



## Smart City Cluster Collaboration

# Task 5 Collaboration with Standardization Bodies & dissemination activities Cluster Dissemination Plan

**Task duration:** May – June, 2015

**Task leader:** Rabih Bashroush (University of East London/EURECA)/Milagros Rey Porto, Silvia Sanjoaquin Vives (GNF/DC4Cities)

**Task Participants:** Andrea Quintiliani (ENEA/DC4Cities), Gonzalo Díaz Vélez (GNF/DC4Cities), Gino Carrozo, Tomaso Zini (Nextworks/DOLFIN), Artemis Voulkidis, Alexis Aravanis (Synelexis/DOLFIN), Fabrice Roudet (EATON/GreenDataNet), Lara López Muniz (ATOS/GENIC) Vasiliki Georgiadou (GreenIT Amsterdam/ GEYSER) Andrew Donoghue (Datacenter Technologies/ RenewIT), Jaume Salom (IREC/RenewIT)

### Document Change History

Vers.	Date	Author	Contributors	Description
0.1	04-06-2015	DC4Cities: GNF		First draft
0.2	14-07-2015	EURECA: UEL		First draft
0.3	04-09-2015	DC4Cities: GNF	Dolfin, GENIC, GEYSER, GreenDataNet, RenewIT	Second draft and last review



# Contents

- Contents ..... 2
- 1. Aim ..... 3
- 2. Target Groups ..... 5
- 3. Dissemination channels ..... 6
  - 3.1 Standardization bodies ..... 6
  - 3.2 Stakeholder engagement ..... 6
  - 3.3 Industrial conferences ..... 7
  - 3.4 Scientific publications and academic events ..... 8
    - Events by scientific publications: ..... 9
    - Academic events: ..... 9
  - 3.5 Online activities ..... 10
  - 3.6 Brochures, posters and press releases ..... 10



## 1. Aim

The Cluster is currently formed by seven projects and their partners (over 50), which include private businesses, research institutions and Public Administrations. DC4Cities, RenewIT, Dolfin, GENiC, GreenDataNet, GEYSER and EURECA projects are currently members of the Cluster. Two more projects, All4Green and CoolEmAll, also took part in the group while still active. All the projects share the aim of decreasing energy and environmental impact of Data Centres, e.g. increasing renewable energies and/or waste heat use, efficiency and the utilization of Smart Grids in Data Centres.

The main goal of the Cluster is to jointly develop/propose a set of common KPIs and methodologies across the projects covering areas including energy, economic and environmental impact. The Cluster also plans to liaise with standardization bodies and propose new KPIs for standardisation. The projects that make up the Cluster ultimately participate in a number of different technological fields, including for example:

- Energy efficiency in computer systems
- Grid balancing
- Smart Grid
- Energy management
- Software engineering
- Cooling systems
- Renewable Energy Sources (RES) integration
- PPI (Public Procurement for Innovation) and PCP (Pre-commercial procurement) of Energy Efficient Data Centre solutions

The work done so far by the Smart City Cluster includes identifying existing metrics, analysing them in order to establish strengths and limitations, and consequently proposing new metrics or modifications of existing ones. Moreover, common methodologies for calculating all each of the KPIs defined by the Cluster have been developed.

In order to communicate the relevant information, and widely exploit and disseminate the work performed within the Cluster, a dissemination plan is being developed. The main objectives of the dissemination plan are as follows:

- Make cluster activities known to standardisation bodies, in order to influence standardisation activities by proposing a common approach for DC energy-related assessment and new KPIs in the fields where cluster projects are focused: renewable energy usage, waste heat usage, etc.
- Make cluster activities known to other organisations working in relevant fields to the metrics proposed.
- Raise awareness within research communities, encouraging further developments in the field of data centre energy metrics.
- Raise awareness of the value and benefits of proposed metrics for improving DC energy and environmental sustainability to policy makers as well as to IT industry (DC owners, operators and others).
- Collect feedback from the different stakeholders that can be used to improve current KPIs and methodologies developed by the Cluster. Identify and exploit synergies with other projects/consortia.



- Disseminate key common points between the different projects, such as project benefits, to profit from possible synergies in exploitation. This cooperation could increase market uptake.

The Cluster (through its partners) is expected to perform dissemination activities representing the Cluster as a whole. Additionally, dissemination activities carried out by individual projects will also contribute to the dissemination of the Cluster's work.



## 2. Target Groups

Target groups identified include organisations, communities and other stakeholders that might be interested in the results of the different Cluster activities. These include:

- Standardisation bodies.
- Researchers working in relevant areas
- Academic/educational institutions – for curriculum development (up-skill the EU workforce, increase number of professionals and researchers in field, etc.).
- OEMs and data centre supply chain industries. Industrial and commercial targets may indirectly influence Standardization Bodies.
- Software developers that may participate in the creation of tools for measuring/improving the energy/environmental performance of IT infrastructure (Energy Management System).
- Policy-makers wishing to legislate and promote Smart Cities and sustainable DCs (such as European Community, national/regional governments and local administrations).
- Public Administrations in the context of Smart Cities interested in procuring innovative energy efficient data centre products and services. Cities are a key PA subgroup since most Cluster projects aim to provide solutions for DCs in a Smart City context.
- DC or other IT infrastructure owners or managers (use metrics to assess energy/environmental/business performance).
- Energy-related companies (who might wish to pursue new business opportunities in the growing field of services for Data Centres, including Energy Services Companies – ESCOs).
- Other projects concerned with DC sustainability and integration in smart cities: DC energy performance, renewable energy usage and DC output flexibility.
- Other groups interested in Smart Cities, IT infrastructure energy/environmental performance and renewable energy integration.



