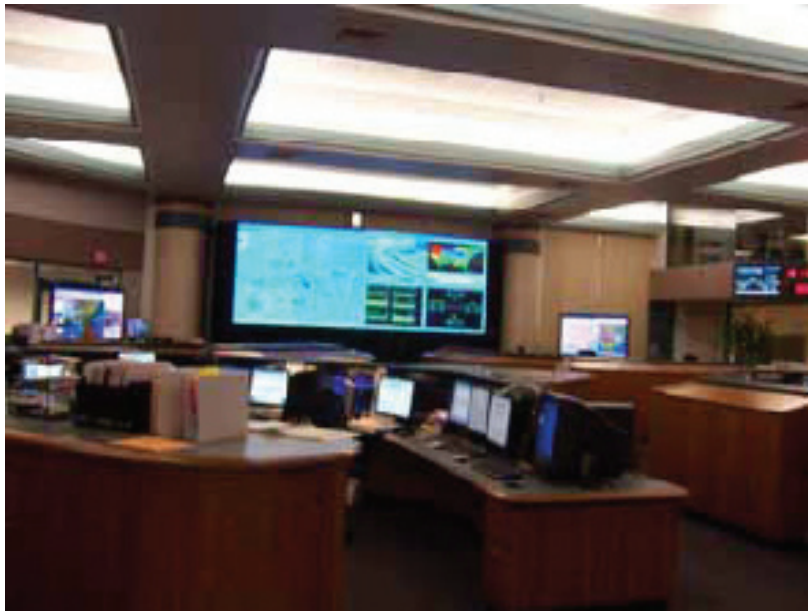


EUCI Presents a Course on:

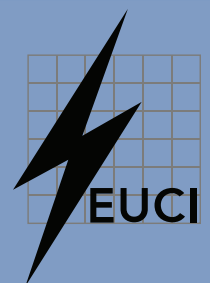
Situation Awareness in Control Centers for Real-Time Operations of Power Systems and Markets

February 26 – 27, 2007

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Situation Awareness in Control Centers for Real-Time Operations of Power Systems and Markets

February 26 – 27, 2007

OVERVIEW

Lack of situation awareness (SA) and related human errors have been found to be key causes of several blackouts around the world including the August 14, 2003 blackout in the US, and the November 4, 2006 blackout in the Continental European Electricity Grid.

Grid and market operators and transmission owners, in anticipation of new mandatory reliability standards including SA in control centers, are investigating the capabilities of existing tools to determine what new tools are needed to improve SA. While the SA in electric utilities control center operations have not received a lot of attention, applications in other domains are more common. In order to succeed in any SA related project, it is important to understand the fundamentals of SA and how to design or re-engineer systems for improving SA. With emerging standards for SA, utilities are focusing more on how to integrate SA aspects in the requirements of operational tools and decision support systems, e.g. visualization, performance metrics and look simulation.

This in-depth introductory course is designed to cover the fundamentals of SA and the key aspects of how to design systems for situation awareness. It provides an overview of EMS applications relevant for SA, as well as how other Decision Support Systems (DSS) are used to improve SA. The loss of expert knowledge in grid operations due to aging and retiring work force could lead to reduced levels of SA in control centers. Techniques to capture operational knowledge and utilize this knowledge in training and real-time decision-making will be discussed.

Participants will have plenty of opportunities to ask questions and discuss issues of special interest to them. Extensive and comprehensive course notes will be provided to each attendee.

WHAT ATTENDEES WILL LEARN

This intensive course will provide participants with a solid understanding of the basics of Situation Awareness and key issues related to designing systems for situation awareness, as well as an overview of the tools and technologies for improving SA in control centers. A review of the process used by utilities for defining requirements for control center SA tools will also be discussed.

