ingenieurwesen	Systemdynamik und Prozessführung	Prof. Engell	There is enormous economic potential for the application of embedded optimization technologies in embedded systems design. Recent advances in the performance of embedded hardware platforms, in combination with fundamental improvements in optimization theory and algorithms, have opened the door to widespread applications over the next decade. Embedded optimization will enable huge energy and resource savings, increased safety, and improved fault detection across a wide a range of industrial applications in the mechatronic, automotive, process control and aerospace sectors. In order to realize the full potential of optimization in embedded systems, their design must also be supported by a focussed set of tools enabling the rapid transfer of novel high-performance algorithms to practical applications. The EMBOCON consortium will enable widespread application of real-time optimization in embedded systems through: - Tailoring of customized numerical algorithms to increase their robustness and efficiency on embedded systems - Enabling real-time optimization on cheap industry-standard hardware platforms - Defining a common user interface for optimization technologies to facilitate technology transfer to industry, and - Performing challenging case studies in cooperation with industrial partners to demonstrate technological maturity. The EMBOCON consortium will strengthen a network of world-leading academic and industrial partners with complementary expertise in control, optimization and embedded systems in a range of industrial applications. Particular emphasis is placed on close collaboration between mathematical algorithm developers, control theorists, hardware specialists and industrial application engineers. The network will consolidate and extend Europe's position as the world research leader in these areas and foster strong collaborative links between European academia and industry.
Highly-complex and networked control systems	HYCON2	7. RP (NoE)	01.09.10 - 31.08.14	23 Partner (Universitäten und Forschungseinrichtungen)	Partner	06 Bio- und Chemie-ingenieurwesen	Systemdynamik und Prozessführung	Prof. Engell	ICT developments both enable and also enforce large-scale, highly-connected systems in society and industry. Knowledge to cope with these emerging systems is lacking. HYCON2 will stimulate and establish the long-term integration of the European research community, leading institutions and industry in the strategic field of control of complex, large-scale, and networked dynamical systems. It will interconnect scattered groups to create critical mass and complementarity, and will provide the necessary visibility and communication with the European industries. HYCON2 will assess and coordinate basic and applied research, from fundamental analytical properties of complex systems to control design methodologies with networking, self-organizing and system-wide coordination. HYCON2 has identified several applications domains to motivate, integrate, and evaluate research in networked control. These domains are ground and aerospace transportation, electrical power networks, process industries, and biological and medical systems. Benchmarking will serve as a tool for testing and evaluating the technologies developed in HYCON2 and for stimulating and enforcing excellence by the identification and adoption of best practices. In particular, two show-case applications corresponding to real-world problems have been selected in order to demonstrate the applicability of networked control and the need for research in control. As no substantial technological breakthrough can be achieved without preparing the proper cultural background, a further important objective of HYCON2 is to spread and disseminate excellence through multi-disciplinary education at the graduate and undergraduate level. The proposed research, integration and dissemination program will make Europe both the prominent scientific and the industrial leader in the area of highly complex and networked control systems, therefore posing Europe in an extraordinary position to exploit their impact in economy and society.

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Flexible, Fast and Future Production Processes	F3 Factory	7. RP (Collaborative)	01.06.09 - 31.05.13	29 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	06 Bio- und Chemie-ingenieurwesen	Systemdynamik und Prozessführung/Fluidverfahrenstechnik/Anlagen- und Prozesstechnik/Technische Chemie B	Prof. Engell/Prof. Górak/Prof. Schembecker/Prof. Agar	The F3 consortium's vision is that the EU's chemical industry's competitive position would be strongly enhanced if it could operate modular continuous plant (F3 plant) which combines world scale continuous plant efficiency, consistency and scalability with the versatility of batch operation. Our project will deliver such a radically new production mode based on: a) Plug-and-play modular chemical production technology, capable of widespread implementation throughout the chemical industry. This technology uses generic backbone facilities designed for rapid interfacing with standardized process equipment containers (PEC). The PEC house process equipment assemblies (PEA) composed of intensified process equipment for fast, flexible future chemical production b) Holistic process design methodology applying process intensification concepts and innovative decision tools. This will accelerate process development and provides a substantial reduction in energy consumption, raw material usage and plant volumes. Our consortium of leading academic & research institutions and 7 major synthetic chemical producing industrial companies has 3 main goals: 1. To prove the technical feasibility of the F3 mode of manufacturing by building and operating a 0.1 to 30 kg/hr demonstration facility, 2. To demonstrate that operation of F3 plant will be more economical, ecoefficient and more sustainable than conventional production modes like large scale continuous or small to medium scale batch processing. 3. To drive a step change in the technology available to EU chemical production and engineering companies by designing intensified equipment for reaction and down stream processing, dissemination of standards for plug and play modular plant and providing open access to the backbone facility Our estimates indicate that the F3 concept will generate additional new business and will save 3.75 billion euro when existing products change to the F3 mode of manufacture.
