

Towards a Pre-Intervention Analytical Methodology

Timothy K. Perkins

Timothy.K.Perkins@us.army.mil

ERDC-Champaign

25 July, 2012

Paper authors:

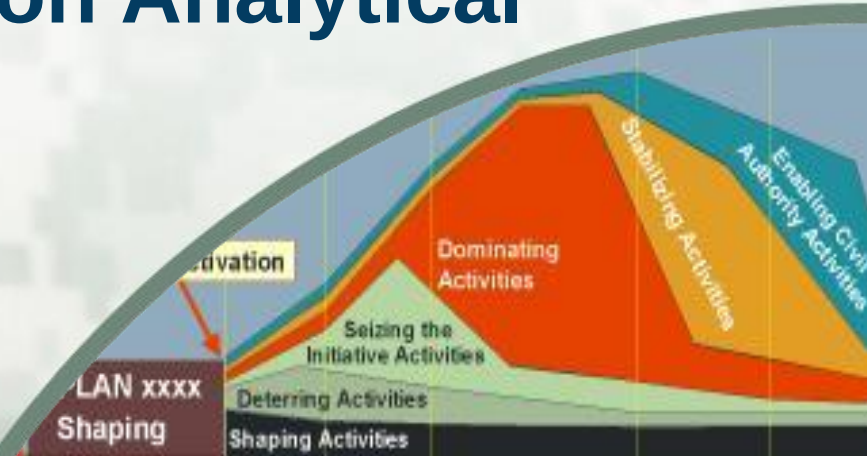
*Lucy A. Whalley; Timothy K. Perkins; David A. Krooks;
Michael Hargrave; Chris Rewerts*

Engineer Research and Development Center



**US Army Corps
of Engineers®**

OVERALL BRIEFING: UNCLASS



Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 15 JUL 2012		2. REPORT TYPE		3. DATES COVERED	
4. TITLE AND SUBTITLE Towards a Pre-Intervention Analytical Methodology				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) US Army Engineering Research and Development Center, Construction Engineering Research Laboratory, Champaign, IL, 61826				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited.					
13. SUPPLEMENTARY NOTES The original document contains color images.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 19	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Agenda

- Focus on the Population
- Current Frameworks
- Primary Objective
- The Analytical Process
- Framework Goals
- Foundational Framework
- Operationalizing the Framework
- The Factor Map
- Applying the Framework in Joint Intelligence Preparation of the Operational Environment (JIPOE)
- Summary



Focus on the Population

- “[The U.S.] intelligence apparatus still finds itself unable to answer fundamental questions about the environment in which we operate and the people we are trying to protect and persuade.” Michael T. Flynn, Matt Pottinger, Paul D. Batchelor, “Fixing Intel...” Jan 2010.
- “...The most effective way to use models of sociocultural knowledge and behavior is not as ‘standalone problem-solving technologies’ but rather as part of a broader effort to understand human behavior, in which the models are used to offer insights, trigger ideas, and generate new stories as a way of aiding decisions and judgments made by humans.” Pool et al; National Research Council, “Sociocultural Data to Accomplish DoD Missions: Toward a Unified Social Framework.” 2011.



Current Frameworks

Framework Dimension	Interagency Conflict Assessment Framework (ICAF)	Conflict Assessment Peace-Building Planning (CAPP)	District Stability Framework (DSF)	Counter-Terrorism Analytical Framework (CTAF)
'Creator'	Department of State (DoS) 	University / Academia	USAID Office of Military Affairs 	Joint Staff, U.S. Armed Forces 
User	DoS w/ Interagency	Non-Gov't Organizations	Soldiers, Officers	DoD Organizations
Purpose	Develop <u>interagency</u> shared understanding of a <u>country's</u> conflict dynamics and potential entry points	Desk and field officers concisely <u>assess</u> <u>conflict dynamics</u> and <u>plan programs</u>	Develop <u>field-level</u> understanding of <u>instability drivers</u> from <u>local</u> perspective for understanding & planning	Dynamic threat assessment & center of gravity analysis; Identify <u>critical vulnerabilities</u> of <u>terrorist organizations</u> .
Typical 'Unit' of Analysis	National	Conflict-centered	Local... <i>District</i>	Threat-centered
Key Data Source	Subject Matter Expert (SME) Workshop(s)	Dialogue Methods, Polling, Media	Field Interviews	Intelligence / All-Source
Current Tool Integration	Prototype, none identified	None identified	Interview data capture, aggregation, analysis	



BUILDING STRONG®



Innovative solutions for a safer, better world

Primary Objective

To inform the work of military analysts and planners with the knowledge and insights of social science literature in a manner that preserves the connection to the original sources.