Attendees will learn the following:

- The basic concepts of Situation Awareness (SA)
- Techniques for measuring SA
- Application of SA techniques in system design
- Energy Management System applications for SA improvement
- Decision Support Systems (DSS) for SA improvement
- Defining requirements for designing Utility Control Centers
- Requirements for control center visualization tools
- Emerging industry standards for SA
- Emerging technologies for improving SA
- Techniques for capturing operators' undocumented knowledge
- Using captured knowledge in real-time decision making
- Examples of what some utilities are doing to improve SA

WHO SHOULD ATTEND THIS COURSE

- Anyone wanting to learn the basics of situation awareness and its applications to the design of systems in Control Centers
- Employees new to the industry or with limited industry experience
- Managers for Control Centers
- Managers and Directors for Grid Operations
- Reliability Coordinators
- Transmission Dispatchers
- Employees at RTO/ISO Market and Grid Operations
- Regulatory Staff

PREREQUISITES

There are no prerequisites for this course.

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PROGRAM AGENDA

MONDAY, FEBRUARY 26, 2007

Registration and Continental Breakfast: 8:00 – 8:30 a.m.
Seminar Timing: 8:30 a.m. – 5:00 p.m.

8:30 – 9:00 a.m.
Introductions, Logistics, and Course Overview

9:00 a.m. – 12:00 p.m.
Fundamentals of Situation Awareness (SA)

- What is SA?
- What factors affect SA?
- How can SA be measured?
- Designing Systems for Situation Awareness

Dr. Mica Endsley, President, SA Technologies

Group Luncheon: 12:00 – 1:00 p.m.
The Overview of FERC Notice of Proposed Ruling on Mandatory Reliability Standards in North America
Speaker TBD

1:00 – 3:00 p.m.
Fundamentals of Situation Awareness (SA) (continued)

- Designing Systems for Situation Awareness
 - Use-Case and Goal Directed Task Analysis - What's the Difference?
- Examples from other industries

Dr. Mica Endsley, President, SA Technologies

Networking Break: 3:00 – 3:30 p.m.

3:30 – 5:00 p.m.
Achieving SA in Hydro One Control Center

- Use of Training Simulators to improve SA
- Getting information at your finger tips in real-time

Scott Vidler, Grid Operating Manager
Hydro One Networks, Inc.



TUESDAY, FEBRUARY 27, 2007

Continental Breakfast: 7:30 – 8:00 a.m.
Seminar Timing: 8:00 a.m. – 3:00 p.m.

8:00 – 8:30 a.m.
Review of previous day; opportunities for questions and discussion on previous day's material
Lawrence E. Jones, Account Executive, AREVA T&D Inc.

8:30 – 10:30 a.m.
Designing for a Disturbance - One Line Display and Alarm Processing Changes to Cater for Power System Disruptions

- Overview of major grid disturbances in South Africa and impact on Control Center staff
- Solutions for coping with data and cognitive overloading
- Overview of the "Bay Method" architecture
- Presentation of Alarm Information
- Examples

Richard Candy, Senior Consultant
ESKOM Ltd, South Africa

Networking Break: 10:30 – 10:45 a.m.

10:45 a.m. – 12:15 p.m.
Decision Support Systems (DSS) for Enabling Situation Awareness in Control Centers

- What are DSS
- Overview of Control Center DSS Components
- DSS Applications
 - Visualization
 - Look-Ahead Simulation
- Designing Dashboards for Situation Awareness
- Improving SA by capturing operators' expert knowledge

Lawrence E. Jones, Account Executive, AREVA T&D Inc.

Group Luncheon: 12:15 – 1:15 p.m.

1:15 – 2:30 p.m.
A Day in the Life of an Operator

- Examples from Refining and Petrochemical Industries
 - Operator Support
 - Electronic Logbook
 - Operations, Maintenance and Engineering Coordination

Jackie Grant, Vice President, iWARE Division, CanWeb

Interactive Demonstration and Discussion

- Live demonstration of ASM tools
- Q & A by demonstration
- How do you see ASM tools solving your issues?

Don Wood, Vice-Chair, CanWeb

2:30 – 3:00 p.m.
Wrap up, final questions, and completing seminar evaluation form

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INSTRUCTORS

Richard Candy is a Senior Consultant with **Eskom's National Control Centre** in Germiston, South Africa. He is responsible for the development of the Man Machine Interface and particularly the presentation of Alarm information to control staff. Based on disturbances experienced on the Eskom system and detailed discussions with control staff, he has patented a number of unique solutions that attempt to solve the problem of control staff data and cognitive overloading. Richard holds both an M. Sc. and Ph.D. degree in Electrical Engineering (Software) from the University of the Witwatersrand in Johannesburg.

