ECO$_2$Clouds

Experimental Awareness of CO_2 In Federated Cloud Sourcing

FP7 – 318048

D6.1: Project Dissemination Plan

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WP6: Dissemination and Exploitation

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Executive Summary

The goal of Task 6.1 is to develop the dissemination strategy, considering in detail the stakeholders of the project, the assets and expected results, the phases and milestones of the project, the partners' strengths and the available dissemination channels. The plan presented in this deliverable establishes a series of actions to be taken, assigns the partners' responsible and lists the expected results. The strategy will also oversee the set-up of the project web site and establish a series of Key Performance Indicators (KPIs). In the course of task 6.1, the series of anticipated activities includes frequent updates to the website, the development of a flyer, the production of whitepapers and articles for scientific journals, as well as conferences presentations, the organisation of workshops, press releases and the presence of the project within selected social media such as Twitter. Dissemination will also be coordinated with the BonFIRE and FIREStation dissemination initiatives.

In the project dissemination plan, contained in the present deliverable D6.1, the aim is to set out the stakeholders and selected dissemination channels of the project along with a series of planned activities for the remainder of the period (including reporting on website, brochure and branding progress). It will also establish the KPIs used to monitor the activity.

1 Introduction

The aim of the ECO2Clouds project is to develop an energy efficient solution for the deployment of workloads on Cloud infrastructures. The project will define a set of metrics encompassing energy efficiency and carbon emissions. We will then directly measure these metrics on private Cloud test beds provided by the BonFIRE project, establishing the impact of factors such as workload distribution and virtualisation on the efficiency of the Cloud-based applications, both in terms of energy consumption and runtime performance. Based on this knowledge, the project will then develop a scheduler that will place workloads on the Cloud with the aim to achieve optimal performance within agreed service level parameters, while keeping the energy usage and environmental impact as low as possible.

1.1 Purpose

The purpose of this deliverable is to provide a detailed description of the project dissemination plan, which will set out the early plans for the coordinated dissemination actions that will be done by the consortium, with special emphasis on the first reporting period.

This plan will be updated at M12 and M24, when we will produce an updated version of the dissemination strategy and include it in the dissemination report deliverables. We will take into account future changes of the strategy, and especially revising exploitation intentions once the first deliverables about the identified scenarios have been produced giving a better understanding of the value proposition and of the main innovations of the project. Thus, we will have an evolving Dissemination Plan until the project end.

The main elements of this dissemination plan will be:

- Firstly the *strategy for project dissemination*, with a detailed description of stakeholders, project milestones and results to disseminate and means of dissemination;
- Secondly a *breakdown of tasks*, assigned *partner responsible* for them, *stakeholder or public addressed* by the task, *timing of the action* and *expected outcome*, that will guide our communication and dissemination activities (website content, publications, speeches and networking at events, meetings and trade shows, etc.). This will occur throughout the project;
- Finally, KPIs for project monitoring, to enable adjustments to the plan in agreement with project, technical and exploitation managers. Every twelve months the dissemination plan will be formally updated according to the project's partial developments and outcomes.

The plan will have another important phase, which consists of disseminating and assessing the target audiences of the project exploitation plans, which should be addressed after the initial exploitation plans are finalized at M12.

1.2 Document Organisation

The plan is set out in three sections:

- After this introduction section of the document, Section 2 describes the organization of the dissemination plan, including all major aspects of the plan such as types of dissemination, methodology used, identification of audiences for intended dissemination actions and how they can be reached, an initial action plan, and major guidelines and strategies for dissemination. It examines the project structure and explains what is our overall dissemination plan for the entire project. It turns into concrete actions for the first reporting period (year one).
- Section 3 describes in details dissemination materials, channels and tools that we will use during the project.
- Section 4 describes the KPIs that will be used for measuring impact and success in dissemination throughout the project life time.

We conclude the document with three annexes that complete this report:

- Annex A. Contains a list of possible venues for dissemination.
- Annex B. Contains an initial proposal for the template to be used for reporting dissemination actions.
- Annex C. Contains the template for the project poster.

2 Project Dissemination

2.1 Introduction

The main message that ECO2Clouds can initially give is extracted from the project definition and its main technical objectives, namely:

WHAT:

> ECO2Clouds endeavours to radicalize the way applications are designed and deployed on the federated clouds by incorporating ecological concerns (such as energy efficiency and CO_2 footprint) as key design parameters for Cloud infrastructure and application deployment strategies.

HOW:

> The project will establish a set of key metrics to expose energy consumption of applications as well as Cloud infrastructure and to enable quantification of ecological impact of Cloud sourcing.

In order to achieve the WHAT and HOW, ECO2Clouds intends to:

BY:

> The project will rely on the use of existing Cloud facilities (such as the ones established under the EU FIRE initiative and in particular BONFIRE) as experimentation test bed to develop and test innovative ways of energy conservation in a federated Cloud environment.

Thus the objectives of the dissemination tasks of ECO2Clouds should help this message get to the right target audiences to:

- Widely disseminate the project aims and objectives towards the various potentially interested stakeholders so as to generate a broad awareness.
- Demonstrate the project concept to key stakeholders communities at the European level, with special focus on those events that focus on the project topics.
- Establishing valuable and durable liaisons with relevant research initiatives in the relevant project fields.
- Manage the attendance to relevant conferences and the production of publications, in order to attain maximum effectiveness while respecting the confidentiality conditions as well as the exploitation agreements and strategies of the consortium.
- Building consensus on the ECO2Clouds strategy, goals, and services using a variety of communication and aggregation tools.
- Obtain valuable feedback on intermediate project results so as to get a comprehensive validation from stakeholders covering all the addressed market

sectors.

- Pave the way for exploitation of project results after the project ends.
- Contributing to the development of new indicators to evaluate the environmental impact of Cloud applications and to their adoption in standardization committees and in independent organizations.

The project dissemination will consist of publishing the project's results, the achieved innovations, transmitting a clear and sound message of what the project is and what problems it can solve with its results. The purpose is to create awareness of its objectives, proposed solution and potential use. For this purpose ECO_2Clouds will use many available dissemination means, namely

- An accessible, attractive, participative and continuously updated website.
- Descriptive and self-explained brochures, videos, presentations.
- Periodic newsletters with subscription facilities.
- Attendance to project-related events to present our project goals and demonstrations (when available).
- Submission of papers or fostering scientific publications.
- Organization of dedicated workshops in relevant events, communities assemblies or scientific conferences and venues related to project technical matters.
- Social networks for linking with potential interested audiences.

