

The Simulation and Analysis of Space Shuttle Launch Teams (SALT)

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ABSTRACT:

The Simulation and Analysis of Launch Teams (SALT) effort focuses on the modeling and simulation of humans for launch team analysis, training and evaluation at Kennedy Space Center, Florida (KSC).

To better model and simulate human interaction and tasks within the shuttle countdown sequence, a discrete event simulation (DES) was created. The DES tool selected for this effort was the Army Research Lab's (ARL)'s Command, Control and Communications – Techniques for the Reliable Assessment of Concept Execution (C3TRACE) tool. C3TRACE is owned by the US Government, free for NASA, and one of a family of ARL tools targeted at human performance modeling.

The SALT C3TRACE simulation demonstrates the complex network of tasks executed by launch team-members, and their competition for shared resources (including communication channels). C3TRACE allows for output paths to be forked simultaneously, probabilistically, or based on tactical considerations. C3TRACE allows for the collection of metrics that can be very helpful in analysis. It has capabilities for tracking visual, auditory, cognitive, and psychomotor (VACP) utilization by individuals.

The SALT project, for its second iteration, focused on an off-nominal case that may occur during a launch, while beginning to integrate the off-nominal task analysis into the overall “nominal” model in the C3TRACE tool.

KEYWORDS: SALT, C3TRACE, simulation, task analysis, nominal, off-nominal

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