

Study Committee C2

Power system operation and control C2

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Simulator-based operator training on power system operating procedures

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Motivation

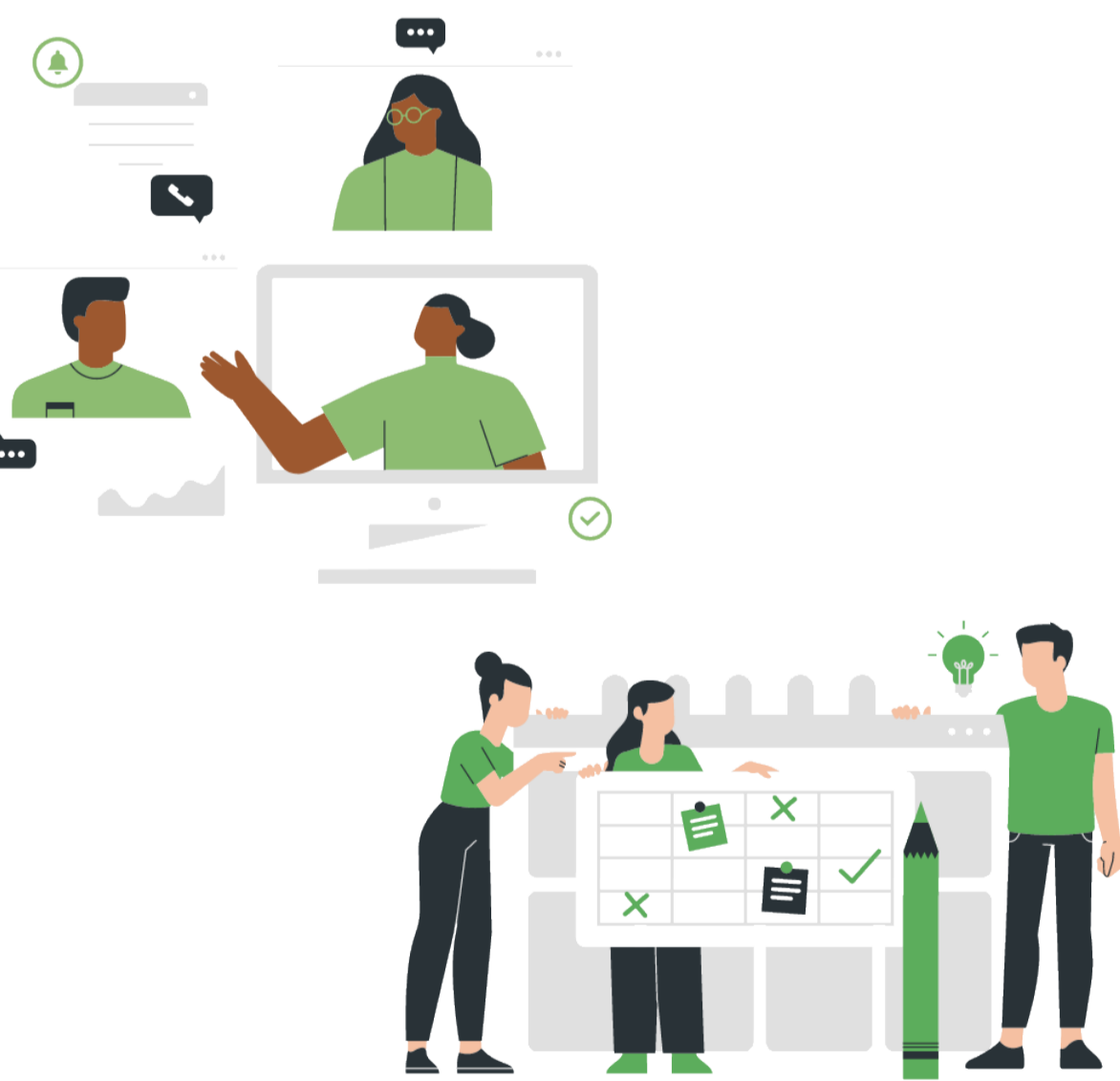
- ONS, which is Brazilian Independent System Operator, must coordinate and control the operation of an extensive system, that does not cease to grow;
- More than 1,400 Operating Procedures documents assists the Real Time Operation, which requires constant training;
- Simulator-based training sessions arise as a new method, bringing interaction and allowing situational awareness.