The Analytical Process

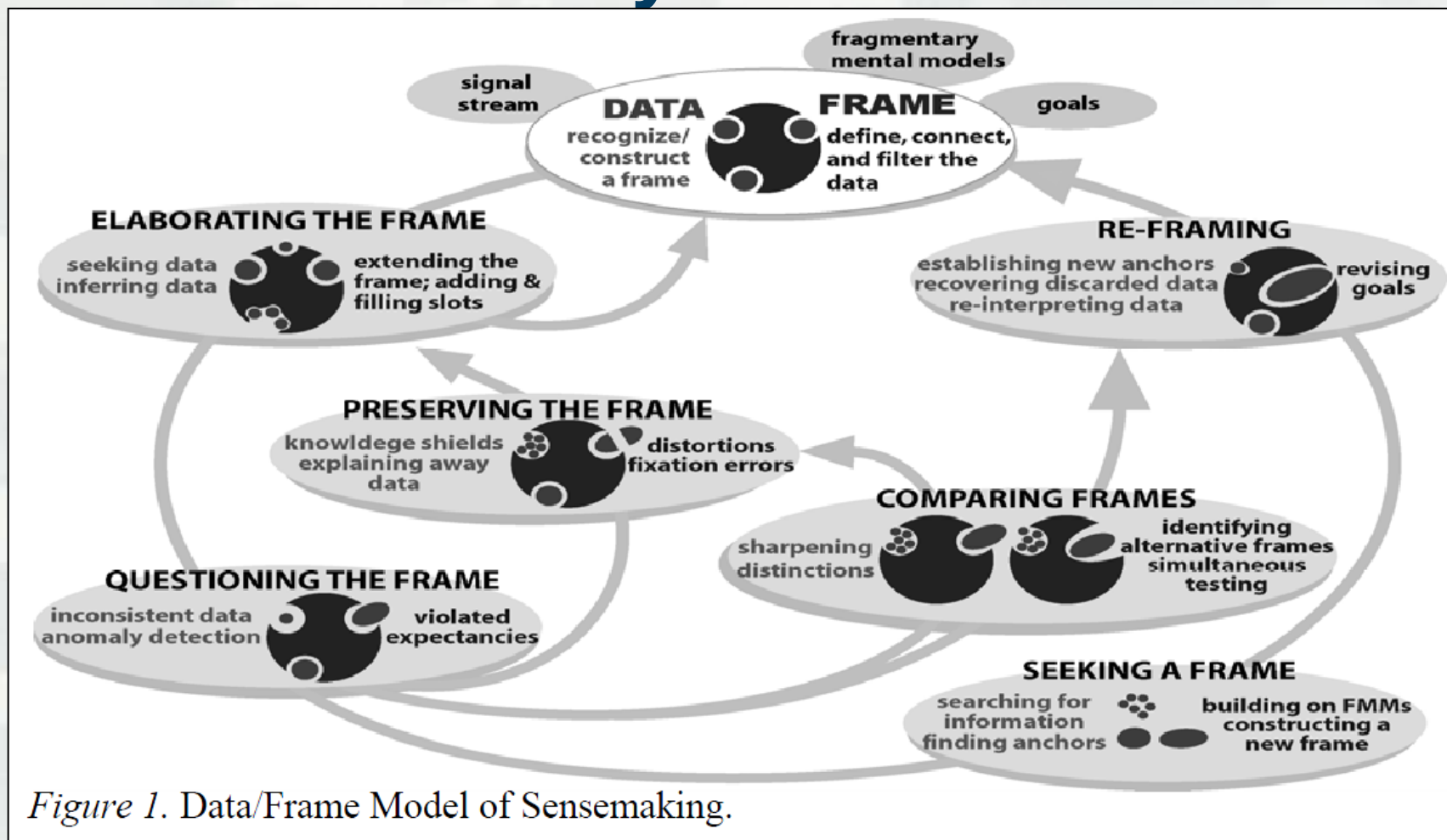


Figure 1. Data/Frame Model of Sensemaking.

