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Deliverable D8.2: Workshop materials and training materials for the use of the toolbox

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- Year 2013 - (D8.2.2)**
- Year 2012 - (D8.2.1)**

| Dissemination level | | |
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| PU | Public. | X |
| TSO | Restricted to consortium members and TSO members of ENTSO-E (including the Commission Services). | |
| RE | Restricted to a group specified by the consortium (including the Commission services). | |
| CO | Confidential, only for members of the consortium (including the Commission services). | |

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1. Introduction

The purpose of the present deliverable is to introduce and make available to all interested parties the dissemination material that was developed and used during the years 2014 and 2013 in order to promote the iTesla project and the preliminary results produced.

1.1 The iTesla project

The purpose of the iTESLA project is to develop an open interoperable toolbox which will support the future operation of the pan-European electricity transmission network by bringing forward a major innovation: carry out operational dynamic simulations in the frame of a full probabilistic approach, thus going further than the current “N-1” approach and optimizing the transit capacities of the grid at different spatial (national, regional, pan-European) and time (two-days ahead, day-ahead, intra-day, real-time) scales. This toolbox will allow transmission system operators

- to perform accurate security assessment taking into account the dynamics of the system using time-domain simulations,
- to provide a risk-based assessment taking into account the different sources of uncertainties (in particular those brought by intermittent power generation), the probabilities of contingencies and the possible failures of corrective actions.

Therefore, the developed toolbox will allow any TSO to take into account uncertainties, probabilities of contingencies, corrective and preventive actions, in their risk-based security assessments at national or/and pan-European level.

The toolbox will be available through an IT platform and will favour flexibility and openness in order to enable the integration of any relevant method, tool and result coming from other operational tools or R&D projects funded at EU level or elsewhere.

1.2 iTesla dissemination objectives

The main goal of the dissemination activities in Work Package 8 is the uptake of the iTesla toolbox by different stakeholders (mainly TSOs) by resorting to four different channels:

- Targeted dissemination workshops (WS) towards the TSOs within the EU27, regulators, equipment manufacturers, the academic community, and the Umbrella consortium¹, aiming at the early adoption of the iTesla open simulation toolbox;
- Training sessions for TSOs, research centres, and equipment manufacturers, open to stakeholders outside the consortium, and to be held in 2015;
- Publications and contributions to conferences in Europe and worldwide;
- An Internet site providing information on the project to the interested stakeholders (equipment manufacturers, research centres, regulators, policy makers, etc.), and giving access to the dissemination material and public deliverables of the project (www.itesla-project.eu).

In addition, WP8 also manages the preparation of the exploitation plan with the whole consortium, relying on a series of exploitation workshops and related activities.

¹ A first common workshop has already been organized during in June 2012 at ENTSO-E premises in Brussels.

2. iTesla dissemination events in 2014

The following dissemination events were organised by the iTesla consortium in 2014:

- The second joint workshop with the Umbrella consortium, held on 14th January in Brussels,
- The first meeting with regulators, held on 30th June in Ljubljana at ACER headquarters,
- The second dissemination workshop dedicated to the TSO community, held on 22nd August in Paris,
- A specific dissemination session dedicated to academic researchers and software developers, held in parallel to the TSO workshop, on 22nd August.

The next three subsections introduce the respective agendas of these events. Web links to the material used during those sessions (power point presentations) are included in each section below, and listed altogether in appendix I.

2.1. Second joint workshop with the Umbrella consortium, 14th January 2014, Brussels

The 2nd joint workshop between the iTesla and Umbrella consortia, held on 14th January 2014 in Brussels (ENTSO-E premises), aimed at further strengthening the cooperation between the two projects. The event gathered over 80 people counting TSOs, equipment manufacturers and academics. The two projects respectively presented their achievements so far and the challenges ahead, and a first demo of the iTesla prototype platform with operational modules was performed by RTE in session.

