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### Deliverable 1.1:

### Detailed dissemination plan

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## 1. Introduction

The main purpose of this document is describe, how IDE4L project partners will disseminate the IDE4L project and its results.

We expect that the main result of the IDE4L project will be the Roadmap to active distribution network. This roadmap will provide required technical, regulatory, electricity market and organizational development steps to achieve active distribution network. The roadmap to exploit project results will also disseminate the recommendations the project has found out from technical, regulatory and economic perspectives. The exploitation of project results is also the aim of industrial partners.

We will disseminate the project in several ways to scientific, industrial and public audience. We are also keeping in mind the standardisation committees and last but not the least the DSOs all over Europe. One option for dissemination is the use of pilot projects in real scenarios or laboratories as a show rooms for demonstrating the concepts of IDE4L in particular above mentioned audiences.

We have planned to organise and participate in events and conferences during the IDE4L project period and publish journal papers. During the project this list of events and conferences become more accurate, when we know all conferences and events that are organized during project period. We will actively follow all conferences and journals in Smart Grid area to know right channels to publish the IDE4L project results.

## **2. Dissemination of project results**

The dissemination activities of the IDE4L project are comprised of the scientific dissemination and the industrial and business exploitation of the project results. Main idea is raising the awareness of the project that carries out research in the field of integration of variable DERs in distribution networks. The dissemination takes into account a variety of communication vehicles and target groups and relevant stakeholders such as DSOs, R&D and large-scale pilot and demonstration projects, grid integration projects, representatives of industry and technology platforms, business and institution decision-makers.

The project results will be disseminated in the academic and industrial communities, technology platforms, committees and networks by publication of papers in scientific journals, project website and conferences as well as presentation of project and its results in clustering events, workshops and other events in the field. The scientific dissemination will also be achieved through educational activities at the participating universities. Furthermore, the IDE4L project will contribute to the monitoring and knowledge sharing scheme of EEGI and providing recommendations and promoting them in relevant committees. In order to create strong links, the project partners will actively contribute to the communication with the representatives of other and large-scale pilot/demonstration projects in the family of projects addressing a functional project of the SET Plan European Electricity Grids Industrial Initiative and grid integration projects expected to be supported by the NER300 scheme. Also the Steering Committee of IDE4L will invite these experts, in addition to European decision makers, to attend its meetings whenever appropriate.

### 3. Public dissemination

Public audience is important to the IDE4L project, even our main focus is the scientific and industrial audience.

For public dissemination the IDE4L project has a website ([www.ide4l.eu](http://www.ide4l.eu)) which will function as a tool for the dissemination and communication between the consortium, general public, and target groups, such as DSOs and representatives of other pilot and demonstration projects. The website will include the summary of the project, information on its progress, demonstrations, results and events, and material such as publications and presentations. Web-pages will be updated actively.

