

# local <u>E</u>lectricity retail <u>M</u>arkets for <u>P</u>rosumer smart grid p<u>OWER</u> services

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# **Abbreviations and Acronyms**

Acronym	Description	
GA	Grant Agreement	
WP	Work Package	

# **Executive summary**

This document reflects the dissemination and communication actions performed in EMPOWER project, since it started (January 2014). It reviews the steps taken during the first year for spreading the project objectives and evolution.

The main goals of this work package are to disseminate the project insights, while capturing and maintaining the attention of stakeholders (authorities, citizens, potential partners). The appropriate channels to do so are selected so as to obtain the largest impact.

Taken into account the large influence Internet has nowadays, a big effort has been put to build the webpage of the project and connect it to the social networks. On the other hand, several events have been organized and other communication channels like magazines, newsletters or journals have been used to publish EMPOWER vision, objectives and results. For encouraging the dissemination of EMPOWER and reaching potential stakeholders, a presentation, a poster and flyer draft have been prepared. Additionally, a Technical Advisory Group (TAG) has been constituted and a descriptive video of the project is under construction.

Using all these tools, the messages spread through the dissemination tasks will promote:

- The creation of innovative, sustainability-focused market solutions that increase prosumer engagement and offer more freedom of choice to electricity consumers.
- The improvement of investments and assimilation of micro-generation in the distribution net among consumers and others by means of the insight established in EMPOWER.
- The SESP role and the micro-market for inclusion in regular business operations.
- The development of functions of the ICT to trigger further exploitation.
- The stimulation of social and environmental mind-shifts and trigger practical initiatives among based on the EMPOWER experience.

# 1 Introduction

The present report summarises the work done in Task 9.3, "Dissemination and Communication report: year 1". To contextualise what is going to be disseminated, a brief description regarding the EMPOWER project are introduced. Due to the distributed installation of renewable and therefore intermittent, generation the role of distribution system operators (DSO) has become much more important than before the electricity market liberalization carried out in the European Union. To maintain a high level of quality of costumer services and electricity supply, new information and communication technologies are needed and new roles will evolve at the interface between DSO's, local consumers/prosumers, decentralised electricity suppliers and the transmission operator. Small to medium-scale distributed storage systems on medium and low voltage supply systems level will have to be managed in the future. In this scenario, EMPOWER is designing a new market for local trading and involvement of prosumers through a cloud based ICT.

The document is structured as follows. First, the projection vision and mission are presented. Then, the need for dissemination and communication is detailed and their main goals are described. The webpage is identified as one of the key actions among dissemination and communication activities. The webpage structure and its main contents are detailed in the present document. The social networks chosen for spreading the project insights and evolution are also shown. The appropriate monitoring of the webpage and social networks allows having an approach of how successful the communication at Internet level is being. As it reflects the information and media that are capturing more interest, it is used as guidance for future communication and dissemination actions.

Furthermore, a video for explaining the project and in an easy-understanding language is under construction. It will be available through the webpage of the project. Complementarily to the internet tools for disseminating the project, material to spread the project in conferences and events has been prepared: a presentation explaining the project, a flyer and a poster.

Finally, the dissemination plan thought at the beginning of the project is revised.

# 2 Empower vision and mission

The EMPOWER vision and mission were presented in the Grant Agreement, before starting the project.

Nowadays, political goals, consumer engagement and technology developments are leading to a lot of changes at the retail/medium and low voltage side of the electricity market. New technologies are under deployment including appliances for smart metering, distributed electricity generation, home automation/smart appliances/load control, distributed storage and electric vehicles. Such technologies create new challenges for the operation of the distribution networks, due to higher peaks, more dynamics and less predictability. Balancing supply and demand and maintaining power quality in the grid are some of the challenges. These challenges are local and must be solved at the local level.

At the same time we observe a growing engagement from the consumers, who want to take a larger responsibility for a sustainable future regarding energy use. Some places groups of consumers self-organize to create co-operatives in order to be able to take such responsibility.

As described above, deployment of new technologies at retail side creates new challenges for the electricity system. On the other hand the same technologies can also be a main contributor to solving these challenges. However, technological possibilities and consumer awareness are not enough to make this happen.

The consumers and prosumers must be provided with incentives (economic and other) to invest in new technology and to participate in self-generation, demand response programs and other programs that put a value at flexibility. This should be done by development of innovative business models. The contribution from each single consumer and prosumer might be small, so aggregation and coordination must be established efficiently. Such collective/coordinated regimes must ensure confidence for the consumers/prosumers as well as for the DSO in order to maximize potential and hence realize the benefits for the local electricity system, the local community and each participant.

Local market place(s) must be established to exchange the local resources aiming for solution of local challenges and ensuring local cost efficiency. EMPOWER proposes the definition of a new role in the local electricity market, the Smart Energy Service Provider (SESP), with the task to handle the operation of the market place, the coordination

between the participants, economic settlement and offering of services for the market participants. The SESP role can be taken by incumbent roles (like the DSO) or by newcomers (like ESCOS, co-operatives, municipalities, or others). In any case the tasks and responsibilities for the different roles must be defined and the technical and economic interaction between them must be outlined.

Taking into account this vision, EMPOWER aims to "develop and verify a local market place and innovative business models including operational methods to encourage micro-generation and active participation of prosumers to exploit the flexibility that this creates for the benefit of all connected to the local grid."

# 3 Dissemination and communication

Dissemination and Communication are extremely important in a European funded project. An internal document entitled "Dissemination & Communication. A guide for project participants" has been written for setting the principles and guidelines mandatory for all the partners, in order to give the Dissemination & Communication activities a common shape and avoid any possible error.

**Dissemination** (from lat. *disseminare* "scattering seeds") is the phenomenon of broadcasting a message to a public without direct feedback from the audience [1].

**Communication** (from Latin *commūnicāre*, meaning "to share") is the phenomenon of conveying information and meaning through non-verbal, verbal, or written media. It requires a sender, a message, a medium and a recipient. Communication requires that the communicating parties share an area of communicative commonality. The communication process is complete once the receiver understands the sender's message [2].

Additionally, as stated in the Grant Agreement (GA), Empower dissemination applies to the effort directed to spread the results of the project, whilst the communication activities will transmit the project insights to pertinent stakeholders for general acknowledgement.

Therefore, dissemination is needed to divulge the results of the project, while communication focuses on divulging the project (not necessarily its results) so as to reach a specific audience.

The main goal of communication and dissemination is to strategically inform/disseminate before-during-after project. The specific objectives of communication and dissemination activities are [3,4]:

- To capture attention (Governments, authorities, public & private funding sources)
- To highlight & enhance (International research cooperation benefits + EU visibility)
- To attract (Businesses + Potential partners + top students + scientists)
- To create (Market demand) Exploitation & Dissemination (research results)

The procedures to reach them include campaign-based activities (target: broad range of stakeholders + general public) disseminated through communication campaigns (websites, social networks, schools, media). In order to prepare any activity implying communication or dissemination:

- Clear objectives of the communication should be established
- The target audience should be identified
- The appropriate message should be transmitted (according to audience's interests and project objectives)
- Right medium & means should be selected
- Good management should be ensured (continuity + sustainability + use of resources)
- The invested efforts should be evaluated (impact + response + change)



Figure 1: Common mistakes and better practice for communication activities. Source: European Commission [3, 4]

The objectives of EMPOWER dissemination and communication activities are based on the previously detailed guidelines and focus on technology transfer, citizens awareness and business creation.