The next table displays the full agenda of the workshop.

| Time | Session | Speaker |
|-------|--|--|
| 09.30 | Workshop opening - Welcome speech | Chavdar Ivanov (Entso-e Secretariat's R&D team) |
| 10.00 | iTesla Toolbox <ul style="list-style-type: none"> • Overview on and state of the iTesla project • General architecture of the security assessment process • Definition of security rules taking into account uncertainties and system dynamics • Demo of prototype modules • Validation of dynamic models and use of Modelica Models • Defense plan and restoration | <ul style="list-style-type: none"> • Christian Lemaître, RTE • Jean-Baptiste Heyberger, RTE, Diego Cirio, RSE • Ioannis Konstantelos, Imperial College, Philippe Duchesne, Pepite • Geoffroy Jamgotchian, RTE, Massimo Ferraro • Luigi Vanfretti, KTH/ STATNETT • Poul Sørensen, DTU, Regina Llopis Rivas, AIA |

| | | |
|--------------|--|--|
| 14.00 | Umbrella Toolbox <ul style="list-style-type: none"> • Overview on and state of the Umbrella project • Modeling uncertainties relevant for the operation of the European transmission grid • Optimization algorithms for transmission system operation • Risk-based Security Assessment incorporating Forecast Uncertainty and Cascading Events • Toolbox Requirements based on TSO Demands and Testing Environment | <ul style="list-style-type: none"> • Dr. Wulf A. Engl, Helmut Paeschke • Raik Becker, Prof. Christoph Weber • Jonas Eickmann, Tobias van Leeuwen • Thilo Krause, Frauke Oldewurtel, Line Roald • Peter Gilsdorf, Dr. Simon Krahl, Michael Rogge, Oliver Scheufeld |
| 16.45 | Conclusion | Irene Bonvissuto (European Commission DG Research & Innovation) |
| 17.00 | Close | |

All the presentations of this event can be downloaded on the following page of the project website:

<http://www.itesla-project.eu/news/large-attendance-to-the-2nd-itesla-umbrella-workshop-14-january-2014>

2.2. Meeting with the Agency for the Cooperation of Energy Regulators (ACER), 30th June 2014, Ljubljana

On the 30th of June 2014, a delegation gathering representatives from iTESLA, UMBRELLA and GARPUR projects was received by the Agency for the Cooperation of Energy Regulators (ACER) in Ljubljana. The meeting allowed regulators to get an overview of some research activities jointly performed by TSOs and academia in relation with the security assessment of power transmission systems, and to be aware of the potential impacts of these activities on European Network Codes.

The next table displays the full agenda of the workshop.

| Time | Session | Speaker |
|--------------|--|------------------------------------|
| 14.30 | Opening introduction | Sophie Dourlens-Quaranta, TECHNOfI |
| 14.45 | Presentation of UMBRELLA and discussion | Jan Kostevc, ELES |
| 15.30 | Presentation of iTESLA and discussion | Gabriel Bareux, RTE |
| 16.15 | Presentation of GARPUR and discussion | Gerard Doorman, Statnett |
| 17.00 | End of meeting | |

All the presentations of this event can be downloaded [following this link](http://www.itesla-project.eu/key-project-events), or on the page of the project website: <http://www.itesla-project.eu/key-project-events>

2.3. Second workshop towards the TSO community, 22nd August 2014, Paris

The second workshop targeting the TSO community, held on 22nd August 2014 in Paris, mainly aimed at presenting the intermediary results of the project, and introducing the remaining challenges ahead. The event gathered 58 participants, including TSOs from Brazil, New Zealand, Serbia, Estonia, Ireland, and Finland– in addition to the 6 TSOs from the project.



A specific dissemination session dedicated to academic researchers and IT developers was also held in parallel to the TSO workshop. Some major manufacturers joined, with representatives from Siemens, Alstom Grid, and Schneider Electric.