2.2 Types of Dissemination

As we understand dissemination for this type of R&D projects from our experience, we should consider three types of dissemination for our project:

- **Project Dissemination:** the project itself needs to be disseminated, showing off: a) the main facts of the projects and its activity; b) the involved partners; c) a continuous presence or participation in major events; d) organization of events. All these elements favour sharing the project activity with others showing that the project is very active. This type of actions is not only highly appreciated from an internal perspective by individual partners, since it can be used for individual marketing purposes among their customers and stakeholders, but is also useful for promoting sharing of the state of the art about eco clouds among the scientific and research communities. This phase is responsibile for creating the first versions of the project's marketing collaterals materials (brochure/leaflet, presentations, etc.), the website (http://www.eco2clouds.eu), setting up social media channels and building the project's blog, and so on.
- **Academic and Scientific Activities and Innovation Results Transfer:** these actions should focus on providing evidence of advanced scientific and research work developed by the project, compiling and sharing with the community, the outputs and main innovations of the project. These tasks encompass scientific and academic publications and papers; blog posts and collaborations with other projects. This phase is responsible for producing and releasing scientific papers, publications in journals and conferences on project topics, and participating in

relevant academic events.

- **Exploitation Marketing:** actions performed in this phase should focus on two issues:
    - Building channels for reaching the target audiences defined in exploitation tasks.
    - Sending out clear and sound messages describing our Value Proposition, Product Definition and benefits for our target audiences.

  This phase should be aligned with the exploitation strategy since on the one side it needs its inputs for the crafting the right message for each channel. And on the other side, it will help in providing feedback input that will serve as validation of the value proposition for the exploitation team. This type of actions will start once the exploitation team reaches a mature level for product definition and its value proposition; and also when the technical team has built a stable-enough version of the product to be shown. This phase is responsible for creating content and intensively using dissemination materials, channels and tools, later described with detail. This phase normally includes the organisation of workshops in relevant events to present the project's results and the participation in industry and business-oriented magazines and events. A detailed exploitation plan will be provided in deliverable D.6.3 due at month 12.

2.3 Dissemination Methodology

Taking all the previous considerations into account we have identified the following stages of the dissemination methodology:

- An early stage identification of **potential target audiences and messages and actions to be performed.**
- **Definition of the objectives of the dissemination** and planning of their achievement along the project lifetime by the definition of suitable **Dissemination Success Indicators,** which are a subset of the project management KPIs.
- The intention of this plan is to ensure the optimum use of resources to transfer knowledge from the project to stakeholders in the academic, scientific and research communities; and also to industrial and business communities as well.
- Dissemination actions should have concrete objectives, based on the result in question, on the audience that is potentially most interested in it, and on the method of most effectively approaching such audience.
- The plan also provides other actions to be carried out regularly. These include among others: website updates accompanying each new project phase (on a six-months basis), getting contact with more and more people through social media channels, fostering discussions in the project group, collecting contact information of potential stakeholders and contacting them, and so on.
- Elaboration of a coherent **multi-channel and multi-campaign strategy** describing how to reach each of the target audiences. This issue includes:
    - A media plan, defining the most appropriate media channels to use to

reach the target groups (daily press, press releases, wide audience magazines, on-line magazines, local TVs, radio programmes) and when these media will be contacted.

- A critical-mass aggregation activity, which describes what communities or relevant international and national initiatives on Green Data Centres will be approached and when such a task will take place.
- What dissemination instruments will be used for each group (flyer, communication papers and booklets, questionnaires, brochures, deliverables, etc.).
- When this dissemination will take place and how it will be performed.

- **Performing Dissemination actions** to specified audiences, i.e., continuously promoting and presenting the on-going results of ECO2Clouds and more generally the benefits of the proposed technologies and tools to interested stakeholders.
- **Evaluating** the effectiveness of the performed dissemination activities at the end of the period against the planned values of the ECO2Clouds KPIs, in particular, the Dissemination Success Indicators.

2.3.1 Identification of Dissemination Target Audiences

A fundamental issue for delivering a suitable dissemination plan is the identification of potential target groups, which will each be approached with a different, yet specific, communication message.

The initial analysis carried out by the dissemination and exploitation teams at this early stage at a very initial level show that expected target audiences of the project are likely to consist of the following categories:

- *Stakeholder communities*, which include current business and industry players working in the area of Cloud Computing and Green IT. They might include both private and public stakeholders.
- *Relevant projects and initiatives* operating in the Cloud Computing and Green IT areas.
- *Specialised Technology and ICT journals, Events and Conferences* (Academic, Scientific and Research).

2.3.2 Dissemination Target Audiences Actions and Messages

The following tables provide details and propose an initial version for the main actions and messages identified at this early stage of the project for all analysed audiences.

This table will be used as a reference for deciding how to target each group and to define a measure of success.

2.3.2.1 Stakeholder communities:

ECO₂Clouds Targeted Group	Benefit in adopting ECO₂Clouds	Actions & Message
Data Centres	To reduce carbon emissions in a measurable and certified way and improve the efficient use of resources.	*Actions*: delivering methodologies and toolsets for design and management of eco services for Clouds. *Message*: explain how to obtain a trade-off among Quality of Service, performance, virtual and physical resource allocation and overall energy efficiency over federated clouds.
Cloud Providers	To be able to evaluate the Cloud environmental impact and to declare emission values for user applications, thus providing green Cloud applications.	*Actions*: Endowing the ECO₂Clouds toolset with energy and eco-related success criteria and advanced algorithms for closely aligning applications' demands for energy with the resource availability and the measurement of carbon emissions. *Message*: show how to combine the success criteria and algorithms with Cloud-typical measures and technologies.
Application Engineers/Cloud consumers	To be able to deploy applications onto the clouds with certified low environmental impact.	*Actions*: coupling design tools and methodology in a run-time environment for integrated detection, monitoring and control of emissions, so as to be able to assess (in quasi-real time) to what extent the taken measures will lower carbon emissions. *Message:* give guidelines on how to define low impact applications and technologies on the Clouds and how to specify Green Certificates for Cloud-based processing environments.

BonFIRE providers	To be able to validate the platform on use cases.	*Actions*: The disseminated project outcomes can be adapted to the BonFIRE particular target groups and their standard to compare their knowledge of the platform with the outcomes of the project. *Message*: the message has to be specific for the BonFIRE providers in that they need to understand the work done by the consortium and test the success criteria to check the benefits from their point of view
Energy and Power Providers	To have real-time information available about energy/power consumption and carbon emissions in order to gain improved energy matching techniques for effective Demand/Answer Energy marketplace.	*Actions*: suggest a set of changes of practice caused by the adoption of results of the ECO_2Clouds project which lead to increased efficiency and lower emissions To include ECO_2Clouds services within their offer in the framework of "green" programs and initiatives. *Message*: to prepare a favourable technical and organizational ground which will facilitate the adoption of the project main outcomes.
ICT Technology/Service Providers (software)	To enter the growing market of green IT.	*Actions*: disseminate awareness regarding the advantages of adopting the project outcomes to reach an open and potentially huge market for ICT services on clouds supporting ICT companies in providing low-emission platforms compliant with international eco standards. *Message*: show increased opportunity for producing greener applications with low emission on Cloud platforms.