# **Technology transfer (UPC)**

- To disseminate the technology developed related to Power electronics developers, microgrid developers, energy service providers and energy research community
- To promote the awareness of the stakeholders
- To harvest pertinent feedback
- To prepare the local stakeholders situated at or close to the test sites and conditions the parties being affected for the purpose at hand.
- To inspire and trigger similar initiatives to create a broad momentum
- To highlight new scientific results and outstanding issues and to show how historic research has been applied and conveys this to the international research community to trigger continued scientific efforts

# Citizens awareness (SmartIO)

- To prepare the locale stakeholders situated at or close to the test sites and conditions the parties being affected for the purpose at hand
- To promote the SESP role and the micro-market for inclusion in regular business operations. Especially the value propositions that can be associated with this are important to convey
- To stimulate social and environmental mind-shifts and trigger practical initiatives among based on the EMPOWER experience
- To promote the necessary actions in order to facilitate the birth of new business models

## Business creation (UNISG)

- To disseminate the knowledge to the business community with publications in management journals. Specially focused on energy industry and business models for local electricity retail markets.
- To implement an in-house-training program for incumbents to implement new business models of local electricity retail markets for prosumer smart grid power services. To participate in the European Academy of Management (EURAM) and European Group of Organization studies (EGOS); in particular organization of two

research workshops to engage fellow European researchers in management to focus on energy innovation.

To participate in the UK-based European network on business model innovation Management practice community in higher education: publication of a teaching case study for business model development of local electricity retail markets for prosumer smart grid power services that can be used for higher education management research community: Active participation and dissemination within the European Academy of Management (EURAM) and active participation and dissemination within European Group of Organization studies (EGOS); in particular organization of two research workshops to engage fellow European researchers in management to focus on energy innovation, and in particular publication in management journals (e.g. Research Policy and Organizational Studies).

All these dissemination and communication tasks will work in cooperation with exploitation so as to attract the interest of those who could serve as potential customers for our consortium members and the full or part of the results.

# 4 The webpage

The internet is a key element for disseminating the EMPOWER project among end users, prosumers or anyone interested in it. So the language style used in it, although being technical when required, should allow a general comprehension of the project insights for non-technical people. The webpage creation also needs to take into consideration that it should allow:

- Presenting the project to a broad audience
- A way to reach possible stakeholders
- Promoting the project insights and the team
- Spreading press/events/deliverables

Taking into account the before-mentioned, it was concluded that what we needed should be:

- Graphical webpage
- Catchy design
- Easy-to-understand language

The webpage designers and programmers were selected among 3 proposals (and corresponding budgets). After examining the three options, Option 1 (La Publi) was rejected because, although being the cheapest, the web design was not included. Only the platform to build it was supplied. Option 2 (IndianWebs) was contemplated as a possible choice, but finally dismissed because the design was not going to be specific for our project and the budget did not include the printing of brochures. These two aspects where included in Lalona proposal (Option 3), which was the final choice (good balance between design & programming).

The link for accessing the EMPOWER project webpage is:

### http://empowerh2020.eu/

The structure of the webpage includes the following menus. The information contained in each of them is detailed in next sections:

- Home
- The project
- Partners
- Technical publications
- Press & News
- Events
- Friends of EMPOWER
- Contact

#### 4.1 Home

#### **EMPOWER**

local Electricity retail Markets for Prosumer smart grid pOWER services

EMPOWER means leveraging citizen energy management

### **EMPOWER** concept

The EMPOWER concept aims to encourage and enable the active participation of citizens that consume and produce energy in the electrical system. It is based on the insight that a significant reduction of greenhouse gas emissions and an increase of energy efficiency require radical changes in the way we produce and consume energy.



Figure 2: Front page

# 4.2 The project

## **EMPOWER** path

- 1. New market design for local trading and involvement of prosumers through a cloud based ICT
- 2. Prosumer oriented business models relevant for the market design
- 3. ICT based monitoring and management system
- 4. Full bidirectional and secure communication between the market and business layers
- 5. Integration of the different parts and demonstration of the viability of the concept

#### **EMPOWER OBJECTIVES**

The creation of local electrical markets to promote the prosumer role in Smart Grids is no longer just an idea, but also the main objective of EMPOWER, which started on January 2015. The project addresses the topic "Modernising the European electricity grid: LCE 7 – 2014: Distribution grid and retail market" of the call "Competitive Low-Carbon Energy" of the HORIZON 2020 work programme 2014-2015. Aiming to develop and verify a local market place and innovative business models, including operational methods, the project encourages micro-generation and the active participation of prosumers to exploit the flexibility created for the benefit of all connected to the local grid.

#### **EMPOWER CONTEXT**

The increasing installed capacity of renewable energy generation in the electrical system and the massive rollout of smart meters show that an improvement of electricity system sustainability and performance has just begun.

Due to the distributed installation of intermittent, renewable generation the role of distribution system operators (DSO) has become much more important than before the electricity market liberalization carried out in the European Union. To maintain a high level of quality of costumer services and electricity supply, new information and communication technologies are needed and new roles will evolve at the interface between DSO's, local consumers / prosumers, decentralised electricity suppliers and the transmission operator. Small to medium-scale distributed storage systems on medium and low voltage supply systems level will have to be managed in the future.

In order to exploit prosumer flexibility in real life, new methodologies, products and services need to be developed and commercialized. This includes on the building side methods for data acquisition and surveillance in individual buildings, decision support models for individual and clusters of buildings with multiple optimization criteria and finally models to analyse the mutual impact between single or multiple, organized prosumers and the energy system.

The proposed empowering project enables the establishment and operation of local energy cooperatives that can manage renewable energy resources and serve members, while operating in an open, competitive market environment. It puts coordinated prosumers into the centre of future local power market design. The project aims to investigate the concept of a regional market and an associated service to manage the exchange of energy, communication and monetary credit assignment.



Figure 3: The project page

#### 4.3 Partners

EMPOWER is not only a project compromised with a sustainable energy future, but also an example of synergy among industry and university. The consortium is constituted by very diverse entities: *Schneider Electric*, a reference in the control of electrical energy and industrial automation, *SmartIO-Smart Innovation Østfold*, which manages the NCE (Norwegian Centre of Expertise) cluster of companies and institutions from the academia with special focus on the energetic markets, *eSmart*, which develops IT solutions, the

norwegian distribution company Fredrikstad eEnergi Nett - FEN, the University de St. Gallen – UNISG, which large experience in developing business models, the Centro de Investigación Tecnológica en Accionamientos Eléctricos de la Universidad Politécnica de Cataluña, CITCEA-UPC, characterized by its experience in Mechatronics and Enertronics, with special incidence in the fields of power electronics and digital control, Malta Intelligent Energy Management Agency – MIEMA, energetic agency which targets its research in the promotion of energy efficiency and the grid integration of renewable sources and NewEn Projects GmbH - subsidiary of Diersch & Schröder (DS), an energetic company with divisions on petroleum sector, renewable energy and IT services.