Frames: “Fragments of local cause-effect connections, rules of thumb, patterns of cues, and other linkages and relationships between cues and information to guide the sensemaking process” (Sieck et al 2007:vi).



From: W. R. Sieck, G. Klein, D.A. Peluso, J. L. Smith, and D. Harris-Thompson 2007.
FOCUS: A Model for Sensemaking. Technical Report 1200, U. S. Army Research Institute for the Behavioral and Social Sciences.

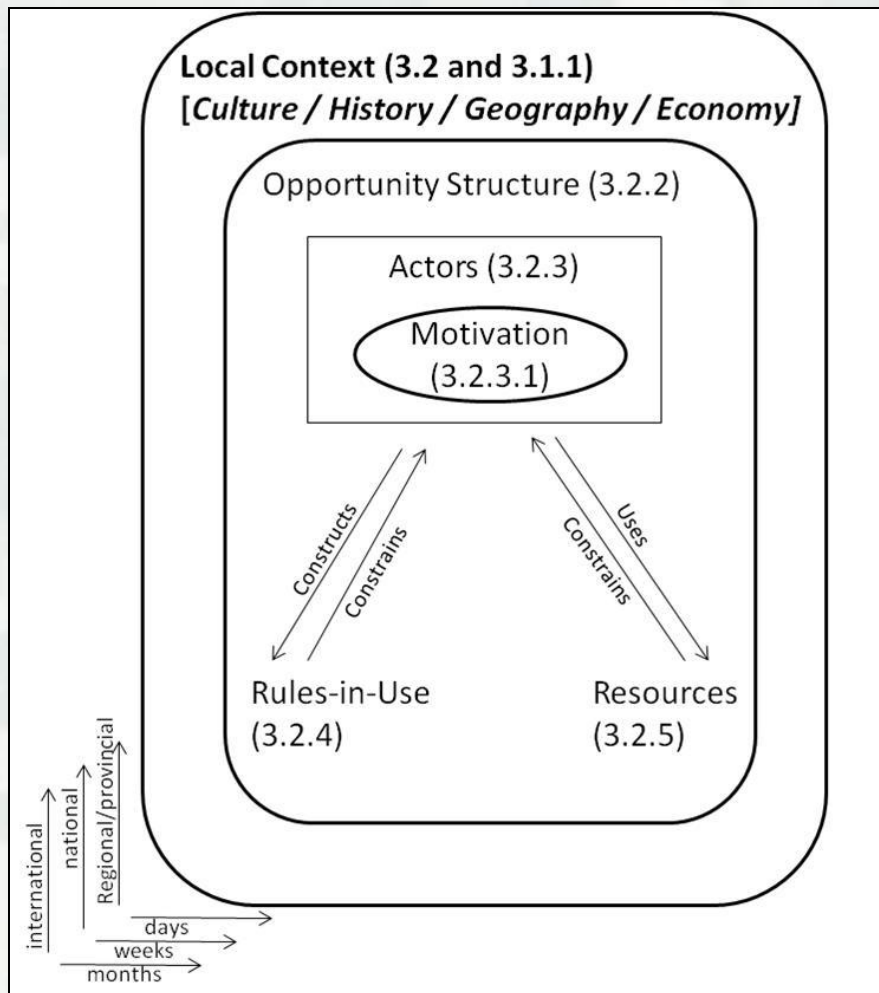
ERDC

Framework Goals

- Demonstrate how a framework, composed of frames, can serve to:
 - Orient an analyst to what's important to know about a situation when assessing the sociocultural dynamics in the operational environment.
 - Organize mission-relevant sociocultural information to enhance understanding.
 - Facilitate the development of conceptual or computational models for analysis of these sociocultural dynamics.