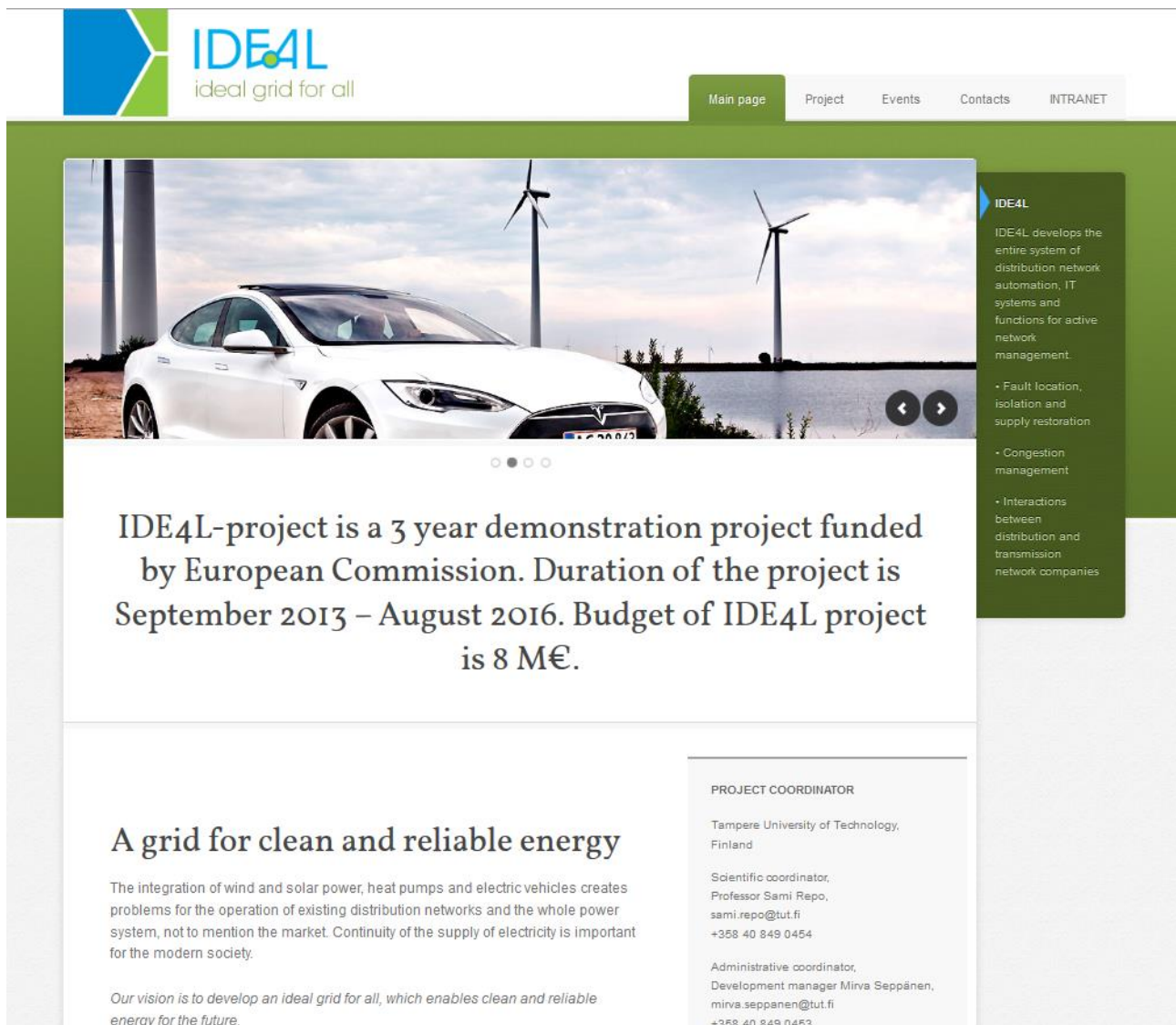


Figure 1: Screen shot of IDE4L web-page; <http://ide4l.eu/>

Also some project partners like A2A, Gas Natural Fenosa and DTU will publish general description of project in their own pages. This way project description is available for larger audiences. Project partners will also write articles of project to their organizations own magazines like science magazine Interface or the online staff magazine Kaapeli in TUT.

In order to reach out to larger public audiences we also start using social networking techniques and have set up an open Facebook-page where we tell the latest news of IDE4L. We believe social networking is an effective way to extend our reach and raise awareness and plan to invest in this media and is perhaps more effective than other make proselytes in communities not usually exposed to technology, science and industrial and business themes.

The Facebook-page is a very open platform for everyone and it is possible to have questions and open conversation on project issues. Through Facebook we can share the information of IDE4L and smart grids with those people, who are not involved in scientific or industrial discussion.

It is highly likely that some of partners will participate to specific Energy exhibitions and promote IDE4L also in there, but we cannot predict these exhibitions at this stage.

## 4. Scientific dissemination

Scientific dissemination among the academic world is the one of main targets of IDE4L project. We will publish papers and participate in conferences to disseminate the targets and results of IDE4L. The scientific dissemination will also be realized through educational activities at the participating universities. The Scientific dissemination plan is to publishable papers, conferences, and other scientific dissemination events.

### 4.1 Journals

The IDE4L project will publish its results in several scientific journals. Most relevant journals for project are: IEEE Transactions on Smart Grids, IEEE Transactions on Instrumentation and Measurement, IEEE transactions on Sustainable Energy, IEEE Transactions on Power Systems, IEEE Transactions on Power Delivery, Electric power systems research, IET Generation, Transmission & Distribution and IET Renewable Power Generation.

IDE4L has planned to publish at least following articles:

Table 4.1: Planned IDE4L articles

Name	when	What	Who
IEEE Transactions on Smart Grids	2014-2015	Journal paper on: Tariff scheme options in smart grids	Authors/co-authors: M. Angeles Moreno and others
IEEE Transactions on Power Delivery	2015-2016	Journal paper(s) on: Coordinated voltage control in smart grids	Authors/co-authors: Hortensia Amaris and others
IET Renewable Power Generation	2014	Journal paper(s) on: RES Scenario reductions for smart grid scheduling	Authors/co-authors: Julio Usaola, Xiaolin Ayón and others
IEEE Transactions on Smart Grids	2015 - 2016	Journal paper(s) on: distribution network state estimation, congestion management and voltage control	Authors/co-authors: Kimmo Lummi, Farzad Azimzadeh Moghaddam, Antti Supponen, Antti Mutanen, Sami Repo.
IEEE Transactions on Smart Grids	2015 - 2016	Journal paper(s) on: Islanding operation	Authors/co-authors: Pablo Ledesma and others
International Journal on Electrical Power and Energy Systems	2014-2015	Journal Paper on: Fault location	Authors/co-authors: Pablo Ledesma and others
International Journal on Electrical Power and Energy Systems	2015	Journal Paper on: Optimal scheduling of generation and flexible demand in smart grids	Authors/co-authors: Julio Usaola, Xiaolin Ayón and others

International Journal on Electrical Power and Energy Systems	2014-2015	Journal Paper on: Distribution State Estimation	Authors/co-authors: Hortensia Amarís and others
International Journal on Electrical Power and Energy Systems	2015-2016	Journal Paper on: Congestion management with grid tariffs	Authors/co-authors: M. Angeles Moreno and others
Energy Policy	2016	Journal Paper on: Benefits of optimal operation and scheduling of distributed resources in smart grids	Authors/co-authors: Julio Usaola, Xiaolin Ayón and others
IEEE Transactions on Smart Grids	2015 - 2016	Journal paper(s) on: Adapting the PMU technology to distribution systems, Key data exchange between TSO and actors of distribution system, new monitoring, control and protection functions for active distribution systems	Authors/co-authors: Hossein Hooshyar, Farhan Mahmood, Luigi Vanfretti
IEEE Transactions on Smart Grids	2014-2015	Congestion management within distribution networks using DLMPs with DG	Shaojun Huang, Qiuwei Wu, et al
IEEE Transactions on Smart Grids	2014-2015	Congestion management within distribution networks using direct control with DERs	Shaojun Huang, Qiuwei Wu, et al
IEEE Transactions on Power Systems	2015-2016	Congestion management within distribution networks using co-optimization of active and reactive power with DERs	Shaojun Huang, Qiuwei Wu, et al
IEEE Transactions on Smart Grids	2015	IDE4L concept	Sami Repo, Ignasi Cairo, Lukas Verheggen, Zaid A-Jassim, Davide Della Giustina, Miquel Cruz, Ferdi Ponci
IEEE Transactions on Smart Grids	2016	Automation architecture	Ferdi Ponci, et al.
IEEE Transactions on Power Systems	2015	Modelling of DER uncertainty	Antti Supponen, Antti Mutanen, Sami Repo
IEEE Transactions on Power Systems	2016	Active network management benefits for distribution network hosting capacity	Antti Supponen, Farzad Azimzadeh Moghaddam, Sami Repo



## 4.2 Conferences

IDE4L- project partners will participate in conferences and have presentation or poster in the conferences.

