

Research and Analysis for Stability Operations (SO) and Irregular Warfare (IW) Environments



Briefing to 25 ISMOR

26 August 2008

Purpose and Agenda

Purpose: To highlight recent U.S. Army TRADOC Analysis Center (TRAC) research and analysis for SO and IW environments.

- **SO Background, key terms, and acronyms.**
- **TRAC SO efforts.**
 - **SO Functional Area Analysis (FAA).**
 - **SO Scenario.**
 - **SO Capability Gap Analysis.**
 - **Theater and Strategic Level SO Gap Analysis.**
 - **SO Methodologies, Models, and Simulations Research.**
- **IW Background.**
- **TRAC IW efforts.**
 - **IW Scenario.**
 - **IW Methods, models and Analysis Working Group (MmAWG).**
- **Way ahead.**

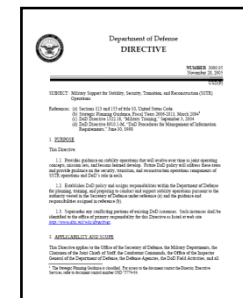
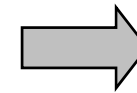
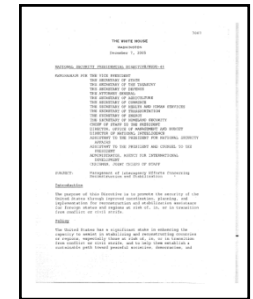
Stability Operations

Background

Definition of Stability Operations: An overarching term encompassing various military missions, tasks, and activities conducted outside the United States in coordination with other instruments of national power to maintain or reestablish a safe and secure environment, provide essential governmental services, emergency infrastructure reconstruction, and humanitarian relief .

- Joint Pub 3-0 Joint Operations, Army Field Manual 3-0 Operations

- **National Security Presidential Directive (NSPD) 44 (7 Dec 2005):**
 - Establishes Secretary of State as U.S. lead for reconstruction and stabilization activities.
 - Establishes Department of State (DOS) Coordinator for Reconstruction and Stabilization (S/CRS) to lead R&S planning and coordination.
- **Department of Defense Directive (DODD) 3000.05 (28 Nov 2005):**
 - SO is a core U.S. military mission that the Department of Defense (DoD) will be prepared to conduct and support.
 - SO will be have priority comparable to combat operations.
 - U.S. military forces will be prepared to perform all tasks necessary to establish or maintain order when civil authority cannot.