## Schneider Electric Norge AS - Schneider



From its creation in 1836 as a producer of iron and steel, Schneider Schneider Electric has evolved to become a global leader in energy management. Along the way, Schneider has **Electric** contributed to the transformation of industries with an innovative, international and responsible mind-set. With

operations in over 100 countries and more than 150.000 employees, Schneider's mission is to help people make the most of their energy.

2000-2009 was a period of organic growth for Schneider, positioning itself in new market segments like UPS (uninterruptible power supply), movement control, building automation and security through acquisitions of APC, Clipsal, TAC, Pelco, Xantrex, becoming the global specialist in energy management. In 2010: Schneider Electric strengthens its lead in the development of the Smart Grid, with the acquisition of the distribution activities of Areva T&D.

In 2010 Schneider strengthened its lead in the development of the Smart Grid, with the acquisition of the distribution activities of Areva T&D and in 2011 Schneider reached the landmark of €20 billion sales and continued its external growth with the acquisitions of Summit Energy (USA), Luminous (India), as well as Leader Harvest Power Technologies (China) and Telvent (Spain).

Today, Schneider is one of the world's largest manufacturers of equipment for electrical power distribution, industrial control and automation. Because of its strengths in industrial and building automation, Schneider's smart grid strategy is to connect those automated systems to the grid to improve efficiency and to allow its customers to participate in demand response programs. Based in France with operations in more than 100 countries, it had 2010 sales of \$26 billion.

### Smart Innovation Østfold AS - SmartIO



The Norwegian Centre of Expertise (NCE) Smart Energy Markets was established by the Norwegian government as one of twelve world class centres consisting of clusters of enterprises and academic institutions within dedicated fields

of expertise. NCE has specific focus towards energy markets and is located in Halden, Norway. The centre is managed by Smart Innovation Østfold (SmartIO). SmartIO organizes Norway's leading cluster of industries and academic institutions within Smart Grid and Smart Energy Market Research and Innovation. SmartIO develops smart and sustainable solutions through research based innovation and business development. Emphasis is on techno economic models, business intelligence, prosumers and user flexibility. It holds key competences in relevant and applied R&D, entrepreneurship, intrapreneurship and process development to cater for new businesses based on research results generated. Its history is rooted in a long tradition of cutting-edge energyrelated developments stemming from the Institute for Energy Technology (IFE) in Halden. In the 1980s IFE developed the world's first ICT system for competitive energy trading in a deregulated electricity market (1991). Later, spin-off Hand-El Skandinavia developed the world's, first ICT system for emissions trading (2005). SmartIO and the associated cluster have long traditions of creating energy related spin-outs around new products and technologies. These include software and engineering companies like Scandpower, Hand-El Scandinavia, CognIT, MoreCom, Communicate, Navita/Brady, Miriam, eSmart Systems, Tiny Mesh and more. Together with SINTEF and Narvik University College SmartIO was a founding partner of the Norwegian Smart Grid Centre.

SmartIO has long experience from technical project management and will be deeply participating in the execution of WP1. SmartIO also has strong experience from electricity market design and functional specification for all kinds of electricity trading systems. Thus, SmartIO will be the work package leader of WP6. SmartIO is a non-profit research organization focusing at research based innovation and exploitation of results from such projects. Therefore, SmartIO is especially suited to be the leader of WP8

## eSmart Systems AS – eSmart

eSmart is stacked with deep market knowledge experts with a long, strong history of developing and delivering pioneering IT-system solutions on a world-class scale to worldleading energy players. With decades of experience in energy trading, risk management, systems operation, customer information systems and smart grid software solutions, eSmart's team boasts an average 15 years international experience at delivering IT solutions to physical and financial power exchanges in Europe, North America, Asia and Australia. eSmart commenced operations on the 1st of February 2013, which was a highly successful start-up year for eSmart. Our first focus for the year was to build a team of experienced and leading professionals, which we rapidly did growing from six to more than 20 by year's end. We have already gained significant status and become a soughtout employer in a high-tech environment populated by many interesting and leading tech companies.



eSmart Systems AS develops next esmart Systems As develops next generation software systems for grid companies large energy consumers companies, large energy consumers, SYSTEMS prosumers and retailers. eSmart is built on

a strong market knowledge and a long and strong history of developing and delivering pioneering IT-system solutions on a world-class scale to world-leading energy players. eSmart's focus on integrity and teamwork coupled with ambitions of excellence and innovation form our values foundation. Values-driven processes put our customers at the center of all we do and contribute to our competitive advantage in the global marketplace. The company has it's headquarter in Halden, Norway. Over the last two decades, Halden has developed into one of the most competent energy IT environments in Norway.

eSmart develops an intelligent Energy Management System (iEMS), and will for the project develop the SESP control cloud based on this. We will work closely with the pilot sites and Schneider Electric on development and integration with the necessary components, and with the remaining partners on market design and other relevant research and development tasks for the project.

# Fredrikstad Energi Nett – FEN



The Fredrikstad Energi group consists mainly of wholly owned subsidiaries within grid, markets and B2B-services. Fredrikstad Energinett AS (FEN) is a Norwegian Distribution Service Operator (DSO) and the largest grid company in the group's portfolio. FEN has territorial concessions and responsibility for electricity distribution to about 38.500 customers in the municipalities Fredrikstad and Hvaler (southeastern part of Norway).

FEN is the host for the Smart Grid demonstration program "Smart Energy Hvaler". The demonstration site covers the Hvaler islands (86 km²) consisting of 4 larger islands with road connections and 16 smaller islands without road connections. There are 6.800 customers with smart meters at Hvaler. Out of these, 4.300 smart meters are installed in holiday houses/cabins. The total electrical consumption at Hvaler is about 80 GWh pr. year.

FEN provides access to metering data from all of the 6.800 smart meter (AMI) installations at Hvaler. Metering data handled in the project, and analyzed by EMPOWER services, will consist of active and reactive energy consumption. In addition, there will be access to production data series dating back to November 1, 2011. Today, the smart meter data registration frequency is every hour with a collection frequency every 24 hours.

FEN provides access to all relevant parts of its distribution grid and many years of expertise from distribution grid operations, grid extensions and customer oriented DSO business. The Fredrikstad Energi group is engaged in the EMPOWER project with representatives both from the parent company and from FEN. This because it is expected that the project will have substantial impact on not only FEN's, but also The Fredrikstad Energi group's current business, its future business and future business model.

