

Whither EBO?

Network Enabled Synergy

...and

The Man in the LOOP

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Outline

- 1. Complexity, The Reality and the Problem**
- 2. The Complexity Paradox and the Man in the Loop**
- 3. Classic EBO**
- 4. Network Enabled + Effects-Based EBO**
- 5. Implications**

1. Complexity: The Reality and the Problem



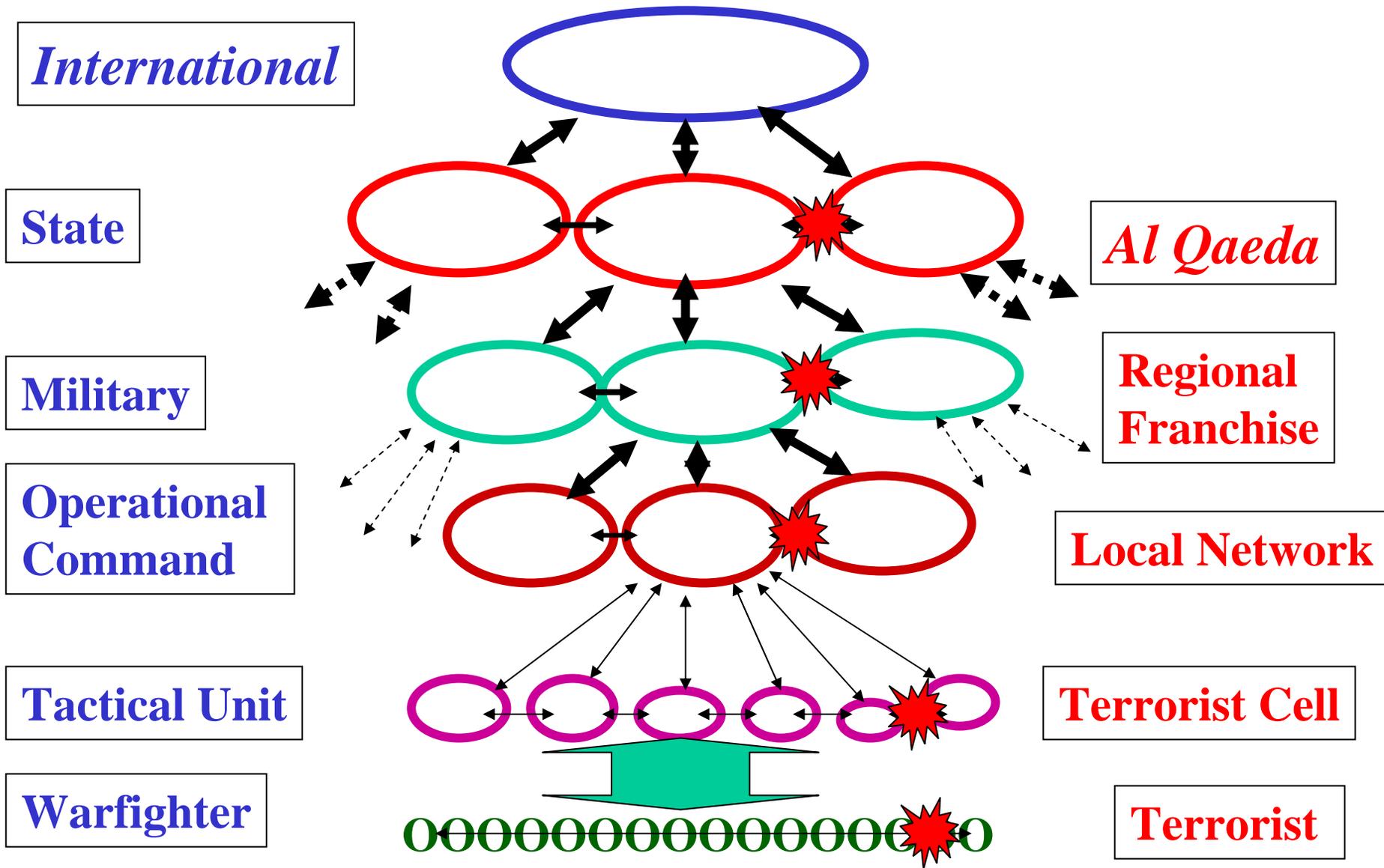
Two Worlds

Complicated/ Linear

- Solving
- Whole equal to the sum of the parts
- Outputs proportionate to inputs
- Repeatable results
- Predictable chain of causes and effects