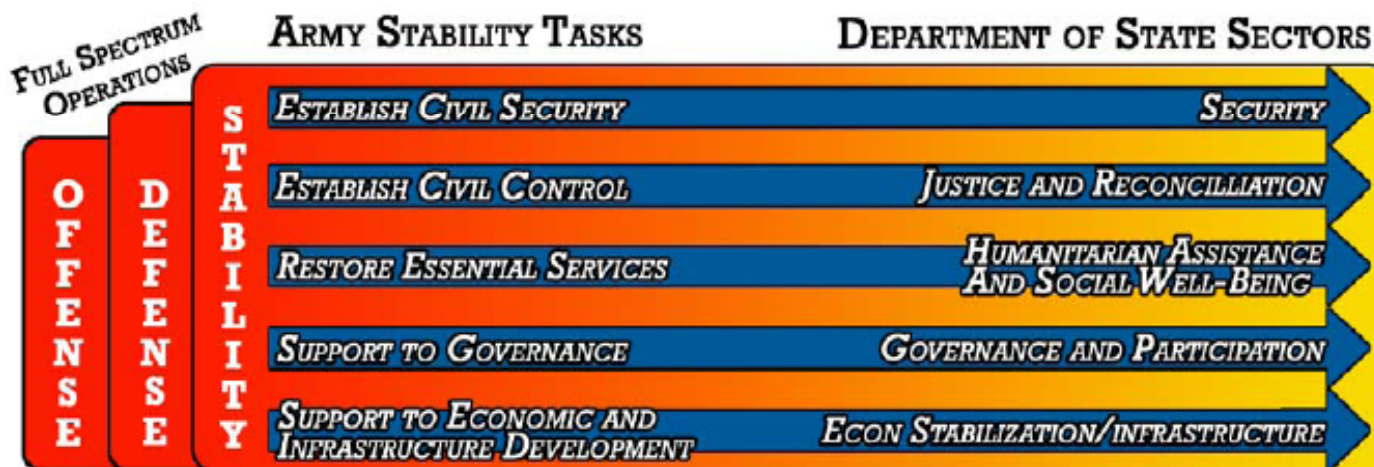


Key Terms and Acronyms

- **Center for Army Analysis (CAA)**: Field Operating Agency of the Deputy Chief of Staff, Programs, G8 that conducts analyses of Army forces and systems in the context of joint and combined war fighting.
- **Headquarters Department of the Army, Military Operations-Stability Operations (DAMO-SSO)**: Army Stability Operations Division (Within HQDA G-3/5/7, Strategy, Plans and Policy) that serves as the Army lead for focusing and integrating SO-related activities to improve capability and capacity to conduct SO.
- **Peacekeeping and Stability Operations Institute (PKSOI)**: Supports the G-3/5/7 by assisting in shaping military concept and doctrine development for stability, reconstruction and peace operations, conducts senior leader education, and facilitates the integration of effort among the Army and Joint, Inter-Agency and Multinational organizations.
- **Joint Capabilities Integration and Development System (JCIDS)**: The formal United States DoD procedure which defines acquisition requirements and evaluation criteria for future defense programs.
- **Functional Area Analysis (FAA)**: Part of the Joint Capabilities Integration and Development System (JCIDS) that identifies the operational tasks, conditions, and standards needed to accomplish military objectives.
- **Universal Joint Task List (UJTL)**: A comprehensive, integrated menu of functional tasks, conditions, measures and criteria supporting all levels of the Department of Defense (DoD) in executing the National Defense Strategy and the Military Strategy.
- **Army Universal Task List (AUTL)**: A comprehensive listing of Army tactical-level collective tasks. The AUTL complements the UJTL by providing tactical-level Army-specific tasks.

SO Functional Area Analysis (FAA)

- **Purpose:** Identify operational and tactical level SO tasks, associated conditions, and required standards for task accomplishment.
- **Contributors:** TRAC, HQDA, CAA, PKSOI, TRADOC Schools and Centers, TRADOC Intelligence Support Activity (TRISA), joint services, and allies.
- **Study approach:** Analysis completed in February 2007.
 - Subject matter experts (SME) identified SO tasks, conditions, and standards, and indexed tasks to Army Universal Task List/Universal Joint Task List.
 - Experienced SO operators and analysts prioritized tasks by expected frequency of occurrence and perceived operational/tactical impact.



SO Scenario

- **Purpose:** Provide environment in which to analyze SO concepts and tactics, assess capability gaps, and evaluate potential SO gap solutions.
- **Contributors:** TRAC, DAMO-SSO, CAA, TRISA, TRADOC Schools and Centers.
- **Approach:** TRAC SO scenario approved by TRADOC in June 2007.
 - Extended a combat operation scenario and included SO conditions and required SO missions/tasks.
 - Assigned scenario forces to operational and tactical SO missions and tasks for extended duration.

SO Capability Gap Analysis

- **Purpose:** Identify operational and tactical SO missions and tasks that cannot be accomplished to standard by Army units.
- **Contributors:** TRAC, DAMO-SSO, CAA, PKSOI, TRADOC Schools and Centers, joint services, and allies.
- **Study approach:**
 - TRAC completed capability gap analysis in Jan 07.
 - Analysts used FAA and SO scenario. Assigned military units to tasks.
 - SME identified operational and tactical level capability gaps.
 - CAA used Marathon model and range of scenarios to conduct capacity gap analysis.
 - Results briefed to Mar 07 SO conference and HQDA Generals.