- **Framework:** *"Identifies, categorizes, and organizes those factors deemed most relevant to understanding some phenomenon," (McGinnis, 2011).*
- **Theory:** *"Posits general causal relationships among some subsets of these variables or categories of factors, designating some types of factors as especially important and others as less critical for explanatory purposes," (McGinnis, 2011).*
- **Frames:** *"Fragments of local cause-effect connections, rules of thumb, patterns of cues, and other linkages and relationships between cues and information to guide the sensemaking process" (Sieck et al 2007:vi).*
- **Model:**
 - *"Specifies the specific functional relationships among particular variables or indicators that are hypothesized to operate in some well-defined set of conditions," (McGinnis, 2011).*
 - *A model is a physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process. (AR 5-11)*

Organizing Principle

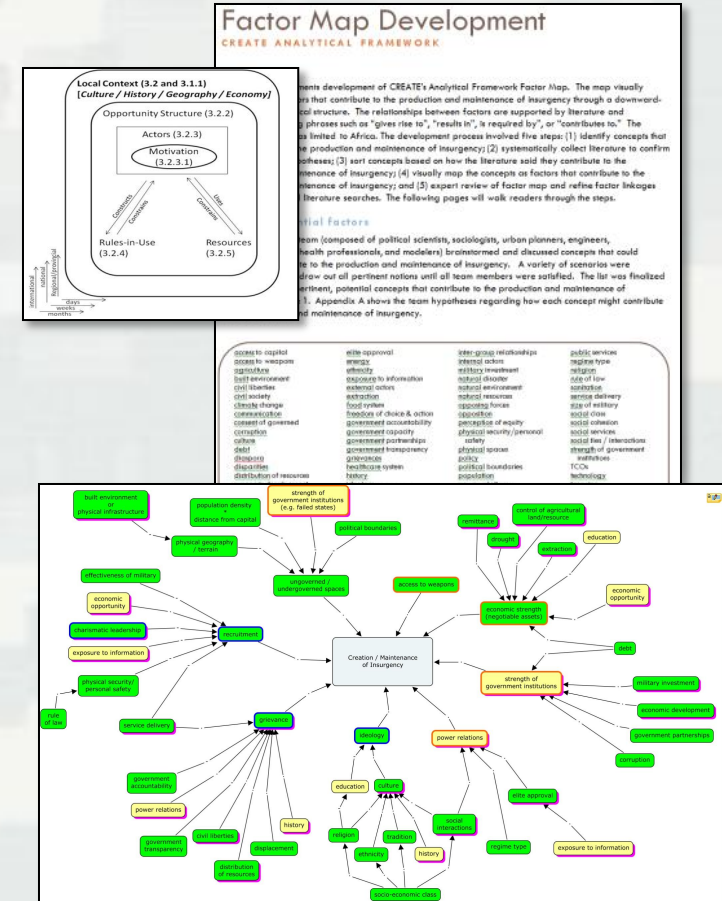


- A high-level actor-centric lens through which to view an operational context.
 - (Inspired by McGinnis and Ostrum's 'first tier SES variables' [2011]).
- **Local context:** A system of rules-in-use, actors, and resources available at the locality.
- **Opportunity structure:** Specific configurations of resources, institutional arrangements, historical precedents for social mobilization (Kitschelt, 1986).
- **Actors:** Persons or groups of persons who can act collectively for a common purpose (McGinnis and Ostrum, 2011).
- **Motivation:** What moves an actor to convert latent will into action in a particular situation.
- **Rules in Use:** Rules that guide the individual behavior of actors and the interactions among actors.
- **Resources:** Sources of support that carry some strategic value as perceived by the actors.



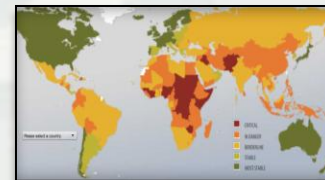
Developing Frames and a Framework

- Identified and analyzed frames about insurgency from peer-reviewed social science literature.
- Focused the collection of frames on the creation, production, and maintenance of insurgency in Africa.
- Constrained the search to literature that can be obtained via a readily available search engine that is not limited to use on a discipline-centric corpus.
- Created a synthesis map of key factors in the creation, production, and maintenance of insurgency.
- Ensured that factors were grounded and traceable to source literature.