### University of St. Gallen - UNISG



The University of St. Gallen was founded in 1989 and has since grown from a commercial academia to a renowned, internationally networked university. As part of the University of St. Gallen, the institute

for Economy and the Environment at university focuses on issues related to development of business models and consumer behaviour in the field of renewable energy and Smart Grids. Research is involved in finding solutions to problems of sustainability in business and society through its scientifically based work and practice-oriented approach. Throughout these themes, the UniSG turns special attention to heuristic decision-making.

The University of St.Gallen leads the work package 2. In this package, the UniSG provides the EMPOWER project a prosumer perspective, on which a sustainable business model will be built. This type of task perfectly matches to the expertise of UniSG with respect to studies about prosumer behaviour and development of sustainable business models, which are core competencies of our team. Mr. Loock is responsible for the implementation of this part of the project at UniSG.

# Universitat Politècnica de Catalunya - CITCEA – UPC



Created in 2001, CITCEA-UPC is a technology transfer centre of the Technical University of Catalonia (UPC BarcelonaTech), specialized in responding to the needs of enterprises to build functional prototypes that can be industrialized and commercialized. In order to carry this out, we build a client-supplier relationship with the enterprises we collaborate with. The group

activity is focused on mechatronics and enertronics fields. Mechatronics combines the fundamentals of mechanical, electrical, power electronics and computer engineering. Enertonics is the synergistic combination of electronic signal and power, computing and control systems.

Since 2001 CITCEA-UPC has been part of the TECNIO network, which provides support for technological innovation, driven by ACC1Ó, an organism of the Government of Catalonia. CITCEA-UPC is expert in all types of applications requiring the control of energy and/or movement. It develops technologies in: electricity, control electronics, power electronics, industrial communications and digital control with processors. And the applications of these technologies range from the automation of processors and machines to renewable energies and the electrical grid, among many others. In 2009 CITCEA-UPC was officially recognized by AGAUR (Agency for Management of University and Research of Catalonia) as a consolidated research group. This recognition period is until 2013.

UPC will develop the hardware for participating in electricity markets based on power electronics and integrate it in the utility ICT system. This will enable to increase renewable penetration ratios, taking also in account system security, energy efficiency goals and security margins.

### Malta Intelligent Energy Management Agency – MIEMA



The Malta Intelligent Energy Management Agency (MIEMA) is a public body to conduct research and promote energy efficiency and renewable energy sources. MIEMA operates on a national level and was set up in 2007 with the support of the Intelligent Energy Europe (IEE) programme and with the participation of a number of public institutions. MIEMA collaborates closely with the University of Malta (particularly the Industrial Electrical Power Conversion Department, the Institute for Sustainable Energy and the Mediterranean Institute), the Ministry for Resources and Rural Affairs and various municipalities.

Its research activities have focused on the local context, such as the energy practices of the tourism industry and the performance of PV installations in Malta. MIEMA personnel also conduct energy audits and offer an advisory service to encourage a more intelligent use of resources. Its publications have been widely distributed to disseminate information on the optimization of the use of conventional energy resources and to develop renewable sources. Its researchers have been involved in the setting up of a 15kW PV and 10kW wind RES system in a sustainable development centre managed by Nature Trust Malta.

# NewEn Projects GmbH - NewEn



NewEn Projects GmbH (NewEn) is specialised in Renewable Energy and part of the Diersch & Schröder Group (DS) in Bremen. DS was established in 1920 and became one of the most important German oil traders in recent decades. In addition to oil business activities, DS

started its first operations within the Renewable Energy Market in 1998 by projecting wind farms.

NewEn is developing Renewable Energy Concepts for industrial customers and municipalities and bases its actions on careful use of resources and assuming responsibility in the area of community service. Based on long-term experiences NewEn provides solutions for customers to get a maximum level of energy self-supply and energy self-sufficiency by using own potential production capacities of heat and power. Our goal is the establishment of self-sufficient energy-villages within the framework of the so called "NewEn Village Concept".

For the Empower project NewEn holds key competences as an active, independent planning company in Germany. In the field of renewable energies, NewEn combines practical know-how along the entire value chain in the areas of wind and solar energy, photovoltaic, geothermal and biomass and energy efficient buildings. As a provider of self-sufficient energy and energy-optimized solutions for municipalities, NewEn, for example, accompanies communities in all project phases and supports them in choosing the right energy and beyond. This leads to a long-term experience in local stakeholder management and resident motivation and activation for renewable electricity projects.

NewEn is an ideal partner to implement the EMPOWER results in a local demonstration site. NewEn's contribution will enable the consortium to run a pilot implementation based on a given infrastructure and a pro-active, innovation-friendly environment.



Figure 4: The partner's page

# 4.4 Technical publications

The project results will lead to two kind of publications that can be classified in deliverables (official reports of the project) and publications in magazines and journals.

### 4.4.1 Deliverables

The list of all the EMPOWER deliverables is presented in this page. Those deliverables that are public will be available for download. The deliverables produced during the first year are detailed in Table 1.

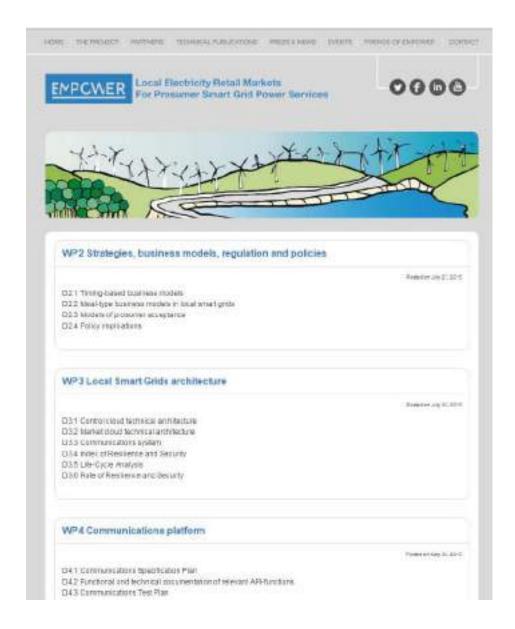


Figure 5: Technical publications page. Deliverables submenu

Deliverable code	Deliverable title
D1.1	Quality Plan
D1.2	Risk management and contingency plan
D2.1	Timing-based business models
D3.1	Control cloud technical architecture
D3.2	Market cloud technical architecture
D3.3	Communications system
D4.1	Communications Specification Plan
D6.1	Market design
D9.1	Dissemination Plan
D9.2	Project website and social networks profiles

Table 1. List of finished deliverables

## 4.4.2 Magazines & journals

Most of the publications will be done in English. However, so as to reach also the audience, that could actively intervene in the scenario thought by and for EMPOWER, other languages like Norwegian, German or Spanish are also being used for communication purposes. The list of publications in magazines and journals is depicted in Table 2.