Capability gap – A mission or task that the Army does not have the units, personnel, equipment, or training to accomplish.

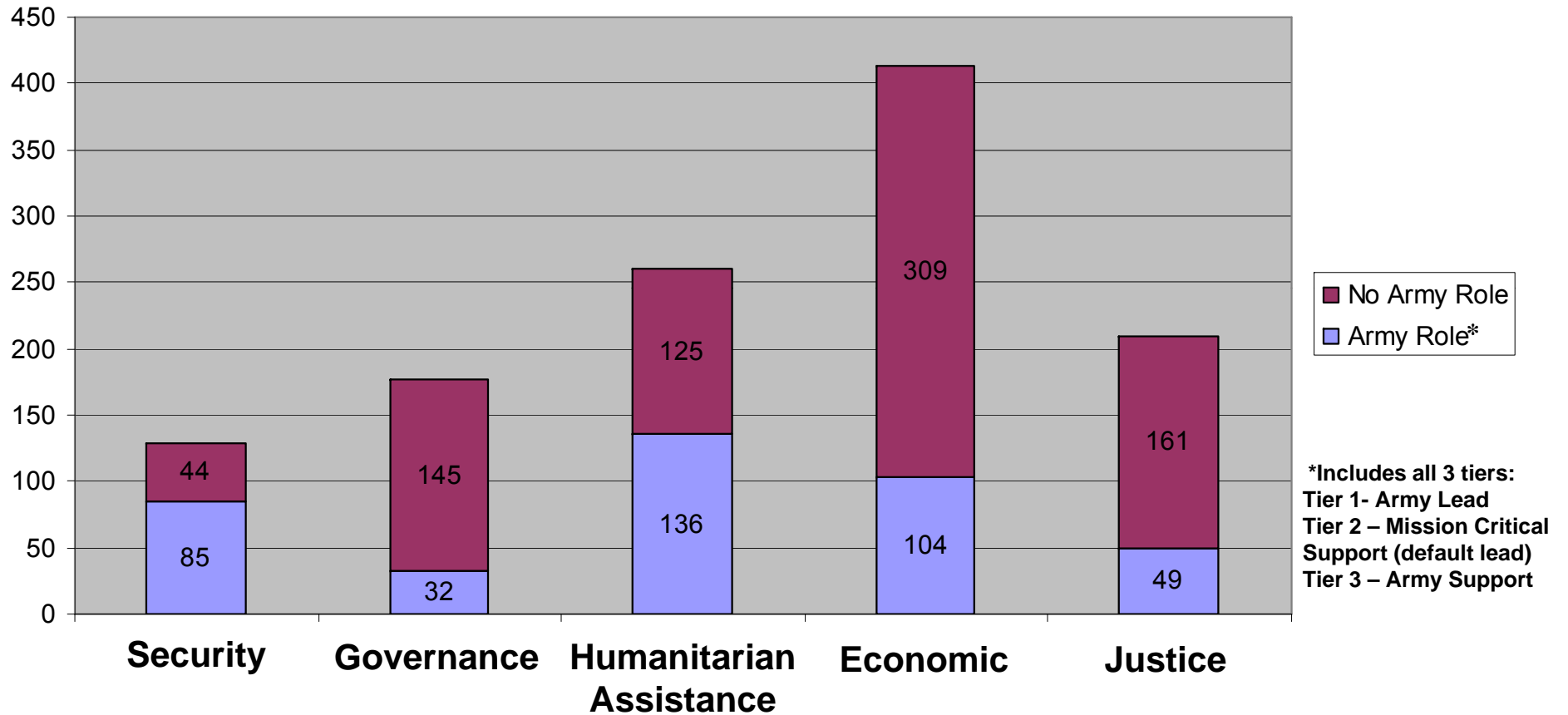
Capacity gap – A mission that the Army has the capability to conduct, but lacks the amount of resources (units, personnel, or equipment) required to conduct the mission in conjunction with other assigned missions.