Hardware Producers	Increased opportunity for producing greener hardware for clouds connected with evaluation methods about the environmental impact of hardware platforms.	*Actions*: Disseminate the defined success criteria to measure the opportunity for hardware producers to develop integrated multi-level platforms including carbon emission monitoring layers to demonstrate eco awareness. *Message:* Show the synthetic indicators on which to assess the impact of various ECO$_2$Cloud techniques and methodologies.
Environmental, Energy and Health Agencies	Achieve easy inclusion of metrics and Cloud services within their plans in the framework of green programs and initiatives.	*Actions*: promote the adoption of the project metrics, success criteria, monitoring, design, and run-time methods to promote and encourage green actions of various communities/groups of providers and consumers of Cloud platforms and applications. *Message*: support and foster adoption of low-emission centers by promoting educational plans to increase Cloud eco-efficiency.

Table 1 - Stakeholder communities relevant to ECO$_2$Clouds

2.3.2.2 Relevant projects and initiatives

ECO$_2$Clouds Targeted Group	Benefit in adopting ECO$_2$Clouds	Actions & Message
Projects related to Cloud Computing	Novel scheduling and deployment models.	*Action*: developing novel scheduling techniques where energy metrics are included in the non-functional properties of the system. *Message*: demonstrate the importance of the energy related metrics in the management of a Cloud infrastructure.
Projects related to Carbon Emissions of ICT infrastructures	Metrics for measuring the carbon emissions in cloud infrastructures and data centers.	*Action*: proposing green metrics that link the infrastructure energy demand with the energy sources used by the ICT infrastructures. *Message*: increasing the awareness about how the energy used by the ICT infrastructures is produced.

Table 2 - Projects and initiatives relevant to ECO$_2$Clouds

2.3.2.3 Journals, Events & Conferences (Industry, Academic, scientific and Research)

ECO2Clouds Targeted Group	Benefit in adopting ECO2Clouds	Actions & Message
Journals and magazines	Stimulate both the academic and industrial communities about topics related to sustainable ICT .	*Action*: submit innovative papers about both specific parts of the project and the general vision of the project. *Message*: increasing the visibility of the ECO2Clouds results.
International Research Conferences	Stimulate primarily the research community about topics related to the sustainable ICT and increase the exchange of ideas.	*Action*: submit papers about results of the project, usually at workpackage level or participate at the venues. *Message*: increasing the visibility of the ECO2Clouds results.
Industrial Venues	Increase the awareness of the industrial community around the topic of sustainable ICT and increase the exchange of ideas.	*Action*: submit papers, posters, and demo tool or participate to the venues. *Message*: increasing the visibility of the ECO2Clouds results.
Thematic Workshops	Identify working groups that can influence the research on the green IT.	*Action*: organize thematic workshops and/or submit papers about results of the project. *Message*: increasing the visibility of the ECO2Clouds results.

Table 3 - Journals, events and conferences relevant to ECO2Clouds

2.4 Dissemination Action plan

The dissemination plan of the project will be divided into two periods, corresponding to the two reporting periods (M1-M12 and M13-M24). Although this deliverable describes an overall plan for the whole project, this initial plan intends to evolve, adapting to every stage of the project. Thus, on each Dissemination Report at the end of each period, we will include a revised and updated version of the plan with indications for the next period.

2.4.1 Objectives of the overall action plan

The actions that will be carried out are defined under the dissemination plan have been divided in two phases:

- The **First Phase (1)** covers the first year and aims to raise awareness for the project and should concentrate on Project Dissemination activities

communicating the progress of the project and initiate the first steps towards future actions for "Academic and Scientific Activities and Innovation Results Transfer" and for "Exploitation Marketing", especially working on reaching, and the creation of interest among, our future target audiences; reputation among the scientific, research and academic communities should be given special attention as well;

- The **Second Phase (2)** begins once the project has initial version of the final results, innovations have been achieved, research has been carried out, and moreover, when the project has identified its business models scenarios and a matured value proposition definition. Actions will be concentrated on addressing potential adopters of ECO_2Clouds results, and therefore "Exploitation Marketing" will take a leader role in the dissemination roadmap. During this period project dissemination and results transfer types should not be abandoned, instead they should be carried out intensively to support and help exploitation marketing. Almost at the end of the project's life, we should concentrate our efforts on translating ECO_2Clouds' Value Proposition messages try to build support for the project sustainability once the present project is finished.

2.4.2 Specific and detailed action plan for first reporting period (M1-M12)

There will be a series of specific dissemination actions as the project evolves and the ECO_2Clouds system becomes more mature. For the first year, most of the WPs intend to plan to submit papers to conferences. However, it is important to recall that this is just a *plan* and that depending on the deadlines and relevant findings these actions may –or may not- take place. We have set an ambitious plan where:

- all the WPs shall publish results,
- all deliverables marked as "public" will be published and accessible on the project web,
- all publications and events will be clearly announced on social media and on our website.

Name, date and location of the event/journal	Target Group[1]	Objective[2]	What material/topic will be disseminated[3]	Partner involved[4]
IoS Collaboration Days 2012, Brussels, Oct.	Related Projects	Participation in Conferences/	Presentation of ECO2Clouds Technical aspects	ATOS

[1] Which type of audience will attend the event

[2] Why ECO_2Clouds will be present at this event, what is the objective

[3] Clarify if you will present a paper, organise a tutorial/workshop, have a booth and which type of material will be distributed

[4] Who is the person and partner that will attend the event

2012		Events	http://wiki.ict-fire.eu/index.php/Experimental_Awareness_of_CO2_in_Federated_Cloud_Sourcing	
FIRE Engineering workshop, Ghent, Nov. 7, 2012	BonFIRE providers	Participation in Conferences/ Events		ATOS, UNIMAN
DataCenterDynamics event, London, Nov. 2012	Data Center, Cloud providers, ICT Technology Service providers	Project presentation	Panel participation	POLIMI
Green Days @ Luxembourg	Broad audience	Participation in Conferences / Events	Presentation	INRIA
FIA event (planned in 2013)	Related projects, BONFire providers	Project presentation	Chapter of FIA book	UNIMAN, ATOS, POLIMI
Hands on FIRE! Conference, Dublin, Ireland 8-10 May, 2013	Broad audience	Participation in Conferences / Events	Presentation of ECO2Clouds Technical aspects	ATOS
E2DC (planned in 2013)	Researchers	Discuss requirements	paper	WP2 participants
COST 804 School on Energy efficiency in large scale distributed systems, (planned on April 2013)	Researchers	Green Performance Indicators for energy-efficient services	lecture	POLIMI