Needs for a Useful Framework

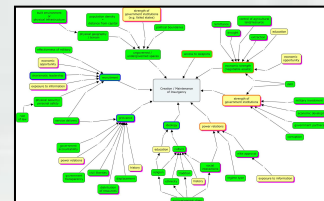
- Moving from data and frames to models involves applying theory that is relevant for understanding a particular situation.
- A useful framework will include a collection of frames, which represent theories derived from the social science literature.
- Modeling a particular situation entails the selection of theories from a collection of frames.
- When modeling a particular situation, the components of the foundational framework – actors, resources, and rules-in-use related to an opportunity structure – have a role to play in organizing the application of the theories.



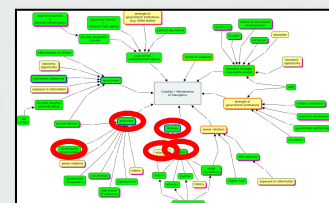
Global



Local



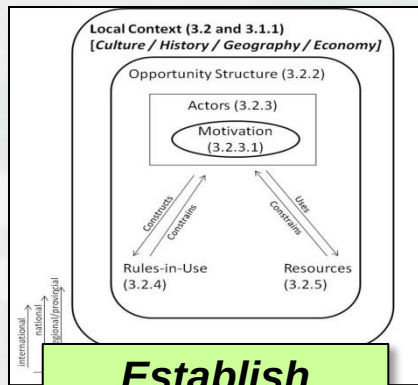
**Broad
Literature
'Frames'**



Situated



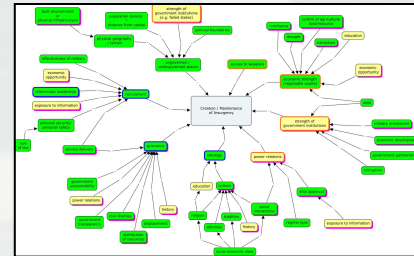
Making the Framework Operational



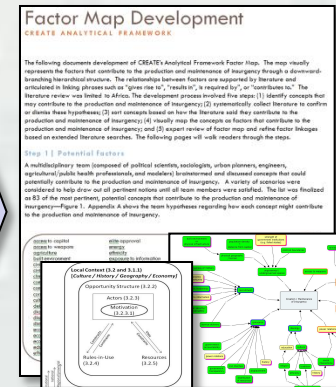
**Establish
Foundational
Principle
Components**