European multilevel integrated biorefinery design for sustainable biomass processing	EUROBIOREF	7. RP (Collaborative)	01.03.10 - 28.02.14	28 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	06 Bio- und Chemie-ingenieurwesen	Fluidverfahrenstechnik	Prof. Górak	The development and implementation of bio-refinery processes is an absolute necessity and the key to meet the vision towards bio-based economy. The EuroBioRef concept is an integrated, sustainable and diversified bio-refinery involving all biomass value chain stakeholders. The latter will allow large-scale research, testing, optimisation and demonstration of processes in the production of a wide range of products with the dual aim to use all fractions of various biomasses and exploit their potential to produce the highest value possible in an eco-efficient and sustainable way. Moreover, the project attempts to overcome the efforts fragmentation of the whole biomass value chain requiring greater networking, coordination and cooperation among a large variety of actors from biochemical and chemical industry, SMEs, scientific knowledge chain, and European organisations. The new concept will adopt a flexible and a modular process design adapted to large- but also small-scale production units easier to install in various European areas. The overall efficiency of this approach will clearly exceed existing pathways and will consider sustainable options in order to: - Produce and use a high diversity of sustainable biomasses adapted for European regions - Produce high specific energy bio-jet fuels (42 MJ/kg) - Produce multiple products (chemicals, polymers, materials) in a flexible and optimised way that take advantage of the differences in biomass components and intermediates - Improve cost-efficiency by 30% through improved reaction and separation effectiveness, reduced capital investments, improved plant and feedstock flexibility, reduction of production time and logistics - Reduce by 30% the energy - Produce zero waste and rationalise use of raw materials The impact of the project in terms of environment, social and economic benefits is important and could give a serious advantage for European bio-industry.

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Effective redesign of oxidative enzymes for green chemistry	OXYGREEN	7. RP (Collaborative)	01.05.08 - 30.04.13	12 Partner (7 Universitäten und Forschungs-einrichtungen, 5 Industriepartner)	Partner	06 Bio- und Chemie-ingenieurwesen	Biotechnik	Prof. Schmid	Enzymes are extremely powerful natural catalysts able to perform almost any type of chemical reaction while being mild by nature and highly specific. In fact, the delicate functioning of enzymes forms the basis of every living creature. The catalytic potential of enzymes is more and more appreciated by the industry as many industrial processes rely on these sophisticated catalysts. However, the number of reactions catalyzed by enzymes is restricted as enzymes only have evolved to catalyze reactions that are physiologically relevant. Furthermore, enzymes have adapted to the direct (cellular) environment in which they have to function (e.g. operative at ambient temperature, resilient towards proteolysis, catalytic turnover rate should fit with metabolic enzyme partners). This excludes the existence of enzymes that do not fit within boundaries set by nature. It is a great challenge to go beyond these natural boundaries and develop methodologies to design `unnatural? tailor-made enzymes. Ideally it should become possible to (re)design enzymes to convert pre-defined substrates. Such designer enzymes could theoretically exhibit unsurpassed catalytic properties and, obviously, will be of significant interest for industrial biotechnology. The OXYGREEN project aims at the design and construction of novel oxygenating enzymes (designer oxygenases) for the production of compounds that can be used in medicine, food and agriculture and the development of novel powerful and generic enzyme redesign tools for this purpose. The enzymes and whole-cell biocatalysts that will be developed should catalyze the specific incorporation of oxygen to afford synthesis of bioactive compounds in a selective and clean way, with minimal side products and with no use of toxic materials. For this, generic platform technologies (novel high-throughput methodology and methods for engineering dedicated host cells) will be developed that allow effective structure-inspired directed evolution of enzyme.
A European biotechnology training network for the support of chemical manufacturing	BIOTRAINS	7. RP (Marie Curie ITN)	01.07.09 - 30.06.13	11 Partner (Universitäten und Forschungs-einrichtungen)	Partner	06 Bio- und Chemie-ingenieurwesen	Biotechnik	Prof. Schmid	The objective of BIOTRAINS is to deliver a trans-European network of industrially oriented white biotechnologists fully trained in the application of biocatalysis to sustainable chemical manufacturing. Their skills will be developed through a joint research programme at leading national CoEs (Centre of Excellence) with research projects identified by internationally leading Principal Investigators in this field. There is an urgent need for these scientists to support the KBBE (Knowledge Based BioEconomy) identified by the SUSCHEM (The European Technology Platform for Sustainable Chemistry) technology platform and they will provide the key to the European future that has defined the work programme for FP7 in this field. We present a doctoral training program where the scientific research is integrated with industrial training, supervised by key academic and industrial scientists from all the disciplines needed to deliver industrial relevant science. The UK Centre of Excellence in Biocatalysis (CoEBio3) will manage the project to ensure that the collaboration is integrated seamlessly across both academic and industrial centres, and across geographical boundaries. Most importantly, CoEBio3 will manage efficient technology transfer between the academic scientists and industry. This will ensure a state-of-the-art programme meeting current industry needs in both people and technology. A structured exchange programme with both industrial placements and CoE exchanges will ensure that national leading-edge skills together with specialist equipment training are transferred across Europe, and will define best practice for both academia and industry.
Platform for e-learning and Telemetric Experimentation	PETEX	Leonardo da Vinci	01.12.08 - 30.11.10	3 Partner (Universitäten und Forschungs-einrichtungen)	Koordinator	07 Maschinenbau / HDZ	Umformtechnik und Leichtbau / HDZ	Prof. Tekkaya / Prof. Wildt	./.
Flexible and cost-effective innovative manufacturing of complex 3D-bent tubes and profiles made of high-strength steels for automotive lightweight structures	ProTuBend	Research Fund for Coal and Steel RFCS	01.09.09 - 31.08.12	6 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Koordinator	07 Maschinenbau	Umformtechnik und Leichtbau	Prof. Tekkaya	./.
Flexible Modular Master Programme in Technology	MasTech	Tempus	15.10.2010-14.10.2013	9 Partner (Universitäten, Forschungseinrichtungen und Industriepartner	Koordinator	07 Maschinenbau	Umformtechnik und Leichtbau	Prof. Tekkaya	./.