ECO2Clouds Workshop (planned on Sept. 2013)	Broad technical audience	Dissemination and discussion of results	Workshop organized by ECO2Clouds	UNIMAN
ECO2clouds related workshop, eChallenges 2013	Researchers	Dissemination and discussion of technical solutions and results	Paper	HLRS
ECO2Clouds Workshop (planned on Sept. 2014)	Broad technical audience	Dissemination and discussion of results	Workshop organized by ECO2Clouds	UNIMAN

Table 4 - ECO2Clouds disseminations events in Y1

2.4.3 Individual partners detailed dissemination plan

ATOS

Regarding external dissemination of ECO2Clouds project, Atos is currently working in conjunction with the Dissemination leader and other partners to identify relevant conferences and events to attend and to submit papers or technical articles. Atos has also worked on collaboration activities with other EC funded projects like BonFIRE and Fed4FIRE, setting up conversations and establishing a collaboration context with them. Further, ECO2Clouds will seek to use Atos established marketing and communication tools (press releases and newsletters) as relevant results are achieved.

Additionally, regarding internal dissemination of the project our first efforts consist of presenting ECO2Clouds at different levels in internal technical meetings contributing to Cloud strategy within Atos and as part of ARI (Atos Research and Innovation Group) contributions. The Atos team is planning to address internal meetings to show the value and potential of the future ECO2Clouds outcomes from a business point of view to our management. ECO2Clouds main innovations have been cited to be evaluated to become future possible topics to be addressed by future whitepapers of ATOS Scientific Community (elite technical advisory group inside Atos).

Atos has already participated in disseminating ECO2Clouds at the FIRE Engineering Days in Ghent November 7th, 2012 and plans to participate actively in FIRE and FIA related events especially.

UNIMAN

The University of Manchester (UNIMAN) plans to carry out scientific dissemination of ECO2Clouds results with the intention to provide widespread knowledge about the project and foster feedback on complementary approaches. As scientific and technical leader of the project UNIMAN aims to coordinate the efforts (from all partners) for the submission of high quality scientific articles to international conferences and Journals.

The main message of the articles will include the approach taken, the results gained, the innovation and processes used/developed. The feedback gathered during the submission of scientific articles will be used to improve the scientific contributions throughout the project lifecycle.

Furthermore, UNIMAN will organize a workshop at the end of both year 1 and year 2 of the project. The workshops will invite audience from a variety of backgrounds e.g. Cloud providers, stakeholders in Cloud-related research projects and representatives of standardization bodies. The results of the workshops will be published as workshop reports (or white papers).

The format of the first workshop is currently being planned as a road-show event where invitees from different aspects of Cloud computing can be briefed about the significance and innovative aspects of the ECO_2Clouds project, while being given the opportunity to present their Cloud-based solutions in such a way to discuss potential synergies and possibilities of collaboration.

The second workshop will be organized towards the end of the project with the aim of spreading the word about ECO_2Clouds outcomes and impact. This can be linked to an existing conference as has been a reliable practice in other similar sized projects, due to pooling resources in the organisation and marketing of the event.

UEDIN

EPCC at the University of Edinburgh (UEDIN) will contribute to the dissemination activity by using its established channels of publicity, which already reach a wide audience. At the start of the ECO2Clouds project, EPCC published an article in its newsletter to introduce the aims of the project to its subscribers. The newsletter was distributed at the Supercomputing'12 conference in Salt Lake City (US). EPCC will continue to use this medium to publicise the future progress of the project. EPCC also uses social media and frequently updates its website with short articles on current work.

In addition to this higher level of publicity, EPCC will also contribute to scientific papers and conference presentations.

USTUTT

HLRS, which is part of the University of Stuttgart (USTUTT) will contribute to the dissemination activity as follows: it is mentioned in the specialized green computing lectures held by the participating departments. In addition, at another level of publicity, energy efficient student projects are offered within HLRS. Furthermore, at the beginning of the project, an internal newsletter was published to inform the scientific staff. The HLRS webpage also contains some information regarding ECO_2Clouds.

HLRS will also spread the results and knowledge regarding monitoring, energy efficient deployment and cloud architecture using scientific papers and organizing workshops.

POLIMI

POLIMI will contribute to the dissemination activity by spreading results and useful

knowledge through scientific papers and presentations oriented to both academic and industrial communities.

POLIMI is also responsible of the project Website and manages the project social channels (i.e., Twitter and Facebook) through which news, main project activities and results are also publicised. Dissemination will be also achieved through seminars and lectures in teaching activities by participating researchers (e.g., in the Service Technologies course).

INRIA

Inria will disseminate the objectives and results of the project mainly through two channels: the Grid'5000 community (we will ensure ECO2Clouds presence during the Green Days @ Luxembourg event to be held at the end of January 2013) and the COST 804 action (ECO2Clouds was already presented on October 18th 2012 at the common COST 804-805 meeting) as well as through the more established channels Inria uses to communicate with its partners.

2.5 Project dissemination strategies

2.5.1 Publications

During the first year of the project, the core ideas and motivation behind the project will be turned into concise presentations and short papers, as well as some visionary case studies, which will be defined to illustrate the technology's potential to interested stakeholders and early adopters. Next, starting from the end of the first year, the first prototype will be available and this will be used to improve the visibility of the project and the validation of the approaches proposed by the partners.

In particular, activities and actions taking for ensuring a wide visibility and identification of the project are planned as part of the marketing driven dissemination.

The main actions are listed below:

- Design of the ECO$_2$Clouds brand (logo, colour scheme, document templates)
- Design of promotional materials such as leaflets, posters, project folder
- Participation in exhibitions, workshops, specialised international meetings, etc.
- Public relations, featured articles in magazines, e-journals, forums, mailing lists, press releases, etc..
- Media coverage (TV, radio presence, etc…)

In every reporting period, a report about submitted and accepted publications will be provided according to the template described in B.2.

2.5.2 Academic, Scientific and Research Dissemination

Academic dissemination will concentrate on conferences, scientific workshops, academic papers and scientific magazines (online and printed). The main messages include the principal motivation of the project, the scientific approach and methodology, the results gained, the core innovation and the delivered technology. The intention is to

spread information about the project widely and encourage feedback on complementary approaches. The aim is also to get in touch with companion initiatives and projects to share ideas and experiences to work towards common standards and results.

The key scientific communities we have identified and the methods for connecting with them are listed in Annex A of this document.