The next table displays the full agenda of the workshop.

| Time | Session | Speakers |
|-------|---|--|
| 9.30 | Welcome speech and introduction to the iTesla project | C. Lemaître, RTE |
| 9.50 | General architecture of the security assessment process | JB Heyberger, RTE D Cirio, RSE |
| 10.25 | Definition of security rules taking into account uncertainties and system dynamics | I. Konstantelos, Imperial Colle P. Duchesne, Pepite |
| 11.00 | Demo of the prototype modules and concepts for man-machine interface | M. Ferraro, Quinary, JB Heyberger, RTE |
| 11.45 | Offline validation of dynamic models | L. Vanfretti, KTH |
| 12.15 | Defense plan and restoration | P. Sørensen, DTU |
| 12.45 | <i>End of morning session</i> | |
| | Parallel sessions | |
| 14.30 | Session for TSOs: capabilities of the iTesla Toolbox in terms of support to operations | |
| | <ul style="list-style-type: none"> ▪ Added value of the iTesla toolbox in terms of support to operation, and use cases | Martin Godemann, CORESO Grégory Meys, ELIA |
| | <ul style="list-style-type: none"> ▪ Data mining, data conversion and use of High Performance Computing Resources | P. Duchesne, Pepite JB Heyberger, RTE |
| | <ul style="list-style-type: none"> ▪ HELM Software and simulation tools for restoration | R. Llopis, AIA F. Promel, Tractebel Engineeri |
| 14.30 | Session for researchers and developers: data sampling techniques and dynamic modelling of power system using Modelica | |
| | <ul style="list-style-type: none"> ▪ Modelica power system library and introduction to the RaPid software | L. Vanfretti, KTH |
| | <ul style="list-style-type: none"> ▪ Data sampling techniques s (30 min + 5 min Q&A) | I. Konstantelos, IC |
| | <ul style="list-style-type: none"> ▪ Optimization techniques for large scale optimal power flow | Manuel Ruiz, Artelys |
| 16.15 | <i>End of workshop</i> | |

All presentations can be downloaded on the following page of the project website:

<http://www.itesla-project.eu/itesla-workshop-download-page>

3. iTesla dissemination events in 2013

The main dissemination event organized by the iTesla consortium in 2013 was the first dissemination workshop dedicated to the TSO community, held in June 2013 in Brussels. The next section introduces the agenda of the event, and the displayed material is given in Appendix II.

3.1. First workshop towards the TSO community

The workshop targeting the TSO community, held on June 26th 2013 in Nice, aimed at introducing the challenges addressed by the iTesla project, its objectives and the technical approach to achieve them. The workshop gathered over 45 people². The next table displays the full agenda of the workshop.

| Time | Session | Speaker |
|------------------------------|---|---|
| 09:30 – 10 h15 | <ul style="list-style-type: none"> Welcome / Introduction Security and risk assessment issues Objectives and challenges of the iTesla project | <ul style="list-style-type: none"> RTE Coreso RTE |
| 10:15 – 11:15 | <ul style="list-style-type: none"> 1st challenge: to take into account uncertainties Data mining techniques to extract knowledge from historical data Solution implemented in the iTesla toolbox Questions | <ul style="list-style-type: none"> RTE Pepite Imperial College |
| Coffee break | | |
| 11:30 – 12:45 | <ul style="list-style-type: none"> 2nd challenge: to take into account system dynamics Solution implemented in the iTesla Toolbox Validation of dynamic models and use of Modelica models Questions | <ul style="list-style-type: none"> Statnett Tractebel E. KTH/AIA |
| 12:45 h – 13:45 Lunch | | |
| 13:45 – 14:30 | <ul style="list-style-type: none"> 3rd challenge: provide operators with relevant proposals for preventive and corrective actions Solution implemented in the iTesla toolbox Questions | <ul style="list-style-type: none"> Elia RSE |
| 14:30 – 15:15 | <ul style="list-style-type: none"> Synthesis: global solution to the security assessment problem - Recourse to offline parallel computing Questions | <ul style="list-style-type: none"> RTE |
| 15:15 – 15:45 | <ul style="list-style-type: none"> Data management - Progress of work Use cases for the toolbox validation Questions | <ul style="list-style-type: none"> Quinary/RTE INESC Porto |
| 15:45 – 16:00 | <ul style="list-style-type: none"> Next steps – Future exploitation of the toolbox - Next workshops Questions | <ul style="list-style-type: none"> Technofi/RTE |

² A more in-depth analysis of the outputs of the workshop is given D8.3.2.