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Supporting EU's Freight Transport Logistics Action Plan on Green Corridors Issues	Supergreen	7. RP (Coordination and support action)	15.01.10 - 14.01.13	9 Partner (Universitäten, Forschungseinrichtungen und Industriepartner	Partner	07 Maschinenbau	Verkehrssysteme und -logistik	Prof. Clausen	The purpose of SuperGreen is to promote the development of European freight logistics in an environmentally friendly manner. Environmental factors play an increasing role in all transport modes, and holistic approaches are needed to identify win-win solutions. SuperGreen will evaluate a series of green corridors covering some representative regios and main transport routes throughout Europe. The objectives of the SuperGreen project concern supporting the development of sustainable transport networks by fulfilling requirements covering environmental, technical, economic, social and spatial planning aspects. This will be achieved by: - Benchmarking of Green Corridors - “Green technologies” - “Smarter” utilisation of ICT-flows - Recommendations for R&D
Steep subthreshold slope switches for energy efficient electronics	STEEPER	7. RP (Collaborative)	01.06.10 - 31.05.13	9 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	08 Elektrotechnik	Arbeitsgebiet Bauelemente der Mikro- und Nanoelektronik (BMN)	Prof. Knoch	STEEPER addresses the development of Beyond CMOS energy-efficient steep subthreshold slope transistors based on quantum mechanical band-to-band tunnelling (tunnel FETs), with the aim of reducing the operation voltage of nanoelectronic circuits to sub-0.5V, and their power consumption by one order of magnitude. STEEPER focuses on two technology tracks, united by same device principle, shared performance boosters, and compatibility with silicon CMOS. These are (i) Ultra-Thin-Body Silicon-On-Insulator technology for planar, tri-gate and nanowire tunnel FETs featuring ultra-low standby power and smartly exploiting additive boosters: high-k dielectrics, SiGe source, strain, and improved electrostatic design, and (ii) a III-V nanowire platform on silicon, as unique material to control staggered or broken bandgap boosters and devise a high performance (high-Ion, steep slope) implementation of tunnel FETs. Platform (i) will enable a hybrid platform combining high performance (HP) CMOS and low standby power (LSTP), low voltage tunnel FETs, supporting energy efficient hybrid CMOS/Tunnel-FET digital and analog/RF circuit design. In line with ITRS, STEEPER will evaluate in platform (ii) the physical and practical limits of boosting the performance of tunnel FETs with III-V nanowires on silicon, and resulting advantages for HP digital circuits. The development of the two technology platforms are interactive and collaborative in terms of performance boosters, and will benefit from simulation and modelling support by the academic partners, and from investigation of the potentially critical variability and sensitivity of tunnel FETs. Industrial benchmarking is proposed at device and circuit levels by the key involved industries, and the figures of merit of hybrid CMOS/tunnel FET digital and analog circuit design will be investigated. The project targets energy efficient nanoelectronic technology for high volume markets covering digital, analog/RF and mixed mode applications.
Research, methodologies and technologies for the effective development of pan-European key grid infrastructures to support the achievement of a reliable competitive and sustainable electricity supply	REALISEGRID	7. RP (Collaborative)	01.09.08 - 28.02.11	20 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	08 Elektrotechnik	Energiesysteme und Energiewirtschaft	Prof. Rehtanz	The European electricity system is facing major challenges to implement a strategy for a reliable, competitive and sustainable electricity supply. The development and the renewal of the transmission infrastructure are central and recognised issues in this strategy. Indeed the transmission system is a complex and strongly interconnected infrastructure that offers a wide range of benefits like reliability improvement, promotion of competitive electricity markets and of economic growth, support for development of new generation and for exploitation of renewable resources. Within this context, the objective of REALISEGRID is to develop a set of criteria, metrics, methods and tools (hereinafter called framework) to assess how the transmission infrastructure should be optimally developed to support the achievement of a reliable, competitive and sustainable electricity supply in the European Union (EU). The project encompasses three main activity-packages: 1) identification of performances and costs of novel ltechnologies aimed at increasing capacity, reliability and flexibility of the transmission infrastructure and preparation of a roadmap for the incorporation of new transmission technologies into the electricity networks; 2) definition of long term scenarios for the EU power sector, characterized by different evolutions of demand and supply, with the goal to assess the impact on future electricity exchanges among European countries; 3) implementation of a framework to facilitate harmonisation of pan-European approaches to electricity infrastructure evolution and to evaluate the overall benefits of transmission expansion investments. This cost-benefit analysis framework will be applied to test specific transmission projects listed in the EC “Priority interconnection plan”.

