

EUROPEAN PATHWAYS TO SMART CITIES

EERA Joint Programme on Smart Cities SPECIAL ISSUES SERIE

Since their creation eight years ago, the EERA Joint Programmes and their participating institutions have accumulated important knowledge on the specific topic of each of the several programmes they carried out. This includes **Smart Cities**, which refers to the main outlines of the **EERA JPs on Smart Cities Workplan**, focusing on innovative solutions based on interdisciplinary approaches, as needed to face the highly complex structure of a future smart energy system at urban scale.

A shared definition for **Smart Cities** might still lead to extensive discussions among experts, covering many areas related to energy technology development, environmental issues, politics and socio-economic aspects. However, following the outlines of Smart Cities and Communities Initiative of the European SET-Plan, “Smart Cities” are clearly characterized by the extensive use of low carbon technologies, combined with a smart energy management based on innovative design and operation of the entire system at city level as well applied innovation, better planning, participatory approaches, higher energy efficiency, better transport solutions, intelligent use of Information and Communication Technologies (ICT), etc.

Techne Special Issue 1/2018 on “European Pathways to Smart Cities” sits in this framework, as a first step of the cooperation between EERA JPSC - *European Energy Research Alliance Joint Programme on Smart Cities* and SITdA - *Società Italiana della Tecnologia dell'Architettura*, with the objective to highlight the different researches and approaches emerging in the European transition towards the Smart Cities. In line with the research areas identified by EERA JPSC and SITdA, the papers proposed for this Special Issue are expected to focus on one of the following topics:

1. **Energy in Cities and Simulation Tools**

For the design and planning of smart energy systems the detailed understanding of the energy performance characteristics of urban areas is of crucial importance. New tools and methods have been developed based on deep knowledge of the urban morphology such as building density, typology and end-use mix. These tools shall be further used for future holistic energy master planning.

2. **Energy Networks**

Smart energy grids will be responsible for the intelligent management and operation of energy networks in cities by utilizing the potential for shift between thermal and electrical loads. Furthermore, the integration of decentralized renewable energy sources into existing energy grids brings up some major

technical issues that have to be treated. The interaction between mathematical modeling techniques, numerical simulation environments and advanced communication infrastructure is a powerful tool in this research area. This also holds for the potential storage capacity for both electrical and thermal energy within energy networks which can be achieved by intelligent demand side management.

3. **Buildings**

The building stock represents an essential part in the existing energy system of cities being responsible for almost 40% of the entire energy consumption according to European statistics. Current research focuses on the further development of building automation control systems that enable the increase in energy efficiency by including smart control strategies (considering the dynamic parameters such as weather, user behavior, Energy/spot prices,...), as well as on the overall energy performance of buildings with respect to new innovative building design concepts (architecture, shape, envelope, ...) and the role of urban design (building density, orientation, functionality,...).

In the context of a smart energy grid buildings cannot be treated as stand-alone objects but have to be fully integrated into the overall network. Once integrated, they provide energy storage capacities supporting the smart management of the entire energy system. In addition, buildings will soon provide energy generation services supporting the overall energy supply of the entire system. This interaction between building and the smart grid is one key aspect for future research where ICT plays a major role. Summarizing, the transition from single passive building technologies to fully integrated buildings, Zero Energy/Emission D and/or Positive Energy Blocks (PEB), acting as active hubs in the energy grid and as booster of smart services is one of the main missions future research has to accomplish.

4. **Supply Technologies**

In the field of energy supply technologies research has to deal with the smart integration of on-site renewable energy sources and smart appliances/services into buildings and networks, the cascade use of resources or poly-generation. Furthermore, the interaction between cities and their neighboring industries will have to be examined in order to maximize synergies (e.g. industrial waste heat used as energy supply for cities). Scientific tools for the optimal use of hybrid supply systems will play a crucial role in this research field combined with large-scale experimental testing and the development of new procedures and standards.