4. iTesla dissemination events in 2012

The main dissemination event organized by the iTesla consortium in 2012 was the first joint workshop with the Umbrella consortium. The next section introduces the agenda of the event, and the displayed material is given in Appendix III.

4.1. First joint workshop with UMBRELLA

On June 21st 2012, the first Itesla-Umbrella joint workshop gathered over 40 participants (TSOs and ENTSO-E, manufacturers, research centers, academics and the EC). The workshop started with a reminder of the R&D activities of ENTSO-E followed by several presentations on the main outputs from the Tradewind, PEGASE and EWIS FP7 projects. Then, both the iTesla and Umbrella coordinators presented their project : participants, main goals, workflow, etc. The afternoon session was fully dedicated to discussions addressing risk based assessment issues and defense plan concepts: possible future concepts and strategies were put forward.

The workshop ended with a roundtable involving the EC (iTesla and Umbrella project officer), ENTSO-E and EWEA. The EC emphasized the need for data exchange between the two projects and for innovative operational tools to address security issues at the pan European level.

The next table displays the full agenda of the workshop.

| Time | Session | Speaker |
|-----------------------|---|---|
| 10h00 – 10 h30 | <ul style="list-style-type: none"> Welcome coffee & registration | |
| 10:30 – 10:45 | <ul style="list-style-type: none"> Workshop Opening: Welcome Speech | <ul style="list-style-type: none"> K. Staschus ENTSO-E |
| 10:45 – 12:15 | <ul style="list-style-type: none"> Operational Challenges <ul style="list-style-type: none"> ENTSO-E R&D Plan Network Management & control Results of Tradewind Results of PEGASE Results of EWIS | ENTSO-E RDC EWEA Tractebel TTG |
| 12:30-13:30 | <ul style="list-style-type: none"> iTesla project umbrella project | <ul style="list-style-type: none"> iTesla Coordinator Umbrella Coordinator |
| 14:00 – 15:30 | <ul style="list-style-type: none"> Risk based assessment & defense plan concepts <ul style="list-style-type: none"> Present situation Continental Europe Possible future concepts for optimized solutions for maximizing power transits Possible future strategies to limit extend and impact of major system disturbances | ENTSO-E SOC-RG-CE-SPD iTesla/umbrella universities & research institutes iTesla/umbrella universities & research institutes |
| 15:45 – 16:45 | <ul style="list-style-type: none"> Panel session - Discussion with stake holders | <ul style="list-style-type: none"> EC, ENTSO-E RDC, ENTSO-E SOC, EWEA |

| | | |
|----------------------|--|--|
| 16:45 – 17:00 | <ul style="list-style-type: none">• Conclusion | <ul style="list-style-type: none">• H. Lemmens ENTSO-E RDC |
|----------------------|--|--|

APPENDIX I: web links to access iTesla dissemination material 2014

1. Presentation material from the joint workshop with Umbrella, 14 January 2014, Brussels

All presentations can be downloaded on the following page of the project website:

<http://www.itesla-project.eu/news/large-attendance-to-the-2nd-itesla-umbrella-workshop-14-january-2014>

2. Presentations material from the meeting with ACER, 30 June 2014

All the presentations of this event can be downloaded [following this link](#), or on the page of the project website: <http://www.itesla-project.eu/key-project-events>

3. Presentations material from the 2nd TSO workshop and parallel session dedicated to academic researchers and IT developers, 22nd August 2014, Paris

All presentations can be downloaded on the following page of the project website:

<http://www.itesla-project.eu/itesla-workshop-download-page>

APPENDIX II: web links to access iTesla dissemination material 2013

Presentations of the first TSO workshop, 26 June 2013

All presentations can be downloaded in a single zip file [following this link](#), or the iTesla website on the following page: http://www.itesla-project.eu/public_files .

APPENDIX III: web links to access iTesla dissemination material 2012

Presentations of the first joint workshop with UMBRELLA, June 2012

All presentations can be downloaded on the following page:

<http://www.itesla-project.eu/news/itesla-presentations-from-joint-workshop-with-umbrella-available-for-download>