SO Theater and Strategic Level Gap Analysis

- **Purpose:** Assess SO tasks and gaps at theater and strategic levels
- **Contributors:** TRAC, DAMO-SSO, CAA, PKSOI, TRADOC Schools and Centers, joint services, allies, DOS, United States Agency for International Development, United States Department of Agriculture, Dept of Justice, Office of the Secretary of Defense.
- **Study approach:** HQDA-led team completed analysis in May 2008:
 - Used DOS S/CRS task list, TRAC FAA, UJTL and AUTL, and SO scenario.
 - Conducted workshops facilitated by PKSOI.
 - Prioritized S/CRS task list of over 1100 tasks:
 - Tier 1 - military lead.
 - Tier 2 - military support to other lead agency (mission critical).
 - Tier 3 - military support to other lead agency (non-mission critical).
 - Identified Tier 1 and Tier 2 capability gaps.
 - CAA conducted capacity gap analysis.
 - TRAC conducted risk assessment and prioritized tier 1 and tier 2 gaps using pair wise comparison techniques.
 - CAA hosted February 2008 Joint/interagency mitigation/solution workshop.

SO Theater and Strategic Level Task Prioritization

Army and Non-Army Task Comparison by Dept of State Sector



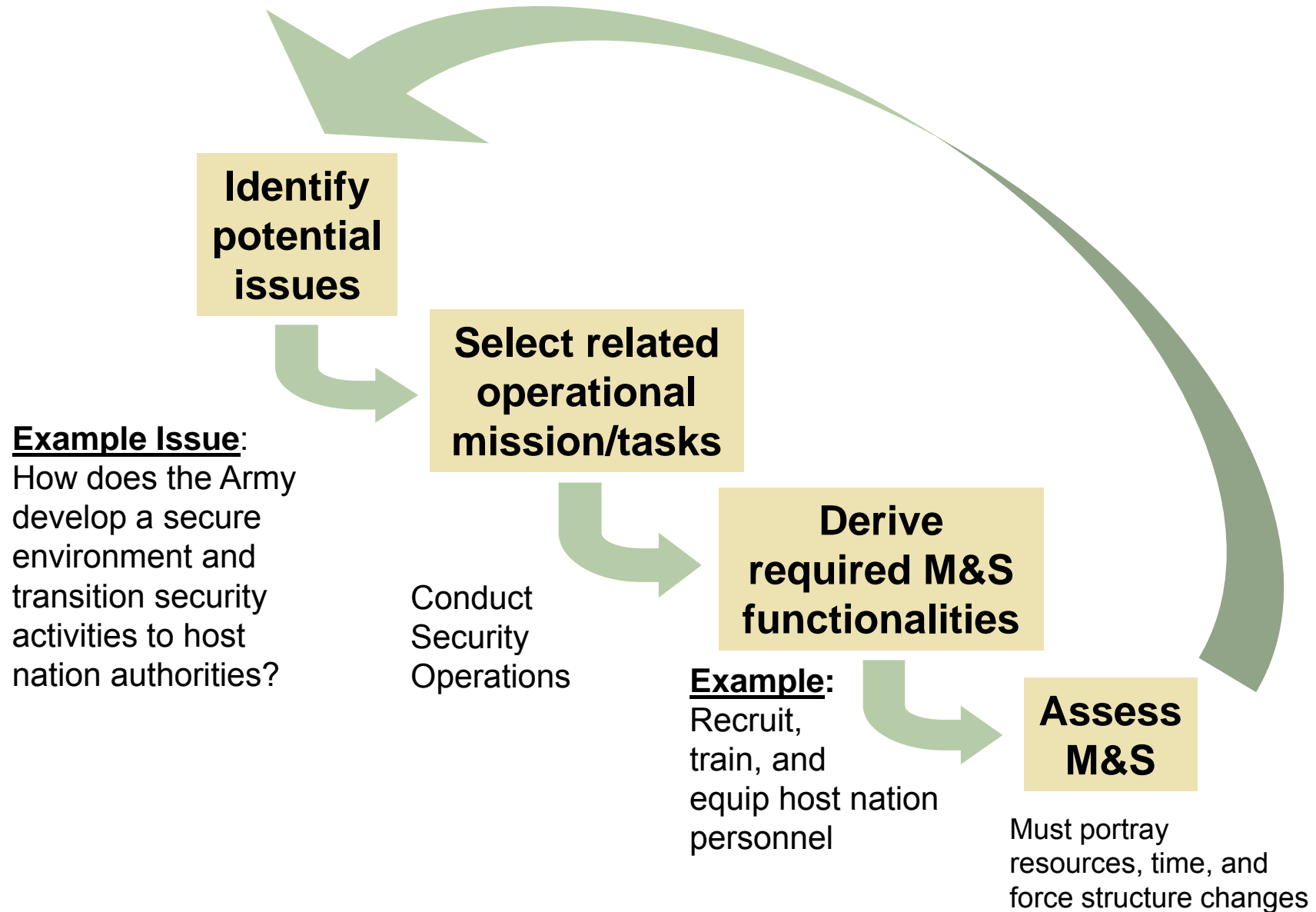
Army has a role in 34% of 1190 total tasks

