

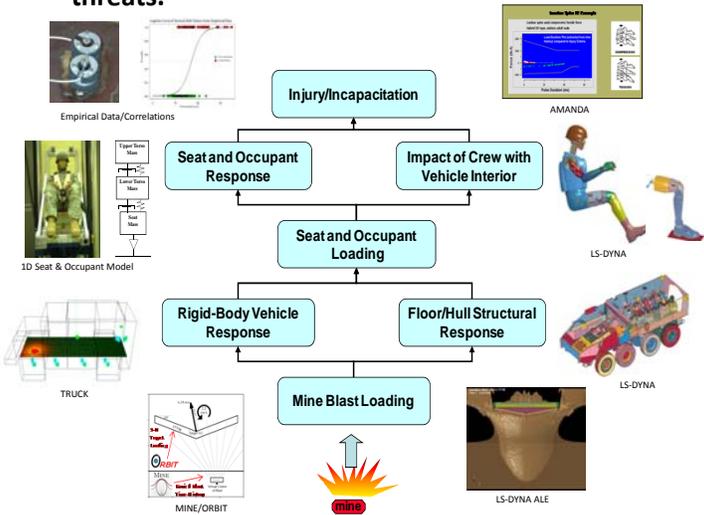


S&T Campaign: Assessment & Analysis
Assessing Mission Capability of Materiel

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Objective

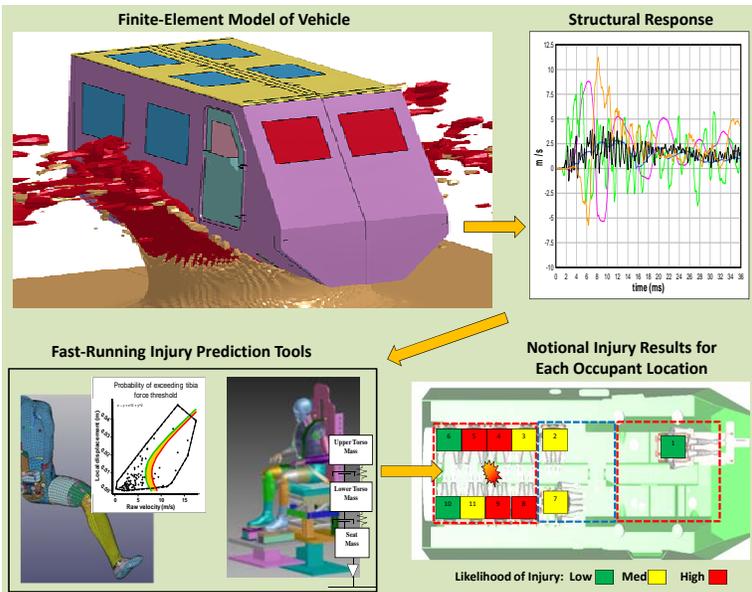
- Develop a robust, efficient and accurate methodology—consistent with results from high-fidelity multi-physics software—for estimating vehicle and occupant vulnerability to under-body blast threats.



Breaking the problem down with a wide range of capabilities

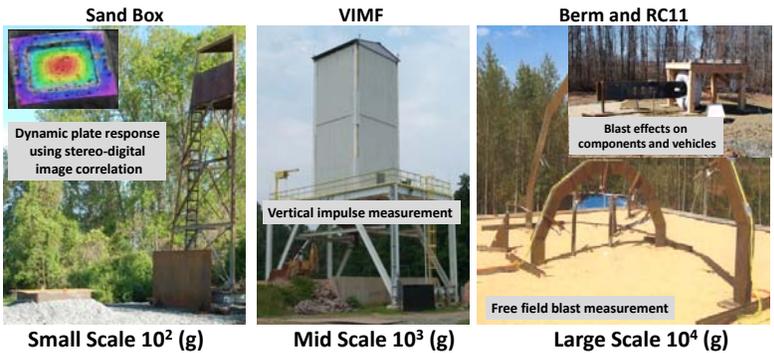
Challenges

- Suitable instrumentation to provide data for loading model development and validation
- Complex phenomenology and variability of outcomes
- Computational efficiency

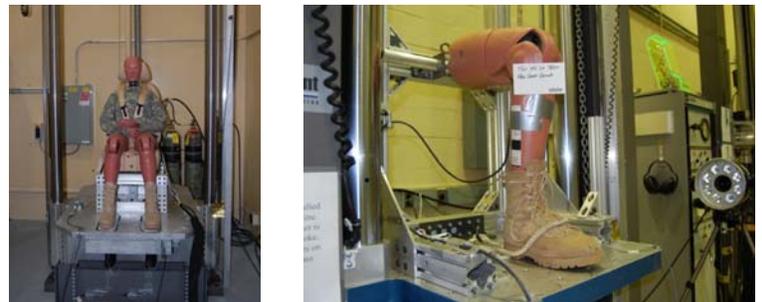


ARL Facilities and Capabilities Available to Support Collaborative Research

- Experimental facilities to study the effects of buried high-explosives on structures



- Experimental facilities to study the effect of blast-like loading on anthropomorphic test devices (ATDs) and blast-resistant seats



ATD on crew seating blast effects simulator

Lower leg of ATD on drop tower machine

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Advanced instrumentation methods that are sufficiently robust to capture the time and spatial distribution of buried blast loading on structures
- Advanced algorithms to develop meta models from extremely complex computational physics models
- Alternative methods for modeling complex soil and explosive interactions with vehicle structures; must be efficient, accurate and robust
- Automated techniques to develop complex meshes of vehicle structures