**Initial
Qualitative
Analysis of
Literature**

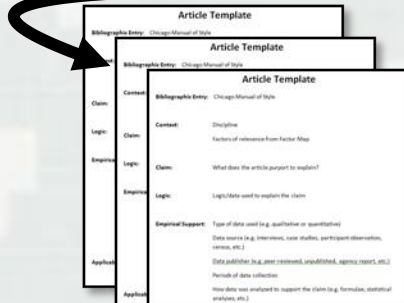


**Organize,
Derive & Relate
Key Factors**



Draft Framework

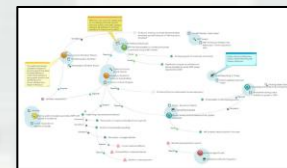
Refined Req'ts



**Develop Analysis
Template**



**Content
Analysis /
Markup of
Literature**



**Dynamic
Factor
Visualization
Models**



**Mediated
Simulation**

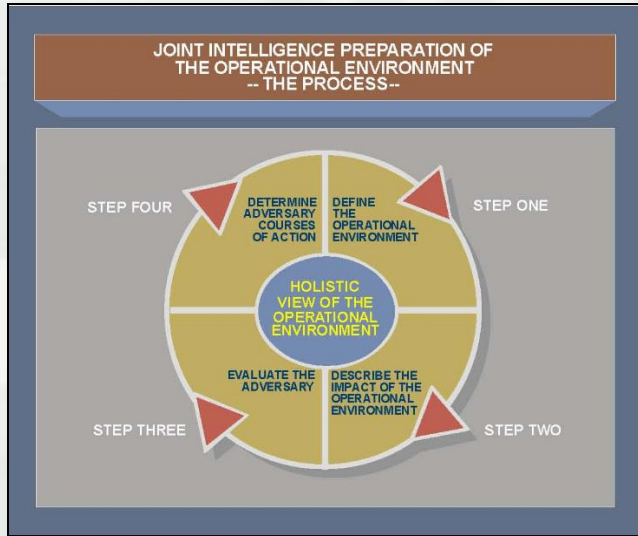


BUILDING STRONG®

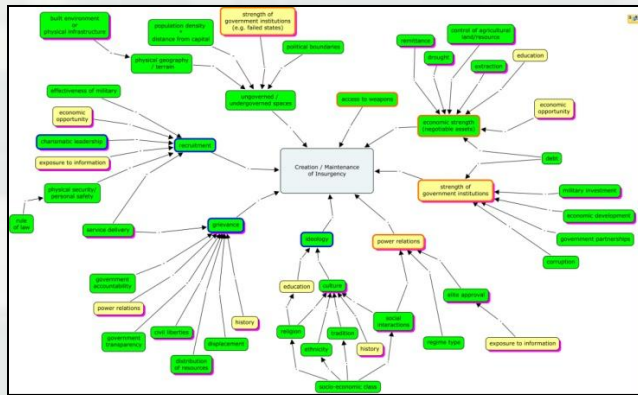
ERDC

Innovative solutions for a safer, better world

Application Concept



1. The first two steps of a JIPOE analysis are:
 1. Define the Operational Environment (OE).
 2. Describe the impact of the OE.
 - a) Develop a geospatial perspective of the OE (incl. area of interest, area of influence).
 - b) Develop a systems perspective of the OE (incl. identifying and evaluating threats [e.g., military, criminal, roles of local actors]).
 - c) Describe the impact of the OE on adversary and friendly capabilities and broad courses of action (COAs).



2. Steps 1, 2a and 2b above necessitate creating a model of the system on the ground on its own terms: What is the situation and how does it impact U.S. COAs?
 1. The organizing principle and the factor map together can focus the analyst on what is important to include in systems analysis of the operational environment.
 2. The factor map and associated literature offer theories, and possible explanations of the sociocultural dynamics in the OE.
 3. The model (which includes description and explanation of the system) is the basis for evaluating threats and considering COAs via simulations.



Summary

- Understanding the population is critical to mission success.
- The organizing principle and factor map applied in combination as a framework supports sensemaking, modeling and aids understanding.
- The work is anchored in the peer-reviewed social sciences.
 - ▶ Maintaining explicit connection to social science literature facilitates deeper inquiry when time permits.
- Enhanced understanding of sociocultural dynamics improves decision making.



Discussion



Timothy K. Perkins
Timothy.K.Perkins@us.army.mil

BUILDING STRONG®

ERDC

Innovative solutions for a safer, better world

Backup Material



BUILDING STRONG®



Innovative solutions for a safer, better world

Project Team

- **Engineer Research & Development Center (ERDC)**
 - *Participating ERDC Sites include Champaign, Alexandria, Hanover.*
 - Project oversight & management, primary analytical framework development, remote analysis guidance, challenge problem & proxy analysis, stakeholder engagement.
- **Center for Nation Reconstruction and Capacity Development, U.S. Military Academy at West Point**
 - Horn-of-Africa data & systems diagrams, existing JTF-HOA assessment process, indicators & metrics.
- **Frontier Technologies, Inc.**
 - Analysis of CAPP, ICAF, DSF frameworks; interagency perspective use-case.
- **Institute for Defense Analysis**
 - AFRICOM and EUCOM facilitation, challenge problem definition, data collection, pseudo-models.
- **Securboratorion**
 - Prototype tool - semantic search.
- **University of North Carolina – Charlotte**
 - Conceptual model; architecture; prototype tools; challenge problem models.
- **University of Illinois at Urbana-Champaign**
 - Research assistance.
- **PERTAN**
 - Mediated modeling, systems dynamics, text analysis.



Why Another Framework?

- To meet the primary objective:
 - Inform the work of military analysts and planners with the knowledge and insights of the social sciences that preserves the connection to the grounding literature
- Our approach in broad outline:
 - Develop a framework of frames to aid in sensemaking: it's not just about the facts on the ground, it's about **understanding** the significance of those facts
 - Ground that framework in the social science literature
 - Test that framework against a challenge problem
 - Develop prototype tools based on the framework that support understanding and conceptual/computational modeling
 - Support Joint Intelligence Preparation of the Operational Environment (JIPOE)



The Factor Map