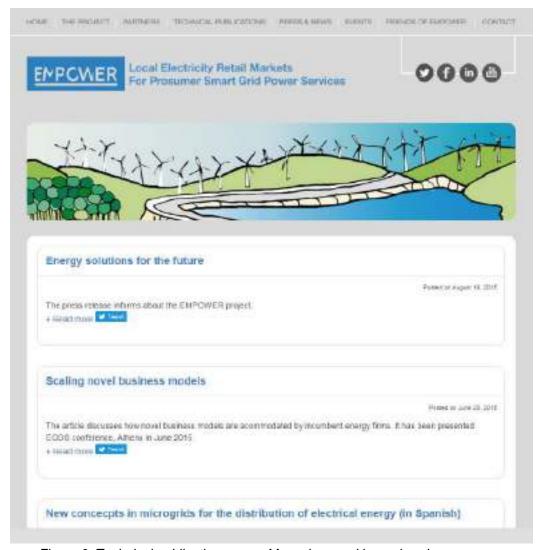


Figure 6: Technical publications page. Magazines and journals submenu

English title	Type of document	Partners involved	Date of publication	Published in	Brief description
Choose your partners wisely	Newsletter	SmartIO	January 2015	Forskningsradet webpage	The Research Council of Norway (RCN) has published an article about SMARTIO and the EMPOWER project, put forward as a Norwegian success story within Horizon 2020
The real value of Smart Grids and Microgrids	Press release	CITCEA-UPC	January 2015	Automática e Instrumentación, num. 469	The way Smart Grids affect consumers and prosumers is presented from economical, technological and social perspectives. EMPOWER project is seen as a path to enhance the potential of the Smart Grids concept.
New concepts in microgrids for the distribution of electrical energy	Divulgation article	CITCEA-UPC	January 2015	Automática e Instrumentación, num. 469	The key factors for an evolution from the classical electrical grids to Smart Grids are analysed. The particularities and advantages in terms of operation and control of microgrids are addressed. Finally, two european projects that are promoting the Smart Grid concept and the creation of electrical local markets are presented: Smart Rural Grid and EMPOWER.

NCE Smart leads new 50 million EU project which will revolutionize the energy market	Newsletter	SmartIO	October 2014	NCE Smart Energy Markets webpage	Smart Innovation Østfold AS presents the EMPOWER project objectives and consortium. Their expertise can enable the development of future energy markets adapted to the new scenario resulting from the Smart Grids evolution
Vil flytte markedsdmakt	Article		December 2014	Energiteknikk (Norwegian Energy Technology Magazine) page 42	The EMPOWER goals and insights are described. Professor Bernt Bremdal presents his vision
Facilitating homeowners to be able to create their own energy	Article	FEN	February 2015	NRK - Østfold	On Hvaler Fredrikstad Energy will together with a number of other national and international actors initiate a project focusing on own production of energy. The aim is to encourage small, local energy markets where the consumer produces and uses its own energy. They can also sell energy in a local community market.

Solar cells and wind turbines will provide power at the eastern Hvaler	Article	FEN	February 2015	Fredrikstad Blad	In three years 40 solar stations and a number of small windmills will be deployed on Southern Sandøy. The environment project is followed with interest interest by European environmental scientists. The EU project EMPOWER has a total budget of 50 million.
Fredrikstad Energi preparing for the future	Press release	FEN	March 2015	Energibransjen.no	Fredrikstad Energi along side several other local and international business partners are engaged in an EU project in the new Horizon 2020 program. The EMPOWER project has a total budget of 50 million and will revolutionize how the energy market works.
Unique environmental project in Southern Sandøya will make cabins self- powered. Recieving 16 environmental millions	Articles	FEN	February 2015	Fredrikstad Blad	Solar power instillation on Hvaler, supported by local government and e20 (Fredrikstad Energi)
The concept of prosumer	Newsletter	CITCEA-UPC	May 2015	CIT UPC	The concept of prosumer from EMPOWER perspective

Getting smarter and smarter	Article	CITCEA-UPC	April 2015	Blog of Estabanell Energia	The article is based on the publication with identifier 2
Scaling novel business models	Conference paper	UNISG	June 2015	EGOS conference, Athens	The article discusses how novel business models are accommodated by incumbent energy firms
Energy solutions for the future	Press release	UNISG	August 2015	UNISG webpage	The press release informs about the EMPOWER project
Local Electricity Retail Markets for Prosumer Smart Grid Power Services	Press release	UNISG	April 2015	UNISG webpage	This description informs about EMPOWER and provides a link to the EMPOWER homepage
Promising Smart Grid Business Models	Workshop description	UNISG, SmartIO	March 2015	UNISG webpage, conference brochure	The text describes a workshop about EMPOWER that was part of a larger conference

Table 2. List of publications

## 4.5 Press and news

At the end of the present document, some media recommended by the European Commission have been listed. The press and news, as well as any kind of publication on the EMPOWER project, are collected in this section of the webpage. The menu "Press and News" of the webpage allows to access to all these publications.

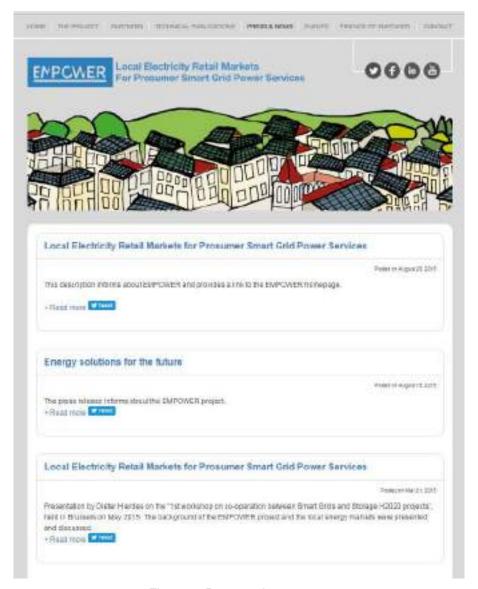


Figure 7: Press and news page

## 4.6 Events

Any event organised inside EMPOWER or implying the participation of its partners is announced here. The events done at the moment are reflected in Table 3. Additionally, the EMPOWER

project was presented in different European cities by Dieter Hirdes, in the dates specified in next list:

