



U.S. Army Research, Development and
Engineering Command

Toward A More Faithful Representation of the Soldier in Modeling and Simulation

ARL

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

**US Army Research Laboratory (ARL)
Human Research and Engineering Directorate (HRED)
Simulation & Training Technology Center (STTC)**

- Problem Motivation
- Distributed Soldier Representation (DSR) Concept
- DSR Initial Areas of Interest
- DSR Implementation Concept Overview
- Recent Activity
- Select Research Questions
- Contact Information
- Acronyms



*IT'S ALWAYS SUNNY
IN PHILADELPHIA*





File Scale Map Features Map Scale Show As Special Local Designation HHours Privilege 20:52:33 GMT

0A1 0A2 0A3 0A4 0A5 0A1 0A2 0A3 0A4 0A5 00A

02 40 41 42 43 44 45 46 47 48 49 50 51 52 53 02
01 1:38,424
00
99
98
97
96

OPFOR

Zoom: click middle to zoom in around point; click right to zoom out around point; click and drag middle to set screen area

Unit Operations

Done Edit Configure

Edit Assigned Mission
 Edit Pending Mission
Assign Mission

AS1 AS2 AS3 AS4

Continue

O/O Move	Attack By Fire
O/O Move	Attack By Fire
O/O Move	Attack By Fire
O/O Move	Attack By Fire
O/O Move	Attack By Fire
O/O Move	Attack By Fire

Continue

Execution Matrix Legend

- Preparing
- Executing
- Future
- Interrupted
- Overridden
- Reaction
- Finished

Unit Operations Editor: Use execution matrix to assign commands, or choose a different unit from the map
(Select an item to edit will be resumed when finished with unit operations)

And it's
Always Sunny in
Simulation Land!

Where our soldiers act like



Always sunny in
Simulation Land!

File Scale Map 20:52:33 GMT

0A1 0A2 0A3 0A4 0A5 0A1 0A2 0A3 0A4 0A5 00A

Zoom: click middle to zoom in around point; click right to zoom out around point; click and drag middle to set screen area

Continue	
O/O Move	Attack By Fire
O/O Move	Attack By Fire
O/O Move	Attack By Fire
O/O Move	Attack By Fire
O/O Move	Attack By Fire
O/O Move	Attack By Fire
Continue	

Unit Operations Editor: Use execution matrix to assign commands, or choose a different unit from the map
(Select an item to edit will be resumed when finished with unit operations)

Unit Operations
Done Edit Configure
Edit Assigned Mission Edit Pending Mission Assign Mission

Execution Matrix Legend
Preparing
Executing
Future
Interrupted
Overridden
Reaction
Finished

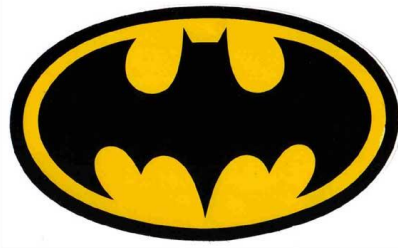


Where our soldiers act like



Always sunny in
Simland!

Or at least



A screenshot of a military simulation interface. The top shows a menu with 'File', 'Scale', and 'Map'. Below is a map with a grid and various colored regions. A list on the left shows units from 0A1 to 0A5. The bottom section is titled 'Unit Operations Editor' and contains a list of units (AS1-AS4) with 'O/O Move' commands. To the right is an 'Execution Matrix Legend' with color-coded boxes for 'Preparing', 'Executing', 'Future', 'Interrupted', 'Overridden', 'Reaction', and 'Finished'. A status bar at the bottom reads: 'Unit Operations Editor: Use execution matrix to assign commands, or choose a different unit from the map (Select an item to edit will be resumed when finished with unit operations)'. A zoom instruction is visible: 'Zoom: click middle to zoom in around point; click right to zoom out around point; click and drag middle to set screen area'. The top right corner shows the time '20:52:33 GMT'.





The Soldier, as a complex human, is not sufficiently represented in models and simulations



