

# Knowledge Systems for Coalition Operations KSCO 2007



## Evaluating Culture's Impact on Planning for Multinational Operations

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- **Program genesis**
- **Current DARPA sponsored program**
- **SSTR Experiment**
- **Example of findings (so far)**
- **Possible “way ahead”**



# Genesis

- JFCOM Graybeard's questioned SJTF element training
- DARPA and JFCOM initiated IBC program
- Integrated suite of tools to aid planning, collaboration, reach-back for JTF, OGA, and NGOs (120+ nodes)

*DARPA wanted to know the impact of culture on planning aid use*

- Each Services has Center of Excellence for Culture
- JCTD for Mapping Human Terrain



# Operational Level Terminology

- **DIME**
- **PMESII**
- **Joint Operational Planning**
  - Action
  - Node
  - Effect
- **Phase 4 - SSTR**



# Current Program

- DARPA-funded, small scale, proof-of-principle experiment
- Hypothesis: coalition planning efforts would benefit from a culturally aware assessment tool
- Intent :
  - explore the role of culture on planning and execution of multinational and interagency SSTR Operations using automated decision planning tools
  - identify areas within multinational SSTR planning that are vulnerable to errors due to cultural differences among agencies and nations involved in the operations



# Key Program Activities

- Participated in two interoperability events with UK
- Participated in planning exercise with Singapore forces
- Examined domain activities and professional literature
  - Operational planning
  - Cultural anthropology
  - Language-to-language translation
- Conducted multinational SSTR experiment to examine planning, planning aids and planning process:
  - Presidential Planning Directive – 44
  - From NCA to upper tactical level



# The Setting

- **Set in Sub Saharan Africa**
- **Year 2008**
- **SSTR Environment**
  - Humanitarian Assistance
  - Potential Environmental Disaster
  - Establish Security
  - Counter-Terrorism
- **Scenario to drive planning tool use**
  - 4 nation coalition (Nigeria, SA, US, UK)
  - Multiple ethnic groups in region
  - 18 NGOs in region
- **Align with JFCOM MNE-5**



# Lead-in

- US Bde in Nigeria conducting training activities
- Humanitarian crisis erupts in Lake Chad region
- Fundamentalists attempt to grab power—seize refinery and threaten to pollute remaining water supply
- Chad requested UN aid, only nation with sufficient capacity in time is US.
- Form CJTF to put “African face” on activity.
- STARTEX has planner’s working Phase IV plan for approval by RCC



# Experiment - Focus

## Physical connectivity

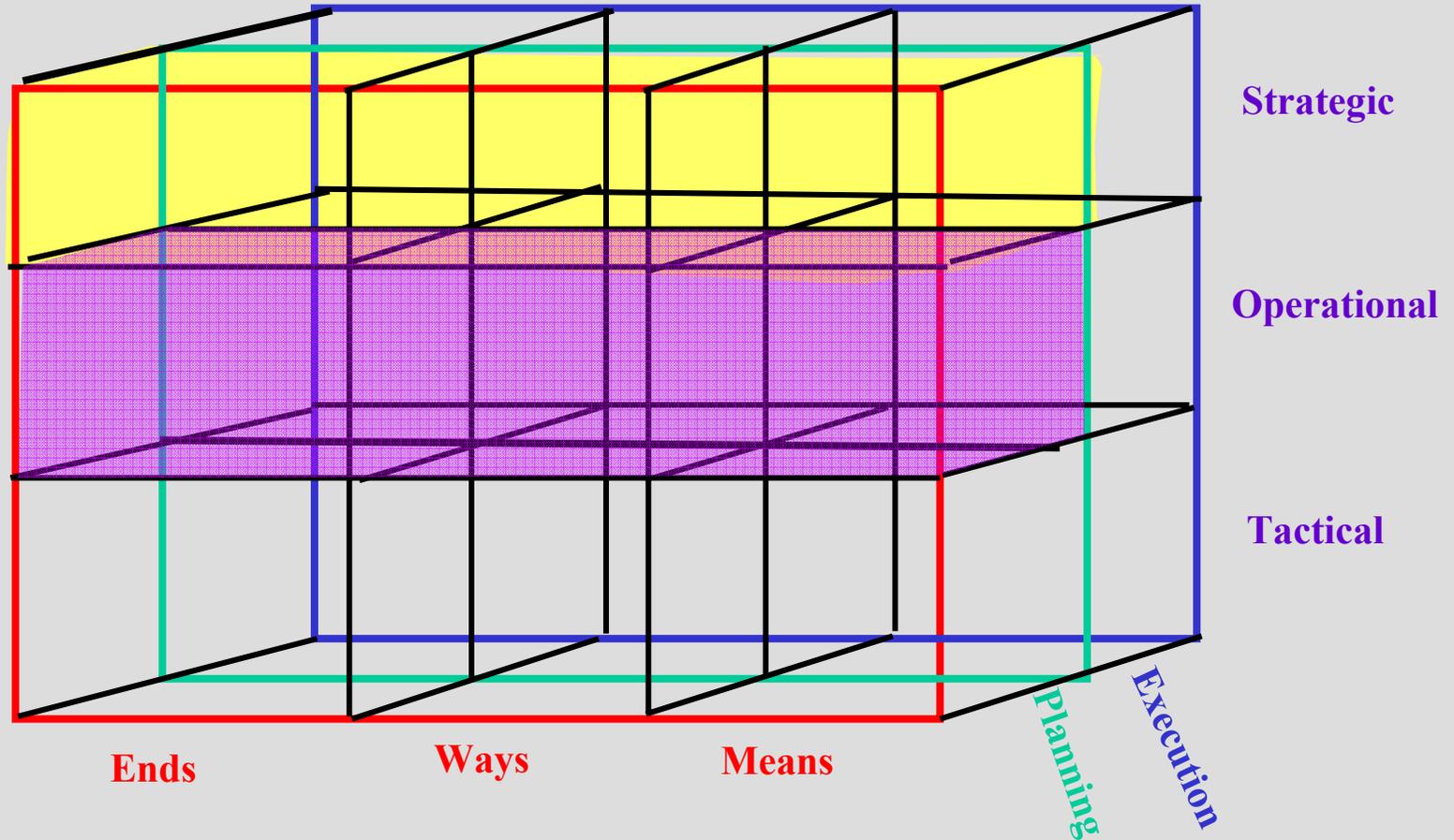
- CAPES can use the CoWeb (IBC target)
- GAMMA can use the CoWeb (also IBC target)
- GAMMA, can form assessments and send to operational and strategic planners.
- Theater planners can use GAMMA assessments understand the impact of military activities.