SO Methodologies, Models & Simulations Research

- **Purpose:** Examine available methodologies, models, and simulations and determine their functionality and utility for SO analysis.
- **Contributors:** TRAC, Military Operations Research Society (MORS), Modeling and Simulation Information Analysis Center (MSIAC), Virginia Modeling, Analysis, and Simulation Center (VMASC) at Old Dominion University, Army and Air Force Research Laboratories, Joint service SMEs, allies, and contractors.
- **Study approach:** TRAC completed analysis in April 2007.
 - Identified functionality and utility needed to use tools for SO analysis.
 - Surveyed DoD, academia, and industry to identify candidate tools.
 - No standard Modeling and Simulation (M&S) for SO analysis.
 - Modeling gaps exist.
 - Based on model functionality and utility, identified best off-the-shelf government, allied, and commercial SO tools.

SO MM&S Assessment Approach: Functionality

Example



Irregular Warfare

Background

Irregular Warfare: A violent struggle among state and non-state actors for legitimacy and influence over the relevant populations. IW favors indirect and asymmetric approaches, though it may employ the full range of military and other capabilities, in order to erode an adversary's power, influence, and will.

– Irregular Warfare Joint Operating Concept - 2007

- **IW is a complex environment distinguished by human dynamics and non-lethal activities.**
- **The IW environment and concepts are evolving.**
- **Many IW issues require tools and methods other than traditional M&S.**
- **Government agencies and private firms working to create and apply new IW analytic capabilities.**

IW Scenario

- **Purpose:** Provide scenario in which to analyze concepts and tactics, assess IW capability gaps, and evaluate potential solutions.
- **Contributors:** TRAC, Marine Corps Combat Development Command (MCCDC), CAA, TRISA, TRADOC Schools and Centers, and joint services.
- **Approach:** TRAC IW scenario under development.
 - Creating scenario campaign plan focused on achieving strategic and operational goals.
 - Developing derivative tactical-level scenarios to examine specific IW issues.