The most relevant conferences for IDE4L are e.g.: IEEE Power & Energy Society (PES) general meeting, IEEE PES innovative smart grid conference, IEEE PES Transmission and Distribution Conference and Exposition, IEEE Power Tech, IEEE Applied Measurements for Power Systems, IEEE Complexity in Engineering, IEEE International Instrumentation and Measurement Technology Conference, IET Renewable Power Generation Conference, IET International Conference on Developments in Power System Protection, International Conference on Integration of Renewable and Distributed Energy Resources, International Conference and Exhibition on Electricity Distribution (Cired), International council on large electric systems (Cigre), International Conference on Power System Protection, International Conference on Power Systems Transients, and Power System Computation Conference.

IDE4L has planned to participate at least following conferences:

Table 4.2: Planned IDE4L conferences

Conference	when	What	Who	Other information
IEEE PES ISGT Europe 2013	Oct 6 - 9, 2013	Brochure, posters, speaker	DTU is organizing conference, Authors: Assoc. Prof. Luigi Vanfretti and Associate Professor Qiuwei Wu; Participants: Sami Repo	The 4th European Innovative Smart Grid Technologies (ISGT) Conference is sponsored by IEEE Power & Energy Society (PES) and hosted by Technical University of Denmark (DTU). <a href="http://www.ieee-isgt-2013.eu/">http://www.ieee-isgt-2013.eu/</a>
International Conference on Renewable energies and power quality (Icrepq)	April 8-10, 2014	Conference papers, posters, presentations	IREC	<a href="http://www.ipqdf.com/ai1ec_event/icrepq14-international-conference-on-renewable-energies-and-power-quality/?instance_id=">http://www.ipqdf.com/ai1ec_event/icrepq14-international-conference-on-renewable-energies-and-power-quality/?instance_id=</a>
European Conference on Power Electronics and Applications	2015	Conference papers, posters, presentations	IREC	<a href="http://www.epe2014.com/">http://www.epe2014.com/</a>
International Conference on the European Energy Market	May-14	Conference papers, posters, presentations	IREC	<a href="http://eem14.com/">http://eem14.com/</a>

IEEE PES ISGT Europe 2014	October 12-15 2014	Conference papers, posters, presentations	Authors/co-authors: Kimmo Lummi, Antti Mäkinen, Farzad Azimzadeh Moghaddam, Antti Supponen, Antti Mutanen, Sami Repo.	<a href="http://www.ee.itu.edu.tr/isgt2014eu/">http://www.ee.itu.edu.tr/isgt2014eu/</a>
CIREN 2015	June 15 - 18, 2015	Conference papers, posters, presentations	Authors/co-authors: Kimmo Lummi, Antti Mäkinen, Farzad Azimzadeh Moghaddam, Antti Supponen, Antti Mutanen, Sami Repo.	The 23th International Conference and Exhibition on Electricity Distribution (CIREN 2015) will be held in Lyon, France. <a href="http://www.cired2015.org/">http://www.cired2015.org/</a>
IEEE AMPS 2014	September	Measurement topic of the project	A2A	
IEEE PES ISGT Europe 2014	October 2014	Architecture and use cases	A2A	
IET CIREN Workshop 2014	July 2014	LV management concept	A2A	<a href="http://www.cired2014-workshop.org/">http://www.cired2014-workshop.org/</a>
IEEE International Conference on Smart Grid Communications (SmartGridComm) 2015	tbd	generic smart grid venue - agenda and speakers to be defined		
IEEE PES ISGT Europe 2014	Oct 12-15 2014	draft architecture	RWTH	expected deadlines: abstract March 2014, final paper June 2014
IEEE AMPS 2014		Measurement topic of the project	RWTH + A2A	location Aachen, expected deadlines : abstract end of May 2014, final beginning of August
IET CIREN Workshop 2014		preliminary considerations on architecture	RWTH	deadlines: abstract 20 -12 - 2013, full paper 24 -03-2014
8th ELECO International Conference on Electrical and Electronics Engineering	Nov 28-30 2013	Conference paper	Hossein Hooshyar, Luigi Vanfretti	<a href="http://www.eleco.org.tr/index.htm">http://www.eleco.org.tr/index.htm</a>