Several events have been identified to reach the audiences to which the dissemination activities of ECO2Clouds are addressed. The list will be monitored and updated periodically. The list includes events mainly in the green computing, clouds computing, and distributed computing area. The list also includes industrial and academic events in order to reach a vast variety of audience. For every event, we have analyzed the potential type of participation of ECO2Clouds.

In every reporting period, a report about attended events will be provided according to the template described in the Annex B.3 of this document.

2.5.3 Dissemination to potentially interested stakeholders

The project will also disseminate results in conferences more oriented towards industrial audiences, such as the Service Research Innovation Institute's global conferences, PoweredByCloud and the Cloud Computing Expo conferences. Also national conferences, workshops and events in the Project Countries will be addressed as well as National Computer Science and Engineering Associations aggregating professionals and managers operating in the eco and Cloud areas. Moreover, specific courses on the project's topics will be addressed in academic PhD courses.

Regarding standards relating to Grid and Cloud Computing, one must acknowledge that ECO2Clouds is not going to play the role of creator of new standards but rather one of consumer. ECO2Clouds will use existing standards and will actually benefit from those that are already used within the framework of the BonFIRE project. This makes sense since ECO2Clouds and BonFIRE will be in close touch and will benefit from one another.

On the other hand, the project will aim at interacting with standardisation bodies with specific activities, disseminating results of the research and experimental results of the project and of the organized workshops.

Some prominent standardisation bodies and consortia in the scope of ECO2Clouds are:

- **Open GRID Forum (OGF)** http://www.gridforum.org: the main objective of the OGF is to support the implementation of Grid technologies and applications with specifications, experiences, results and guidelines. ECO2Clouds may contribute through BonFIRE to the extensions needed to manage the deployment of services in a heterogeneous Cloud federation infrastructure.
- **Green Grid** http://www.thegreengrid.org: the members of The Green Grid consortium have taken up the challenge of developing standards to measure the efficiency of a data center (this includes both the facility and the IT equipment inside of it).. ECO2Clouds can provide concrete results for evaluating the impact of Cloud computing and to deliver energy efficient Cloud solutions.
- The **OpenDataCenterAlliance** http://www.opendatacenteralliance.org: An independent IT consortium comprised of global IT leaders who have come together to provide a unified customer vision for long-term data center

requirements. The Alliance has delivered the first customer requirements for Cloud computing documented in eight Open Data Center Usage Models which identify member prioritized requirements to resolve the most pressing challenges facing Cloud adoption. ECO2Clouds can provide an experimental basis for assessing such requirements and provide strategies to lower the impact on energy consumption.

- The **European Telecommunications Standards Institute (ETSI)** http://www.etsi.org: a European Standard Organization with members worldwide. The ETSI has recently launched the Cloud Standard Coordination with the aim to define a cloud standard map where four main themes are considered: Security, Interoperability, Data Portability, SLAs, and Reversibility.

Applied dissemination will focus on typically shorter and more generic communication items (web coverage, flyers, press releases, whitepapers, exhibition stands, magazines and websites focused on software developers). The key messages revolve around what ECO2Clouds will be able to do, the benefits it will confer, the conditions under which it can be used and how and when users can become involved. The intention is to identify potential collaborators and experimenters, potential partners for exploitation and users, and in general to gather feedback from different communities both public and private.

2.5.4 Dissemination within FIA and BonFIRE

The project will actively participate and contribute to the collaboration activities organised at Future Internet Research and Experimentation (FIRE Conference and Workshops), Future Internet (FI Assembly) and ICT programme (ICT Conference) levels. The objective is to provide input to common activities and receive feedback, contribute advice and guidance and receive information relating to FIRE community building as well as tools and platforms and ICT programme implementation, standards, policy and regulatory activities, relevant national or international initiatives, etc.

The project will contribute to community support like the FIRE portal and community-building activities like joint workshops, schools, training, etc. By initiative of interested projects, thematic Clusters and Working Groups might be proposed; the project will actively participate and contribute to the relevant activities.

The project will participate to Future Internet Assembly books, submitting proposals for chapters describing the goals of the project first, and advancements of the project during its duration.

2.5.5 Organisation of Workshops

Two workshops will be organized by the project (M-12 and M-24). The goal of the project is to involve all stakeholders to exchange ideas and get feedback on research directions in ECO2Clouds.

The goal of the first workshop, to be held in conjunction or collocated with a selected events at which major stakeholders will be present, will be to exchange and disseminate ideas and also to create consensus on concepts and to get feedback on results, involving other projects, inviting representatives of standardization bodies and other organizations. The results of the workshop will be sent (by electronic or personal presentations) to standardization committees (for instance in form of a white paper

with a summary of the results of the workshop).

A second workshop will be organized by the end of the project aimed at discussing the impact of the mechanisms ensuring efficiency of federated Cloud infrastructures and the use of eco-metrics. This will be possibly linked to an existing conference, as previously done (in a fruitful way) in other similar-sized projects, due to pooling resources in the organisation and marketing of the event. Depending on the feedback received from the communities over the course of the project, this workshop will be focussed on coupling industry participation with scientific presentations (industry/academic peer reviewed papers, for example). Also in this case, involvement of other projects and standard organizations will be sought, to disseminate ideas and reach a wide consensus on our technological and research directions.

3 General dissemination channels and marketing collateral materials

In this section we illustrate the main channels for general dissemination and the marketing collateral materials that will be developed for the project.

We want to highlight that our communication is based on a coordinated set of tools for interaction with audiences outside the project, keeping a recognizable look in terms of coherent use of the logo and colours in all communication material, both online and printed. Thus, for all materials produced we have in mind and pay special attention to the two following differentiated concepts:

- **Content:** It is fundamental that it is produced in plain language and with a clear and simple message. For materials intended for business oriented audiences, we should focus on explaining the core technical message in an easy to read and understandable way. The production of content requires the participation of all partners in the project.
- **Design:** The design constitutes the image and "packaging" of the content and makes it attractive and can influence the reader's perception of the content. The graphical design is carried out by the dissemination team and will be created using the project image and style guidelines.

3.1 Project Website

The project web site www.eco2clouds.eu is our main dissemination tool for the project which can be accessed by the general public. The home page is shown in Figure 1.

The web site consists of six main public areas and one private area. The public area allows the user to have information about the objective of the project and the description of the consortium. Specific pages focus on the dissemination activities in terms of event and initiatives organized by the ECO2Clouds team. Finally, a section makes available the public deliverables and the list of publications written by the consortium about the topics of the project. In the private area, a specific account will be released to people that have the right to access (e.g., project officers and reviewers) private documentation such as deliverables that, according to the Description of Work, are not intended to be public.