IW Methods, models and Analysis Working Group

- **Purpose:** Determine the Army and DoD's analytical ability to support decisions centered on organizing, equipping, and fighting ground forces within an IW context.
- **Contributors:** TRAC, MCCDC, Army Materiel Systems Analysis Activity (AMSAA), Army Capabilities Integration Center (ARCIC), CAA, TRISA, US Air Force A9, US Navy N81, Johns Hopkins University.
- **Study approach:** Initial work completed in May 2008.
 - Identified senior leader decision issues.
 - Identified the analytic requirements to address issues.
 - Evaluated ability of current and emerging methods and models to answer issues.
 - Identified knowledge, data, or algorithm gaps.
 - Prioritized the gaps for risk and estimated the cost to mitigate them.

Vision: Feed a long-term campaign plan designed to advance the DoD analysis community's ability to support leader decisions centered on organizing, equipping, and employing ground forces within an IW context.

Analysis Tools Reviewed for IW

- Traditional modeling and simulation (M&S)
- Wargaming approaches
- Seminars/workshops/panels/conferences/symposia
- Network/agent-based M&S
- Methods used with frequent success in non-DoD communities (e.g., forecasting for economics, game theory for diplomacy)
- Special DoD or non-DoD techniques related to cost-benefits, risks, sensitivities, etc.
- DIME/PMESII-PT* analytic models & environments
- Collaborative analysis techniques (e.g. Delphi method)
- System dynamics models

No single tool or method provides the capability to support the range of decision issues set in an IW context.

*DIME - Diplomatic, Information, Military, Economic
PMESII-PT - Political, Military, Economic, Social, Information, Infrastructure, Physical Environment and Time

IW Analytic Capability Gaps (Examples)

Gap Description	Required Capability Area
Data and algorithms that account for changes in target audience attitudes caused by the application of PSYOPS.	Psychological operations (Friendly) (SS) (D)
Knowledge, data, and algorithms that reflect adversary HUMINT networks (e.g. attributes of the HUMINT network, how the network is formed, how the network adjusts if a node or element is removed, what adversary activities tend to facilitate or discourage the population's provision of HUMINT).	Intelligence (Adversary) (SS) (D)
Knowledge, data, and algorithms to account for unique adversary PYSOPS techniques and the effect of those techniques on the target audience.	Psychological operations (Adversary) (SS) (D)
Data and algorithms to represent the effects of CMO on the attitudes of the civilian population (or other target audience).	Civil-military operations (SS) (D)

SS = Social Science
D = Data

**Social science knowledge, data, and algorithms
are needed to mitigate gaps**

IW MmAWG Findings

- **35 gaps exist within the 58 required analytic capabilities.**
- **19 of the 35 gaps require at least some level of social science (psychology/sociology/economics/political science) expertise to mitigate.**
 - **14 of the 18 gaps that fall into the highest risk level are in the social science group.**
 - **DoD, industry, and academia trying to address these gaps**
 - **Wide variety of closed-form or HITL models (“DIME/PMESII-PT models”).**
 - **Data to support these models (predominantly human behavior data) often relies on SME opinion or is “user provided.”**
 - **Many models are based on different, sometimes conflicting, social science theories and are difficult to verify and validate.**
- **33 of 35 gaps are caused or compounded by lack of authoritative data.**

Way Ahead

- **Stability Operations**

- HQDA review and update the Army Action Plan based on SO Gap Analysis results.
- TRAC, Marine Corps, and Naval Postgraduate School conduct multi-agent system modeling effort “Representation of Urban Cultural Geography for Stability Operations”.
- TRAC analyze force structure and force design issues in a SO environment using one of the off-the-shelf SO models and the TRADOC-approved SO scenario.

- **Irregular Warfare**

- TRADOC and Army develop campaign plan to build capability to analyze operations in IW.
- Conduct war game of the IW Scenario and derivative vignettes using SME.
- TRAC model IW Scenario in one (or more) of the off-the-shelf models in support of joint and Army studies.