IEEE PES General Meeting	July 27-31 2014	Conference paper	Hossein Hooshyar, Farhan Mahmood, Luigi Vanfretti	<a href="http://www.pes-gm.org/2014/">http://www.pes-gm.org/2014/</a>
IEEE PES General Meeting	July 27-31 2014	Conference paper	Peyman Jafary, Sami Repo	<a href="http://www.pes-gm.org/2014/">http://www.pes-gm.org/2014/</a>
IEEE PES ISGT Europe 2014	October 12-15 2014	Conference paper	Shaojun Huang, Qiuwei Wu, et al	<a href="http://www.ee.itu.edu.tr/isgt2014eu/">http://www.ee.itu.edu.tr/isgt2014eu/</a>
IEEE PES GM 2015	July 2015	Conference paper	Shaojun Huang, Qiuwei Wu, et al	
IEEE PES GM 2015	July 2015	Conference paper	TUT	
IEEE PES GM 2016	July 2016	Conference paper	TUT	
IEEE PES ISGT Europe 2014		Conference paper	Shaojun Huang, Qiuwei Wu, et al	
Power System Computation Conference 2014	August 18-22, 2014	Conference papers, presentations	Antti Supponen, et al. Shengye Lu, et al.	<a href="http://psc2014.pwr.wroc.pl">http://psc2014.pwr.wroc.pl</a>

## 5. Events for dissemination to DSO's and Industry

IDE4L will participate in several events to disseminate its results to DSO's and other industrial partners. IDE4L will itself organize and participate in workshop and national events for DSOs to disseminate the demonstration results and receive feedback. In the early events we will concentrate on the objectives of the project and receiving information regarding different boundary conditions and practical challenges that the active distribution network should rise to. The IDE4L workshop will focus on sharing information on project results in order to encourage DSOs to adopt new solutions into their networks. Demonstrations will be also presented by organising site visits for the target groups. IDE4L workshops are detailed when we have results of project and we know where we can best demonstrate our ideas to DSO's and industry. One possible solution is to organize tutorial in some relevant conference.

A2A plans to organize a conference or seminar event in 2015 and/or 2016 to promote the A2A efforts in smart grid innovation. In 2015 the city of Milano - the largest city served by A2A - will host the International Exposition (Expo 2015) whose key theme revolves around eco-compatible life style and A2A is looking for possibilities to present IDE4L concept and whatever will be available for a demonstration at that stage.

Annual Power quality management seminar, organized by Tampere University of Technology together with MX Electrix Oy, PowerQ Oy and Finnish Energy Industries (association), deals with power quality and network management in electricity distribution systems. The number of participants is about 50 coming from universities, research institutes, DSOs, TSO, manufactures, regulator and energy industry association. The seminar continues five days. The main goal of the event is to exchange information and experience about research projects, demonstrations, new products, network disturbances and events.

Department of Electrical Engineering at Tampere University of Technology will organize one day event to disseminate research results to Finnish DSOs. Dissemination of the results of IDE4L project will be realized together with other projects of department.

The professorship of Sami Repo at Tampere University of Technology is financed by SENER (Finnish Electricity Association). The advisory board of professorship consists of the representatives of SENER member companies which all are DSOs. Annual report of achievements is reported to advisory board.

Danske Energy will disseminate and collect information from DE members and all Danish DSO's several ways. They are organizing:

- The yearly energy summit (Energien Topmøde), which is targeted at DSOs, energy companies, equipment manufacturers and others who work with the field of energy.
- **Danish Intelligent energy alliance** (Part of DE) holds 3-4 events/meetings a year for members where there is an opportunity for presenting the IDE4L project, finding partners and hearing members' opinions.
- **Danish Electric Vehicle Alliance** (Part of DE) holds 3-4 events yearly for members where there is an opportunity for presenting the IDE4L project, finding partners and hearing members' opinions.
- Afternoon meetings: Shorter presentations with a specific theme. Targeted at DSOs.
- Theme days: Courses regarding specific topics. Targeted at DSOs and consultants within the field.

Dansk Energy has also several ways to communicate and disseminate the about IDE4L to Danish DSO's:

- Energi.dk (newsletter): Daily energy news. Targeted at DSOs and other professionals within the field of energy.
- Nyhedsbladet Dansk Energi (Newspaper/Magazine): Monthly released. Targeted at DSOs, electricity production and trade companies.
- <http://www.danskeenergi.dk/> : News and information to DSOs, electricity production and trade companies.
- <http://www.danskelbilalliance.dk/> : Website for Danish Electric Vehicle Alliance
- <http://www.ienergi.dk/> : Website for Danish Intelligent energy alliance

RWTH is working actively in following working groups and they are using those for collecting information and disseminating the ideas of IDE4L:

- VDE (<http://www.vde.com/en/Pages/Homepage.aspx>) Task Force Smart City; Professor Antonello Monti is the Chair of task.
- IEEE Instrumentation and Measurement Society Technical Committee for Measurements in Power Systems ; Professor Antonello Monti and Professor Ferdinanda Ponci as members
- IEEE Student Branch in Aachen; The Chairman is working in RWTH

Following events has been identified as possible dissemination events. IDE4L project will consider participation to following events. IDE4L will identify events where are correct target group for IDE4L and participate those events. If we don't find relevant events we will organize our own events.

Table 5.1: Planned IDE4L events

Event	Time	Key issues	Target group
Seminar on Smart Grid Standards	Dec. 5 <sup>th</sup> 2013	DTU-CEE, in cooperation with Energinet.DK	
UC3M seminar	June-July every year	UC3M Department of electrical engineering presents its research and projects to industry and DSO's	Spanish DSO's, energy industry
Smart Metering UK	January 30-31 2014	The event includes Europe Summit 2014 & The European Smart Metering Awards and will feature four streams: UK metering, European metering, smart homes and cybersecurity. <a href="http://www.smartmeteringuk2013.com/">http://www.smartmeteringuk2013.com/</a>	
Smart Energy Summit	Feb. 17-19, 2014 Austin, Texas	The event will analyze consumer-facing solutions that engage consumers in the energy management market, and will offer solutions that help consumers manage their energy use. <a href="http://www.parksassociates.com/events/smart-energy-summit">http://www.parksassociates.com/events/smart-energy-summit</a>	