Methodology

- Identify reason for training, which can be:

- Integration of new power system plant or transmission equipment
- Monthly or Quarterly Planning Studies
- Change of operation scenario
- Recommendations from Operation Analysis Team
- Voltage control strategies
- Review of maneuver procedures
- New power restoration areas or the review of the existing ones
- Equipment's long-term outages
- Admission of employees
- Any specific topic demanded from Operation Team

- Following actions are necessary for preparing simulator-based training:



Organize class size and propose schedule



Expositive vs. Participative

Developing Expertise

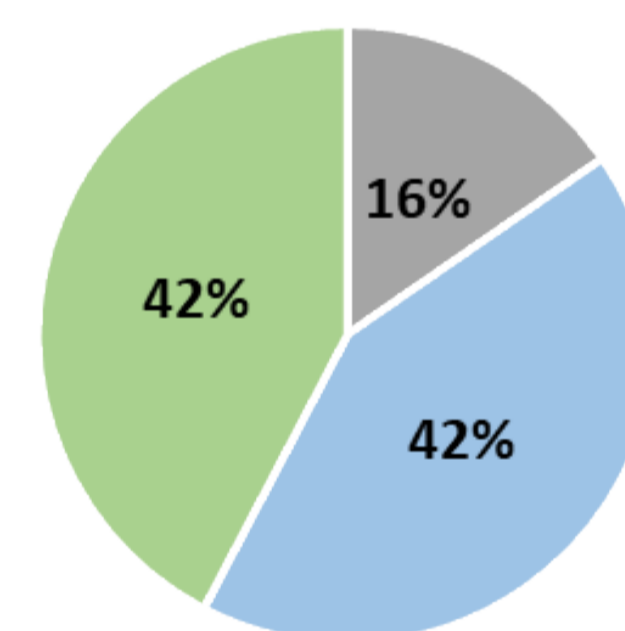
- Three different examples of simulator-based training were tested:



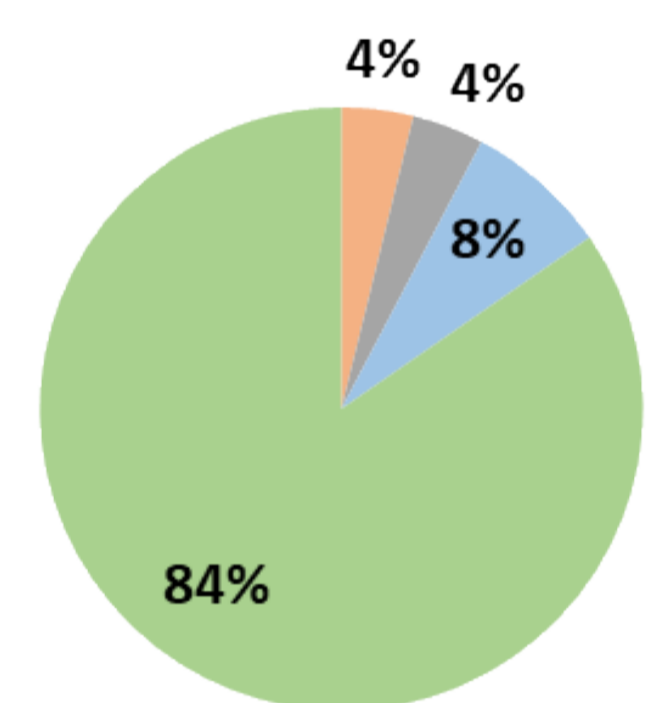
Results

- Evaluation results from simulator-based presented cases

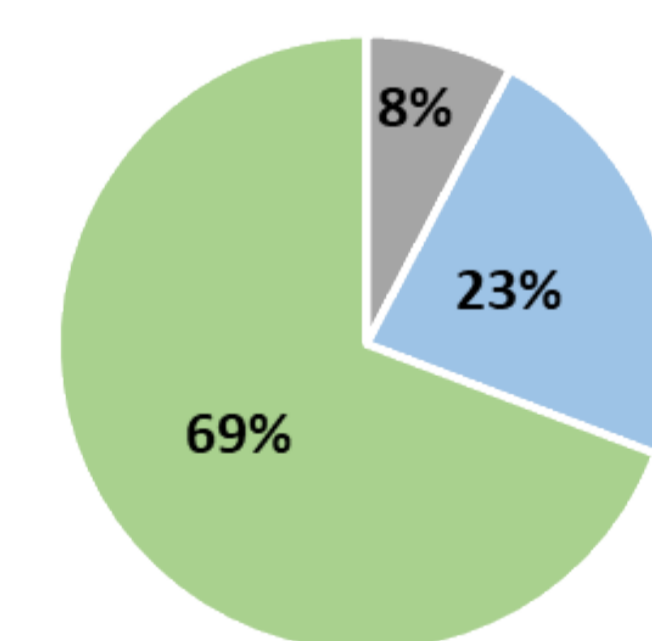
Comparing with previous trainings, the new method is:



Relevance of the obtained knowledge

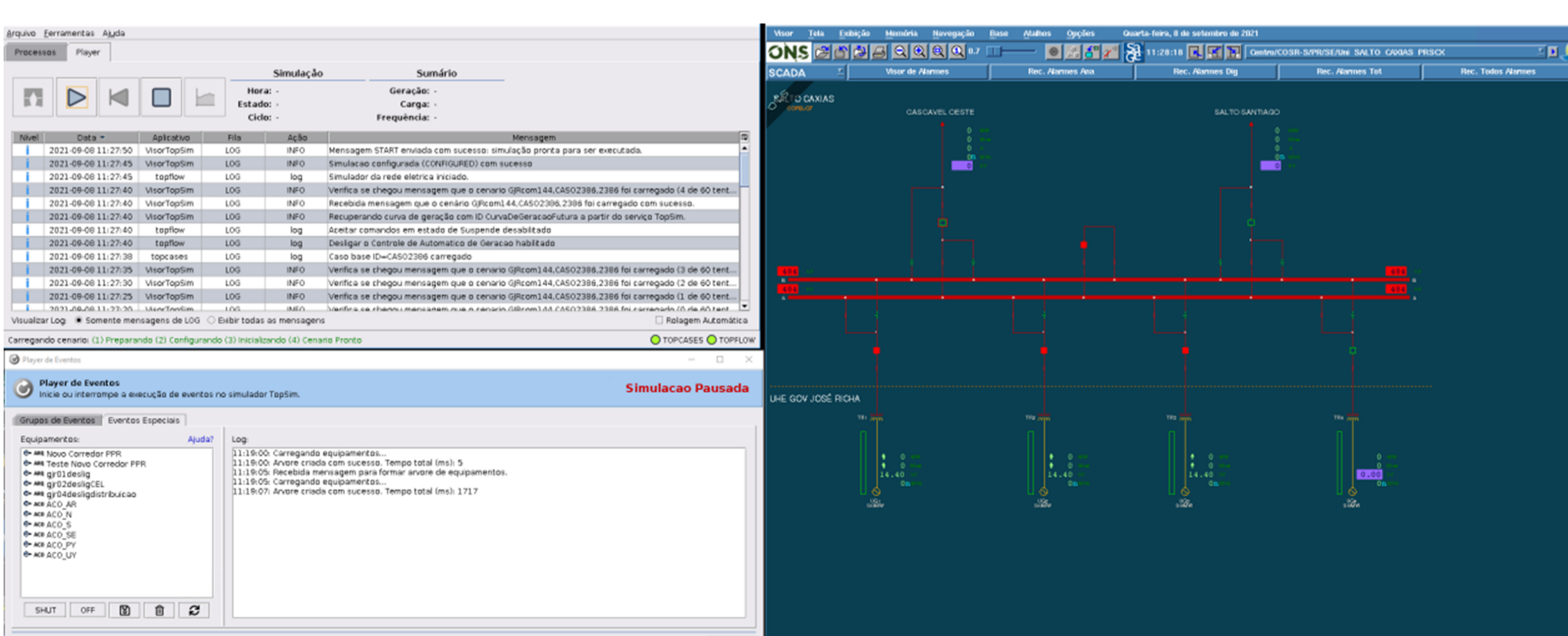


Motivation for new simulation-based trainings



Conclusion

- Interactive aspect, situational awareness and the identification of improvements in both the content and the presentation structure from the Operating Procedures are the highlights;
- Some challenges to look for: time spent vs. expected gain, simulator usage, and Real-time Operators shift scales vs. available time to prepare;
- Simulator-based training sessions are suitable and should be adopted for improving learning experience.



Operating scenario:

simulation plan; obtain and adjust case; evaluate all simulation