## Cultural interaction

- Culture and influence individuals perception, problem solving, and solution generation.
- Military officers of different nationality view, use, and trust decision planning aids differently.
- Combining different nationalities in to a multinational JTF creates a potential for planning difficulties.
- These differences can reduce speed, quality, and synchronization of plans and may result in botched execution.

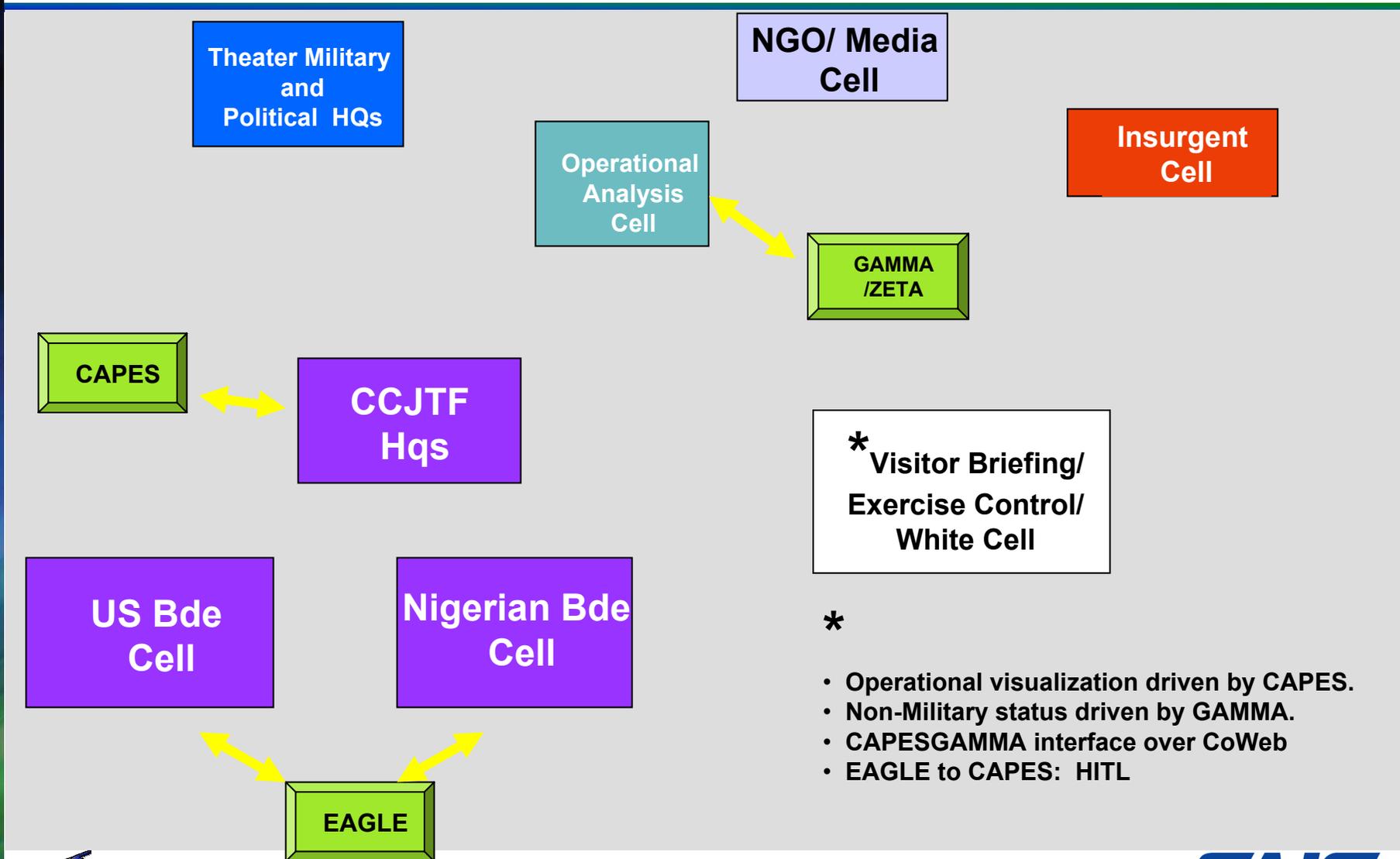


# Activity Focus



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# Operating Cells



\* Visitor Briefing/  
Exercise Control/  
White Cell

- \*
- Operational visualization driven by CAPES.
  - Non-Military status driven by GAMMA.
  - CAPESGAMMA interface over CoWeb
  - EAGLE to CAPES: HITL



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# Participants

## Models:

- GAMMA
  - Dr Uwe Dompke – NATO-C3
  - Mr James Ayerton – NATO-C3
- CAPES
  - Greg Davis – CERDEC
- CoWeb
  - Dr Doug Dyer – Active Computing
- EAGLE
  - Rob Alexander – SAIC

## Theater Strategy: (DARPA/JFCOM Senior Mentors)

- Amb (Ret) Larry Pope
- Dep. Under Secy. of State (Ret) Len Hawley

## Scenario Development: (SAIC)

- Charlie Driest
- Joe O'Connor
- John Lorah
- Plaudy Meadows
- Dan Sprengle
- Randy Young
- Tom Dodd

## Cultural:

- Dr Kim Holloman - SAIC
- Dr Noel Ono – UT Brownsville/SAIC
- Mr Mike Lytle – SAIC
- Prof. Dave Davis – GMU