2015-05-21 1st workshop SmartGrids Brussels

2015-06-16 Malta demo site visit

2015-06-17 Statsbygg

2015-06-18 Verdiskapingsforum Østfold

2015-08-13 TrønderEnergi

2015-08-14 Stavanger FME

2015-08-28 OE Minister visit to Hvaler

2015-08-28 Ringeriks-Kraft Halden

2015-09-02 Lyse

2015-09-10 Wolpertshausen

2015-09-22 SRG meeting Dublin

2015-10-01 FlexNett project meeting

2015-10-08 BANCAGE Bulgaria

2015-10-09 Østfold fylkeskommunes Internasjonale Forum

2015-10-13 TrønderEnergi

2015-10-14 Haugaland Kraft

2015-10-22 German-Norwegian Energy Forum Berlin

2015-11-03 FME CEI Halden

2015-11-04 Nettalliansen

2015-11-06 Energi Norge

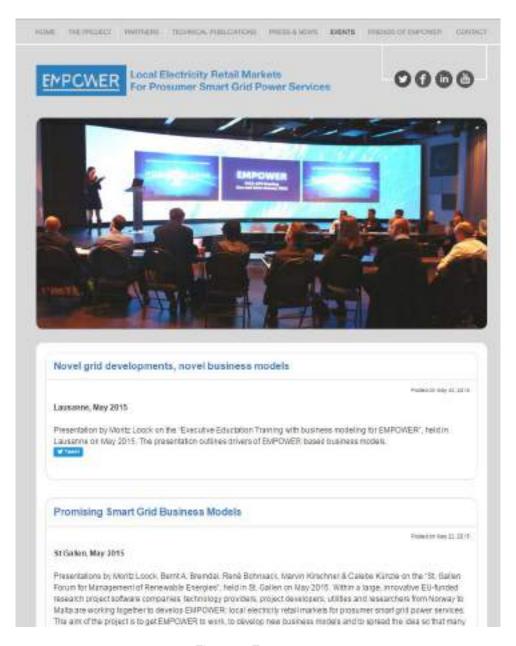


Figure 8: Events page

Frame/event title	English title	Type of event	Partners involved	Place	Date	Brief description
1st workshop on co- operation between Smart Grids and Storage H2020 projects	Local Electricity Retail Markets for Prosumer Smart Grid Power Services	Presentation	SmartIO	Brussels	21-22.05.2015	Presentation of the EMPOWER project based on a 5-slides presentation template from DG Energy. In addition some slides about the background of the EMPOWER project and the local energy markets.
St.Gallen Forum for Management of Renewable Energies	Promising Smart Grid Business Models	Workshop with different presentations	UNISG, SmartIO	St. Gallen	22/05/2015	Within a large, innovative EU-funded research project software companies, technology providers, project developers, utilities and researchers from Norway to Malta are working together to develop EMPOWER: local electricity retail markets for prosumer smart grid power services. The aim of the project is to get EMPOWER to work, to develop new business models and to spread the idea so that many more companies and prosumers join in, thereby transforming the dominant business models in the energy industry. EMPOWER welcomes new partnerships and alliances with interested companies and individuals.
REM-HSG	Business Modeling in the Energy Sector	Executive Eductation Training with business modeling for EMPOWER	UNISG, NewEn	St. Gallen	18-21-05.2015	Participants engaged in business modeling for EMPOWER and learned foundamentals on how to develop new business models for EMPOWER

Presentation for China Light Power	Novel grid developments, novel business models	Executive Eductation Training with business modeling for EMPOWER	UNISG	Lausanne	30/05/2015	The presentation outline drivers of EMPOWER based business models
Presentation and workshop at International Summer University on Energy 2015	New energy business models	International Summer School by the Helmholtz Zentrum Berlin	UNISG	Falera	01/09/2015	The presentation discusses fundamentals of EMPOWER based business models and 60 participants from all over the world enagged in business modeling for EMPOWER

Table 3. List of events

### 4.7 Friends of EMPOWER

Joining our Network of Interest means keeping you informed about all the news of our project and the possibility of being part of the TAG (Technical Advisory Group) being constituted. The TAG will have direct access to the project and will be able to attend the meetings and events organized.

Sign up here to join our Network of Interest.



Figure 9: Network of interest page

### 4.8 Contact

For being informed of the project evolution and news, join our Network of Interest by signing up here.

The project participants would be pleased to answer any questions related to the investigations and developments achieved.



Figure 10: Contact page

# 5 Social network profiles

EMPOWER is available in different social networks: Twitter, Linkedin, Facebook and Youtube. At the moment, the Twitter account (@EmpowerH2020) is the one more being used, for allowing commenting and exchanging points of view around Empower and related subjects in a serious-extended environment in Internet. On June 15<sup>th</sup>, we had 41 and on December 15<sup>th</sup>, we have 74 followers.

All the social networks are accessible from the home menu of the webpage of the project. On the other hand, the Youtube channel will be used for uploading registered presentations and events, as well as videos explaining the project.

All the social media (and webpage) are being monitored through google analytics, so as to know how successful they are being and for taking future measures so as to extend the communication achieved.

Figure 12 and Figure 13 and show the statistics obtained with during the first year for the EMPOWER webpage. Figure 14 depicts the number of tweets, mentions followers during the first 12 months. All the statistics reflected have been obtained with Google Analytics.



Figure 11: Caption of the twitter account on 6th July 2015

Both webpage and social media have an important role for achieving a successful communication and dissemination. That's why it has been decided to monitor them. This allows getting statistics of their use and will help taking decisions for reinforcing those channels that are not being so consulted and to strengthen the most successful ones.

The list of performance indicators considered for this purpose are the number of visits/clicks (home page statistics), the number of followers on Twitter, Facebook and LinkedIn. The number of project generated tweets being bookmarked and retweeted and the Number of "likes" and commentaries on Facebook and LinkedIn.



Figure 12: Statistics of EMPOWER webpage during the first year, from Google Analytics



127 (3.13%) 71.65% 91 (2.64%) 64.57% 2.43 00:02:01 Norway Russia 107 (2.64%) 28.97% 31 (0.90%) 89.72% 1.13 00:00:37 9. 102 (2.61%) 98.04% 100 (2.90%) 86.27% 0.95 00:00:24 Japan United 75 (1.86%) 94,67% 71 (2.08%) 81,33% 1.48 00:01:11 Kingdom

107 (3.11%)

B3 (2.41%)

148 (4.30%)

62.05%

58.82%

86.93%

2.94

2.58

1.05

00:03:41

00:02:23

00:00:41

64.46%

54.25%

96.73%

166 (4.00%)

153 (3.77%)

153 (3.77%)

Germany

Switzerland

China

6.

Figure 13: Location and characterization of EMPOWER webpage visits, from Google Analytics

MONTH	TWEETS	PROFILE VISITS	NEW FOLLOWERS	TWEET IMPRESSIONS	MENTIONS
1	9	333	19	1160	3
2	0	77	7	1208	3
3	1	167	6	788	1
4	0	54	4	75	4
5	5	134	2	379	5
6	4	90	12	617	5
7	1	125	5	634	4
8	0	66	4	286	0
9	1	35	4	454	1
10	0	253	6	73	5
11	1	69	5	122	5
12	5	177	8	771	2
TOTAL	27	1580	82	6567	38

Figure 14: Twitter statistics during the first year of the project, obtained from Google Analytics

## 6 Technical Advisory Group

Another objective of WP9, complementary to the communication and dissemination actions, is the creation of a Technical Advisory Group, the so-called TAG. For this purpose, a letter of invitation and a FAQ (Frequently Asked Questions) document were prepared to be sent to potential TAG candidates (

Figure 15 and Figure 16, respectively). In the latter, the profile of TAG members desired and their responsibilities were explained.