IX Congress of the Spanish Association for Energy Economics	February 2014	Spanish event organized by the Spanish chapter of the International Association for Energy Economics ( <a href="http://www.iaee.org/">http://www.iaee.org/</a> )	Academic and industrial partners, including Spanish TSO and DSOs representatives. Spanish public bodies (Ministry and Energy Regulator).
The 4th China International Smart Grid Construction Distributed Energy and Energy Storage Technology and Equipment Expo & Summit	March 31-April 2 2014 Beijing, China	The conference focuses on advanced smart grid equipment and technology and is widely considered a leading platform for domestic and overseas manufacturers to unveil their latest products.	
All-Energy Canada Exhibition & Conference	April 9-10, 2014 Toronto, Canada	The event is designed to optimize opportunities to build relationships and connections with decision makers from the entire renewable energy spectrum. <a href="http://www.reedexpo.com/en/Events/3085/All-Energy-Canada-Exhibition-Conference">http://www.reedexpo.com/en/Events/3085/All-Energy-Canada-Exhibition-Conference</a>	Developers; engineers; contractors; architects; farmers and landowners; community power proponents; government representatives; building owners; facility managers and construction industry representatives.
China International Electric Power and Electrical Engineering & Smart Grid Construction Exhibition	April 25-27 2014 Xiamen, China	The conference and exhibition promotes advanced electric equipment and technology, building supply and demand, communication platforms, new technology and materials and electrical industry equipment.	
Smart grid Summit 2014	29-30 April 2014 Malaga - Spain	Generic smart grid event	all indiscriminate
Green eMotion stakeholders forum	Brussels on June 2014	The main objective of the Green eMotion Stakeholder Forum is to engage companies and interested parties in exchanging information and experience with the project partners. In previous meetings, Green eMotion project partners have presented new projects they are participating on, where similar topics to the Green eMotion ones are dealt with. ( <a href="http://www.greenemotion-project.eu/stakeholder-forum/">http://www.greenemotion-project.eu/stakeholder-forum/</a> )	companies and interested parties

DistribuTech - 2014	28-30 January - San Antonio - Texas - US	key DSO event in USA - exposure	Key event catering for US DSO's with ample coverage of technology vendors, academic and general public
DistribuTech – 2015	2015	key DSO event in USA - exposure	Key event catering for US DSO's with ample coverage of technology vendors, academic and general public
Smart Metering UK	Jan 30-31 London - England	Key metering event	The event includes Europe Summit 2014 & The European Smart Metering Awards and will feature four streams: UK metering, European metering, smart homes and cybersecurity.
Smart City Expo WC,	Nov every year - Barcelona	Smart City event	For companies, institutions and professionals

## 6. Other projects

### 6.1 Collaboration with other European projects from the ENERGY 2013 7.1.1 Call

IDE4L partners are committed to seek for best collaboration opportunities with the projects selected for funding within the energy topic 2013.7.1.1 in the SMARTCITIES-2013 call, in order to allow for enhancing individual results on the basis of proper exploitation of synergies.

A collaboration framework will be initiated at start of projects, addressing:

- Strategic views; this will be pursued by sharing the knowledge acquired through individual advisory boards, with possible invitation of other projects representatives to board meetings;
- RTD synergies; opportunities will be sought not only for activities characterised by limited innovation content, but also on complementary or common investigations, where joint studies might positively impact individual project results or just make available resources for more specific subjects of research;
- Dissemination and exploitation planning complementarities; collaborative approaches in dissemination will be pursued in view of increasing effectiveness of awareness raising and opportunities of efficiently transferring concepts developed by each project; collaborative exploitation planning might address initiatives relevant for example to:
  - further enhancing success probabilities of take up initiatives to follow;
  - offering adequate evaluation of marketing synergies like co-branding approaches to increase cross target reach;
  - improve robustness of exploitation paths by designing a cross-compatible roadmap for future research and take-up, suitable to enhance capabilities of rapidly achieve positive impacts anticipated by individual projects.

Collaboration set-up will be part of management activities, and will be pursued by minimising financial impact on the original allocation of resources.

The collaboration framework will be designed and managed through meeting and workshops among projects representatives, to be conducted by leveraging already planned activities, and possibly exploiting joint presence at international conferences and significant events for the projects objectives and technologies.

Initial subjects of discussion proposed by **DREAM** are:

- inclusion of specific notifications by other projects into the published DREAM newsletter;
- solicited participation of partners from other projects to the internet forums by DREAM;
- joint initiatives toward specific classes of stakeholders (EEGI, eDSO, en-TSOe).

Initial subjects of discussion proposed by **evolvdSO** are:

- Sharing of developed scenarios, including potential future role of DSO
- Discussion of first results of developed tools, tested/validated through computer simulations.
- Presentation of the results of field tests, with input for appropriate final conclusions and roadmap.

Initial subjects of discussion proposed by **IDE4L** are:

- Concept and use cases specified and developed within IDE4L project to get input from other countries and DSOs not represented in the consortium.
- Sharing and discussing about the benefits of smart grid use cases in different market, regulation and network conditions.
- Dissemination of IDE4L field test results and conclusions.

Initial subjects of discussion proposed by **INCREASE** are:



- inclusion of specific notifications by other projects into the published INCREASE newsletter;
- joint initiatives toward specific classes of stakeholders.

