Real-time Assessments

FERC and ERO Enterprise Joint Report

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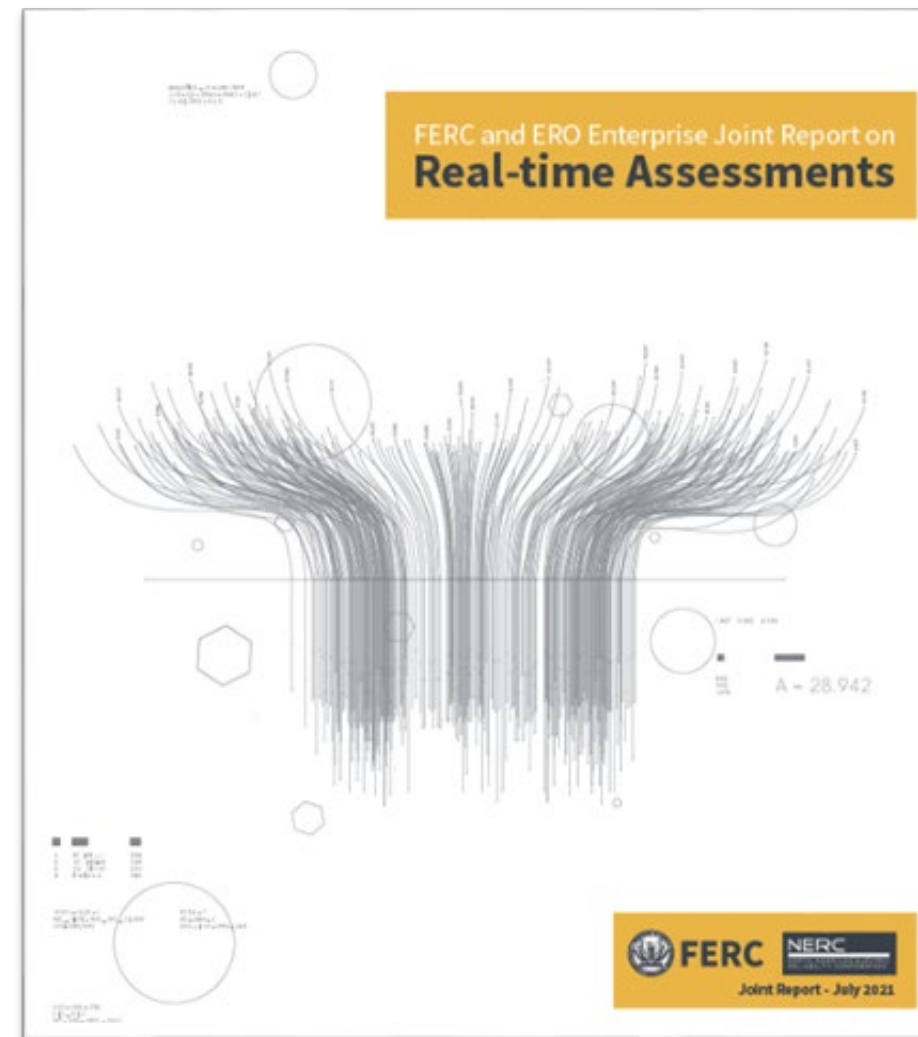Brian Thiry, Manager, Entity Engagement, RF
Technical Talk with RF
August 16, 2021

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- Background and Summary
- Data Quality for EMS and SCADA
- Alternate Real-time Assessments
- Conclusions

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- The Risk is the **Loss of Situational Awareness**

- EMS outages are reported via EOP-004 and OE-417 submissions

- FERC, NERC, and the regions visited nine Reliability Coordinator / Transmission Operator Control Rooms to discuss

  - How do we define (and perform) a Real-time Assessment?

  - What are best practices?

  - How do we measure data quality and confidence in tools/technology

  - What are the backup plans and internal controls (i.e., Alternate RTAs)

    - How do we train, drill on these?

- # What is a Real-time Assessment?

  - An evaluation of system conditions using Real-time data to assess existing (pre-Contingency) and potential (post-Contingency) operating conditions. The assessment shall reflect applicable inputs including, but not limited to: load; generation output levels; known Protection System and Remedial Action Scheme status or degradation, functions, and limitations; Transmission outages; generator outages; Interchange; Facility Ratings; and identified phase angle and equipment limitations. (Realtime Assessment may be provided through internal systems or through third-party services.)

- [NERC Compliance Implementation Guidance](#)

- **Seven Technical Areas**
  - Real-time Assessment tools under normal operating conditions
  - Real-time data and data quality
  - Manage the loss of Real-time data
  - Alternative Real-time Assessment and study tools
  - Model Management
  - Control Center hardware configuration
  - Major system upgrades/vendor changes
- **Five Recommendation Focus Areas**
  - Maintaining situational awareness when tools are impacted
  - Ensuring actions are known and consistent in timing and scope
  - Having feasible, accurate backup plans with related training programs
  - Establishing verification procedures to ensure that models are accurate and consistent
  - Maintaining awareness of changes/upgrades to the EMS

Data Quality

- Develop procedures and metrics that provide System Operators with the means to measure the impact of data accuracy

- Continue to improve Real-time data quality metrics to ensure that all data and analysis on the screens are relevant, useful, and accurate

- Use redundant data to evaluate Real-time data quality (e.g. how do you mitigate the loss of an ICCP data link)

- Before discussing the loss of data – have you identified all the data you need (including relaying data, DER data, plus data streams from neighbors?)