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Intelligent coordination of operation and emergency control of EU and Russian power grids	ICOEUR	7. RP (Collaborative)	01.01.09 - 31.12.11	21 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Koordinator	08 Elektrotechnik	Energiesysteme und Energiewirtschaft	Prof. Rehtanz	The interstate integration of power grids provides multiple advantages concerning operation security, integration of renewable energy as well as energy trading. Due to this fact the UCTE interconnection expands continually since its establishment. Consideration is given to different scenarios of joint operation of UCTE and NORDEL with power grids on the territory of the former USSR. Due to the fact that such an interconnection is second to none in the World in terms of the scale and distance of the interconnection and number of countries involved, strong R&D and innovations are urgently required along with the recent development of technologies. Bulk power grids may encounter major blackouts, which originate in increasing complication in monitoring, operation and control of interconnected power grids as well as in limited knowledge of the total system state. Therefore the possible future interconnection between the European and Russian electricity transmission systems requires elaborating methods for monitoring, control and protection of large scale systems and especially for the support of their interconnections. The development and prototypically implementation of these new methods and tools is the major goal of the ICOEUR project. New technologies like Wide Area Monitoring, Control and Protection as well as advanced network controllers (FACTS) and HVDC systems will be considered. Envisioned ICOEUR goals can be achieved only in close cooperative work of experts, with extensive knowledge of EU and Russian power systems as well as manufacturers and network operators. The ICOEUR consortium involves leading experts in all these domains and guarantees efficient collaboration and knowledge required for testing the methodologies developed. The joint development of innovative monitoring, simulation and control concepts, tools and equipment through international diversified ICOEUR consortium and their prototype implementation will promote their adoptions.
Grid for Vehicles - Analysis of the impact and possibilities of a mass introduction of electric and plug-in hybrid vehicles on the electricity networks in Europe	G4V	7. RP (Collaborative)	01.01.10 - 30.06.11	12 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	08 Elektrotechnik	Energiesysteme und Energiewirtschaft	Prof. Rehtanz	Electric and plug-in hybrid vehicles (EV, PHEV) have the potential to contribute significantly to solving contemporary and future environmental and economic challenges of mobility. Various projects in different EU member states are currently addressing the subject in an isolated manner. The G4V consortium consisting of major European electric utilities and distinguished academic institutions are now adopting a holistic European approach to analyse the impact of a mass introduction in detail in order to optimise the grid infrastructure and make use of the inherent opportunities this represents for the operation of smart grids and energy efficiency. The objective of the project is to develop an analytical framework for the planning of technological developments in the grid infrastructure and the definition of related ICT and policy requirements in order to cope with the mass introduction of EV and PHEV. On the one hand, the aim is to clearly understand the effects of a mass introduction under physically given parameters and taking into account local aspects in different EU member states. On the other hand, the opportunities consisting in active demand and storage possibilities will be extensively explored as these also imply options for managing the possible negative impacts on the grid. The project will deliver recommendations on aspects such as possible ICT solutions, grid services anticipating, RES integration, prediction of mobile customers who are potential energy traders and the impact of dedicated tariffs. To ensure an open and holistic approach, the project will take all stakeholders into account and has established an advisory board consisting of institutions along the whole value chain. The project will generate fast and openly available results within 18 months: An analytical framework to evaluate the impact of a large scale introduction on the grid infrastructure and a visionary ?road map? for the year 2020 and beyond.

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Home Gigabit Access	OMEGA	7. RP (Collaborative)	01.01.08 - 31.03.11	20 Partner (8 Universitäten und Forschungs-einrichtungen, 12 Industriepartner)	Partner	08 Elektrotechnik	Kommunikationstechnik	Prof. Kays	Gigabit Home Access Networks are a pivotal technology to be developed if the EU Vision of the Future Internet is to be realised. Consumers will require such HANs to be simple to install, without any new wires, and easy enough to use so that information services running on the HAN will be just another utility, as, for instance, electricity, water and gas are today. The OMEGA HAN is centred round the needs of the user: gigabit RF and optical links, combined with more robust wide-area RF and visible-light communications will provide wireless connectivity within and the home and its surroundings. Combined with power-line communications this provides a home backbone without new wires. A technology-independent MAC layer will control this network and provide services as well as connectivity to any number of devices the user wishes to connect to it in any room in a house/apartment, and further, this MAC layer will allow the service to follow the user from device to device. In order to make this vision come true, substantial progress is required in the fields of optical-wireless and RF physical layers, in protocol design, and in systems architectures. For OMEGA, an interdisciplinary team from leading institutes and companies in this broad range of technologies has been assembled. OMEGA will provide a substantial consumer pull for next-generation broadband by enabling the sharing of large-date user-generated content, which will, in turn, raise the expectation for higher data rates. Also, at the same time, a push from service providers will take place, as they see the possibility of delivering new high-bandwidth services to the user throughout the home. OMEGA will present significant market opportunities for all the EU actors in the communications industry, but most importantly empower citizens by offering access to novel emotional experiences while addressing ageing, isolation, and health challenges, and thus making an important contribution to the vision of FP7.
European Development Opportunities in Rural Areas	EDORA	ESPON 2013 Programme	26.06.08 - 31.03.11	16 Partner (Universitäten und Forschungs-einrichtungen)	Partner	09 Raumplanung	Institut für Raumplanung	Prof. Greiving	./.
Mountain Risks: from prediction to management and governance	Mountain Risks	6. RP (Marie Curie RTN)	01.01.07 - 31.12.10	14 Partner (Universitäten und Forschungs-einrichtungen)	Partner	09 Raumplanung	Institut für Raumplanung	Prof. Greiving	./.
