



Analysis and Assessment Campaign Overview

Open Campus Open House

16 November 2016

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U.S. ARMY
RDECOM

Analysis and Assessment Campaign



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Vision

Premier provider of land forces engineering analyses and assessment through unprecedented analytical capabilities and expertise.

Mission

Analyze and improve Army technologies and systems to:

- (1) Increase survivability, lethality, effectiveness, and human-system integration;
- (2) Provide accurate and detailed awareness of materiel capabilities; and
- (3) Provide a powerful shared toolset that simplifies and improves Army decision making.



A&A Campaign Bridges across
Army Functions

Make the Army Invulnerable!



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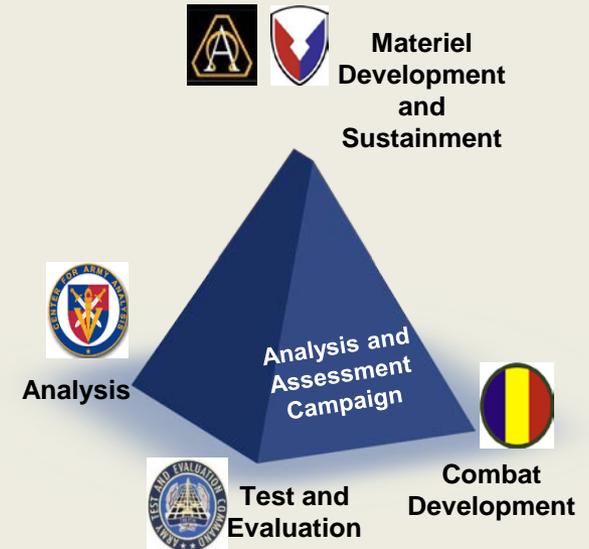
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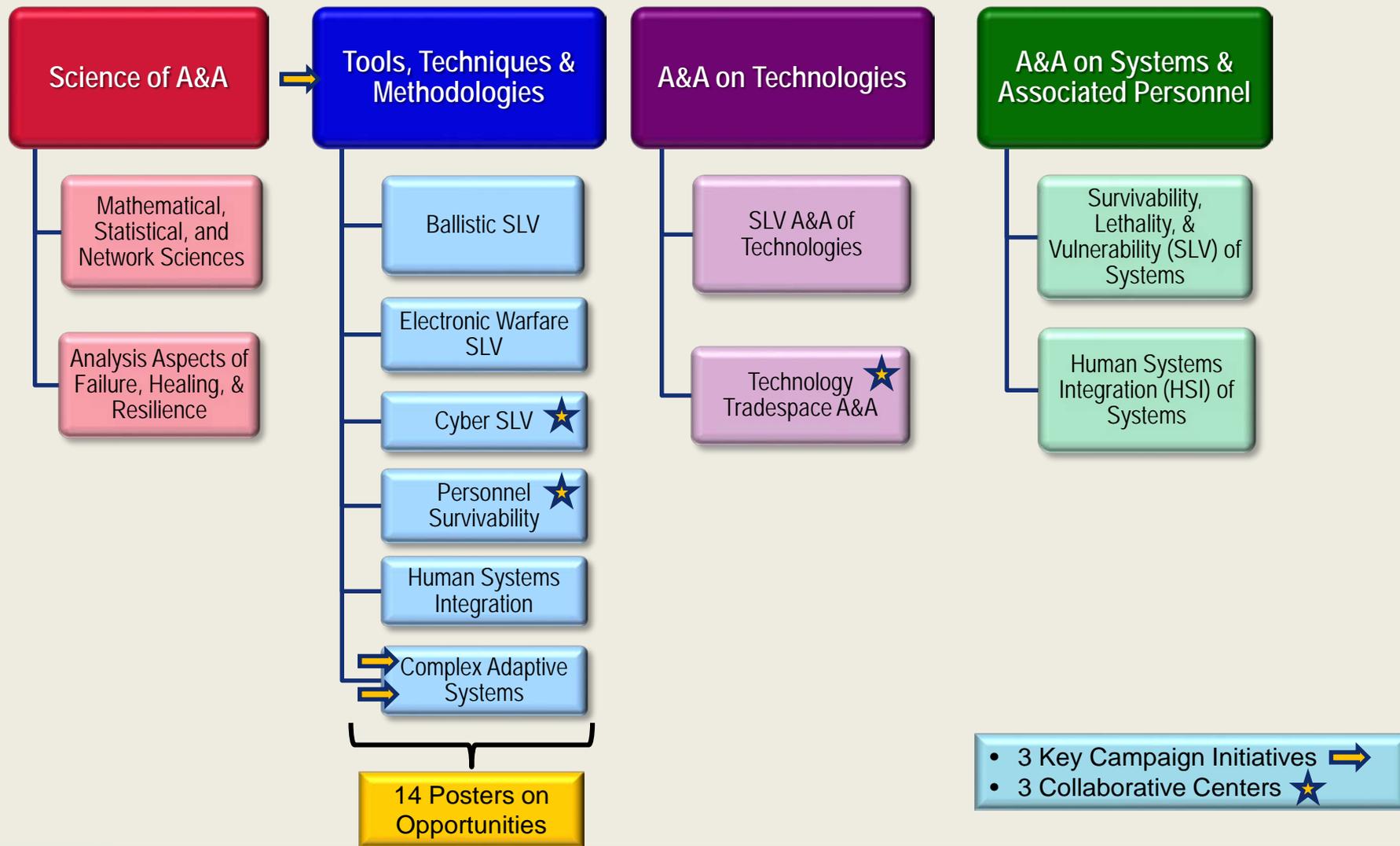
Make the Army Invulnerable!