## Data Analysis: (SAIC)

- Dr Keith Gremban

## Exercise Design/Execution (SAIC)

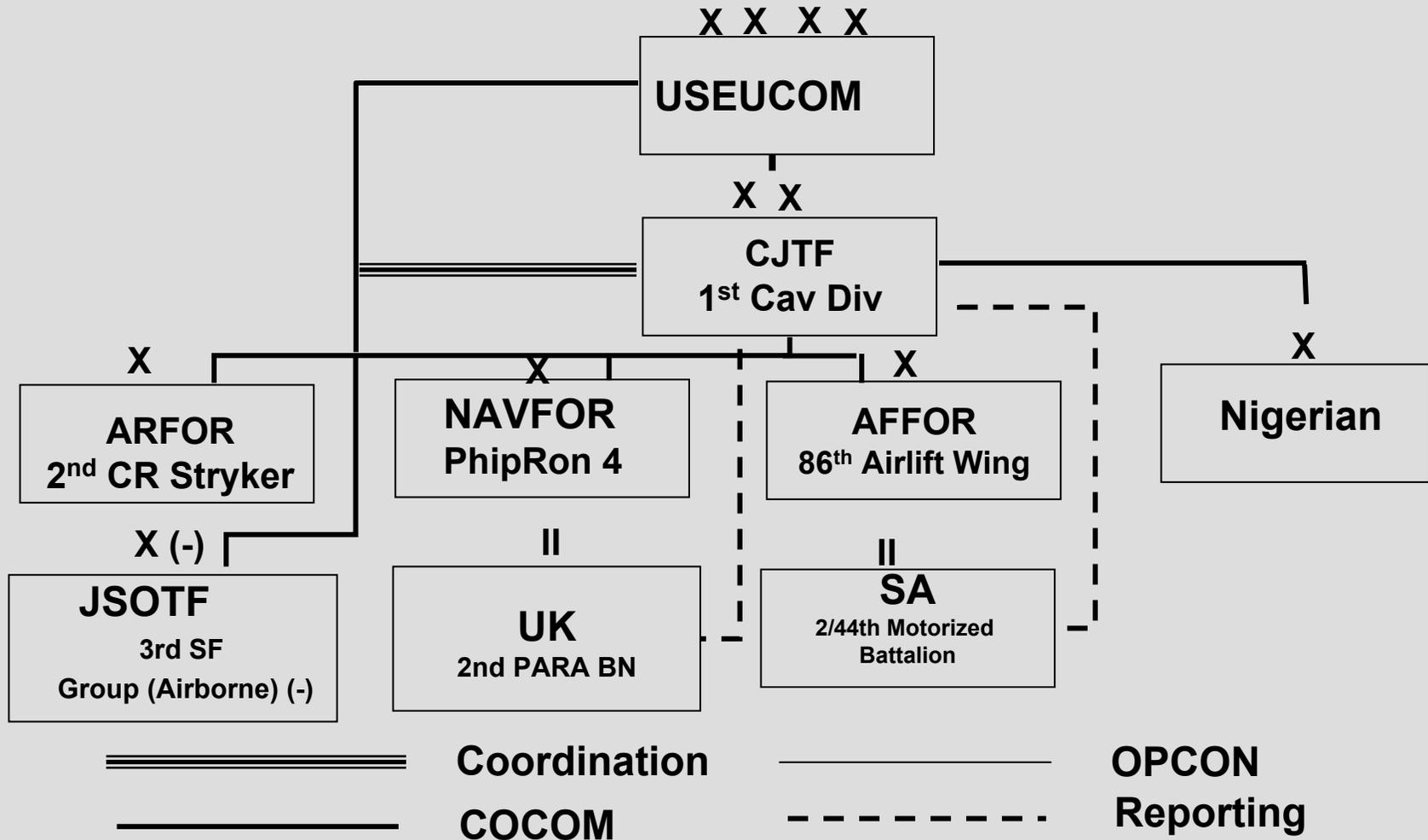
- Ken Sharpe