Methods for the improvement of Vulnerability Assessment in Europe	MOVE	7. RP (Collaborative)	01.10.08 - 30.09.11	13 Partner (11 Universitäten und Forschungs-einrichtungen, 2 Industriepartner)	Partner	09 Raumplanung	Institut für Raumplanung	Prof. Greiving	MOVE will create knowledge, frameworks and methods for the assessment of vulnerability to natural hazards in Europe. It will use indices and indicators to help improve societal and environmental resilience. Floods, temperature extremes, droughts, landslides, earthquakes, wildfires and storms will be studied. Emphasis will be placed on clear, capable measurement and accounting for uncertainties. MOVE will identify gaps in existing methodologies. It will produce a conceptual framework that is independent of scale and hazard type. It analyse physical (technical), environmental, economic, social, cultural and institutional vulnerability. These will be measured for specific hazards and at different geographical scales. Methodologies will be tested in case study regions on vulnerable elements and appropriate hazard types. Case studies will enable the availability and quality of existing data at sub-national (NUTS 3-5) and local scales to be examined. MOVE will evaluate statistical data (for cities, from EUROSTAT, etc.) and remote sensing information. The case studies will integrate and combine economic damage and social vulnerability methods. The generic framework, data analysis and applicability tests will result in a standard approach to vulnerability assessment in Europe. Stakeholders will be consulted systematically in order to understand their needs and to enable MOVE to draw attention to the practical value of its methodologies. There will be six work-packages. First, terms will be defined and gaps in existing methodologies identified. Next, a generic framework will be developed, with variants for particular scales, hazards and situations. Thirdly, the methods will be applied to case studies. The fourth and fifth packages will develop co-operation processes with stakeholders and ensure that the framework and the methods are disseminated for the benefit of European citizens. Project co-ordination will occupy the final package.
Linking civil protection and planning by agreement on objectives	INCA	civil protection	01.01.09 - 30.11.10	9 Partner (Universitäten und Non-profits)	Partner	09 Raumplanung	Institut für Raumplanung	Prof. Greiving	./.
Climate change and territorial effects on regions and local economies in Europe	Climate Change	ESPON 2013 Programme	08.12.08 - 23.01.12	12 Partner (Universitäten und Forschungs-einrichtungen)	Koordinator	09 Raumplanung	Institut für Raumplanung	Prof. Greiving	./.

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Changing Hydro-Meteorological Risks As Analyzed by A New Generation of European Scientists	CHANGES	7. RP (Marie Curie ITN)	01.01.11 - 31.12.14	11 Partner (Universitäten und Forschungs-einrichtungen)	Partner	09 Raumplanung	Institut für Raumplanung	Prof. Greiving	The CHANGES network (Changing Hydro-meteorological Risks as Analyzed by a New Generation of European Scientists) will develop an advanced understanding of how global changes (related to environmental and climate change as well as socio-economical change) will affect the temporal and spatial patterns of hydro-meteorological hazards and associated risks in Europe; how these changes can be assessed, modeled, and incorporated in sustainable risk management strategies, focusing on spatial planning, emergency preparedness and risk communication. The main objectives are (1) provide high-level training, teaching and research in the field of hazard and risk management in a changing environmental context to European young scientists; 2) reduce the fragmentation of research on natural processes, and 3) to develop a methodological framework combined with modelling tools for probabilistic multi-hazard risk assessment taking into account changes in hazard scenarios (related to climate change) and exposed elements at risk.The MCITN is inter-disciplinary and inter-sectoral by its nature. Active stakeholders' participation and the dissemination of the project results are important features of the project. High-level training facilities as well as scientific and technological excellence will be provided to the next generation of researchers in the field of hazard and risk management. It is expected to foster European young scientists to be able to find employment in European organizations, in different sectors. The CHANGES network hopes to contribute to the Topical Action numbers 2 and 3 of the Hyogo Framework for Action of the UN-ISDR, as risk assessment and management, combined with innovation and education are considered essential to confront the impacts of future environmental changes (ISDR, 2009). The network consists of 11 full partners and 6 associate partners of which 5 private companies, representing 10 European countries. It it proposed to hire 12 ESR's and 3 ER's.
Prototypical Policy Impacts on Multifunctional Activities in rural municipalities	PRIMA	7. RP (Collaborative)	01.11.08 - 31.10.11	15 Partner (Universitäten und Forschungs-einrichtungen)	Partner	09 Raumplanung	Landschaftsökologie und Landschaftsplanung	Prof. Gruehn	The proposed project will develop a method for scaling down the analysis of policy impacts on multifunctional land uses and on the economic activities. This method will rely on micro-simulation and multi-agents models, designed and validated at municipality level using input from stakeholders. The models will address the structural evolution of the populations (appearance, disappearance and change of agents) depending on the local conditions for applying the structural policies on a set of municipality case studies. We shall consider policies related to use of Structural Funds (SFs), Cohesion Fund (CF), Preaccession funds (PAFs) and EAFRD (respectively CAP). This project will include the following actions: - Review the EU structural policies, identify driving forces at EU, national and regional levels for multifunctional land use activities and provide baselines for the design of national and regional scenarios on multifunctional land use activities. - Interaction with stakeholders: pre-model engagement with stakeholders in terms of scenario design and formulating agent decision rules for agent-based models, on-model engagement with stakeholders mirroring agent-based models, and post-model engagement with stakeholders in terms of assessing model outputs. - Design and develop micro-simulation and multi-agents models, of local dynamics and of the impact of European structural policies at the municipality level. - Build a mapping between available data on municipalities and prototypical, contrasted evolutions of micro-simulation and agent based models. This will allow us to aggregate the results provided by these models at a regional level, on a set of regional case studies, and to compare these results with existing models at regional scale. - Investigate the potential of the approach to design a method that enhances the scope of Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and Sustainable Impact Assessment (SIA).