A&A Campaign Taxonomy



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Vision

- Framework for models, simulations and data that enables analysis of the behavior in complex adaptive systems

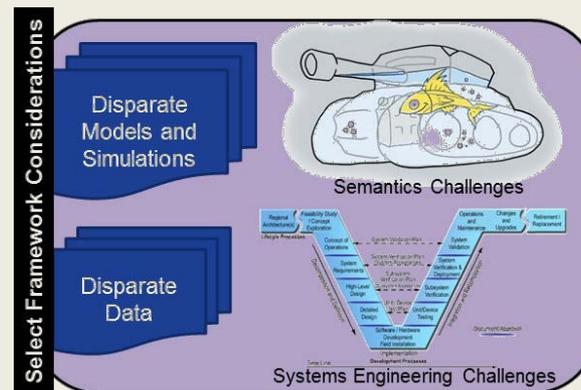
Objectives

- Modular simulation framework integrating physics, engineering-level and systems models
- Enable coherent engineering analysis of complex adaptive systems' in mission context



Collaboration Areas

- Simulation framework design, implementation and evaluation
- Domain sub-model development and integration
- Methods for experimental design/design of experiments
- Modeling/Implementing artificial intelligence and machine learning in the simulation framework



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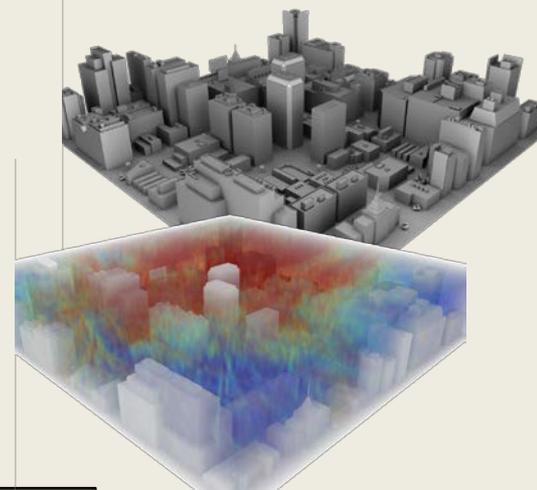


Vision

- Remarkably reduce time to decision while increasing relevance and fidelity.

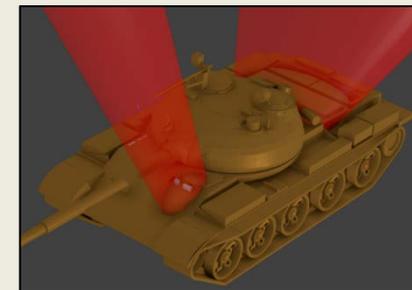
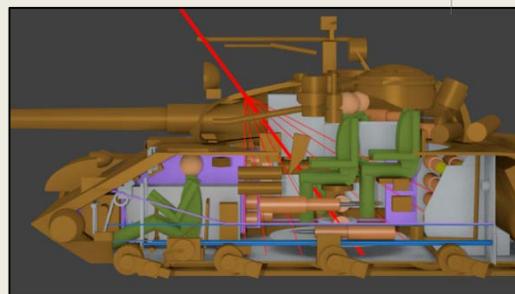
Objectives

- **Visual:** Visually intuitive analysis process and results.
- **Interactive:** Immediate feedback to input changes. Products on-demand with the data available.
- **Situational:** Enable analytical optimization of design, testing, and operational use of technology using data specific to the task at hand.