Table 6.1: Joint Events between EU collaborative projects of the 7.1.1 Energy 2013 call

Proposed Events	DREAM	evolvDSO	IDE4L	INCREASE	Organized & hosted by	Indicative timing	Duration of the event
Early Event: share the preliminary results and concepts developed	OK to share the concepts and the selected trials (coordinator + "Dissemination" partners)	OK to share by M3 the scenarios (and thus getting scenarios/future DSO roles from other projects)	OK	OK	INCREASE	M2-M4	1 to 1 ½ day
Middle Event: discussion of first results (simulations), specifications and presentation of the trials	OK	OK	OK	OK	IDE4L	M18-M22	1 to 1 ½ day
Final event: presentation of the simulation results and trials + conclusions and roadmap	OK	OK	OK	OK	evolvDSO	M34-36	1 to 1 ½ day
Cross participation in Advisory Boards	OK	OK	OK	OK	rotating	Once a year per projects	½ to 1 day
Summer school on specific subject (agent based coordination foreseen)	OK – subject to be confirmed	OK – subject to be confirmed	OK	OK – subject to be confirmed	DREAM	M24	1 to 3 day(s)
Panel session in an international conference (IEEE PowerTech 2015 in Netherland for instance)	OK	OK	OK	OK			

IDE4L project will organize three workshops together with DREAM, evolvDSO and INCREASE projects for the DSOs. IDE4L will take care of organizations of middle event. Workshop will provide information on project results in order to encourage DSOs to adopt new solutions into their distribution networks. Also some other events like special session in conference with other projects will be organized.

## 6.2 EU projects

IDE4L connections to previous and ongoing initiatives at national and European level. Partners of IDE4L project have very wide relationship to other European projects. All related projects deal with smart distribution networks, integration of RESs and DERs into MV and LV networks and transmission network monitoring, control and security. We will also work with following projects and adopt and share the results, methods and information from these projects. Through these projects the results and roadmap of IDE4L will be shared to national level and also to international project partners.

**Integris, Intelligent electrical grid sensor communications** (EU); <http://fp7integris.eu/index.php> INTEGRIS project develops a novel and flexible ICT infrastructure based on a hybrid Power Line Communication-wireless integrated communications system able to completely and efficiently fulfill the communications requirements foreseen for the Smart Electricity Networks. Project includes also development of electrical network monitoring and management in MV and LV networks.

**EcoGridEU** (EU); <http://energinet.dk/en/forskning/EcoGrid-EU/sider/EU-EcoGrid-net.aspx>

By creating a new real time market the 2000 participants of EcoGrid EU will be directly involved in balancing a system with a high penetration of many and variable renewable energy resources. Participants' DER will automatically be adjusted to optimize the operation of the power system.

**EDISON, Electric vehicles in a Distributed and Integrated market using Sustainable energy and Open Networks** (Denmark, international); <http://www.edison-net.dk/> In the EDISON project Danish and international competences will be utilized to develop optimal system solutions for EV system integration, including network issues, market solutions, and optimal interaction between different energy technologies.

**iPOWER** (Denmark, international); <http://www.ipower-net.dk/> The iPower Platform will develop intelligent control of decentralized power consumption and production tools to manage millions of flexible consumption units, and methods of operation of a distribution with flexible power generation.

**iTELSA, innovative Tools for Electrical System security within Large Areas**, (EU); <http://www.itesla-project.eu/> iTesla is one of the largest European projects in pan-European transmission networks with several transmission system operators including Statnett SF (Norway's TSO), research centres and universities including KTH and DTU Risø. The aim of project iTELSA is to provide a flexible tool that can support pan-European electrical energy transmission networks.

**iGREENGrid (Integrating Renewables in the European Electricity Grid)** <http://www.igreengrid-fp7.eu/>

This project focuses on increasing the hosting capacity for Distributed Renewable Energy Sources (DRES) in power distribution grids without compromising the reliability or jeopardizing the quality of supply. The aim of iGREENGrid is to establish the guidelines for future massive integration of DER in Distribution grids, analyzing and comparing the most promising solutions based on selected Key Performance Indicators. In order to achieve that, a technical evaluation and selection of 'most-promising' interoperable European solutions with largest potential for replicability and scalability in Europe are being carried out, being PRICE project from GNF one of these solutions.

The objective of **DISCERN** (<http://www.discern.eu/>) (EU 7FP) is the study of distributed intelligent solutions and devices for a cost-effective and reliable Distribution Network Operation. The analysis of five European demonstration projects on MV/LV networks (being PRICE project from GNF one of them) is being carried

out, developing an evaluation framework to compare the different technological solutions that permits the integration of Distributed Elements with supervision systems.

**STRONgrid, Smart Transmission Grid Operation and Control** (Nordic);

<http://www.nordicenergy.net/section.cfm?id=3-0&path=220,238>

STRONgrid is funded by the Nordic Energy Research agency and co-funded by TSOs and DSOs in the Nordic Grid. This research project aims to address the challenges for security of supply by supporting basic research in the area of Wide-Area Monitoring, Control and Protection. The project will develop applications that use synchrophasors (PMU data) for monitoring and control of transmission grids.

**Grid4EU** (Large-Scale Demonstration of Advanced Smart GRID Solutions with wide Replication and Scalability Potential for EUROPE). <http://www.grid4eu.eu/> Grid4EU approach aims at testing, in real size, some innovative concepts and technologies in order to highlight and help to remove some of the barriers to the deployment of smart grids and the achievement of the 2020 European goals: technical, economic, societal, environmental and regulatory barriers. It focuses on how distribution system operators can dynamically manage electricity supply and demand, which is crucial for integration of large amounts of renewable energy, and empowers consumers to become active participants in their energy choices.

