



IAB News

Newsletter of the Industrial Advisory Board, Power Systems Engineering Research Center

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Editor

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Research Stem Concept

As PSERC grew, it needed a new organizational structure to facilitate collaboration and to efficiently organize research efforts. Research stems were conceived as a way to accomplish these objectives.

Three stems were created: Markets, Systems, and T&D Technologies. With research grouped into three areas, PSERC members may focus their participation and identify people to participate according to their interests and expertise. Technical details about research plans and projects are handled by the Stems. Recommendations on research plans and new project funding are given to the Director, Executive Committee, and Industrial Advisory Board for further action. Stems officially began their activities in the Spring of 2001.

Each Stem has a committee on which university and industry members work collaboratively. Industry members may participate in all three Stems. The Stems meet at IAB meetings and the summer retreat, and use conference calls and email for on-going communications. In this issue of IAB News, the stem leaders discuss their Stem Committee's activities. Each stem leader invites industry and university members to contact them for additional information.

T&D Technologies Stem Mladen Kezunovic, Texas A&M

The T&D Technologies Stem focuses on a broad range of issues dealing with the design, operation and maintenance of T&D systems. The T&D Stem initiated its activities in May 2001 and has held 8 meetings since that time. Membership stands at 18 members and 8 observers, 16 from industry and 10 from academia.

[Project descriptions](#) are available on the web site. Major accomplishments in the past year were:

- Created a detailed T&D technology research plan
- Carried out reviews of T&D project proposals submitted for funding in 2002
- Organized a panel session titled "IT Technology in the Utility Business" held at the December 2001 IAB meeting in College Station, Texas
- Conducted a survey of the Principle Investigators of the on-going projects to determine how well the current funding aligns with the research plan
- Initiated a discussion of stem priorities for future action.

At present, the stem is well organized with a clear agenda to improve the quality of on-going PSERC projects and to coordinate future efforts of reviewing new projects. The committee is also focusing on the selection of new research topics that will meet the interests of industry members as well as PSERC faculty. All PSERC industry members and faculty with an interest in T&D technologies are strongly encouraged to participate. The membership is open to everyone who wishes to contribute. Mladen's email is kezunov@ee.tamu.edu.

Markets Stem Shmuel Oren, Berkeley

The Markets Stem activities encompass a wide range of research problems dealing with various aspects of electricity markets such as market design; markets and reliability; auctions and bidding; financial engineering and forecasting for risk management and asset valuation; and market power and price anomalies. These problems are being addressed by five general methodological approaches: theoretical analysis, computational modeling, experimental economics, empirical analysis of functioning systems, and artificial agent-based modeling.

Currently the Markets Stem supports five research projects. Details and progress reports of these projects can be found on the [PSERC web site](#). Two of these projects started on June 1, 2002. One led by Shijie Deng of Georgia Tech. focuses on "modeling market signals for transmission adequacy issues". The second new project led by Richard Schuler of Cornell concerns "structuring electricity markets for demand responsiveness".

At the upcoming PSERC summer retreat, the Markets Stem will discuss potential areas for new projects. An important area concerns the role that PSERC should play in the national debate regarding the FERC standard market design initiative and the effect of that initiative on the PSERC research agenda. We also plan to discuss alternatives for expanding the communication among participants in the Markets Stem and for increasing involvement of industry members in the stem's projects. Industry members are strongly encouraged to participate in the retreat. Shmuel can be contacted at oren@ieor.berkeley.edu.

Systems Stem

Sakis Meliopoulos, Georgia Tech

The Systems Stem's research focuses on all aspects of operations of complex dynamical systems with emphasis on power systems. The Stem Committee, consisting of 20 industry members and 18 faculty members, promotes research activities that are responsive to the needs of the industry while maintaining a balance between basic and applied research. Several research results have led to practical applications, for example the results of the visualization project. The committee has adopted a research plan and maintains a wish list of research problems/projects. Examples are:

- Congestion management
- Improved TLR, FTR, FGR, ATC
- Visualization and Animation
- Reliability and risk management
- Self-healing (controlled islanding)
- Model trustworthiness
- Very large scale systems
- Complex systems: stability voltage control, dynamic interactions, dynamic market interactions
- Corridor constraint expansion planning

A basic function of stem activities is to bring together industry and faculty members, discuss ideas and develop research proposals. The process starts with the May IAB meeting and continues during the summer retreat. Last year the following five proposals were selected for funding and were initiated in June of 2002:

- (1) Extended data estimation for synchronous generator parameters
- (2) Visualization of power systems and components
- (3) Detection, prevention and mitigation of cascading events
- (4) Techniques for evaluation of parametric variation in time-step simulations
- (5) Security enhancement through direct non-disruptive load control.

The Systems Stem Committee will meet during the summer retreat.

Industry advisors are strongly encouraged to participate in these activities. Sakis can be reached at sakis.meliopoulos@ece.gatech.edu.

Summer Retreat

The PSERC summer retreat is scheduled for August 15-18 at Mt. Hood, Oregon. The agenda and logistics are available on the PSERC web site ([Summer Retreat 2002](#)). This is an excellent opportunity for IAB members to get to know the capabilities of the university researchers, and to communicate the research and education needs of their organizations.

Welcome to New Members!

A warm welcome is extended to the California ISO and to Powertech Labs as new PSERC members!

Spring IAB Meeting

Attended by some ninety industry members, faculty and students, the Spring 2002 IAB meeting in Schenectady, NY was hosted by GE Power Systems and Cornell University. Highlights of the May 29-31 meeting included:

- Presentation by Ian Davis, Vice-President, National Grid USA, on "Transmission as a Business: How Value Gets Created"
- Stem project presentations and posters along with student posters

- Presentations by James Momoh (National Science Foundation) on NSF Initiatives in Power Systems and Vijay Vittal (Iowa State University) on Education Programs at PSERC universities
- Panel on the vulnerabilities of the electric power system
- Presentation on the U.S. energy market outlook by GE Power Systems
- Tours of the NYISO and GE's Turbine Generator Manufacturing facility
- Stem Committee meetings and an IAB business meeting.

At the closed meeting, members reviewed the [progress of research](#) projects among other business items. [Presentation slides](#) from the presentations and posters along with the [minutes](#) of the closed session are available on the PSERC web site.

Calendar in Brief

August 15-18, [Summer Research Retreat](#), near Portland, OR

[Internet Seminars](#) from 1:00-2:00 p.m. Central time on the first Tuesday of month beginning in September

December 12-13, IAB Meeting in Atlanta, GA

(A [complete calendar](#) is on the PSERC website: <http://www.pserc.wisc.edu>.)



Industry Advisory Board members, PSERC faculty and students toured the New York ISO before the May 30-31 IAB meeting.