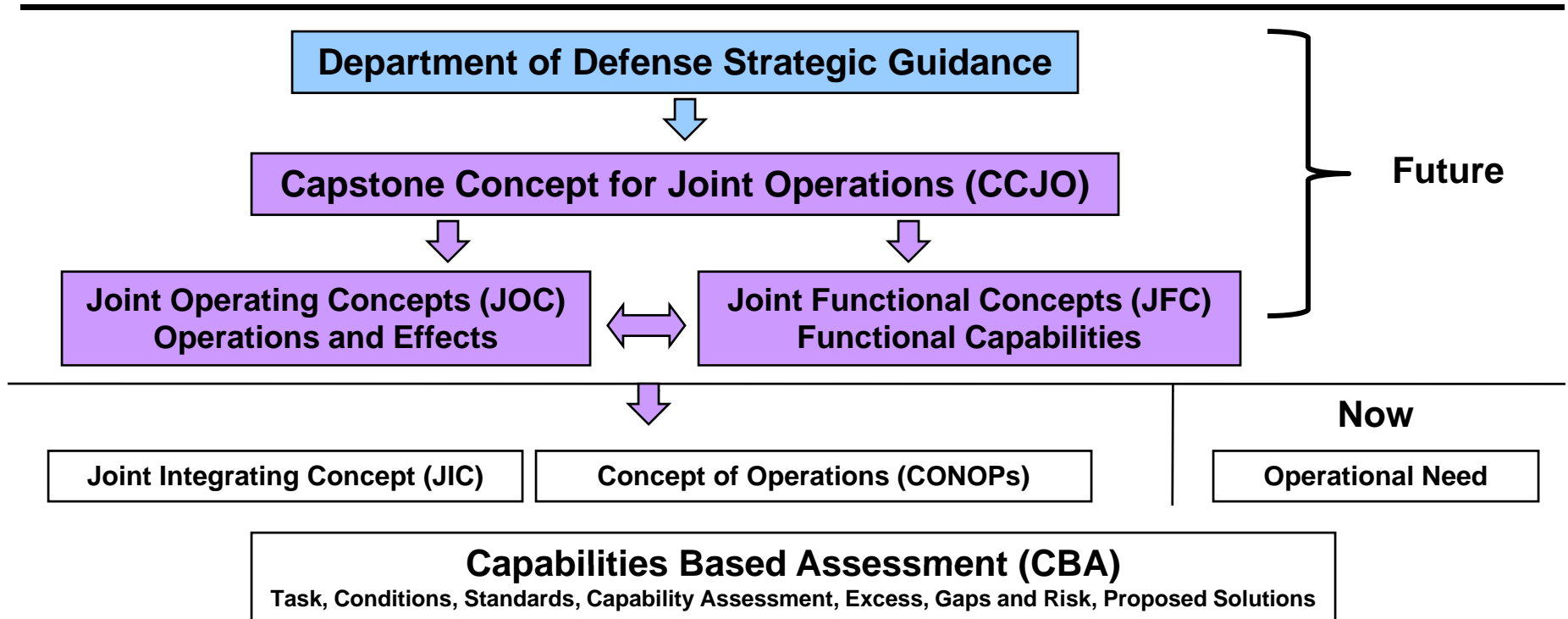
QUESTIONS?



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Joint Capabilities Integration and Development System (JCIDS)

Identify, assess and prioritize joint military capability needs



Functional Area Analysis (FAA)



Identifies the Task, Conditions and Standards (TSC).

Functional Needs Analysis (FNA)



Given present and future capabilities, can those TSC be met? Identify Gaps (and risk), and excess capability.