Collaboration Areas

- Visualization & rendering
- High-performance computing vectorization
- Computational steering
- Networking



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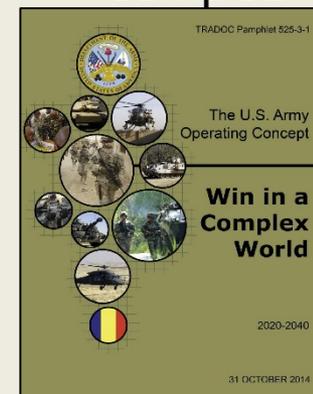


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Assessment & Analysis Methodology for Congested and Contested Operational Environments



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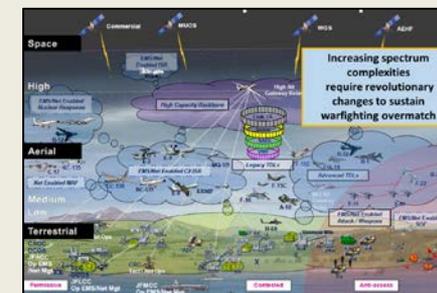
- Rapidly assess and analyze complex congested and contested operational environments for lethality and survivability across the underground, ground, air, and space continuum.

Objectives

- Provide coherence in kinetic, spectrum, cyber, intelligence and psychological arenas
- Analyze socio-cultural dynamics in congested and contested spaces
- Understanding technology non-deterministic doctrine proliferation

Collaboration Areas

- Geospatial domains and coupled phenomena
- Cyber 6th Domain (Information Warfare, Big Data, Internet of Things)
- Dynamic interconnectedness for situational understanding
- Measurement tools for congested/contested environments



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Vertical Lift Performance, Reliability, and Survivability Research Center



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S&T Campaigns:
Assessment & Analysis
Sciences for Maneuver

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Vision:

- Government, industry and academia partners collaboratively developing optimized solutions that enhance performance, reliability, and survivability across full spectrum of vertical lift operations.

Research & Analysis Objectives:

- Innovative engineering and analysis tools to enable tradespace studies and guide technology insertion
- Develop and demonstrate capabilities of emerging rotorcraft technologies

ARL Facilities and Capabilities:

- Extensive ballistic experimentation facilities.
- Unique test fixtures
- Inventory of rotorcraft and parts available for experimentation
- Software development and visualization
- Material prototyping capabilities
- Aerodynamic modeling
- Extensive computational resources

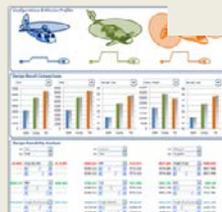
Member Benefits

Shape center concept
and priorities

Networking

Access to facilities and
tools

Partnerships on
proposals



Interactive user value
elicitation



Immersive technology
trade-offs and exploration





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Center for Human Injury and Performance (CHIP)



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S&T Campaign:
Assessment & Analysis
Military Injury Biomechanics

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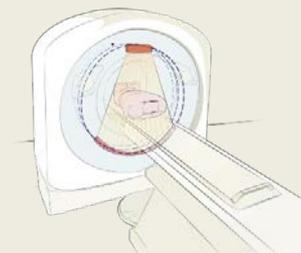
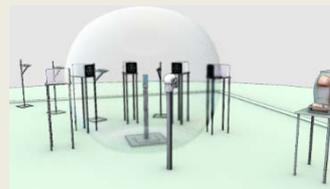
- Diverse & professional network to exchange ideas and promote research and analysis that will facilitate injury prevention, treatment, and rehabilitation.

Objectives

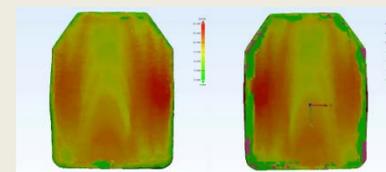
- Collaborative network that **focuses on injury frequency, mechanisms, and resulting biomechanical performance** to inform prevention, treatment and rehabilitation in combat.
- Identify new technologies & research** necessary to build more effective and comprehensive injury prevention programs.