At the current stage, the web site is populated with basic information and during the life of the project it will be continuously populated and upgraded. In particular, the web site tool will host presentations (technical, academic and business oriented) with clear messages for all our intended targets and audiences. We will also try to use this materials to help others (influencers and referral channels) spread our message on the web by allowing them to copy and paste our presentations on their websites.

Moreover, the website contributes to derive traffic to our social media networks proving links to our Twitter and Facebook social media accounts. Also, we plan to use our web site for retention purposes, having the option for users to register and join our mailing list and receive every newsletter and updates we publish in the web site.

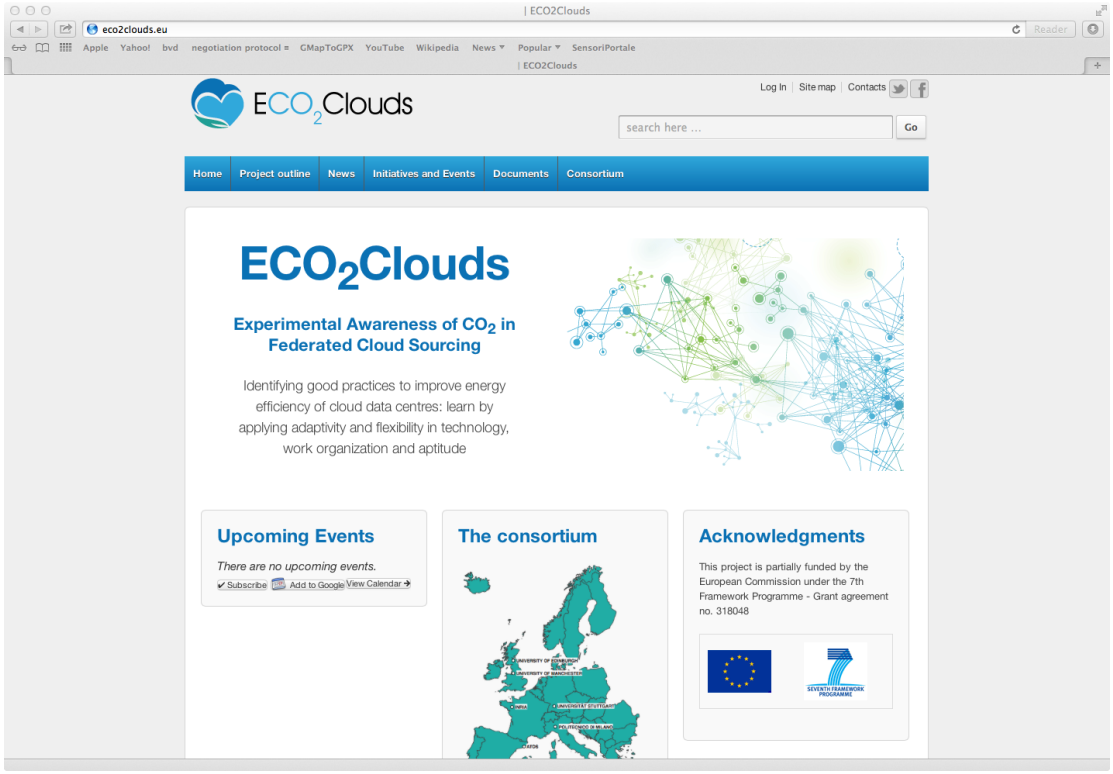

Figure 1 - ECO$_2$Clouds Web site

To reduce the effort for the maintenance and to improve the timeliness of the update, the web site is based on Wordpress. In this way, all the partners of the project have an account and can directly add new content as soon as it is relevant for the audience without a centralized editor. Moreover, using the huge amount of available Wordpress plugins, new functionalities of the web site can be easily added. For instance, there is the possibility to automatically update the personal agenda with the scheduled events.

3.2 Newsletters/Posters

A newsletter for the project will be published every six months starting from M6. To advertise the project in this first months of the project, a poster has been produced and distributed during events in which project partners have participated so far. A copy of this poster is reported in the Appendix C to this document.

Newsletters will be sent to the general subscribers list. They will be sent out using various channels to reach a wider audience (ICT news channels or industry publications). We will promote the newsletter through posting the newsletter availability announcement on the project's web site; announce the newsletter on the LinkedIn contacts' network and using our Twitter account; all partners will send the newsletter internally in their organizations and network of contacts; and industrial partners or influencers in the project who might have relevant blogs will promote it on their blogs, etc.

3.3 Social networking

ECO2Cloud uses Social Media account on different well-known social networking sites to support dissemination activities. In particular, they are meant to:

- **Build and grow our Sphere of Influence:** Our sphere of influence is the people in and around our project that we can interact with, not what people we want to reach. Thus, we should spend some time getting to know key people of influence in our sector, watch and learn how they engage their audience and then start engaging with them. We will try to develop a relationship with these key people of influence which will also have an impact on the sphere of influence too, because other people will see it and it will help build the online brand even further. Also we have to think that everyone is using one or another social network for personal use, and that brands and companies are made of people, so we must be on social media.
- **Use Social Media as the next generation of Word of Mouth Marketing:** What better way to interact with new potential users or clients than via people who have already experienced what our project has to offer? When the social media presence of the project starts to generate conversation and reactions such as; likes, shares, tweets, pins or whatever else it might be, then this social recommendation is visible to more people and we can have access to more people and reach further audiences with the chance to get to know more about our project.
- **Create Community around the project:** If we can really embrace the nature of social media, through providing great content and engaging and interacting with your audience in a manner that leads to building a great community that people want to be involved with, then our project will get a great boost. We will work towards this goal to improve dissemination actions by using social media.
- **Improve Project Dissemination Phase:** by further disseminating scientific publication to online communities, and when possible, used to highlight project news and events, as well as to promote discussion on selected topics, to promote and create a bound between users and the ECO2Cloud Project.
- **Have a better Search Engine content ranking:** We have to be aware that the main search engines such as Google, Bing or yahoo takes into account social media sharing when ranking websites content. The whole concept of the internet is a web. When many different people on social media refer to our content, our website, our articles, or our dissemination materials, it means that those individual people find our content useful, entertaining, informative or all of the above. When this happens the search engines pay attention and in return use this as a factor to provide better search engine placement for our content. Thus allowing our project to reach more people and audiences. Also Social Media networking sites have high page rank since Facebook, Twitter, LinkedIn have high Page Rank per se. This means that in terms of the search engines such as Google and Bing that they carry authority and therefore get a good ranking in search results.

3.3.1 Twitter

Twitter has become the reference social networking for microblogging, enabling its

users to quickly send and read short messages everyday day from sources that are relevant for the user.

A twitter account named ECO$_2$Clouds has been created. The goal of this account is twofold. On the one side it is to help us on acquisition and referral purposes, helping us post comments related to our project, share events to attend and news related to the market, as a means to develop an audience to acquire traffic to our main website where we publish all content and drive specific messages using news, blog and event tools available on the website. On the other side, the goal is to enable the exchange of relevant documents produced by someone else among the partners of the project.