- Darryl Werkley



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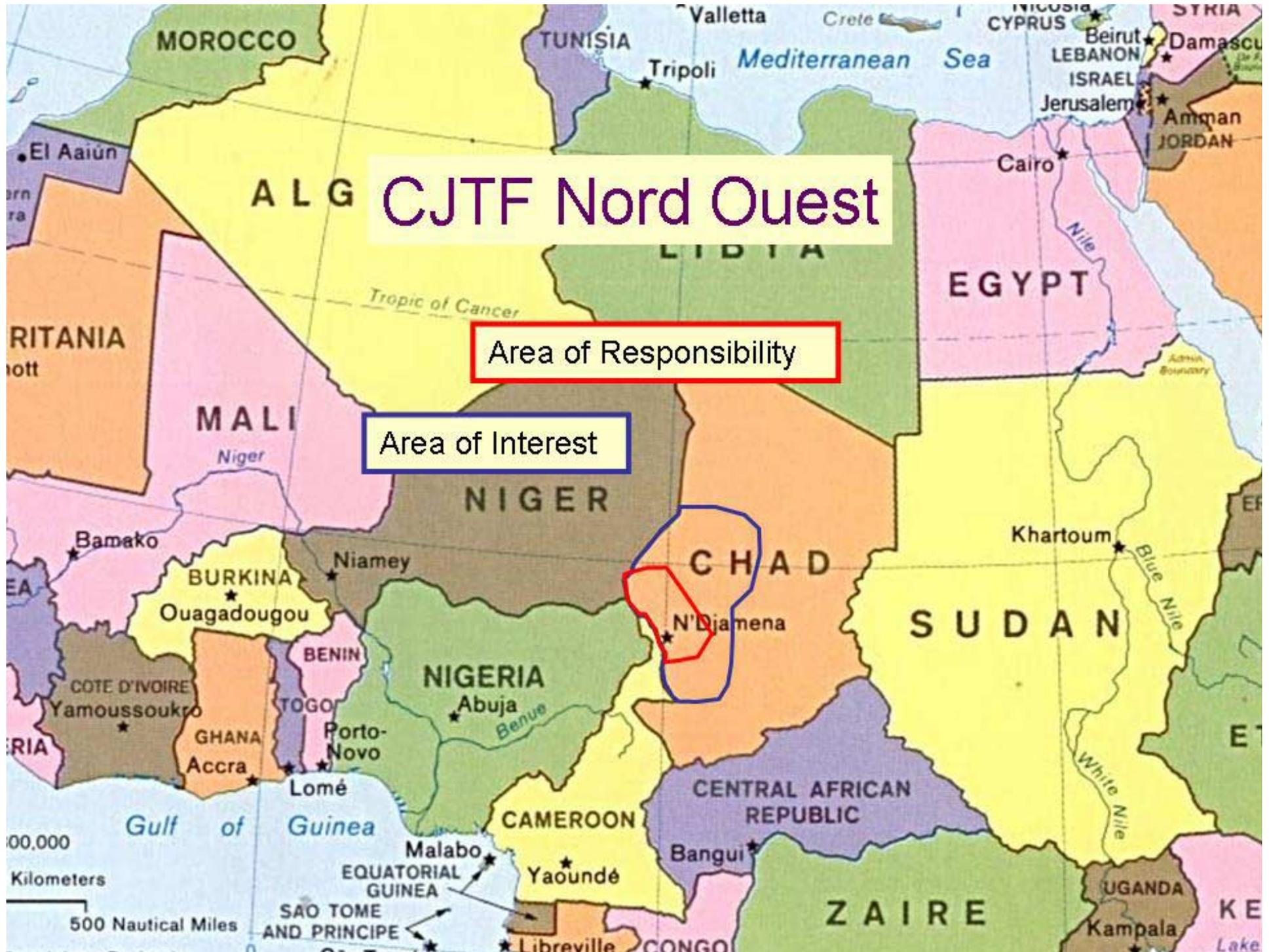
# Phase I Command Relationships



