

# COLE CYBERSPACE OPERATIONS LETHALITY AND EFFECTIVENESS



- Provides means to develop and characterize the dynamics of the target and its environment, including uncertainties
- Enables access to standardized offensive cyber capability performance data; ability to simulate individual and chained attacks
- Includes analytical tools to optimize the attack and infer the aggregate effect or probability of success
- Nightly updates from National Vulnerability Database enable automated early discovery
- Functional analysis provides insight into tangible mission impact of cyber effects
- Fielded across multiple security domains in FY21; stand-alone version available in FY23



## COLE ENABLES COMMANDER OPERATIONS DECISIONS THROUGH ADVANCED ANALYTICS USED TO VISUALIZE, PLAN, EVALUATE, AND ASSESS OFFENSIVE AND DEFENSIVE CYBERSPACE ACTIVITIES

**DATA STANDARDS** (intelligence, capabilities, target) to facilitate data transformation into and out of the suite

**CAPABILITY MANAGEMENT** for cataloging of performance, provenance, and effectiveness of cyber effects and enabling capabilities against characterized targets

**NETWORK CHARACTERIZATION** for the development and data-enriched modeling of cyber terrain; components (nodes), configuration and properties (e.g., hardware, software, network addressing, ports, services, etc.) of an operational environment model (OEM)

**MISSION PLANNING** for scheme of maneuver simulation to calculate probability of an effect for a sequence of attacks based on target properties and selection of available weapons. Requires knowledge of weapon characteristics and vulnerabilities of the target

- Target Vulnerability Assessment
- Attack Sequence Modeling
- Effects-Based Modeling



# COLE: CYBERSPACE OPERATIONS LETHALITY AND EFFECTIVENESS

Providing critical information to decision makers to reliably estimate cyberspace operations effects for targeting, weaponeering, and planning.

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**1 CHARACTERIZE NETWORK**

**2 ASSESS VULNERABILITIES**

**3 PLAN & ANALYZE ATTACKS**

The image displays three overlapping screenshots of the COLE Gateway software interface. The top screenshot shows a network graph with a callout box labeled '1 CHARACTERIZE NETWORK'. The middle screenshot shows a similar network graph with a callout box labeled '2 ASSESS VULNERABILITIES' and a browser window displaying a vulnerability search result. The bottom screenshot shows a network graph with a callout box labeled '3 PLAN & ANALYZE ATTACKS' and a detailed analysis panel on the right. The analysis panel includes a 'Notional Data' table and a 'Target Status' section with various metrics and a 'Calculate' button.

## INNOVATIVE SOLUTIONS TO COMPLEX PROBLEMS

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