3.3.2 Facebook

Facebook is a free-access social utility website where users can join networks and groups (e.g., organized by region, workplace, interests, business) to connect and interact with other people.

To increase the visibility of the project a Facebook page has been established (see Figure 2). This public page is available at http://www.facebook.com/ECO2Clouds and represents an advertising channel complementary to the Twitter account. Moreover, this Facebook page allows the project team to directly publish information and documents without any size limitation.

Figure 2 - ECO$_2$Clouds Facebook page

3.4 Marketing Collateral materials

3.4.1 Logo

The logo has been designed from the draft logo initially presented with the proposal,

including a stylized reference to clouds, environment (a green leaf) and a positive attitude towards environmental impact (the heart).

3.4.2 Factsheet

A preliminary factsheet has been produced containing a quick explanation of the project main facts and it is intended to be used for all partners on dissemination actions. In general, factsheets will be produced with the release of public deliverables.

3.4.3 Folder

A project folder has been designed to contain project information and fact sheets. The aim of the folder is to act as a visible advert of ECO$_2$Clouds that can be distributed during an event organized or hosted by ECO$_2$Clouds partners. Figure 3 reports the structure of the folder.

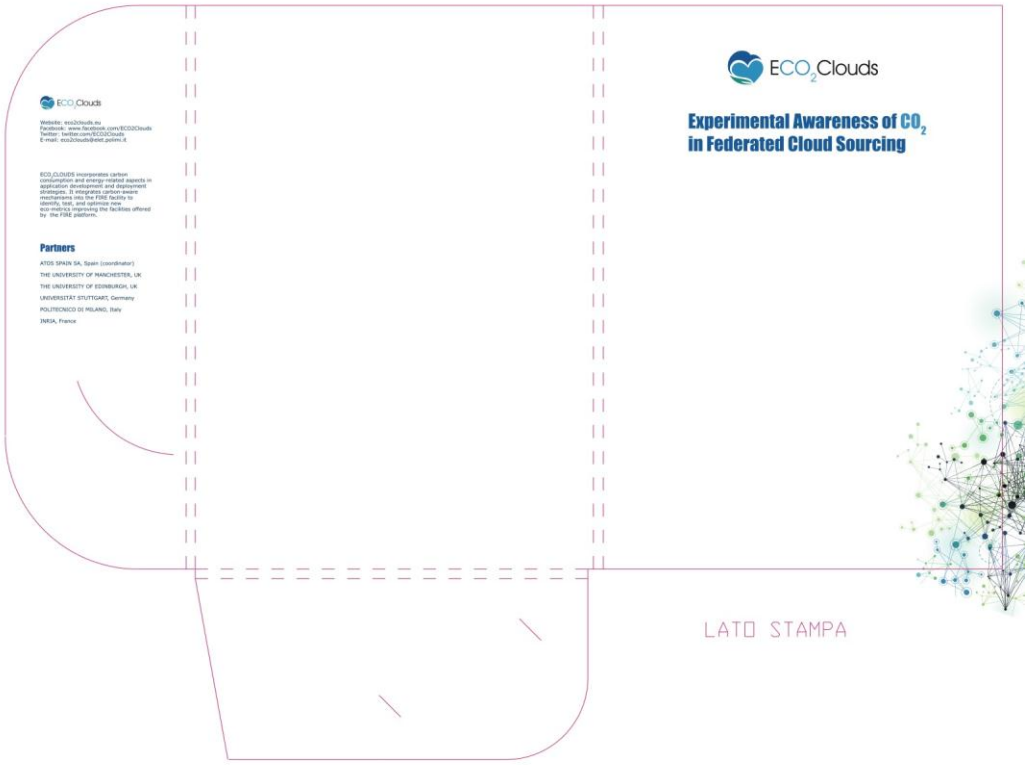

Figure 3 - ECO$_2$Clouds folder

3.5 Collaboration with other Projects

Collaboration with other R&D projects is also a good dissemination channel thus, we will analyse a broad spectrum of ICT projects to select the ones which we consider more interesting for our project to concentrate our collaboration efforts on them.

The objective of these collaborations should be trying to take advantage of possible similarities for reusing results, and collaborate on the dissemination of the results, innovations or on general topics of the sector, or participating or organizing events and conferences.

One of the relevant venues that can be considered is participation in the IoS Collaboration Days yearly organized by the European Commission with the goal to stimulate collaboration, around a set of topics, among the funded projects.

4 Evaluation Criteria and Measuring Impact with KPI

Progress in dissemination will be monitored through the use of key performance indicators (KPIs) which will cover all forms of dissemination and in particular emphasize the results gained rather than the quantity of activities realised. Constant monitoring of the KPIs will allow the dissemination manager, project coordinator and exploitation manager to modify their respective strategy and incorporate feedback into the project.

Specific dissemination plans will be drawn up at the beginning of the project and revised periodically. The above mentioned publications and events will be revised when the plan is elaborated.

The main KPIs to be monitored during the project are summarized in the following table.

<table>
<tr><th colspan="4">Key Performance Indicators</th></tr>
<tr><th>Tool</th><th>Type</th><th>Success Indicators</th><th>Coverage</th></tr>
<tr><td rowspan="2">The web site, together with associated social media, is one of the main ways to disseminate information about the project and will be populated with results from the research and from the experimentation within the project.</td><td rowspan="2">Quantitative</td><td>>7000 accesses per year</td><td rowspan="2">World wide,
general and specialised target</td></tr>
<tr><td>>300 downloads</td></tr>
<tr><td>Project flyer and factsheets</td><td>Quantitative</td><td>3 versions</td><td>World wide</td></tr>
<tr><td>Press echoes (from all over Europe) This shows the relevance of the project to public.</td><td>Quantitative</td><td>8</td><td>EU</td></tr>
<tr><td>On-line magazines and newspapers</td><td>Quantitative</td><td>4</td><td>World wide</td></tr>
<tr><td>Newsletter
The newsletter will target the stakeholders and interested potential users of the platform.</td><td>Quantitative</td><td>4</td><td>EU</td></tr>
<tr><td>Scientific papers and white papers</td><td>Quantitative</td><td>10</td><td>World wide</td></tr>
</table>

Key Performance Indicators			
Tool	**Type**	**Success Indicators**	**Coverage**
Numbers of conferences and expositions The participation to conferences, expositions and other events indicates the interest in the various topics which are covered by ECO2Clouds.	Quantitative, Qualitative in terms of participation	10	World wide, specialised target
Focused workshop The Consortium foresees the realisation of a focused event especially designed for potential ECO2Clouds users and researchers.	Quantitative	2	World wide
Cooperation with other initiatives Cooperation with other European and international initiatives and in particular with FIRE initiatives, are necessary to disseminate the ECO2Clouds results and to promote the exploitation of the services and tools.	Quantitative	≥ 3	Europe