ARL Capabilities

Experimentation Facilities



Multi-disciplinary analytics



Software, Analysis & Methodology



Members Benefits

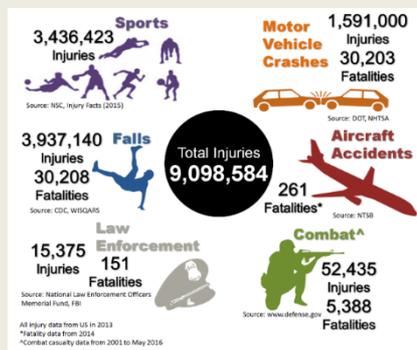
CHIP Data and Tools

Shape center focus and priorities

Membership networking

News and Information products

Proposals





S&T Campaign: Assessment & Analysis Cybersecurity

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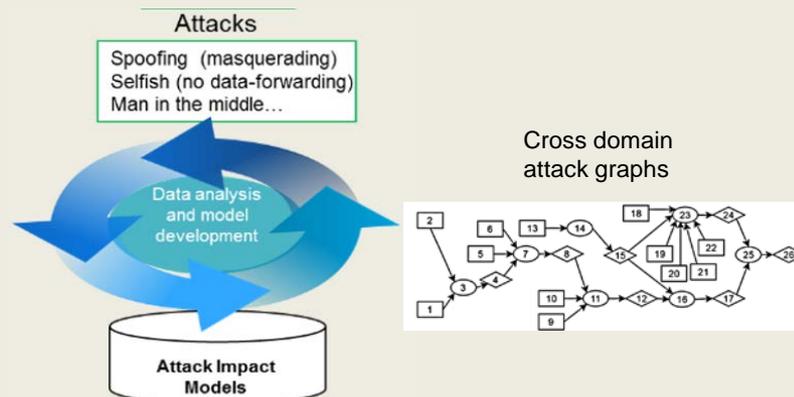
- Gather experts from various fields to establish a synergistic, cross-domain, environment to facilitate advancement of cybersecurity analysis and assessment research and development.

Objectives

- Collaborative network that focuses on dataset collection & sharing, and assessment & forensics methodologies, to improve vulnerability identification, remediation, and defense capabilities.
- Joint portal to enable collaborative analysis, research, and tool development.

ARL Capabilities

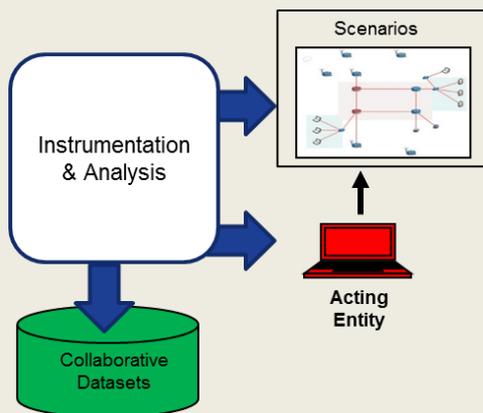
Vulnerability Models and Impact Analysis



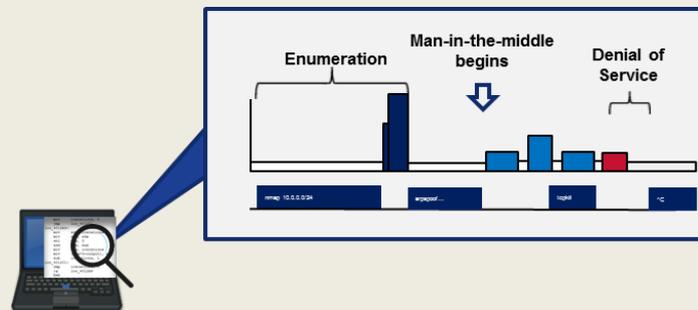
Execution-Based Model Generation Workflow

Member Benefits

- Open source and portable data collection infrastructures
- CCAA data and tools
- Access to cross-domain red/blue team analysts
- Exclusive technical workshops & exercises
- Joint proposals



Software, Analysis & Methodology





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OCOH Posters & CCEs



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CORE COMPETENCY	POSTER TITLE
Ballistics SLV	Design of Experiments (DOE) for Ballistic SLV Testing, Modeling, and Simulation
	Vertical Lift Performance, Reliability, and Survivability Research Center
	Visual Simulation Laboratory: Massively Parallel, Interactive. Cognition-Driven Analysis
	Under-body Blast Methodology Development and Validation
Personnel Survivability	Understanding Military-relevant Injury Mechanisms
	Center for Human Injury and Performance (CHIP)
	Comprehensive Injury Prevention and Analysis Network (CIPAN)
Human Systems Integration	Human System Integration Modeling for Improved Performance
	Workspace Analysis - Human Figure Modeling
Cyber SLV	Towards a decision support system for cybersecurity assessments
	Traffic Based Model Generation
Electronic Warfare SLV	Tools for EO/IR Sensing System Performance Analysis
	Laser Vulnerability of Optical Systems
Electronic Warfare SLV / Complex Adaptive Systems Analysis	Radio Frequency Communication Survivability & Integrated EW Sensor Analysis



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Questions?