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Cities Regrowing Smaller - Fostering Knowledge on Regeneration Strategies in Shrinking Cities across Europe	CIRES	COST Action	01.01.11 - 31.12.11	Einzelförderung	Einzelförderung	09 Raumplanung	Raumordnung und Planungstheorie	Prof. Wiechmann	At the beginning of the 21st century, the shrinking cities phenomenon is widespread in Europe. To deal with the results of demographic, economic and physical contraction processes and to plan for the future of considerably smaller but nevertheless livable cities is one of the most challenging tasks for urban Europe in the near future. Against this background, the Action aims at fostering knowledge on regeneration strategies in shrinking cities across Europe. By promoting the exchange of scientific knowledge and the stimulation of new ideas in selected reference cities, the gender-balanced network with proposers from ten countries will act as a catalyst for new solutions to deal with demographic changes and to design the restructuring of shrinking cities in Europe. Significant benefits at the European level are envisaged, resulting in a common framework of terminology and synopsis of published research in this field, exemplary regeneration strategies and a best practice database. At a strategic level, the network will: 1) provide a forum for the discussion of successful regeneration strategies in shrinking cities, establishing a frame of common action facing the multiple challenges around shrinking cities; 2) improve the knowledge basis for targeted policy actions by the EU or its Member States; 3) lay foundations for future corresponding EU research initiatives; 4) foster the questioning of traditional paradigms of urban development in view of the demographic and economic challenges in European cities. At an operational level, the network will: 1) devise a conceptual framework (incl. a common terminology) to describe and analyze issues of shrinking cities; 2) survey and review the existing studies on regeneration strategies in shrinking cities in Europe and elsewhere; 3) assess the level and nature of selected approaches to regenerate shrinking cities; 4) provide on-site advice to end-users of the completed research in selected shrinking cities; 5) offer a 'best practice' database on regeneration strategies; 6)provide access for young researchers to a highly innovative debate.
Development of Innovative Steel-Glass-Structures	INNOGLAST	Research Fund for Coal and Steel RFCS	01.07.07 - 30.12.10	5 Partner (Universitäten und Forschungs-einrichtungen)	Partner	10 Architektur	Stahlbau	Prof. Ungermann	./.
Open Information Environment for knowledge-based collaborative Processes throughout the lifecycle of a building	InPro	6. RP (IP)	01.09.06 - 30.11.10	20 Partner (6 Universitäten und Forschungs-einrichtungen, 14 Industriepartner)	Partner	10 Architektur	Baubetrieb und Bauprozess-management	Prof. Gralla	./.
Advancing knowledge-intensive entrepreneurship and innovation for growth and social well-being in Europe	AEGIS	7. RP (Collaborative)	01.01.09 - 30.09.12	21 Partner (Universitäten und Forschungs-einrichtungen)	Partner	11 WiSo	Wirtschafts- und Industriesoziologie	Prof. Hirsch-Kreinsen	The proposed research project will study the interactions between knowledge, economic growth and social wellbeing in Europe. It focuses on knowledge-intensive entrepreneurship as a necessary mechanism and an agent of change mediating between the creation of knowledge and its transformation into economic activity. Knowledge-intensive entrepreneurship is perceived herein as a core interface between two interdependent systems: the knowledge generation and diffusion system, on the one hand, and the productive system, on the other. Both systems shape and are shaped by the broader social context including customs, culture, and institutions thus also pointing at the linkage of entrepreneurship to that context. The project has three main objectives (research thrusts). At the micro level, it purports to study in depth the very act of knowledge-intensive entrepreneurship, its defining characteristics, boundaries, scope and incentives. At the macro level, it will study the link between knowledge entrepreneurship, economic growth and social wellbeing, also extending to the socio-economic processes that help transform the "animal spirits" (John Maynard Keynes) into a self-reinforcing process for broader societal prosperity. The way the broader socio-economic environment stokes "animal spirits" and benefits from them will be studied within the contexts of various shades of capitalism in Europe and elsewhere, expanding beyond the growth accounting and endogenous growth approaches and issues to novel concepts of knowledge-intensive entrepreneurship in growth and, further, into the underlying issues of social wellbeing such as inclusion, cohesion, equity, opportunities, and social care. Finally, at the policy level, the project will take a systemic approach aiming at an organic integration of diverse sets of policies that influence the creation and growth of innovative entrepreneurial ventures based on knowledge generation and diffusion.

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Social platform on research for families and family policies	FAMILY PLATFORM	7. RP (Coordination and support action)	01.10.09 - 31.03.11	12 Partner (Universitäten und Forschungs-einrichtungen)	Koordinator	12 Erziehungswiss. + Soziologie	Sozialpädagogik, Erwachsenenbildung und Pädagogik der frühen Kindheit	Prof. Uhlendorff	The overall objective of the planned FAMILYPLATFORM is to elaborate a focussed research agenda that will address fundamental research issues and key policy questions for future research and family policies in Europe. Therefore, the platform will match three relevant perspectives: The perspective of the scientific community, the perspective of European families represented by important stakeholders such as family and children`s rights associations, and the perspective of policy makers and social partners. The FAMILYPLATFORM will focus on four areas: 1.Catching up with the current state of family research and elaboration of significant trends, differences between countries, gaps and methodological problems of existing research on families. Therefore a wide range of existential fields of family life and family policy will be taken into consideration. 2. A critical review of existing research from the perspective of a wide range of stakeholder representatives such as family associations, children`s right associations and policy makers and social partners, 3.Generating key policy questions for future European policy and research issues and tools focussed on ?well being of families? as key concept in European policy, 4.Working out a research agenda with fundamental research issues, research areas and tasks of long-term studies, methodological tools based on step 1-3. The FAMILYPLATFORM offers a wide variety of forums: Conferences with debates to certain topics, workshops and future scenarios with defined tasks, focus groups for opinion formation, and discussion forums on the internet platform. In order to build a consensus, there will be special techniques of moderation. The FAMILYPLATFORM will involve a wide range of stakeholders from an early state of the project. The consortium covers well known European experts on applied research for families and family policies in Europe and one important confederation of family organisations in Europe.
