



**6th IEEE Int. Conf. on Digital Ecosystem Technologies
Complex Environment Engineering
IEEE DEST-CEE 2012
18 - 20 June 2012 -- Campione d'Italia, Italy**



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Call for Papers

In our Digital Age, strong development of digital network infrastructure has dominated our service delivery, economic growth and life style. Future applications in domains such as Healthcare/Health-Science, Energy, Social Networks and Logistics demand infrastructures that are more agile than those operated currently. Digital Ecosystems aim to capture the notion of such agile and adaptive infrastructures. Digital Ecosystem Technologies encompass the advent of the whole spectrum of Internet technologies, starting from the hyper-linked web towards pervasive internet applications, from Peer-to-Peer systems to Grid middleware, followed by Cloud Services, Agent technologies, Sensor Networks and Cyber-Physical systems, which has become a major theme for business process digitalization.

Digital Ecosystems inherit concepts of open, loosely coupled, demand-driven, domain clustered, agent-based self-organized collaborative environments where species/agents form a temporary coalition (or longer term) for a specific purpose or goals. Within this environment everyone is proactive and responsive for their own benefit or profit. The essence of digital ecosystems is the adoption of ecological system concepts, and creating value by making connections through collective intelligence and promoting collaboration instead of unbridled competition and ICT-based catalyst effects in a number of domains, to produce networked enriched communities and solutions. Today's global challenges such as in Energy and Sustainability, Healthcare and an Aging Society, Public Safety and Security, or Democracy and Participation/Involvement confront us with the most Complex Environments. Traditional ICT-support has often increased complexity, thus making the challenges even more severe. The Digital Ecosystem perspective aims to address the twofold challenge of Complex Environment Engineering and Digital Ecosystem Technology mapping. The complexity of both the challenges and the technological solutions has to be acknowledged.

IEEE DEST-CEE is jointly conducted with **IFIP 2.6 - 2.12 SIMPDA (International Symposium on Data Driven Process Discovery and Analysis, <http://sesar.dti.unimi.it/SIMPDA2012>)**. This acknowledges the key role of business process data modeling, representation and privacy-aware analysis for Digital Ecosystems, and vice versa. Further, the Innovation Adoption Forum underpins the importance of public-private partnership as the key for delivering sustainable solutions for our Complex Living and Business Environment and thus our Digital Ecosystem Habitat. Our Keynotes, Panels and Sessions will tackle the multifaceted challenges and solutions from various stakeholders' perspectives.

This call for papers and additional information about the conference can be found at <http://sesar.dti.unimi.it/DEST2012/>. For information regarding the conference you may contact: fulvio.frati@unimi.it.

Important Dates

Submission of Full Papers EXTENDED:	15 March 2012 - 2 April 2012
Notification of Acceptance:	19 April 2012
Submission of Camera Ready Papers:	21 May 2012



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Paper Submission

Papers are to be original works, up to 6 pages in length, and will be peer reviewed by at least 3 independent reviewers from the international Programme Committee.

Papers submitted for this conference must be formatted to fit on A4 paper in a two-column format. The author should use a word processor or desktop publishing system to produce a "camera ready" paper on A4 paper.

The exact formatting instructions can be found on the website. Before submitting your paper submission, please ensure that it has been converted to a PDF using IEEE's requirements.

The papers submission system for IEEE DEST-CEE 2012 can be found at <https://www.easychair.org/conferences/?conf=ieeedestcee2012>.

Conference Venue

All conference activities will take place in the **municipal casino of Campione d'Italia**.

From **Milan** Campione can be reached by car following the A9 motorway MILANO-CHIASSO and then the A2 motorway CHIASSO-LUGANO, exit at Bissone Melide.

A bus leaves from **Garibaldi square** (the square before the Garibaldi railway station) Dep. time from Milano 15.00/20:30- Dep. from Campione 19:00/00:30/3.00.

