

iTesla PST / PowSyBI

The open-source project for power grid simulations

Join the 2nd iPST/PowSyBI session, Friday 25th May 2018

[Com'Square, 57 Esplanade du Général de Gaulle, Paris La Défense, France](#)

The iPST project aims at developing an open-source platform dedicated to large power grid simulations and security analysis. It is dedicated to:

- ✓ *power system simulations, be they static through Power Flows and Optimal Power Flows or dynamic through dynamic power system simulators;*
- ✓ *power system data-mining thanks to big-data databases that allow storing time-series of power system related data.*

The core of the project is composed of modules from the PowSyBI library (Power System Blocks)

which allows data management and distributed computation on grid data.



The project continues the development done during the iTesla research project to enhance grid security analysis from D+2 to real-time. This year, a special emphasis will be put on the open-source ecosystem which is being set up by RTE and its partners.

AGENDA

10:00-10:15: Welcome coffee

10:15-10:30: Introduction of the day (ENTSO-E, tbc)

10:30-10:45: Open-source implementation of a CIM-CGMES compliant power flow

10:45-11:15: Towards a validation of power-flow results on real-size cases

11:15-11:45: Presentation of the open-source strategy of RTE

11:45-12:15: Open-sourcing of a full modelica simulation suite

12:15-12:30: 2018-2019 iPST/PowSyBI roadmap presentation

12:30-13:45: Lunch

Functional session

13:45-14:15: The future industrial tool for security analysis at RTE

14:15-14:45: Progresses on the Monte-Carlo approaches for security analysis

14:45-15:15: Progresses on the application of robust approaches to security analysis

15:15-15:45: A new roadmap towards fast contingency filtering with security rules

IT session

13:45-14:15: How to install a developer environment of PowSyBI and iPST

14:15-14:45: Fundamentals of PowSyBI: IIDM format, extensions and topologies

14:45-15:15: How to implement the load-flow API

15:15-15:45: Business data management

15:45-16:15: Interfacing third-party tools

FREE REGISTRATION: <https://goo.gl/forms/KxB7BKnygIRQmmlq2>

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Zoom on some key features of the platform

Import/export

The platform is based on a computationally friendly data format named iIDM (iTesla Internal Data Model) which is oriented towards helping the connection of computation modules. The iIDM supports node/breaker and bus/branch models and the platform involves functionalities to switch from node/breaker to bus/branch view.

The platform is currently able to read CIM V14, CIM CGMES, UCTE, and iIDM-XML formats. It is able to export grid data into Eurostag format, tabular format, iIDM-XML format and CIM CGMES.

Computation

The platform includes a load-flow interface in order to accommodate for different load-flows. Currently, [AIA's HELM LF](#) and [RTE's Hades](#) are available. On top of that, a Monte-Carlo like security analysis process, allowing to simulate contingencies in an uncertain environment is available.

It is also possible to call dynamic simulators like Eurostag and the PSM full modelica simulator.

The underlying MPI framework allows the distribution of the computations on as many computers as needed.

JOIN THE OPEN SOURCE PROJECT on GITHUB

Part of the iPST software, as well as the Modelica power system library have been released under the Mozilla Public License 2.0 and can be downloaded at:

<https://github.com/itesla/ipst>
<https://github.com/powsybl>

The license is "commercial friendly" and allows a smooth interleaving of open-source and commercial code.

IPST project fact sheet

9 partners

2 open source repositories



<https://github.com/powsybl>
<https://github.com/itesla>

1 TSO



6 industrials



3 research centers



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More project results on:
www.itesla-pst.org/