Mica R. Endsley is recognized as a pioneer and world leader in the field of situation awareness. She is President of **SA Technologies** in Marietta, Georgia, a leading cognitive engineering firm specializing in design, research, training and measurement of situation awareness. Mica received a Ph.D. in Industrial and Systems Engineering from the University of Southern California. She is a fellow of the Human Factors and Ergonomics Society and has authored over 180 scientific articles, books and reports on situation awareness. Dr. Endsley is the co-author of the recently published book *Designing for Situation Awareness*.

Jackie Grant is Vice-President for **iWare Division, CanWeb**, a provider of ASM / SA and KM tools. Over the past 15 years, she has held a variety of positions in the information technology space including strategic marketer for emerging technologies, sales, marketing and public relations. As a founder and managing partner of CanWeb, Mrs. Grant has been involved in addressing ASM / SA issues in the various process industry sectors for the past 3 years. She is an active member of Community Advisory Panels for the Petrochemical and Transportation industries and is a member of the ISA SP101-HMI standards committee.

Lawrence E. Jones joined **AREVA T&D Inc.** in 2000 and is presently Account Executive. He was previously Manager of Utility Practice and Strategic Initiatives and is still involved in several new technology initiatives including Decision Support Systems (DSS) for Control Centers, and Wind Power. He led AREVA T&D's Transmission Optimization and Partnering (TOP) Program formed as a result of the August 14, 2003 power blackout in the United States and Canada. He holds a Ph.D. degree in Electrical Engineering from the Royal Institute of Technology in Sweden. He is a Senior Member of the IEEE.

Scott Vidler has been employed in the electrical industry for 29 years as a Control Room Operator and manager. He managed the control room tools portfolio in the Hydro One "One Centre" project where the 6 Ontario Transmission Operating Centres were amalgamated into 1 Grid Control Centre to manage the HV transmission and sub transmission systems. Scott is presently a Grid Operations Manager at the **Ontario Grid Control Centre**.

Don Wood, Vice-Chair, **iWare Division, CanWeb**, provides senior advisory services in business and technology management to owners of small and medium sized businesses. Don's experience spans from Vice President of a \$2 billion petrochemical corporation and Senior Operating Officer of a \$500 million chemical company to fostering three startups. He has had variety of directorships and advisory board positions. He has been involved in acquisition, management and integration of over 10 businesses, one an IPO. He was involved with the development of the first major cogeneration project in Ontario and with the fuel selection of many major large industrial power plants in SW Ontario.

COURSE PROCEEDINGS

The proceedings of the course will be published and one copy will be distributed to each registrant at the workshop.

COURSE LOCATION

A room block has been reserved at the Loews Philadelphia Hotel, 1200 Market Street, Philadelphia, Pennsylvania 19107, for the nights of February 25-27, 2007. The rate is \$169 single or double occupancy, plus applicable tax. Call 215-627-1200 for reservations and mention the EUCI Conference to get the group rate. Make your reservations prior to January 26, 2007. Reservations after this date will be on a space available basis and **cannot be guaranteed at the course rate.**



REMEMBER, EVERY 4TH REGISTRANT IS FREE!

REGISTRATION INFORMATION

For instant registration, call (303) 770.8800 or fax the Registration Form to (303) 741.0849.

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Any organization wishing to send multiple attendees to these conferences may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.

All cancellations received on or before January 26, 2007 will be subject to a \$195 processing fee. Written cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI conference or publication. This credit will be good for six months. In case of conference cancellation, Electric Utility Consultants' liability is limited to refund of the conference registration fee only.

EUCI reserves the right to alter this program without prior notice.

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PLEASE USE THIS WHEN REGISTERING FOR THE CONFERENCE

PLEASE REGISTER THE FOLLOWING

- Situation Awareness in Control Centers for Real-Time Operations of Power Systems and Markets, February 26-27, 2007: \$1495, **Early Bird Before February 16, 2007: \$1295**

- Check here if you have any dietary or accessibility needs. We will contact you for more details.

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