Table 5 - Dissemination KPIs

Annex A. Possible venues for dissemination

Academic venues

- **Cloud and SaaS**: targeted conferences will include Future Internet Assembly initiatives promoted by the EU Commission and scientific and general conferences related to the theme of the project. The main events related to ECO2Clouds will be:
  - Any events organised by the European Future Internet Alliance
  - Any events organised by NESSI
  - The Future Internet Assembly (FIA) and other Future Internet events (two big events per year)
  - ServiceWave conferences (often in turn associated with FIA)
  - Scientific conferences in the area of Services (covered by Service Congress 2012 and others such as ICWS, ServiceWave, SCC, ICSOC and Smart Grid initiative)
  - Scientific conferences in the areas of *Cloud* Computing covered by the IEEE International Conference on Cloud Computing (CLOUD), IEEE International Conference on Cloud Computing Technology and Science (CloudCom), the International Conference on Cloud Computing and Virtualization
  - Scientific conferences in the areas of Information Systems Engineering e.g., CAiSE (Conference on Advance Information Systems Engineering), European Conference on Information Systems, International Conference on Information Systems, International Conference on Engineering Information Systems.
  - Journals in the area of Services such as Transactions on Services Computing, Transaction in Software Engineering, Journal of Systems and Software, Transaction on the Web.
  - Journals in the area of Cloud Computing, or more in general of distributed systems such as Journal of Parallel and Distributed Computing.

- **Energy efficiency, green IT**:
  - International Conference on ICT as Key Technology for the Fight against Global Warming (ICT-Glow)
  - International Conference on Energy-Efficient Computing and Networking (e-Energy).
  - Workshop on Energy-Efficient Data Centres (E2DC)
  - IFIP Conference on Sustainable Internet and ICT for Sustainability - SustainIT
  - ACM/SIGMETRICS GreenMetrics
  - Specific journals that address energy efficiency issues such as Sustainable Computing: Informatics and Systems (Elsevier)
  - International Conference on Smart Grids and Green IT Systems (SmartGreens)

More industry focused venues

- *Data Centre World Conference* (http://www.datacenterworld.com/about-conference/): DataCentreWorld Conference will help managers plan, implement and manage their existing and future datacentre requirements. The DataCentre World Conference will feature the key topics of interest to professional planning, managing or hosting a data centre
- *DatacenterDynamics Conferences* (http://www.datacenterdynamics.com): The DatacenterDynamics Conferences offer Knowledge and networking for people who design, build and operate data centre facilities. DatacenterDynamics Conferences will be held around Europe, North America, Latin America, Middle East and Africa.
- *Green Power Conferences* (http://www.greenpowerconferences.com/): Established in 2003, Green Power Conferences was the first to offer professionally organised events focusing on the sustainability sector
- *Conference on Enterprise Servers and Data Centers: opportunity for energy savings* (http://www.energystar.gov/index.cfm?c=products.pr_esads_conf): The Conference goals are to bring together national and international stakeholders to highlight the growing energy demands of today's high density enterprise servers and data centres, and share ideas on management, technical strategies, and best practices for addressing energy consumption by enterprise servers and data centres.

Annex B. Templates for Reporting

B.1 Template for dissemination report deliverable (table of contents)

B.2 Template for reporting submitted publications

For every reporting period, partners will be requested to fill this template in order to collect all the publications submitted to any event, conference, journal or book. Following an explanation of what every column means:

- Date: date of the event; date of journal/book publication
- Submitted At: place where the publication has been submitted. It can be a paper for an event or a conference; article for a journal; or contribution (chapter or whole) to a book.
- Title: title for the publication. As all the references to publications will be published on the project web site, it is required to write also here the link where the publication is.
- Target audience: type of audience to whom the event, journal or book is addressed. We proposed to distinguish between industrial or academic audience.
- Scope: the influence scope of the event, journal or book. We distinguish here

between a national scope, European scope and international scope.

- Partners involved: the authors of the publication, indicating persons and organizations.

Date	Submitted At (name of event, journal, book, etc)	Type (journal paper, conference paper, book chapter)	Title (include link to publication)	Target Audience (Industrial, academic)	Scope (national, European, international)	Partners involved (authors)

B.3 Template for reporting attended events

For every reporting period, partners will be requested to fill this template in order to collect all the events attended or participated by them. Following an explanation of what every column means:

- Event date: date when the event was hold
- Event place: place where the event was hold
- Event name: name of the event
- Target audience: type of audience whom the event is addressed to. We proposed to distinguish between industrial or academic audience.
- Scope: the influence scope of the event. We distinguish here between a national scope, European scope and international scope.
- Partners involved: name of the project organizations that have taken part in the event attendance or organization.
- Type of participation: the explanation about what was the mission of partners at the event: share a panel, act as speaker, moderate a workshop or just attending the event sessions.

Event Date	Event place	Event name	Target Audience (Industrial, academic)	Scope (national, european, international)	Partners involved	Type of participation (panel, speaker, workshop, attendee)

Annex C. Project Poster

ECO2Clouds

Experimental Awareness of CO_2 in Federated Cloud Sourcing

Identifying good practices to improve energy efficiency of cloud data centres

Ecological implications of Cloud-based IT infrastructures are creating a critical gap in the current state of the art in research and business.
The ECO2Clouds project investigates strategies that can both ensure effective application deployment on the Cloud infrastructure and reduce energy consumption and CO_2 emissions. The need for novel deployment strategies becomes more evident when an application spans multiple Clouds. In fact, cloud providers operate under different regulatory frameworks and cost structures in relation to environmental policies and energy value-chains.

Applying adaptivity and flexibility in technology, work organization and aptitude

ECO2Clouds will provide a challenging and innovative approach to Cloud computing service delivery by:

- developing extensions and mechanisms for Cloud application programming interfaces to quantify their environmental impact;
- developing energy-efficient Cloud sourcing and application deployment strategies.

The carbon-aware mechanisms will be integrated into the FIRE facility.

Partners

ATOS SPAIN SA, Spain (coordinator)

THE UNIVERSITY OF MANCHESTER, UK

THE UNIVERSITY OF EDINBURGH, UK

UNIVERSITÄT STUTTGART, Germany

POLITECNICO DI MILANO, Italy

INRIA, France

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Twitter: twitter.com/ECO2Clouds
E-mail: eco2clouds@elet.polimi.it

Grant agreement no: 318048

Figure 4 - ECO2Clouds poster