**DREAM** (Distributed Renewable resources Exploitation in electric grids through Advanced heterarchical Management). DREAM project will lay the foundations for a novel heterarchical management approach of complex electrical power grids, providing new mechanisms for consumer involvement in economical and ecological electricity use as well as stable and cost effective integration of distributed renewable resources. DREAM will demonstrate the economic and technical feasibility of these novel control mechanisms thanks to several real-world small-scale pilots dedicated to different use-cases, and computer simulations will be used to study further scalability.

**Green eMotion:** EU Framework Programme 7 project about EVs and integration of EVs. Also includes some discussion and considerations regarding future grid planning that could be relevant to IDEAL.

### 6.3 National projects

IDE4L project partners are also participating several national projects. There will be cooperation and dissemination between these projects. Similar ideas than in IDE4L are also developed in these projects.

**SDG, Smart Domo Grid** (Italy); Smart Domo Grid is liaising with other DR initiatives and we would like to bring the new functionalities of DR that are being envisioned into IDE4L into play.

**CHPCOM (Combined Heat and Power Communication)** (Denmark) CHPCOM is a joint industry projects with the partners Danish District Heating Association, the Danish CHP Association (FDKV), Danish Energy Association, Energinet.dk and EURISCO. The project is funded by ForskEL to promote the international Smart Grid data communication standards, specifically IEC 61850 and IEC 62351 for IT security. The goal for CHPCOM is, in cooperation with Danish CHP owners, power market stakeholders, plant suppliers and grid utilities, by practical demonstration to bring Danish CHPs to the next step towards the future Smart Grid.

**SGEM, Smart Grid and Energy Market program** (Finland); <http://www.cleen.fi/en/sgem> The aim of SGEM research program is to develop international smart grid solutions that can be demonstrated in a real environment utilizing Finnish R&D&I infrastructure. At the same time, the benefits of an interactive international research environment will accumulate the know-how of world-leading ICT and smart grid

providers. The main components of the research are: Smart grid architectures and distribution infrastructure, Intelligent management and operation, Active resources and Market integration and new business models.

**Evelina, National electric vehicle test environment** (Finland); <http://www.evelina.fi/> EVELINA refers to a comprehensive test environment for EVs nationwide. The implementation of this is based on coherent solutions for data collection and management with various vehicle monitoring systems provided by different suppliers. Test environment focuses on traffic and energy systems as well as on the development of maintenance and service infrastructure for EVs.

**Utilization of demand response in Finland** (Finland) The aim of the project is to find out technical solutions and potential for demand response in Finland in existing buildings. The results of the project determine how and what schedule the load control resources might be used for different functionalities of demand response. Also electricity installation practices and new guideline for installation planning will be developed.

**TIGRIS** (Total Integrated GRid Intelligent System) (Spain). The aim of the project consists of developing an integrated and secured Smart Grid solution, in order to offer an efficient, economic, automated and reliable electrical distribution. That will help to increase the capacity of the system without investing in new infrastructures. <http://tvt.schneider-electric.com/go/tigris/eng>

**FerroSmartGrid** (Smart Grid Development for Energy Management in the Railway Sector) (Spain) is a project for the development of an experimental demonstrator for the first smart grid for rail networks. This smart network will allow an optimal energy management of the system, as well as interoperability between the different urban and intercity transport systems. These systems will be electrically integrated through intelligent nodes and will interact with the user by means of the rail station system. [http://tvt.schneider-electric.com/go/ferrosmartgrid\\_eng/](http://tvt.schneider-electric.com/go/ferrosmartgrid_eng/)

**Smart City Kalundborg: Danish** demonstration project, demonstrating a flexibility market. The marketplace serves DSOs (congestion management & voltage control through DER utilization) and TSO (ancillary service through DER utilization) through a commercial aggregator participating in said marketplace and selling standardized products to DSO and TSO.

**PRICE** (Spain) <http://www.priceproject.es>. (Joint Project of Intelligent Networks in the Henares Corridor) (Spain) an initiative of Gas Natural Fenosa and Iberdrola aiming to give an answer to the technological challenges worldwide in the next generation of electrical systems. Some of the most important challenges to be faced in the forthcoming years are the aging of systems and electrical infrastructure, the growth in demand for energy supply, the increasing presence of renewable energy sources, the integration of electric vehicles (EV) in the network and the need to improve the security of energy supply and reduce dependence on non-renewable energy sources. In order to develop it, the PRICE project is based on the following sub-projects: PRICE-RED: Monitoring and Automation; PRICE-GEN: Energy Management; PRICE-GDI: Distributed Generation; PRICE-GDE: Demand Management.

**Virtual Network Operator with Storage: OVI-RED** (Spain) The OVI-RED project aims to design, develop and implement a system for managing a set of microgrids that, at the same time, manage individually the resources contained in its Local microgrid with presence of diverse distributed energy storage technology, energy capacity and manageability, using as principal basis the concept of Virtual PowerPlant. The

approach of the OVI-RED project is to aggregate the capacity of many DER, generation and storage to present only one point of management to the distributor of the network. The management system of the microgrid can be operated locally and remotely by a centralized microgrid management system. In this way, the Distribution System Operator gain visibility over distributed resources and their use can be maximized, contributing to the efficiency and stability of the system.

**RedNA** (Spain) <http://www.redna.es/> RedNA ( Isolated Neutral Network ) is a project whose general objective is to develop technological solutions to strengthen the operation of the isolated neutral network, improving the power quality and the automation level of this type of distribution network in an economically feasible way. The specific technical objectives are: Improvement of knowledge applied to the isolated neutral network (identify requirements for algorithms of fault location and fault passage indication in isolated neutral networks) and development of equipment and solutions from the requirements and needs identified (protection relays, current transformers , fault passage indicators , ancillary services and signal communication equipment).

