

Simulation based team interaction analysis method as a source for system safety

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This contribution is based on the assumption that teams in high hazard organizations (e.g. teams in control rooms of nuclear power plants) manage system-safety by building and further developing common cognitive strategies. These strategies can be observed on the behavioral level as “safety-interaction-patterns” (SIP, Ritz & Rack, 2009).

The research of SIP in such teams is enabled by highly sophisticated simulators, which are used to simulate critical situations in which team members can be trained to safely interact with each other in a realistic environment.

In complex systems, state of the art research in team interaction often focuses on observation methods. Even though observation as a research method has many advantages, its disadvantages cannot be easily dismissed. Scientists often lack the knowledge of subject matter experts (SME) to completely understand what they observe, as their expertise is in interpreting patterns and behavioral processes, but not in their knowledge about the content of the observed work. However, such knowledge might be crucial to the correct interpretation of this behavior.

We propose an applied research method to reduce the aforementioned problems, using a multimethod approach which would include think aloud techniques, gazetracking as well as classical observation methods. Research scientists and SME (e.g. simulator controller) should both participate in such scientific observations.

The combination of state of the art simulators and research methods would make it possible to analyze and improve the SIP's needed for stable sociotechnical systems in high hazard potential industries.