Monitoring European Research Council's Implementation of Excellence	MERCI	7. RP (Coordination and support action)	01.02.09 - 31.01.14	4 Partner (Universitäten und Forschungs-einrichtungen)	Partner	12 Erziehungswiss. + Soziologie	Soziologie	Prof. Meuser	This project aims to develop and implement instruments for a continuous assessment of the ERC Starting Grants impact on funded researchers. The main item will be a panel study (standardized online interviews) which includes two waves and which is complemented by qualitative interviews and bibliometric studies (triangulation of methods) applied to second stage applicants. The first wave will take place at runtime of the respective projects when grantees will have made sufficient experiences under funding. The second wave will proceed at an adequate time after the end of funding (rejection of the proposal respective) to gather possible middle-term (long-term) effects. In focus are direct impacts of the Starting Grants on the grantees scientific careers, scientific merits (bibliometric analyses), motives concerning mobility, selection of and relation to the host institution, job satisfaction, soft skills and their prestige gained from being funded by the ERC. Furthermore the financial strength of the grant, the broader conditions under funding and the ERC grants in comparison to other (national) funding schemes as seen by the grantees, will be addressed. Besides personal backgrounds (family status, etc.) the grantees opinions about several aspects of EU and trans-EU research conditions and policies also will be surveyed. Qualitative interviews on a sub sample of second stage applicants are planed to gather deeper insights into specific terms not ascertainable in a standardized questionnaire.
We Empower uSbH - Transnationale Entwicklung, Erprobung und Transfer eines beruflichen Förderkonzeptes für Menschen mit Spina bifida und Hydrocephalus	Leonardo	Leonardo da Vinci	01.11.2010-30.04.2013	8 Partner (Universitäten und Forschungs-einrichtungen)	Partner	FK 13	Berufspädagogik und berufliche Rehabilitäation	Prof. Biermann	./.
	SCICOMPED	Leonardo da Vinci	01.10.08 - 30.11.10	6 Partner (Universitäten und Forschungs-einrichtungen)	Partner	15 Kulturwissenschaften	Journalistik	Prof. Wormer	./.
New Molecular Purification Technology for Pharmaceutical Production	NEMOPUR	7. RP (Marie Curie ITN)	01.09.08 - 31.08.12	9 Partner (3 Universitäten und Forschungs-einrichtungen, 6 Industriepartner)	Partner	Institut für Umweltforschung	INFU	Dr. Sellergren	./.

Titel	Akronym	Instrument (Programm)	Laufzeit	Konsortium	Rolle TUDo im Projekt (Koordinator/Partner)	Fachbereich/Fakultät	Lehrstuhl/Institut/ Fachgebiet	Projektleiter	Projektbeschreibung
Water Treatment by Molecularly Imprinted Materials	WATERMIM	7. RP (Collaborative)	01.05.09 - 30.04.12	9 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	Institut für Umweltforschung	INFU	Dr. Sellergren	The present WATERMIM proposal is focused on the advancement and optimization of the MIP technology in order to produce functional materials with well-defined morphologies with respect to pore structure and selectivity for water treatment applications. The project aims at the elimination of the random distribution and the uneven accessibility of receptor sites in the volume of the imprinted material that is crucial for its performance. Such novel materials will immediately gain practical relevance, especially, due to their increased selectivity and superior stability under long and harsh technical conditions. The simultaneous optimization of the imprinting efficiency, polymer membrane morphology and separation conditions will enable the development of a truly molecular selective water purification process, based on affinity interactions that would have a large application impact on the water treatment industry. All types of synthetic organic compounds (i.e., triazines, pharmaceutical compounds and endocrine disruptors) are considered target compounds in the WATERMIM project. More specifically, the present project aims at the following S&T objectives: - Selection of template molecules and synthesis of functional monomers. - Optimization of molecularly imprinted polymer (MIP) composition by computational design techniques and combinatorial screening. - Synthesis of well-defined MIP nanoparticles and microgels. - Production of novel composite membranes utilizing preformed MIP nanoparticles. - Production of composite filters both on organic and inorganic supports via novel grafting techniques. - Synthesis of molecularly imprinted membranes (MIMs) for molecular sensor applications. - Separation and catalytic decomposition of the pollutants. - Advanced monitoring of the target compounds. - Benchmark testing of the produced MIMs for water purification.
Initiative for Globus in Europe	IGE	7. RP (Collaborative)	01.10.10 - 30.03.13	11 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	Institut für Roboterforschung	IRF	Prof. Schwiegelshohn	In order to continuously support the European computing infrastructures and to exploit possible synergies, it is of crucial importance to coordinate the European Globus activities, drive forward the developments according to the requirements of the European users and to strengthen the influence of the European developers in the Globus Alliance. Topics like security or privacy, data privacy protection, compatibility with Grid standards used in Europe to enable interoperability, and aspects of multi-nationality are important in Europe and deserve a stronger representation in Globus. Long-standing relations with the Globus developers and recent negotiations with the Globus Alliance enable us to introduce necessary adjustments into the code base of the Globus Toolkit. Computing infrastructures like DEISA and PRACE can immediately rely on the high-quality middleware required to run these infrastructures while reducing their own efforts keeping track of new developments. With the establishment of the EGI, the IGE can take over the role of providing Globus Toolkit components to the Unified Middleware Distribution (UMD) of EGI. The Initiative for Globus in Europe serves as a comprehensive service provider for the European e-infrastructures regarding the development, tailoring, customization, provisioning, support, and maintenance of components of the Globus Toolkit. This can involve the continuous measurement of software quality, but must also include the operation of a software repository as well as participation in standardisation bodies, training, promotion, and documentation activities. In order to guarantee the sustainability of this effort the main activities are based at large European computing centres and industrial partners. The first steps will be the establishment of a European Globus User Forum and the organization of a yearly Globus Europe conference series in close cooperation with the organisers of the Globus World conference.