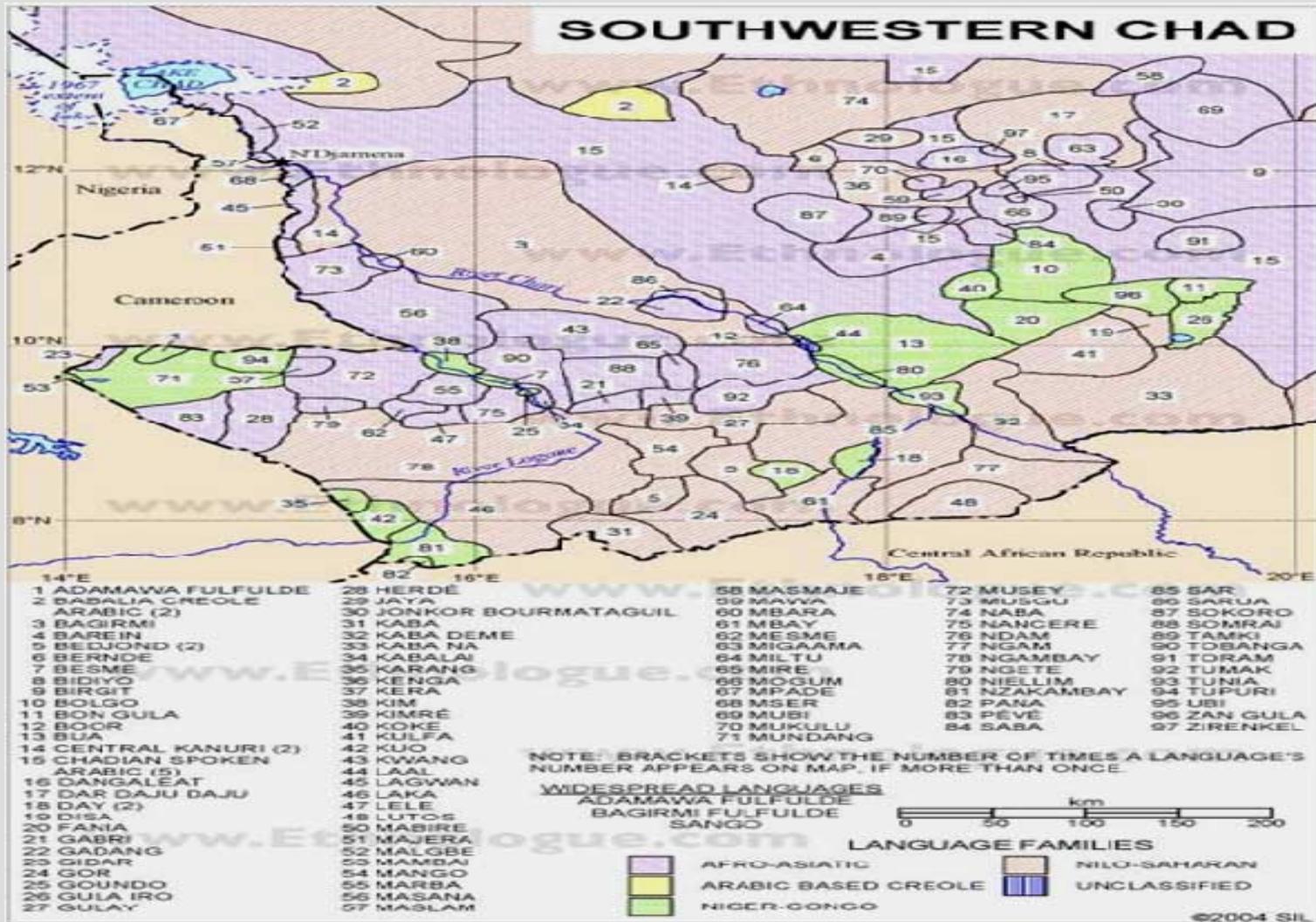
# CJTF Nord Ouest

Area of Responsibility

Area of Interest



# Chad's Ethnic Groups



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# Findings

**Quick response was difficult to synchronize between National (political) objectives And RCC (military) objectives: the ends were agreed upon but the ways were difficult to synchronize primarily from a temporal outlook. Military wanted to establish security quickly but the short term moves were counter to the long-term political goal of security.**

