Human Factors and Situation Awareness in the control room

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NERC Improving Human Performance on the Grid
March 27, 2012, 1-5 P.M.
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Common Scenarios

Who?

- Power Systems Engineers
- Software developers
- IT Professionals
- DBAs, MCSEs, etc.
- Reliability Coordinators

What?

- Source Code
- Release Packages
- Mission-critical tools

Why?
Common Scenarios – “Over the Fence”

- Vendors
- Internal Development
- Production Support
- Control Room
Common Scenarios

- Vendors
- Internal Development
- Production Support
- Control Room

Project Manager
HelpDesk
Needs communications

- Fatigue / diet / exercise / tobacco / caffeine

- Reliability coordinators are not power systems engineers
- Power systems engineers are not reliability coordinators
- Collaborative process
- Shared stress

- Holistic analyses needed
- Agile software development
- Engagement of all players, leveraging different expertise

Prototyping

Needs communications

- Prototypes
- Use Cases
- Post-event analyses & refinements
- Holistic analyses

- Code validation / enhancement to production-level
- Coding support/implementation

- Technical/implementation guidance
- Improved user satisfaction

- Prototypes
- Use cases
- Development limitations

- Code validation / enhancement to production-level
- Coding support/implementation

Control Room

Production Support

Vendor

Internal Development

HFE
Macomber Map®

- Need for wide-area and high-level views
- Alarming issues: “Alarm storm” / “Dust storm”
- Highly dynamic network model
  - Locations of equipment / navigation between equipment
  - Naming convention changes for equipment
- Data integration across multiple systems
- Increased cognitive load as operators increasingly managing more tasks with more complex systems that change more quickly.
- Visualization tool – business processes run by core systems
- Research & rapid prototype platform
- Macomber Map being used in control room, engineers for studying, training (Blackstart), external users.
- Focus on situation awareness, configuration to ERCOT control room operators and their needs.
Set a new Black Start record!

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