Titel	Akronym	Instrument (Programm)	Laufzeit	Konsortium	Rolle TUDo im Projekt (Koordinator/Partner)	Fachbereich/Fakultät	Lehrstuhl/Institut/ Fachgebiet	Projektleiter	Projektbeschreibung
Empowering the Service Economy with SLA-aware Infrastructures	SLA@SOI	7. RP (Collaborative)	01.06.08 - 31.07.11	13 Partner (6 Universitäten und Forschungs-einrichtungen, 7 Industriepartner)	Partner	IT & Medien Centrum	ITMC	Dr. Yahyapour	The ongoing transformation of a product-oriented economy towards a service-oriented economy has come to a critical point. IT-supported service provisioning is of major relevance in all industries and domains. However, the nature of these setups is typically quite static because it requires significant effort to create service offers, to negotiate provisioning details with customers and to manage and control provided services. The research project SLA@SOI will provide a major milestone for the further evolution towards a service-oriented economy, where IT-based services can be flexibly traded as economic good, i.e. under well defined and dependable conditions and with clearly associated costs. Eventually, this will allow for dynamic value networks that can be flexibly instantiated thus driving innovation and competitiveness The technical approach of SLA@SOI is to define a holistic view for the management of service level agreements (SLAs) and to implement an SLA management framework that can be easily integrated into a service-oriented infrastructure (SOI). The main innovative features of the project are (1) an automated e-contracting framework, (2) systematic grounding of SLAs from the business level down to the infrastructure, (3) exploitation of virtualization technologies at infrastructure level for SLA enforcement, and (4) advanced engineering methodologies for creation of predictable and manageable services. SLA@SOI will provide its results in 2 complementing ways. First, an open source based SLA management framework will allow for realizing the benefits of predictability, transparency and automation in an arbitrary service-oriented infrastructure. Second, in-depth guidance for industrial stakeholders will be given explaining the best practise on how to transform their service business into an SLA-driven one. SLA@SOI comprises representative world-class players in academia and industry required for materializing the vision of this ambitious project.
Gender Equality and Diversity Planning at Workplaces	GED-PLAN	Leonardo da Vinci	01.12.08 - 30.04.11	8 Partner (Universitäten und Forschungs-einrichtungen)	Partner	Sozialforschungsstelle	SFS	Geschäftsleitung	./.
Facilitating Family Learning on Work & Life Balance	FAMILY	Grundtvig	01.10.09 - 30.09.11	8 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	Sozialforschungsstelle	SFS	Geschäftsleitung	./.
Gender Competence in Business and Research	GeCo	Leonardo da Vinci	01.10.2010-30.09.2012	6 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Koordinator	Sozialforschungsstelle	SFS	Geschäftsleitung	./.
Zuerkennung eines Zuschusses für die Durchführung eines Leonardo-da-Vinci-Transfer-of-Innovation-Projekts	TRANS SAETO	Leonardo da Vinci	01.10.08 - 31.12.10	4 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	Sozialforschungsstelle	SFS	Geschäftsleitung	./.
Transfer of Innovation from the project Self-Assessment Education and Training Organisation to new regions	TI-SAETO	Leonardo da Vinci	01.01.09 - 30.11.10	5 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Partner	Sozialforschungsstelle	SFS	Geschäftsleitung	./.
Simulator-based training for bus drivers – Current developments in Europe	SBT	Leonardo da Vinci	01.08.09 - 31.07.11	6 Partner (Universitäten, Forschungseinrichtungen und Industriepartner)	Koordinator	Sozialforschungsstelle	SFS	Geschäftsleitung	./.
European solution for inclusion facilitators	VET4e-I	Leonardo da Vinci	01.11.09 - 31.10.11	5 Partner (Universitäten, Forschungseinrichtungen	Partner	Sozialforschungsstelle	SFS	Geschäftsleitung	./.
Improving key Competences of citizens at risk of Exclusion from the Labour Market	KC4all	Grundtvig	01.11.09 - 31.10.11	4 Partner (Universitäten und Forschungs-einrichtungen)	Partner	Sozialforschungsstelle	SFS	Geschäftsleitung	./.
European Observatory of validation of non formal and informal skills in the sector of landscape and urban planning and risk prevention	EU-Observer	European Qualifikations Framework (EQF)	01.01.10 - 31.12.11	9 Partner (Universitäten und Forschungs-einrichtungen)	Partner	Sozialforschungsstelle	SFS	Geschäftsleitung	./.
Intergenerational Learning Circle for Community Service	eScouts	Multilateral projects	01.01.2011-31.12.2012	8 Partner (Universitäten und Forschungs-einrichtungen)	Partner	Sozialforschungsstelle	SFS	Geschäftsleitung	./.