Functional Solutions Analysis (FSA)

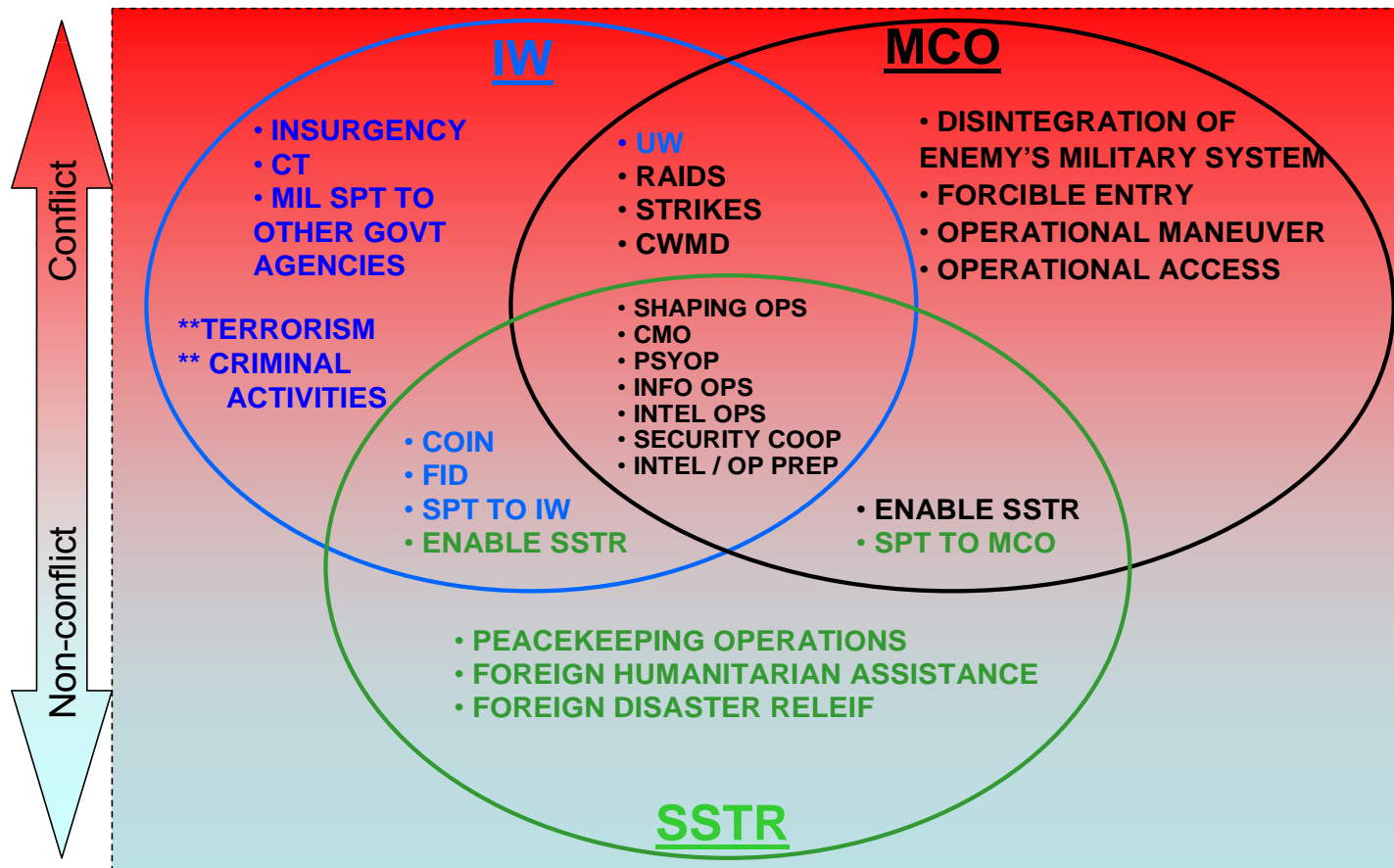


Proposed Doctrine, Organization, Training, Material, Leadership and education, Personnel, Facilities (DOTMLPF) solutions for those gaps where the risk was assessed as unacceptable.

Products: Joint Capabilities Documents (JCDs), Initial Capabilities Documents (ICDs), Capability Development Document (CDD), DOTMLPF Change Request (DCR) (non material solutions).

Relationship of IW to SO and Major Combat Opns

JOC Relationships



**USED BY OUR ADVERSARIES