**Cultural considerations caused the CJTF to reorganize the Task Organization (replace 101<sup>st</sup> with Nigerian forces backing up local Chadian police in close quarters combat). US SOF team did a DA mission on the oil refinery but immediately put a Black face on it.**

**The planning aid was beneficial:**

- **added rigor to the planning process**
- **provided concrete outcomes to use in COA analysis**
- **facilitated coordination between headquarters**
- **quicken the long-range assessment of cultural impact process and help to avoid irreparable missteps**

**Demonstrated that cultural awareness tools can fit in to an IBC-type suite of planning aids**



# Technical Voids -- Examples

**System definition required to provide context for technical voids**  
(requires a supporting system such as IBC)

## **Cultural knowledge base**

- comprehensive
- available without long build time (tools to populate)
- population and maintenance w/o large human effort

## • **Ontology (structured data model)**

- Upper-level (Cultural Primitives)
- Mid-level

## • **Reasoning/Plan Assessment Engine**

- Plan aware
- Environment aware
- Able to reason over uncertainty and handle contradictions in data elements



# A candidate?

A software application, resident on existing hardware, which assesses plans for potential culturally-induced disconnects in mission, task organization, and sequence of actions

## Features:

- Visual and textual results of analysis
- Screen to “drill-down” for closer analysis of rationale of assessment

## Components:

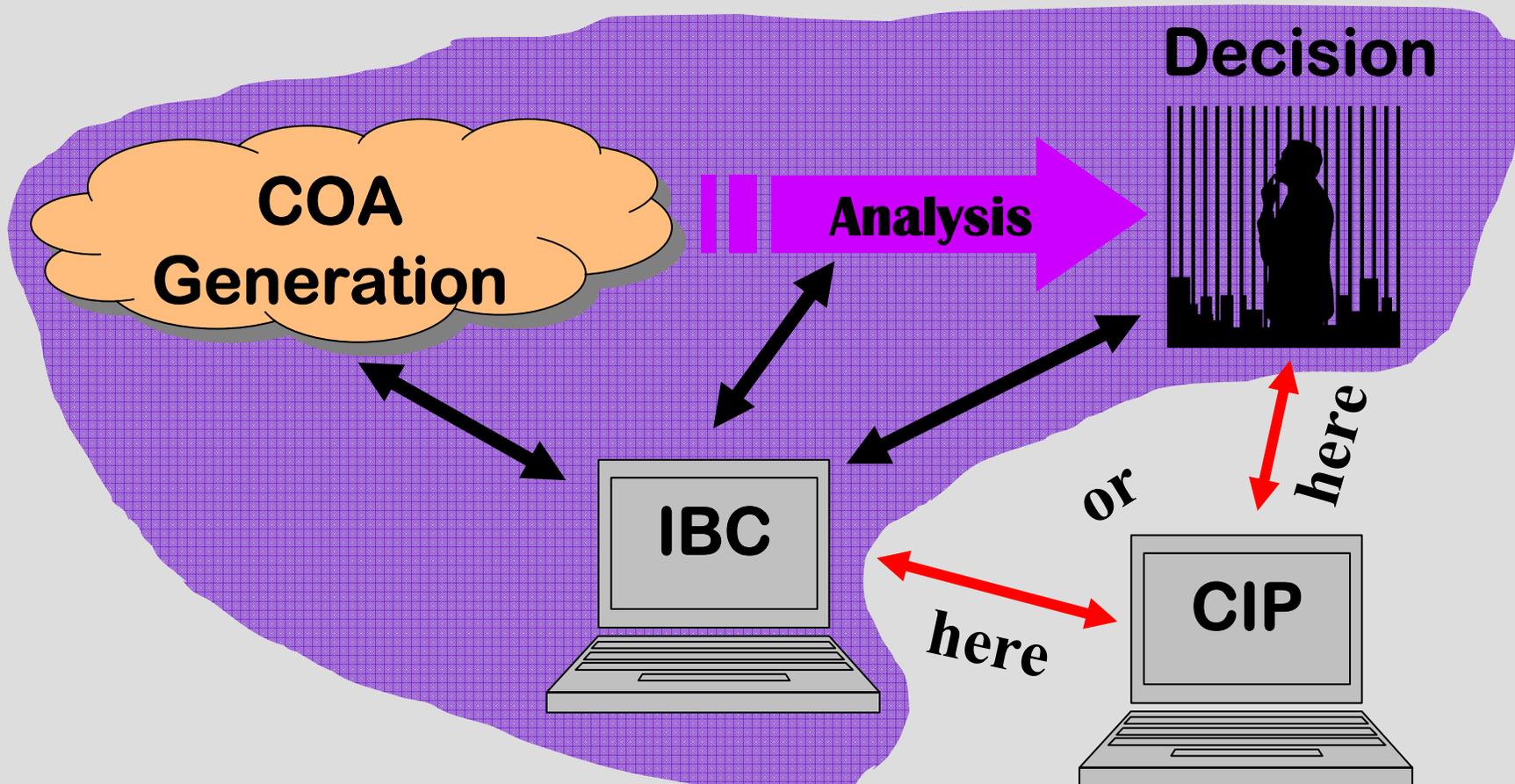
- A Cyc database of cultural facts and relationships
- An ontology that organized the database in to a “reasonable” set of data
- A PAL created data mining, knowledge acquisition program to create and update cultural facts in the database
- Outcome: an analysis engine that temporally evaluates a plan against the cultural mix of Blue, Red, and Green/White players, the environment, and ambient conditions.