Soldier as a Family Member



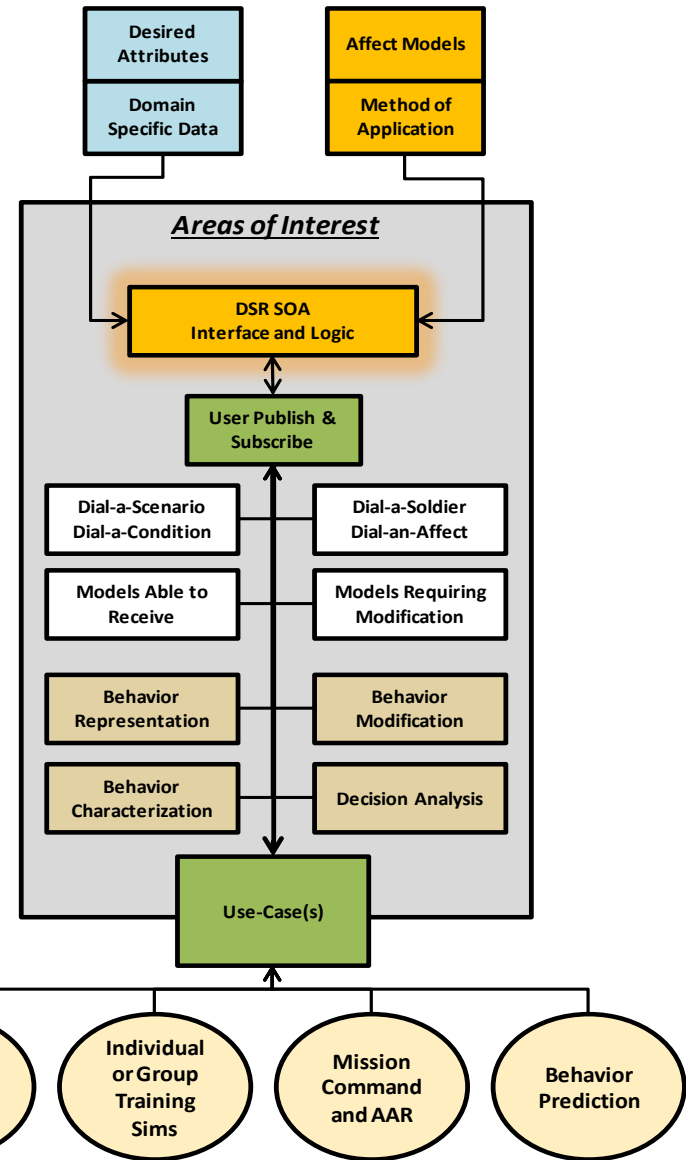
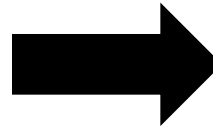
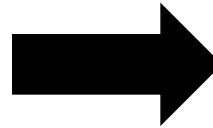
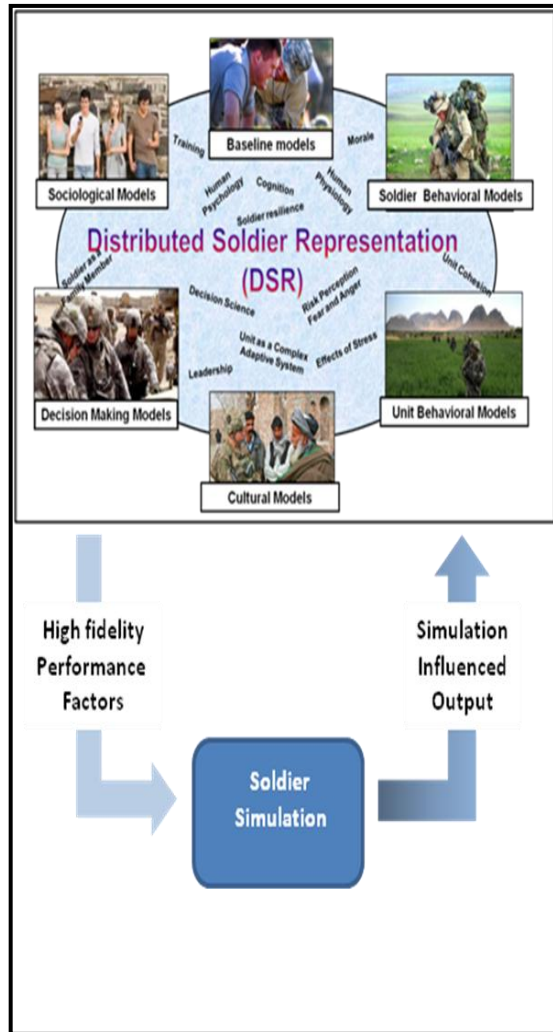
Unit Cohesion



- The Soldier, as a complex human, is not sufficiently represented in models and simulations
- The Army Research Laboratory (ARL-HRED-STTC) initiated the Distributed Soldier Representation (DSR) research project to:
 - Investigate those factors that affect Soldier effectiveness
 - Identify where there are gaps in modeling those factors in current Soldier representations
 - Offer a service oriented, distributed modeling and simulation (M&S) environment able to assist in filling those gaps.
- The DSR long range plan is to provide a capability to represent those human aspects that affect Soldier performance with greater fidelity and an increased realism in the representation of the Soldier within simulations.

- **Cognition**
- **Morale**
- **Soldier Resilience**
- **Human Physiology**
- **Human Psychology**
- **Unit Cohesion**
- **Stress**
- **Leadership**
- **Unit as a Complex Adaptive System**
- **Decision Science**
- **Effects of the Soldier as a Family Member**
- **Service Oriented Architectures**

Actively soliciting partners to ensure Areas of Interest accurately capture current human performance research and modeling and simulation practice; Opportunity to bring human performance research to a community that is currently not benefiting from it.



- SLATE (DSR Variant) – Soldier Load Augmented Training Environment
 - Uses Army Institute of Environmental Medicine (ARIEM) database for physiological degradation
 - Initial Proof of Principal for integrating existing model
- EoS – Effects of Stress Federate
 - Models limited effects of stress on small arms accuracy
- DSR Server – Acts as a broker for distributed soldier effects server

- How can we integrate models and empirical data that represent dissimilar aspects of the Soldier that make them useful to analysis, training, experimentation and test?
- What aspects of the blue force should be represented, to what fidelity and in what combination?
- How does a DSR representative Soldier benefit the analysis, training, experimentation and test communities?
- What gaps in Soldier modeling exist to support the needs of DSR users?
- What simulation architecture can expose simulation services to disparate simulations in an effective way?
- What interface is required for a user to understand what it means to “dial a Soldier”?

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- ARIEM – Army Institute of Environmental Medicine
- ARL – Army Research Laboratory
- DSR – Distributed Soldier Representation
- EoS – Effects of Stress Federate
- HRED – Human Research and Engineering Directorate (RDECOM ARL)
- RDECOM – Research, Development and Engineering Command
- SLATE – Soldier Load Augmented Training Environment
- SOA – Service Oriented Architecture