The choice of the TAG candidates was a consensus among WP9 partners. Each partner proposed a list of contacts, detailing the name of the person and its position in the entity, which could be a company, a university, an institution or any representation having interest and which could bring ideas or constructive discussions during the project.

At the moment, the persons contacted that agreed to become TAG members are: Carmen Gimeno (GEODE Secretary General), Johannes Vollmer (GEODE Policy Manager), Mark Buckner, Group Leader of Power & Energy Systems at Oak Ridge National Laboratory and Xavier Farriols, Head of the Energy Business of Factor Energia.

TAG invitation

H2020 project - Grant agreement nº 646476



#### Dear Mr/Mrs,

We contact you because you might be interested in participating in the Technical Advisory Group (TAG) of the European research project we started this year: EMPOWER (Local Electricity Retail Markets for Prosumer Smart Grid Services).

This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement No 646476. The idea is to encourage and enable the active participation of citizens that consume and produce energy in the electrical system. More information can be found in the webpage.

The project is going to create new business models in local environments, integrating them in the operation of the system, while encouraging renewable integration and promoting the active participation of consumers in the energy exchange.

Joining our TAG means having access to the documentation derived from the project and contributing to the steps that will enable the consecution of the project. Additionally, TAG members will get in contact with experts in fields like smart grids, operation and control of energy systems, electrical markets, power electronics or ICTs.

If you are interested in the progress of the project and would like to participate in the debates organized, you are welcome to become a member of our TAG. Some answers to queries regarding the compromise of being a TAG member are indicated in the attached document.

For any clarification do not hesitate to contact me,

Mònica Aragüés Peñalba monica.aragues@citcea.upc.edu EMPOWER delegate for Dissemination & Communication, WP9

Figure 15: Letter of invitation for TAG candidates



local Electricity retail Markets for Prosumer smart grid pOWER services

# TAG Frequently Asked Questions

#### The Technical Advisory Group (TAG) and suitable profile of its members

The TAG is an instrument for dissemination, general promotion and preparation for EMPOWER exploitation. It is constituted by members of the industry or academia that are experts on the topics included in the project (microgrids, smart grids, electrical markets, communication systems, operation and control of electrical systems) and which are not directly related to the project (their institution is not inside the consortium). An example of topic that could be treated during a TAG meeting is international communication formats and standardization.

#### Responsibilities for TAG members

The TAG includes members from the most important types of stakeholders and constitutes a network of interest that shall help to promote the project in a knowledgeable manner, solicit target for exploitation and yield advice on the demo and our R&D effort. This means that TAG members should be aware of the progress of the project. They are invited to the project meetings and to any event organized in the project frame and they should give advice at different stages of the project.

What kind of arrangement (e.g.; financial) that was included when becoming a TAG member?

Unfortunately, any part of the budget of the project can be dedicated to the TAG. This means that its members they cannot be paid and any expenses derived from project meetings or attendance to related events can be covered.



This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement No 646476

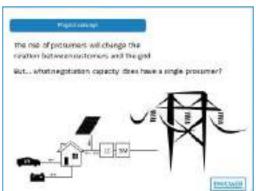
Figure 16: Frequently Asked Questions (FAQ) for TAG

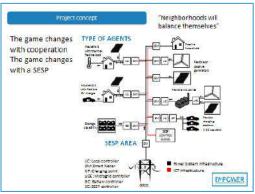
### 7 Other tools for dissemination and communication

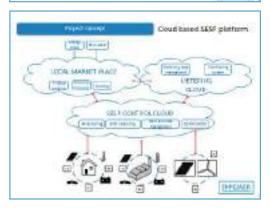
In order to help to disseminate the project in events like congress, conferences, workshops, etc, while reaching possible potential stakeholders, a presentation describing the objectives and the consortium has been prepared (see captions in Figure 17).

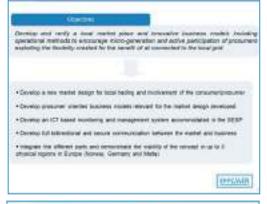


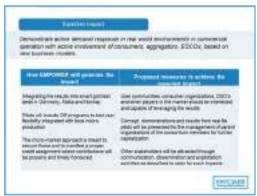


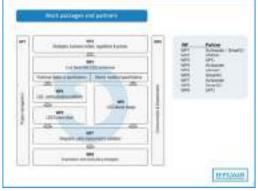












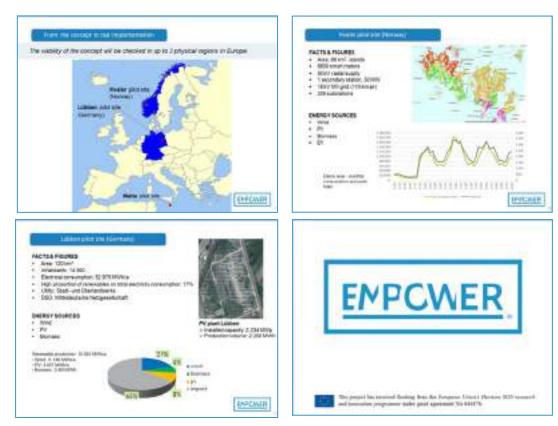


Figure 17: EMPOWER presentation for reaching stakeholders

Moreover, a flyer and a poster are being designed (see poster draft in Figure 18).

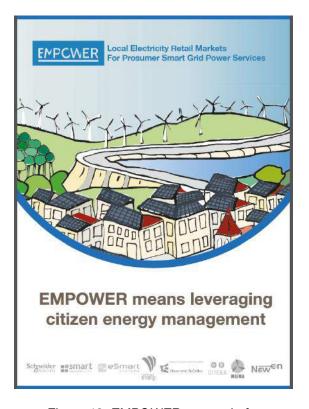


Figure 18: EMPOWER poster draft

On the other hand, a video for explaining the project is under development. The video characteristics have been discussed. An easy-understanding language and simple graphics will be used. The video oral explanation will be based in the narrative description written by Bernt Bremdal.

## 8 Keeping the timeline

The strategy reflected in next tables aims to keep the webpage and social networks updated with a certain frequency so as to maintain the communication enabled through these channels. The main actions to achieve it are presented in Table 4.

Resource	Frequency of updates	Type of content			
Website – main pages including video front page.	Around 4 months	Information about project objectives, strategies and expected results.			
Archive	Dependent on project and dissemination plan.	Deliverables and articles			
Events	Dependent on project and dissemination plan.	News about events			
Press room	Monthly	Any publication about achievements made			
Network of interest	Monthly	Names of people and organizations that support the project.			
YouTube	Around 6 months	Videos about the project			
Facebook	Weekly updates and when need demands. Requests for input from followers at uneven intervals.	Blog entries and popular updates about the project that require more than 160 characters.			
LinkedIn	Weekly updates and when need demands. Requests for	Blog entries and research/ business oriented updates about the project that require more than 160 characters.			

Resource	Frequency of updates	Type of content			
	input from followers at uneven intervals.				
Twitter	Daily	Brief updates about the project, often with a reference to more substance found elsewhere. Retweets of input from followers and those followed.			

