Title: Reducing Manual Reconstruction in AAR: A Deterministic Post-Mission Evaluation Support Approach for Training, Test, and Experimentation

Author: Kira Mamula

Track: Mission Readiness and Human Performance

Training, test, and experimentation events already generate substantial exercise and simulation data, yet post-mission review still depends heavily on manual reconstruction, evaluator notes, and repeated debate over what happened and what evidence supports a finding. The result is slower after-action review (AAR) preparation, inconsistent interpretation across reviewers, and limited traceability when findings need to be revisited.

This presentation describes a bounded post-mission evaluation support approach that helps Observer Controllers, evaluators, and review teams turn existing exercise data into evidence-backed findings for AAR, post-exercise review, and readiness-related discussion. The approach is read-only, deterministic, explainable, and designed to fit existing workflows rather than replace them. It produces structured evaluator review outputs such as time-linked event reconstruction, movement and timing findings, data-quality confidence indicators, and planned-versus-actual comparison when mission plan or route geometry is available.

The contribution is not automated judgment or final readiness adjudication. The value is a more consistent evidence baseline for evaluator-led review. The approach is used after the event, not during execution. It does not provide real-time guidance, command-and-control functions, or pass/fail scoring. Instead, it reduces manual stitching, improves traceability to source data, and supports evaluator judgment and mission command during review and debrief.

The presentation also outlines a practical evaluation design suited to training, test, and experimentation environments: one mission profile, one existing data export, one evaluator review loop, and one repeat-run determinism check. Measures include review preparation time, evaluator consistency, interpretation variance, and the usability of evidence-backed outputs during AAR and post-exercise review.

For modeling and simulation stakeholders, the practical implication is that existing exercise and simulation data can be made more usable for post-mission evaluation without adding workflow disruption or changing authority structures. This makes the approach relevant to training centers, experimentation exercises, and test environments where teams need defensible review outputs from data they already collect.