### 3. Dissemination channels

The format, content and level of technical detail used will depend on the target audience of each of the specific dissemination activities.

#### 3.1 Standardization bodies

It is important for the cluster to participate in standardisation bodies' events such as workshops and meetings. Furthermore, it could be useful to be part of metrics and methodologies development Working Groups, by participating in regular meetings or conference calls in order to present the Cluster's work and influence standardisation activities, and receive feedback and requests regarding the standardization bodies' needs. A possible strategy would be to influence and convince WG members to promote the Cluster's work after the end of the Cluster collaboration.

A series of Standardisation Bodies have been identified as key targets for the Cluster. Nevertheless, it could be useful to collaborate with further international bodies to influence their activities.

- Committee ISO/IEC JTC 1/SC 39 "Sustainability for and by Information Technology": the Cluster already has strong links with SC39 through an official liaison. The representative of this liaison actively participates in Cluster activities, as well as Adhoc WGs through national bodies. This includes Eaton through the French Committee and C3IT, DCA, Norland and UEL through BSI in the UK. EATON took part in SC39 WGs before the existence of the Cluster and possibly will go on doing so after Cluster projects end. As an example, the representative of SC39 – Cluster liaison presented the Cluster's work at the ISO/IEC Plenary Session on June 25<sup>th</sup> in Paris.
- Committee CENELEC CLC/TC 215 "Electrotechnical aspects of telecommunication equipment" WG3 through National Bodies: An official liaison with the committee WG 3 could be proposed on behalf of the EC.
- CEN/CENELEC/ETSI European Coordination Group on Green Data Centres (CG GDC): the role of this group is to harmonise at a European level the various standards. This could be a key forum to create visibility on the Cluster's work and discuss future possible actions, since it is focused on metrics in the field of DCs in Europe and at the international stage. Participants include TGG, SC 39, ETSI and representatives of the M462 mandate going on with the EC (DG Connect). It could be interesting to participate in the next CG GDC meeting (not restricted to Committee) that will take place on November 2<sup>nd</sup> 2015 at a location to be confirmed (London or Brussels).

#### 3.2 Stakeholder engagement

The aim here is to engage the wider stakeholder groups affected by the work conducted within the cluster. This will help receive valuable feedback while fostering uptake of project findings. Stakeholder groups here include data centre operators, managed service providers, co-location service providers, technology developers, OEMs, etc. Engagement activities would tap on planned events and initiatives within Cluster projects (e.g. EURECA) to reach out the widest possible audience. Stakeholder events may include different types of interactions, including workshops and conferences.



#### *Stakeholder events:*

- ICT 2015, Lisbon (European Commission, Research and Innovation). October 20<sup>th</sup> – 22<sup>nd</sup> 2015
- EnviroInfo & ICT for Sustainability (ICT4S) 2015, Copenhagen Sep 2015<sup>1</sup>.

### **3.3 Industrial conferences and commercial publications**

Industrial/commercial conferences target the industrial/business community rather than the academic community. The main target subgroups include the DC operator community and other non-IT stakeholders, including Smart Cities-related organizations and sustainability/efficiency organizations. Other probable attendees include Public Administrations and policy-makers.

The aim of conducting dissemination activities at industrial conferences is to raise awareness of the importance and potential benefits of the usage of KPIs to improve DC energy sustainability. On the other hand, feedback from end-users could be obtained and can be used to improve metrics and methodologies. Moreover, projects participating in the Cluster will indirectly disseminate their project findings to data centre operators, technology suppliers, etc., that could become early adopters, testers, and exploitation partners.

A list of industrial conferences is presented below as an example of events to be targeted. Some of the events may have taken place recently; however, these are generally annual events and therefore could be interesting for the Cluster to participate in future editions, provided that topics remain within the Cluster's areas of interest.

Commercial publications such as data center magazines and online publications are also an important outlet.

#### *Events addressing IT community:*

- Datacloud Global Congress – DCG (formerly DCE Datacenters Europe / Enterprise Cloud Forum).
- Datacenter Dynamics conferences including Converged Paris October 6<sup>th</sup> 2015, London November 18<sup>th</sup>-19<sup>th</sup> 2015
- Data Center World 2015.
- Datacenter Transformation Manchester (DTManchester) 2015. July 14, 2015. The Cluster has already presented here.
- Datacloud Europe 2015, June 3<sup>rd</sup> – 4<sup>th</sup> 2015, Monaco
- SmartER Europe, Essen, February 12<sup>th</sup> 2015.
- SmartGreens Rome (April 23<sup>rd</sup> – 25<sup>th</sup> 2016)
- Green Grid US Summit (October 2015 TBC)
- Grid Grid European Summit (November 2015 TBC)
- 451 Group Datacenter Executive Summit London, October 21<sup>st</sup> 2015. (<https://451research.com/summits/data-centre>)
- Uptime Symposium US (May 2016)

---

<sup>1</sup> A workshop will be organized by DC4Cities project.