CALL FOR PAPERS TECHNE | SPECIAL ISSUE 1/2018

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on behalf of EERA JOINT PROGRAMME on SMART CITIES

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Authors are invited to send an **abstract of 4.000 characters (spaces included)** in English. The abstract is intended to report the main contents that the paper will provide.

The **abstract** has to be written in a clear and concise manner, showing an effective close correspondence to at least one topic of the call. Furthermore, the abstract must be organized by paragraphs/points, according the following structure:

- **object** and **aim** of the paper;
- **approach** and/or **methodology**;
- name, affiliation and **role of the stakeholder/s** which comments will be reported within the paper (for “research and experimentation” only)

The abstract can be presented for one of the two sections “research and experimentation” or “essays and viewpoints”. Authors have to specify the section to which their abstract is addressed. In particular, to be published in “**research and experimentation**” section, papers must:

- focus on one or more of the above mentioned topics;
- provide a documented review of ongoing or completed research, explaining the adopted methods and the research issues/results, as well their related social impacts;
- include one or more comments by the involved stakeholders of one of more of the following categories: local, regional and national authorities, utilities, transport operators/owners, energy networks operators and energy suppliers, owners of infrastructure/building/land, end-users, real estate developers, investors, financial institutions, banks or private equities, citizens, tenants, NGOs, local businesses and construction industry. A text of 1500 to 2000 characters must be provided for this purpose within the paper, reporting the stakeholder's name, affiliation and **point of view on the effectiveness of the described research/experimentation**.

Outline:

- results: analytical aspects, proposals, debates;
- originality: by explaining what is new and for whom;
- limits of the research and results significance/relevance;
- cultural implications (practical or socio-economic) when present;
- reference to other research/researches, relevance of the topic, subjects involved, funding;
- cultural and scientific background with regard to the proposed topic;
- analytical aspects, the state of the art of the critical fields and debates on the topic.

To be published in the “**essays and viewpoints**” section, papers have to face scientific and/or non scientific challenges related with the above mentioned topics, such as smart cities concept, sustainable development, funding mechanism and needs of the

cities, stakeholder engagement, integrated planning approaches for smart cities, interoperability, standards, cyber-physical security, scaling up and replicating at district/city and regional level. Papers targeting this section must pay special attention to provide information about:

- cultural and scientific background of the essay, with special regard to the selected topic;
- state of the art, main issues and positions emerging from the current scientific debate on the topic.

Abstract submission

The abstract, for both sections, has to be followed at least by 3 specific **key-words**, which indicate the essential aspects of the paper. The abstract has to be sent at redazionetechne@sitda.net by **December, 22nd 2017**, using the templates attached to this call. The authors of the accepted abstract will receive further information by the Editorial Team by **January, 17th 2018**. Once the abstract accepted, the authors will be invited to submit the article paper by **February, 21st 2018**. The paper has to respect the limit of 18.000 characters (spaces included), in the case of a single author; or 21.000 characters (spaces included), in the case of multiple authors. The papers will be submitted to a double blind review. The authors whose papers have been accepted, will receive further information by redazionetechne@sitda.net in order to revise the article according to the comments and remarks provided by the referees. The final version of the paper, integrating the suggestions given by the referees, will have to be submitted by **April, 4th 2018**.

Editorial rules and information

Editorial rules to be followed by the authors for texts, bibliographic references, images and notes are available [here](#). Selection and review procedures are explained [here](#). For further information, please visit the official [webpage of the Journal](#).

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TECHNE SPECIAL ISSUE 1/2018	Cod.
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Section	Research and experimentation <input type="checkbox"/>	Essays and viewpoints <input type="checkbox"/>
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Topic(from call)	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>
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Title	
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Keywords(max 5)	
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EERA -SCJPmember	yes <input type="checkbox"/>	no <input type="checkbox"/>
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Abstract (max 4000 characters - including spaces)

References (max 5)