## 7. Committees

The project partners have a representative in several European and national committees. Via these committees IDE4L also effect to the recommendations the project has found out from technical, regulatory and economic perspectives.

Table 7.1:Committees

Committee name
CIGRE working groups; C6.19 Planning and optimization methods for active distribution systems
CIGRE working groups; C6.20, Integration of Electric Vehicles into Electric Power Systems
CIGRE working groups; C6.27 Asset management for distribution networks with high penetration of distributed energy resources
SESKO SK Smart Grid coordination committee (Standardization) (Finland)
Dansk Energi (Danmark),
Energi Danmark (Danmark)
Energinet .dk (Danmark))
Green Society (Danmark)
Dansk Industri (Danmark)
Dansk Standard (Danmark)
Micro CHP (Danmark)
CEI (Italian Electric Commettee)
IEEE I&MS Technical Committee T39 Measurements in Power Systems

## 8. Standardisation committees

Open international standards are a key enabling factor for the development of smart grid. The IDE4L project will develop a concept where is used a standardised way of communication between the actors in a smart grid. We will use the international standards in the widest extend; there will be a recommendation by the European Commission’s Mandate M490 by the end of 2012, to insure interoperability by Smart Grids Architecture Model (SGAM) and to insure that the results of this project can be used in all European countries. If we face problems where we need to use which are not yet standardised, we will develop these in close dialog with the international standardisation organisations such as CENELEC and IEC. To ensure that we can use the IDE4L development as a case study input to the international standardisation organisations.

Project consortium has also several positions in the standardization bodies e.g. A2A is the member of IEC TC57 WG10 “Power system IED communication and associated data models” and TUT is participating in national Smart grid standardization coordination committee. Within Smart Grid standardisation, Schneider Electric Telvent is one of the most active companies: IEC SG3: Smart grids standardisation strategy, IEC TC57: Power utility automation, IEC TC8: System approach, Schneider Electric is also leading the European Smart Grid standardisation roadmap (as part of the mandate M/490), holding many positions in IEC such as IEC TC95 secretary (electrical protection), IEC TC64 secretary (electrical installation), IEC TC17/SC17C chairmanship, IEC PC118: co-convenor on Smart Equipment to serve Demand-Response, IEC TC65 secretary (industrial automation) and many others.

In following table we have listed the main standardisation committees for the IDE4L project.

*Table 8.1: Standardisation committees*

Standardisation committee	Participant
IEC TC57 WG10 “Power system IED communication and associated data models	A2A
CEI CT57 (61850 and other protocols)	A2A
National Smart grid standardization coordination committee	TUT
IEC SG3: Smart grids standardisation strategy	Schneider Electric Telvent
IEC TC57: Power utility automation	Schneider Electric Telvent
IEC TC8: System approach	Schneider Electric Telvent
European Smart Grid standardisation roadmap	Schneider Electric Telvent
IEC TC95 secretary (electrical protection	Schneider Electric Telvent
IEC TC64 secretary (electrical installation	Schneider Electric Telvent
IEC TC17/SC17C chairmanship	Schneider Electric Telvent
IEC PC118: co-convenor on Smart Equipment to serve Demand-Response	Schneider Electric Telvent
IEC TC65 secretary (industrial automation	Schneider Electric Telvent
Spanish Smart grid standardization committee	UC3M

## 9. Advisory board

One important group for IDE4L dissemination project will be the Advisory Board. In advisory board there are representatives of balance responsible parties, national and EU-level smart grid programmes and standardisation. Through the Advisory Board, the committed participation of TSOs is ensured in the project in order to develop the roles and methods of DSOs in close cooperation with them. The Advisory Board will participate in project implementation by providing recommendations. It will have at least three meetings during the project.

The members of the Advisory Board include:

- Lawrence E. Jones, Ph.D. (EE), Vice President, Regulatory Affairs, Policy & Industry Relations, Alstom Grid Inc.
- Jan Segerstam, Development Director, Empower IM Oy. Empower IM provides energy market related services and systems to all participants in the energy value chain. It provides both, market and electricity system control room services.
- Jan Ove Gjerde, SVP R&D Statnett SF, Convener ENTSO-E R&D Plan Working Group
- Per Lund from Energinet.dk representing the Danish TSO
- Peder Cajar, Head of Strategic grid development, DONG Energy, Denmark
- Jani Valtari, Smart Grids and Energy Markets Program Manager, Cluster for Energy and Environment Cleen Ltd., Strategic Centre for Science, Technology and Innovation, Finland.
- Prof. Gabriele D'Antona – of Politecnico of Milan University
- Prof. Mihaela Albu – University of Bucarest
- Leading Specialist Veli-Pekka Saajo, Energiamarkkinavirasto (Finnish Energy regulator), Finland, Chairman of CEER Electricity Quality of Supply and Smart Grids Task Force
- Co-ordinators of DREAM, evolvDSO and INCREASE projects



## **10. Post-graduate courses**

During the last year of IDE4L project, University partners will organise the post graduate course or courses and use the topics and results of IDE4L in the material of course. The method of organizing course can be through RWTH international academy or Electric Energy Systems – University Enterprise Training Partnership (EES-UETP) or by using visitor lecturers in each university own post graduate course.

UC3M is coordinating a post-graduate course on “Smart grids” in the Master in Renewable energies integration into Power systems. The topics and results obtained in the IDE4L project will be used as material of course. It is expected that IDE4L university partners will participate in some of the lecturers.