## Product:

- An assessment of probable cultural impact over time

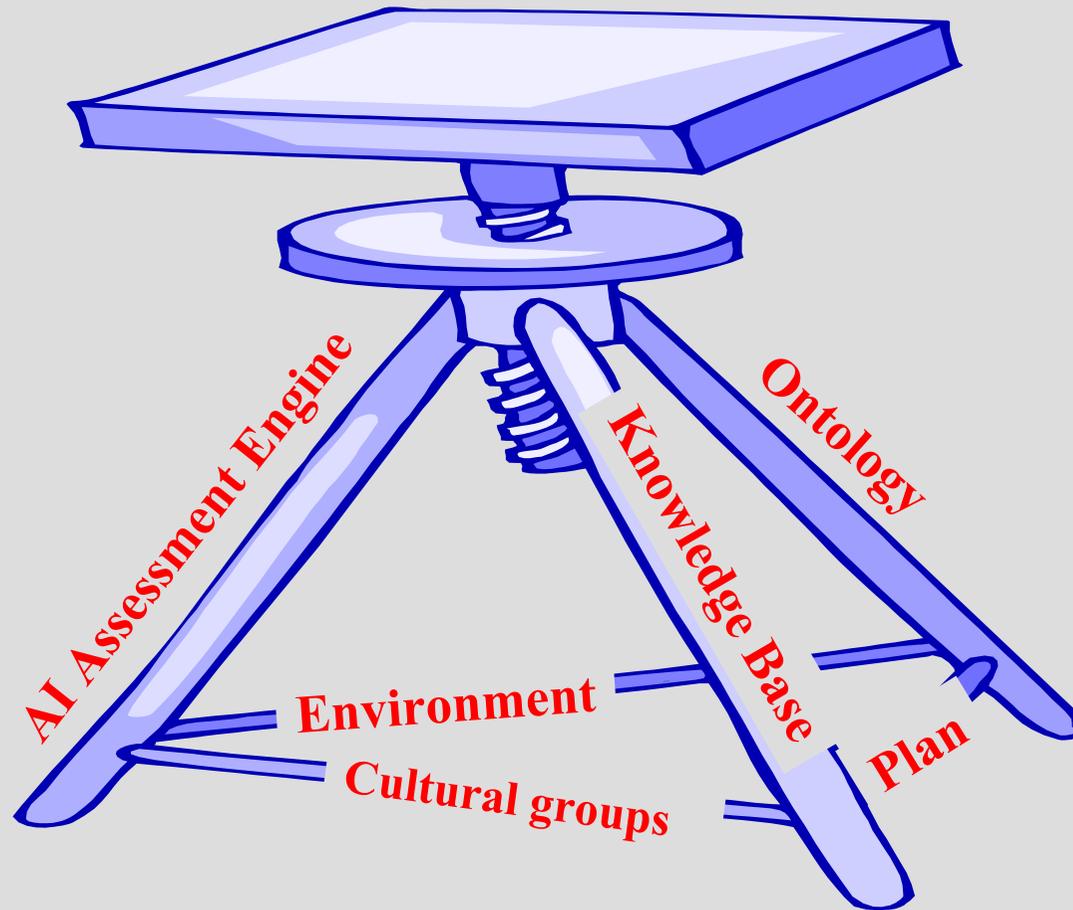


# Cultural Integration Planning Tool Use



# The Golden Nuggets Triad

## Culturally Aware Planning Aid



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# Advantages

**Major reduction in crisis response planning time**

- **Knowledge base generation tools**
  - **Builds across all geographic regions**
  - **rapid modification of knowledge bits**
- **Flexible reasoning engine**
- **Easy hosting**

**Take advantage of previous DARPA investment in Cyc and PAL**

**Accepted Transition to SHAPE ACTD**



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# Will it work?