From **Malpensa Airport** Campione can be reached by car or shuttle in approximately 50 minutes.

From **Lugano** Campione can be reached by boat, bus and car and although you have to cross the Swiss-Italian border line to reach it there are no formal border controls.

Campione is approximately 20 minutes from Lugano by road, and 15 minutes by boat across the lake. A [ferry service](#) runs regularly from Lugano to Campione throughout the day. Bus timetable are available on the [SBB web site](#).

More info on: www.campioneitalia.com

CONFERENCE TRACKS

Area I: Foundations and Technologies

Area I deals with the basic ICT foundations of digital ecosystems, including large-scale, virtualized infrastructures, hosting ecosystem services and processes. Ecosystems require a novel approach to ICT technology development, closely related to the engineering of complex systems.

Area I includes two one-day tracks that feature contributions on how the technological support for digital ecosystems is emerging.

Track A: Foundations of Digital Ecosystems and Complex Environment Engineering

Track co-Chairs:

- **Pierpaolo Andriani**, *Euromed Management School, France*
- **Pierfranco Ferronato**, *Soluta.net, Italy*
- **Gabriele Gianini**, *Università degli Studi di Milano, Italy*

Track A addresses the foundations of Digital Ecosystems in the context of Complex Environments Engineering. A digital ecosystem is defined as an open, loosely coupled, demand-driven, domain clustered, agent-based self organized environment where species/agents form short and long-term coalitions for specific purposes or goals, and everyone is proactive and responsive for its own benefit or profit. Interactions among peers in Digital Ecosystems may involve, besides unbridled competition, new modalities of pre-competitive and collaborative partnerships. Digital ecosystems are characterized by complexity – demanding radically new solutions. This track focuses on the theoretical foundations, that can be drawn upon from various disciplines.

The focus of Track A is on, but is not limited to:

- Models for Digital Ecosystems and Complex Environments
- Economic and Value Models for Digital Ecosystems
- Techniques for Coordination, Availability and Resource Allocation
- Ontologies for service and data semantics

Track B: Technology Infrastructure for Digital Ecosystems

Track co-Chairs:

- **Lionel Brunie**, *INSA-Lyon, France*
- **Harald Kosch**, *University of Passau, Germany*

The ICT infrastructure underlying digital ecosystem must ensure the basis for digital ecosystems' economic operation. Track B will include contributions on how the ICT infrastructure can enable Digital Ecosystems by providing the required connectivity, mobility, availability, and security solutions. Typically, members of an ecosystem employ technological agents to procure products and access services on their behalf in order to achieve collective and individual goals. The ICT infrastructure needs to provide solution ensuring that the ecosystem's resources are available as and when they are legitimately needed, protecting confidential information from loss and avoiding corruption of information.

The focus of Track B is on, but not limited to:

- Knowledge representation and management in Digital Ecosystems
- Secure Information Exchange in Digital Ecosystems
- Models and Technologies for Human-Space Computing
- Processes and Services in Cyber-Physical Systems
- Collaborative Systems



Area II: Sustainable Domain Solutions

Area II presents contributions in various application domains, organized in half-day tracks.

Just as the development of Smart Grids required the convergence of energy and information system infrastructures, radically new approaches to the design, convergence, and adoption of systems are required for future solutions in a variety of domains. Radically increasing the involvement of stakeholders with complex environments is one potential route for providing solutions in these domains, for example in energy systems or healthcare. In the longer term, approaches for enabling collaborative ecosystems may lead to high-impact solutions for today's most pressing challenges.

The "Sustainable Domain Solutions" tracks will identify domain requirements, research challenges and systems solutions with respect to the concept of Digital Ecosystems and Complex Environment Engineering, as outlined in the background and objectives of IEEE DEST 2012:

Digital Ecosystems inherit concepts of open, loosely coupled, demand-driven, domain-clustered, agent-based, self-organized, collaborative environments, where species/agents form a temporary (or longer-term) coalition for a specific purpose or goal.

