Open Source Tools for Smart Grid Applications

Task Force on Open Source Software
PES GM 2013

Co Chairs

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Open Source Tools for Smart Grid Applications

- The transition of the current power transmission and distribution infrastructure into a “Smart Grid” can benefit from the Free and Open Source (FOSS) model for development and distribution of different software tools and applications.

- This panel brings together different facets of the FOSS that can aid in the development of Smart Grid applications.

- This includes Python-based and HPC software for analytics, software and hardware platforms for measuring and managing PMU, open implementation of key analytic functions (i.e. topology processors for state estimation), and software tools that allow enhancing engineering practice.
Open Source Tools for Smart Grid Applications

Introduction and New OSS Project Short Presentation – Luigi Vanfretti, KTH

1. A Python-Based Software Tool for Power System Analysis – Federico Milano, UCD

2. -

3. Open Source Lightning Protection and Electromagnetics Transients Software – Tom McDermott, University of Pittsburgh

4. Co-simulation of Components, Controls and Power Systems based on Open Source Software – Matthias Stifter, AIT

5. Open Source Software for Automated Topology Processing of Power Transmission Networks – Mostafa Farrokhhabadi, University of Waterloo

6. The OpenPMU Project: Challenges and Perspectives – David Laverty, Queen’s University of Belfast

7. Grid Open Source Software Alliance (GOSSA) Overview – Fred Elmendorf, Grid Protection Alliance
• **Federico Milano**, Associate Professor at UCD, Ireland
  – A Python-based Software Tool for Power System Analysis

• Short BIO:
  – He obtained his PhD degree from University of Genoa, Italy.
  – He has worked with University of Waterloo, Canada, and University of Castilla-La Mancha, Spain.
  – His research interests include power system modeling, control and stability analysis.
• **Federico Milano**, Associate Professor at UCD, Ireland
  – A Python-based Software Tool for Power System Analysis

• **Short BIO:**
  – He obtained his PhD degree from University of Genoa, Italy.
  – He has worked with University of Waterloo, Canada, and University of Castilla-La Mancha, Spain.
  – His research interests include power system modeling, control and stability analysis.
• **Thomas E. McDermott**, University of Pittsburgh
  – Open Source Lightning Protection and Electromagnetic Transients Software

• **Short BIO:**
  – B.S. and M.Eng. degrees from Rensselaer; Ph.D. from Virginia Tech
  – 30+ years industry and consulting experience.
  – Research interests in active distribution systems, electromagnetic transients and power electronics.
• Matthias Stifter, AIT
  – Co-simulation of Components, Controls and Power Systems based on Open Source Software

• Short BIO:
  – He obtained his MSc Degree from Vienna University of Technology, Austria.
  – He has worked within the software industry for several years. Since 2007 he is with the AIT Energy Department.
  – His research interests include modeling and simulation of complex energy systems, voltage control and demand response.
• **Mostafa Farrokhhabadi**, University of Waterloo
  – Part of a project funded by Natural Science and Engineering Research Council (NSERC) of Canada.

• **Short BIO:**
  – MSC in Electric Power Engineering from KTH in 2012
  – PhD student at University of Waterloo since 2012
  – Currently he is performing research for Voltage manipulation of the residential and industrial loads in the context of frequency control.
• **David Laverty**, Assistant Professor at QUB, Northern Ireland
  – The OpenPMU Project: Challenges and Perspectives

• Short BIO:
  – He obtained his PhD degree from Queen’s University Belfast, Northern Ireland.
  – He has worked with KTH Royal Institute of Tech., Sweden, and Scottish & Southern Energy, UK.
  – His research interests include power system measurements, telecoms and cyber security.
• Fred Elmendorf, Grid Protection Alliance
  – Real-time systems for Grid Modernization
  – Enterprise-Class Event Analytic Tools
  – Free Open Source Software (FOSS)
• Short BIO:
  – He obtained his BS degree in Computer Science from The University of Tennessee at Chattanooga
  – He worked at the Tennessee Valley Authority in renewable energy, lightning, power quality, and data integration
  – He is currently Manager of Grid Solutions Services for GPA