Table 4 Chart showing planned update frequency

# 9 Dissemination plan review

The dissemination and communication actions performed during the first year of EMPOWER are reflected in Table 5 and Table 6, respectively.

### 9.1 Dissemination actions

Dissemination action	Why	To whom	When	How	Partner in	Evaluation
Dissemination action	VVIII				charge	method
Participation to H2020	To share information	H2020	2015	Presenta	UPC/	Oral
Programme meetings,	regarding the project	Programme		tion	SMARTIO	presentation /
to be organized by the	and technology	participants			/ UNISG	workshop
DG Connect	approach between					
	the participants					

Table 5 Dissemination actions during the first year of the project

### 9.2 Communication actions

Communication actions	Why	To whom	When	How	Partner in charge	Evaluation method
Press releases	To spread information regarding the project, the	All	M2	Press release to major newspapers specialized	UPC	Publication of the article

Communication actions	Why	To whom	When	How	Partner in charge	Evaluation method
	consortium, the approach, enabling interactions and			magazines and Journals		
Activate the project website and the social networks profiles	feedbacks	All	М3	Ongoing report concerning the aims and results of the project		Release of the website, social network profiles opened
Include reference to the project in partners' websites	Inform customers, providers and partners of the projects, expected results and outcomes	All	МЗ	Information and links in partners' websites	All	Publication
Generate and release the Project Video	To spread information	All	M3	Present the project aims,		Release of the video
Generate the Project Flyer and Project Poster	regarding the project and technology approach, enabling interactions and feedbacks	All	М3	expected results and outcomes	UPC	Release of the Project Flyer and Poster
Business awareness creation seminar 1	St. Gallen	Executive s from the European renewable energy industry	May, 18-21 2015	Seminar	UNISG	Number of assistance

Table 6 Communication actions during the first year of the project

### 10 Conclusions

This report has presented the dissemination and communication actions performed in EMPOWER project during 12 months (since it started, in January 2014). The steps taken during the first year for spreading the project objectives and evolution have been reviewed. These steps include the webpage creation, the TAG constitution, the design of flyers and a poster and the dissemination and communication through social networks, magazines, newsletters, workshops and conferences. All these instruments have had a significant impact, which will increase after the video release.

One of the reasons for dissemination and communication is that they have allowed reaching stakeholders and creating impact for them. A few of these are electricity consumers and prosumers (increased choice and lower electricity bills), local electricity suppliers (higher self-sustainability of their previous clients), distribution system operators (partial take-over of their previous tasks by prosumers; change of their business model towards a Smart Energy Service Provider (SESP); increased competition in the domain area due to market entry of independent service providers), electricity exchanges (potential small-scale implementation of their current wholesale market task), regulatory bodies (design of new market roles, implementation of new market structures and rules).

## **European Commission recommended media**

### **Publications**

#### **Horizon Magazine**

http://horizon-magazine.eu/

HORIZON is the EU Research & Innovation magazine. It is covering the latest developmin EU funded research and innovation, communicating the priorities and achieveme of EU-funded research, its impact on citizens lives and its contribution to the EU goals of smart and sustainable growth.

It is written by independent journalists on bel of DG Research & Innovation and is updated

For story suggestions or questions to the editor, e-mail: RTD-PUBLICATIONS@ec.europa.eu

#### **Project stories**

https://ec.europa.eu/programmes/horizon2020/en/newsroom/551/

Articles about selected EU-funded research projects, which led to breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market, at the same time contributing to economic growth and creating jobs, and tackling societal challenges.

least three times a week with new articles.

Please contact your Project Officer about any interesting project outcomes. Furthermore a journalist contracted by the European Commission may contact you.

research\*eu results magazine www.cordis.europa.eu/researcheu/magazine\_en.html This print magazine features highlights from the EU-funded research and development projects. It is published 10 times per year in English, and covers mainly the research areas of biology and medicine, Social sciences and humanities, energy and transport, environment and society, IT and telecommunications, industrial technologies and space.

Please contact your Project Officer about any interesting project outcomes. Furthermore a journalist contracted by the European Commission may contact you.

#### research\*eu focus

www.cordis.europa.eu/researcheu/research-focus\_en.html This print magazine covers in each issue a specific topic of research interest. It features articles on EU policies, initiatives, programs and projects related to research and technological development and their exploitation. It is published at irregular intervals up to six times a year in English. Exceptionally, it may be available in other European languages as well. Newsletters are published by the European Commission for different research areas.

Please contact your Project Officer about any interesting project outcomes. A journalist contracted by the European Commission may contact you.

#### **Newsletters**

www.ec.europa.eu/research/inde x.cfm?pg=publications&lg=en Co-publications or editorial partnerships

The European Commission works with private publishers and international organizations to promote the dissemination of relevant publications. Scientific publications and books, including conference proceedings, may be copublished in this way.

Please contact your Project Officer to get more information on how to publish something in a specific newsletter. Please contact your Project Officer to discuss the possibilities.

## **Audiovisual**

#### **Futuris Magazine**

http://www.euronews.net/scitech/futuris/

Short documentary-style television magazine in various languages, appearing at least 22 times on the EuroNews channel throughout Europe.

EuroNews has editorial independence, but we are in contact with them to suggest good stories. Since it is television, this is interesting for visually appealing projects and demonstration activities. Please contact your Project Officer if you would like your project to be put forward.

### **Events**

Events on the Commission's Research & Innovation website www.ec.europa.eu/research/index.cfm?pg=conferences&filter=all

**Events** on the CORDIS website www.cordis.europa.eu/news/home en.html

**Conferences** and events organised by the European Commission

This website displays research and innovation-related conferences and events.

This website displays research-related conferences and events.

Throughout the year, the European Commission (co-organizes a variety of conferences, both in Brussels and elsewhere. These may include exhibition areas or sessions at which you could present your work.

You can submit an event by using the "Suggest an event" functionality which is available on the left-hand side of the website. Submitting an event requires onetime registration on the CORDIS website

Please contact your Project Officer if you have suitable exhibition items (prototypes, demonstrators)

### Open access publishing

www.openaire.eu

The Open Access Infrastructure for Research in Europe is an electronic gateway for peer-reviewed articles and other important scientific publications (preprints or conference publications).

You may submit your publications to www.openaire.eu

### Online news

**Headlines** on the Commission's Research & Innovation website www.ec.europa.eu/research/info centre/all\_headlines\_en.cfm

**CORDIS Wire** 

http://cordis.europa.eu/wire/

Headlines report on recent developments in research and innovation in Europe and beyond and are devoted purely to projects. Suitable stories to be published on the site are selected on a daily basis.

CORDIS Wire provides registered users with a simple interface to publish articles on the CORDIS website's News and Events service. All articles are moderated by CORDIS editors before publication.

You may submit your news (by means of a press release, event announcement or otherwise) via CORDIS wire http://cordis.europa.eu/wire Requires one-time registration at http://cordis.europa.eu/wire

### References

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