Within this context, the tracks will focus on, but not be limited to, the following issues:

- Scalability and availability, with respect to large infrastructure platforms
- Evolvability, with respect to the introduction and life-cycle of service platforms
- Usability, with respect to human factors and user benefits

Track C: Cyber-Physical Energy Systems

Track co-Chairs:

- Neil Brown**, *Institute of Energy and Sustainable Development (IESD), De Montfort University, UK*
- Rupert Gammon**, *Institute of Energy and Sustainable Development (IESD), De Montfort University, UK*
- Peter Palensky**, *Austrian Institute of Technology, Vienna, Austria*
- Martin Anda**, *Environmental Technology Center, Murdoch University, Australia*

Cyber-Physical Energy Systems address the merging of IT and energy infrastructures, with the aim of achieving more energy-efficient and sustainable lifestyles. The coordination of the various stakeholders involved in the future energy market raises many challenges, for example the data-intensive and complex event processing required.

An example is provided by research driven by the need to reduce greenhouse gas emissions, increase the use of new and renewable energy technologies, and provide a high-quality, comfortable, safe and efficient built environment. Such applied research aims to exploit the potential of information technology to boost energy efficiency and minimize our environmental footprint, while preserving or improving the quality of life for every individual in every nation.

We are looking for papers that address medium-scale/large-scale and medium-term/long-term challenges for cyber-physical energy systems, and indicate/demonstrate potential solutions.

Track D: Healthcare and Sustainable Living

Track co-Chairs:

- Rémi Bastide**, *ISIS-University Centre for Health Informatics, Carmaux, France*
- Matthew Smith**, *Leibniz University Hannover, Germany*

eHealth, Telemedicine, and Bio-System Research Systems all describe approaches to improving the capacity of healthcare systems through fundamental and applied research, technology, and services. Researchers and companies are, for example, exploring the use of sensor devices, human-system interfaces, and medical record systems in order to provide radically new solutions for helping patients.

These advances require structural changes as well as technological development. Societies are facing an increase in chronic degenerative diseases that require monitoring and long-term patient management, the growing desire of patients to be treated in a family environment in order to protect their social ties, and, finally, a need to reduce costs. These factors necessitate a new strategic orientation in services offered by healthcare systems, in particular the transfer of a large portion of care activities from the hospital to the patient's residence. We are looking for papers that address medium-scale/large-scale and medium-term/long-term challenges for healthcare and sustainable living, and indicate/demonstrate potential solutions.

Track E: Digital Humanities

Track co-Chairs:

- Tobias Blanke**, *King's College London, UK*
- Stuart Dunn**, *King's College London, UK*

The digital humanities form a bridge between the traditional practices of scholarship and the opportunities afforded by advances in technology, enabling researchers to reconsider old problems in new ways, and providing the methods, tools and frameworks to support them in developing new modes of enquiry. On the one hand, the humanities are faced with ever greater volumes of complex data and digital resources, for example from the increasing mass digitisation of historical records. On the other hand, research in the humanities is moving away from the model of individual scholars to one in which international and inter-disciplinary teams of researchers collaborate actively within a diverse

ecosystem of digital resources, tools, and services, not forgetting of course the users themselves – the rapid evolution of Web technologies continues to privilege the human as a key agent, both as provider and consumer of content, and this in turn is investing humanities scholarship with an increasing awareness of vast new audiences and potential participants. We are looking for papers that address medium-scale/large-scale and medium-term/long-term challenges for digital humanities, and indicate/demonstrate potential solutions.