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# Theories about Culture

- **Hofstede's theory of culture**
  - **Culture is the “collective programming of the mind that distinguishes one group or category of people from another”**
  - **A collective, not an individual attribute**
  - **Not directly observable but manifest in behaviors**
  - **Common to some but not all people**
- **Cultural primitives exist and can be used to understand differences in nations, organizations, societies, etc.**
- **Research based on tens of thousands of interviews**
  - **Primarily focused on international business community**
  - **Results repeatedly validated by replication studies**



# Hofstede's Cultural Scores

Country	PDI	IDV	MAS	UAI	LTO
<a href="#">New Zealand</a>	22	79	58	49	30
<a href="#">Norway</a>	31	69	8	50	20
<a href="#">Sweden</a>	31	71	5	29	33
<a href="#">Germany</a>	35	67	66	65	31
<a href="#">United Kingdom</a>	35	89	66	35	25
<a href="#">Australia</a>	36	90	61	51	31
<a href="#">Netherlands</a>	38	80	14	53	44
<a href="#">Canada</a>	39	80	52	48	23
<a href="#">United States</a>	40	91	62	46	29
<a href="#">Japan</a>	54	46	95	92	80
<a href="#">Pakistan</a>	55	14	50	70	0
<a href="#">Taiwan</a>	58	17	45	69	87
<a href="#">South Korea</a>	60	18	39	85	75
<a href="#">Thailand</a>	64	20	34	64	56
<b><u>East Africa</u></b>	64	27	41	52	25
<a href="#">Hong Kong</a>	68	25	57	29	96
<a href="#">Brazil</a>	69	38	49	76	65
<a href="#">Singapore</a>	74	20	48	8	48
<a href="#">West Africa</a>	77	20	46	54	16
<a href="#">India</a>	77	48	56	40	61
<a href="#">Philippines</a>	94	32	64	44	19



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# Potential Future Products

- **Planning Assessment Tools**
  - Strategic level (For DOS & DOD)
  - Operational level (For RCCs)
  - For national use government agencies (DHS, DOJ, etc)
- **Plan Execution Tools**
  - Strategic
  - Operational
- **Tactical level tools**
  - For JTFs
    - Rehearsal/training
  - Individual
    - Web-based cultural sensitivity training



# Back-up



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# SSTR Difficulties

## (Example)

- Assume a CJTF deployed to central Africa to provide regional stability and establish conditions to let international organizations build economic stability/capacity and improve living conditions (food, water, sanitation, etc.). AO generally characterized by barter economy, bare subsistence feeding and horrible epidemic waves and generally poor living conditions. Active insurgency is in the northern part of the AO...the southern portion is calm. The operational commander responsible for the southern AO wants to inject currency to generate sufficient cash flow to improve inhabitant's capability to buy things they need. He looks to create a thriving micro economy similar to successes in India and Pakistan. CJTF keeps main force troops away and sends in small contact teams to distribute cash to each family. He also coordinates for OGAs and NGOs to guide women's' groups in the art of weaving for cash, marketing products. CA teams show how to establish cooperative organizations to purchase supplies in bulk and market products to cash markets in larger cities. NGO teams also proliferate within the village to show local inhabitants how to band together to gain from economy of mass and to educate in the concepts of capitalism and free markets. Cdr CJTF, having selected primarily "E" and "I" resources to achieve his endstate, sits back to watch "success break out."
- Here's what happens:



# SSTR Difficulties

## (Example)

- funds arrive (E)
- village economy perks up and stability increases because kids are fed, things are looking up, etc (S)
- increase capital flow lets a lot of entrepreneurial wives and mothers start micro economy (E)
- wives independence weakens tradition male dominated society (S and P)
- local mayor gets really hostile toward the CJTF because his authority is threatened (P)
- threatened traditional leadership start riots, kidnapping, assassinations to curb micro economy (S)
- CJTF inserts small unit forces to work with police and help improve local stability (M)
- CJTF starts Psyop campaign to let village know what is going on (I)
- local religious leaders condemn “meddling invaders.” (P & S)
- rival tribe members squabble over market share (P & E)
- violence erupts—product is burned on the way to market, people die. (S & E)
- CJTF inserts troops to restore calm (M)
- Agents from northern insurgents foment anger against “invading infidels” and created local insurgent cells that ambush and kill some CJTF forces.
- The situation deteriorates from there....



# SSTR Difficulties

(Example)

- **What went wrong? This is an example of a good intentioned plan that went awry...implemented in a manner that threatened the local governance culture. Rather than improve the village lot, the actions destabilized the political environment and enabled the insurgents to reach critical mass.**
- **A CI tool that assessed the CJTF plan might have pointed out the error of directly injecting cash in to the village at the “each” level. Perhaps the assessment would have pointed out the destabilizing effect and let the planners inject funds more slowly and through existing village political leadership. The CJTF might have made the call that his job was to improve living conditions not to establish a western-style capital driven economy.**
- **In accepting the graft and corruption that would inevitable occur as preferable to instability and active conflict, he ad a choice between the lesser of two bad outcomes.**



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