- How do you define the loss of (or degraded) data? What are your requirements and how is the data flagged?

- How do you decipher between a data issue or a model issue?

- How do you identify stale data and what alarms or processes are in place?

- At what point can you not rely on your State Estimator solution and need to look at Alternative Real-time Assessments?

Alternate Real-time Assessments

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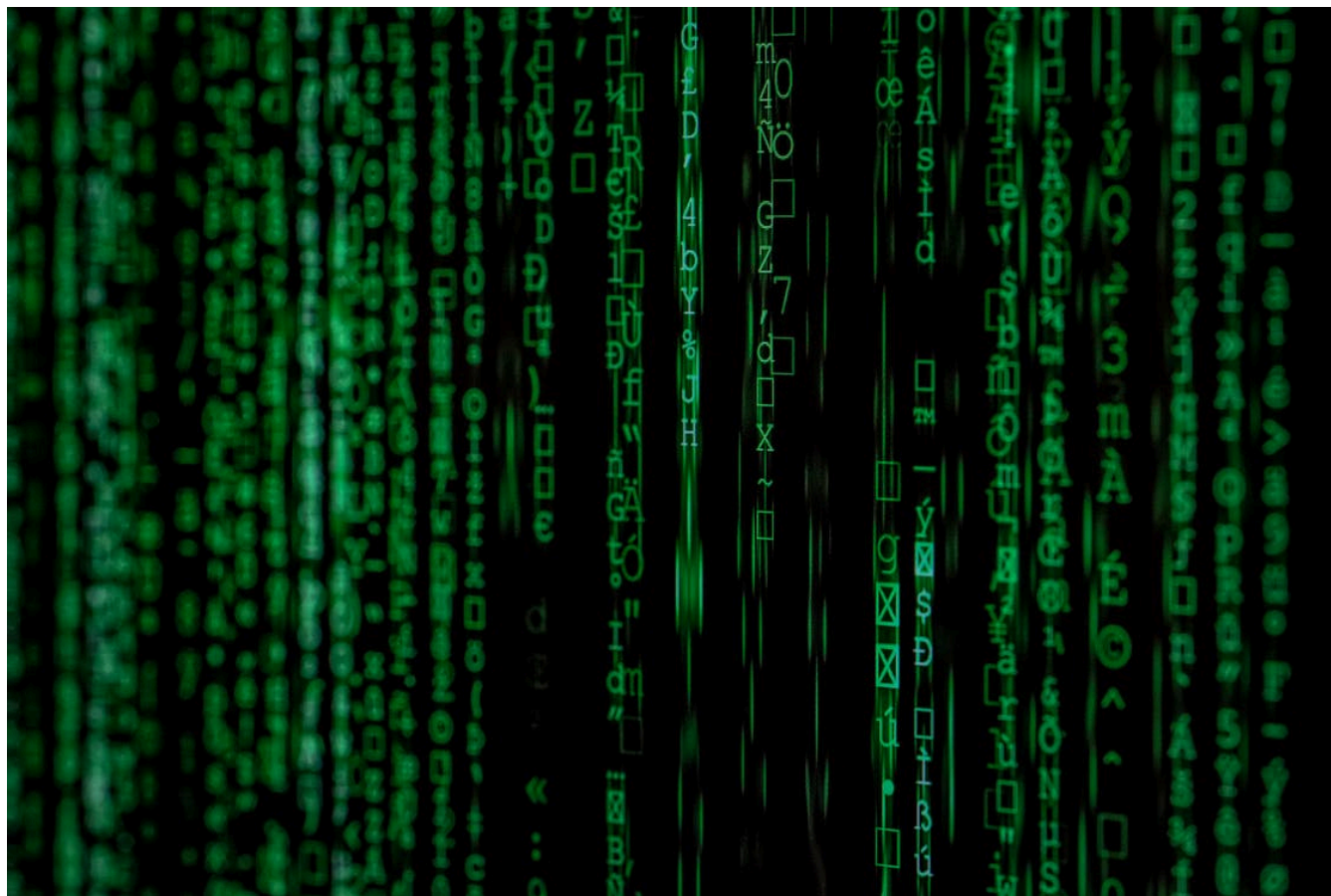
- Identify (and train on) offline tools that can be utilized

- Coordination with / reliance on neighbors

  - How do you ensure you have access to the RC's Real-time Contingency Analysis? What happens if ICCP links fail?

  - How do you ensure the RC has your entire model and is running all of the contingencies? What is your verification and validation process?

  - Define "Coordination." What exactly do you expect your neighbor(s) to do when you notify them? Do they understand your expectations?

- Implement your Alternate RTA plan

  - Define criteria for when to execute the plan (e.g. 10, 15 minutes)

  - Define roles, coordination needed plus train and drill on this

Conclusion

- Assessment recognized best practices with
  - Real-time Assessment tools under normal operating conditions
  - Real-time data and data quality
  - Managing the loss of real-time data
  - Alternate Real-time Assessments and study tools
  - Model Management
  - Control Center Hardware Configuration
  - Major System Upgrades / Vendor Changes
- For more information, make sure to attend the *NERC Monitoring and Situational Awareness Conference* later in the year
- **Reminder**: continue to report EMS outages as per EOP-004-4, working with Events Analysis (Operational Awareness & Analysis) to determine root causes and Lessons Learned

Questions and Answers

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