Track F: Collaborative Platforms for Sustainable Logistics and Transportation

Track co-Chairs:

- Frederick Benaben**, *Ecole de Mines d'Albi-Carmaux, France*
- Amadou Sienou**, *Abamix Research, Germany*
- Hervé Pingaud**, *University JF Champollion, France*

Across application domains, organizations and enterprises (such as Small-Medium Enterprises) gain their strengths from flexible market orientation, agile value chains and cluster-based innovation capacity. The changing global (business) environment challenges all organizations to aim for agility and performance-driven management through process-focused thinking. These challenges reach far beyond the business world, affecting for example the formation and coordination of emergency teams in case of environmental disasters.

For the effective collaboration of all the partners in such scenarios, the agility aspect of the Digital Ecosystem paradigm demands explicit support for risk management and collaboration. Agility implies the continuous improvement and reengineering of the business processes involved. However, the outcome of such process management efforts is risky because of the lack of operational information about future processes, so risk management is a key component. Similarly, collaboration support is required to allow real-time information sharing and interaction of the parties involved, for example in case of deviation from the agreed-upon target process. We are looking for papers that address medium-scale/large-scale and medium-term/long-term challenges for collaboration in the domain of logistics, including risk-management scenarios (e.g. after the occurrence of an environmental disaster), and that indicate/demonstrate potential solutions.

Track G: Platforms for Social and Community Involvement/Engagement

Track co-Chairs:

- Francois Grey**, *Tsinghua University, China*
- Margaret Tan**, *Singapore Internet Research Center, Singapore*

The internet, together with other advances in ICT such as the increased take-up of smart mobile devices, is enabling a new era of community engagement. In science, the application of volunteer computing is providing examples of engagement in which members of the public can contribute to scientific advances of social importance. Examples include modelling climate change (ClimatePrediction.net), developing drugs for AIDS (FightAids@home), or simulating the spread of malaria (MalariaControl.net). The participatory ecosystem is becoming still wider with projects such as GalaxyZoo, in which volunteers contribute their "thinking" rather than their computers, and global initiatives to broaden take-up such as Africa@home and Asia@home.

On the social side, we are seeing substantial evidence of the role that digital technologies, especially the "Social Web" such as blogs, Twitter, Facebook, and video sharing sites, can play in community activism. The Social Web is in some quarters becoming the mainstream method for connecting people, sharing information, and influencing developments, particularly in areas where traditional modes of communication operate less effectively. This is reflected in a number of recent geopolitical events that have been referred to as "Twitter Revolutions", and these technologies have played an undeniable role in such events as the "Arab Spring" and humanitarian crises such as the 2010 Haiti earthquake. The use of these technologies has however led to debates concerning the extent to which such digital technologies genuinely promote more democratic community action, and the extent to which they can be exploited by the powerful to reinforce their positions. We are looking for papers that address medium-scale/large-scale and medium-term/long-term challenges for social involvement/engagement, and indicate/demonstrate potential solutions.

Track H: Cyber-Physical Ecosystems in Robotics and Telematics

Track Co-Chairs:

- Michaela Huhn**, *Clausthal University of Technology, Germany*
- Jörg P. Müller**, *Clausthal University of Technology, Germany*
- Bernardo Wagner**, *Leibniz University Hannover, Germany*

Cyber-Physical Systems are a synergetic composition of computational control and physical actors. They aim to achieve an enhanced functionality that relies on both, the interaction with and coordination in between the physical and the virtual components.

Cyber-Physical Ecosystems are built as agile networks of cooperating, independently developed subsystems. Cyber-Physical Ecosystems are emerging at the interface between robotics, sensor networks, systems of systems engineering, and multi-agent technologies. Research on theories, architectures, models, methods, and tools are required to form a uniform and integrated perspective to systems engineering for this class of complex systems. They need to be validated and verified in key applications such as micro grids, multi-robot systems, or autonomous traffic. The domain focus of this track will be accordingly on robotics and telematics, but is open to adjacent domains as well. We are looking for papers that address medium-scale/large-scale and medium-term/long-term challenges for Cyber-Physical Ecosystems, and indicate/demonstrate potential solutions.