#### *Events addressing also non-IT stakeholders:*

- Smart Cities exhibitions and conferences: e.g., Smart City Expo World Congress (SCEWC), Metropolitan Solutions (2015 edition in Berlin), or local events (e.g. Smart City Exhibition – SCE2014 in Italy);
- Sustainability targeted conferences and/or trade shows: e.g., Ecomondo.
- Energy services conferences.
- Public sector events (e.g. Public Sector Show 2015 in London)

#### *Commercial publications:*

- Datacentre Dynamics – online news site and paper magazine
- Datacentre Knowledge.com – online news site
- 451 Research (online portal) - EU datacenter projects work together for energy-efficiency research (<https://451research.com/report-short?entityId=81448>)
- Mission Critical Magazine
- Datacentre Solutions - <http://dcseurope.info/magazine.php>

### **3.4 Scientific publications and academic events**

Scientific publications constitute an important dissemination tool for academic partners within the Cluster. They require detailed and relevant results and therefore are not normally produced until significant results are achieved. The level of detail and relevance of the available results at each point in time will determine the type of channel used for scientific dissemination:

- Workshops: preliminary results exchange with researchers
- International conferences: timely results to wide audience
- Journals: mature work with high perspectives

The goal of scientific publications regarding Cluster activities is to create interest within research communities in the field of metrics for DCs. Moreover, indirectly scientific publications may help to also create interest in the work of the projects comprising the Cluster.

It could be useful to produce one or more whitepapers comprising the works carried out by the cluster. For example, a whitepaper could be published about how and why some newly proposed metrics could complement or substitute existing metrics for evaluating some aspects of DC performance. Another document could be produced on how the IMPVP methodology can be adapted to evaluate efficiency/environmental improvements in DCs.

A list of academic publications and events is presented below as an example of possible events to be targeted.





## Events by scientific publications:

### *Systems:*

- Conferences: Eurosys, Usenix ATC
- Journals: ACM Transactions on Computer Science, IEEE Transactions on Computer

### *Distributed systems:*

- Workshops: VHPC, HotCloud
- Conferences: ACM High-Performance Parallel and Distributed Computing, ACM Symposium on Cloud Computing
- Journals: IEEE Trans. on Cloud Computing, ACM Trans. on Parallel and Distributed Systems

### *Energy-efficiency in computing systems:*

- Workshops: HotPower, e2dc
- Conferences: ACM e-Energy, IFIP Sustain-IT
- Journals: Elsevier Sustainable Computing

### *Software engineering:*

- Conferences: ICAC, Middleware,
- Journals: Journal of Systems and Software, IEEE Trans. on Software Engineering

### *Energy management:*

- Conferences: CIRED, CIGRE
- Journals: IEEE Trans. on Power Systems

## Academic events:

It is important for the Cluster to have presence at academic events in order to promote the relevant research areas and help bring multi-disciplinary researchers to work under the same roof in order to address the challenges.

### *Conferences & workshops:*

- ACM SIGCOMM International Conference On Energy-Efficient Computing and Networking
- ACM International Conference on Future Energy Systems (e-Energy)
- International Green Computing Conference (IGCC)
- Workshop on Power Aware Computing and Systems (HotPower)
- CIGRE International Council on Large Electric
- CIRED International Conference on Electricity Distribution
- IEEE/ACM International Conference on Green Computing and Communications (GreenCom)
- IRED Conference on Integration of Renewable Energy Sources
- IAEE European Conference Energy, Policies and Technologies for sustainable economies
- Slovenian Energy Information Communication Technology Consultation (PIES)
- Conference on the Economics of Grids, Clouds, Systems, and Services (GECON)



- Conference on Communication for Energy (ComForEn)
- Conference on Smart Cities and Communities
- Smart Cities Industry Summit
- Other events organized by the Cluster or their participants, e.g. E2DC

### 3.5 Online activities

Online dissemination is key to communicate information regarding Cluster activities to an audience as wide as possible, allowing frequent updates in a cost-effective way. However, due to lack of resources the Cluster will perform its online communication activities through the projects.

- **Web:** It was agreed by the partners to not have a Cluster-specific website, but Cluster existence, definition, goals and results are published by the European Commission in their website and other communication channels. Nevertheless, participating projects could publish Cluster documents in their websites, if the cluster agrees, as Cluster results (metrics, procedures and methodologies) constitute important information regarding the development of the projects, and can be necessary to understand or evaluate the projects' results.
- **Social media** (LinkedIn, Twitter): in the same way, participating projects can mention their membership of the Cluster, contributing to raising awareness of the existence of the Cluster and its work.

### 3.6 Brochures, posters and press releases

These channels increase Cluster visibility during academic, industrial and internal events.