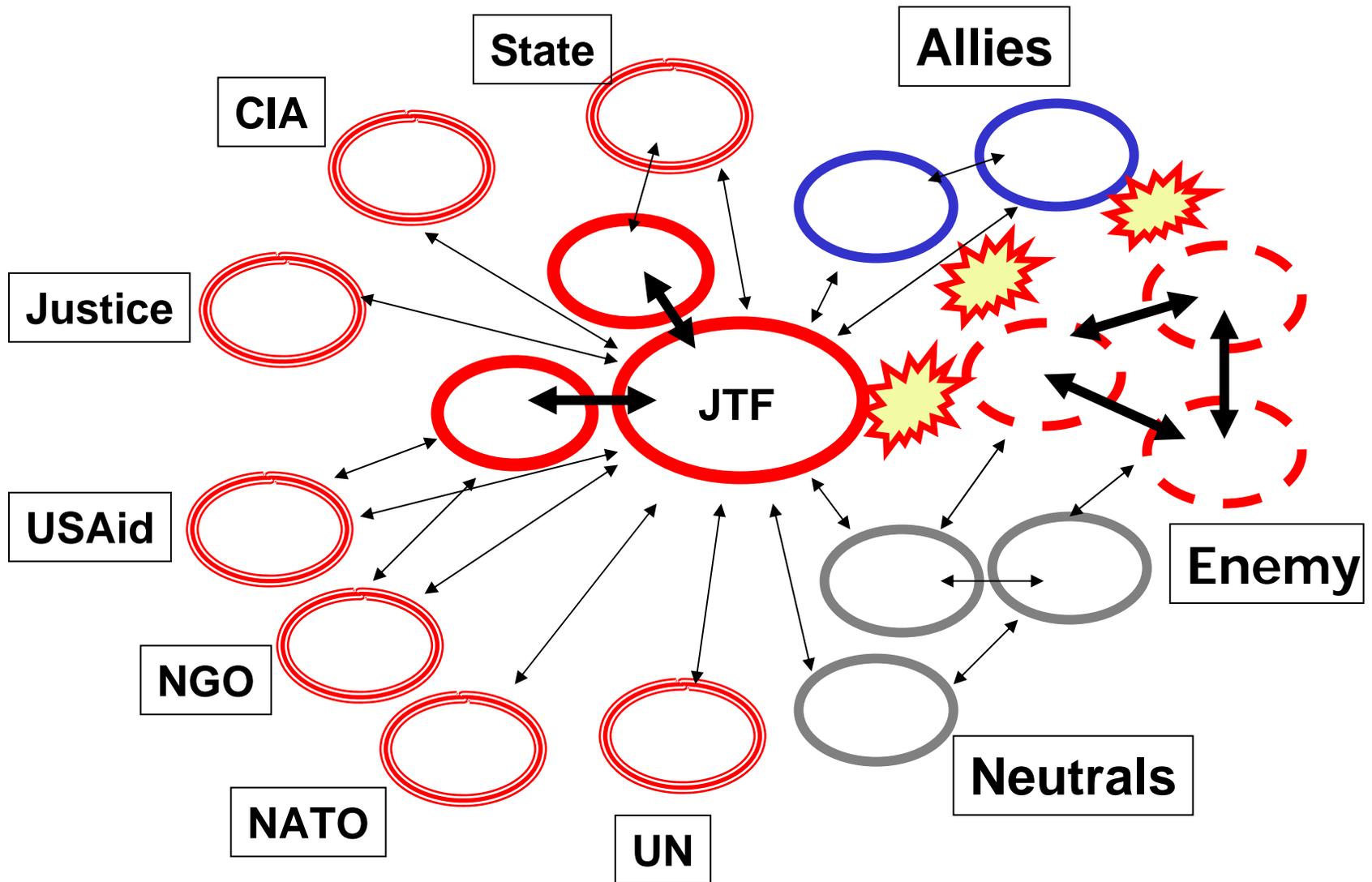
Complex/ Non-linear

- Bounding
- Whole not equal to the sum of the parts
- Outputs not proportionate to inputs
- Results not repeatable
- No predictable chain of causes and effects



Multi-level Interaction

Cross-section



Characteristics of Effects-Based Approach:

- 1. Focus on Human Dimension**
- 2. Cross-Spectrum**
 - All Types of Operations
 - Peace, Crisis, Conflict, Post Conflict
- 3. Whole of Nation/ Coalition Power**
- 4. Complex**

2. The Complexity Paradox:

Complexity Simplifies

Complexity means:

- **There is no perfect awareness**
- **We cannot definitively “solve” complex problems or foresee all the consequences of an action**
- **We will not entirely understand the adversary ... or ally, or neutral**
- **We will never have all the answers, and...**

*The Human must be at the center
of any effort to deal with complex problems*

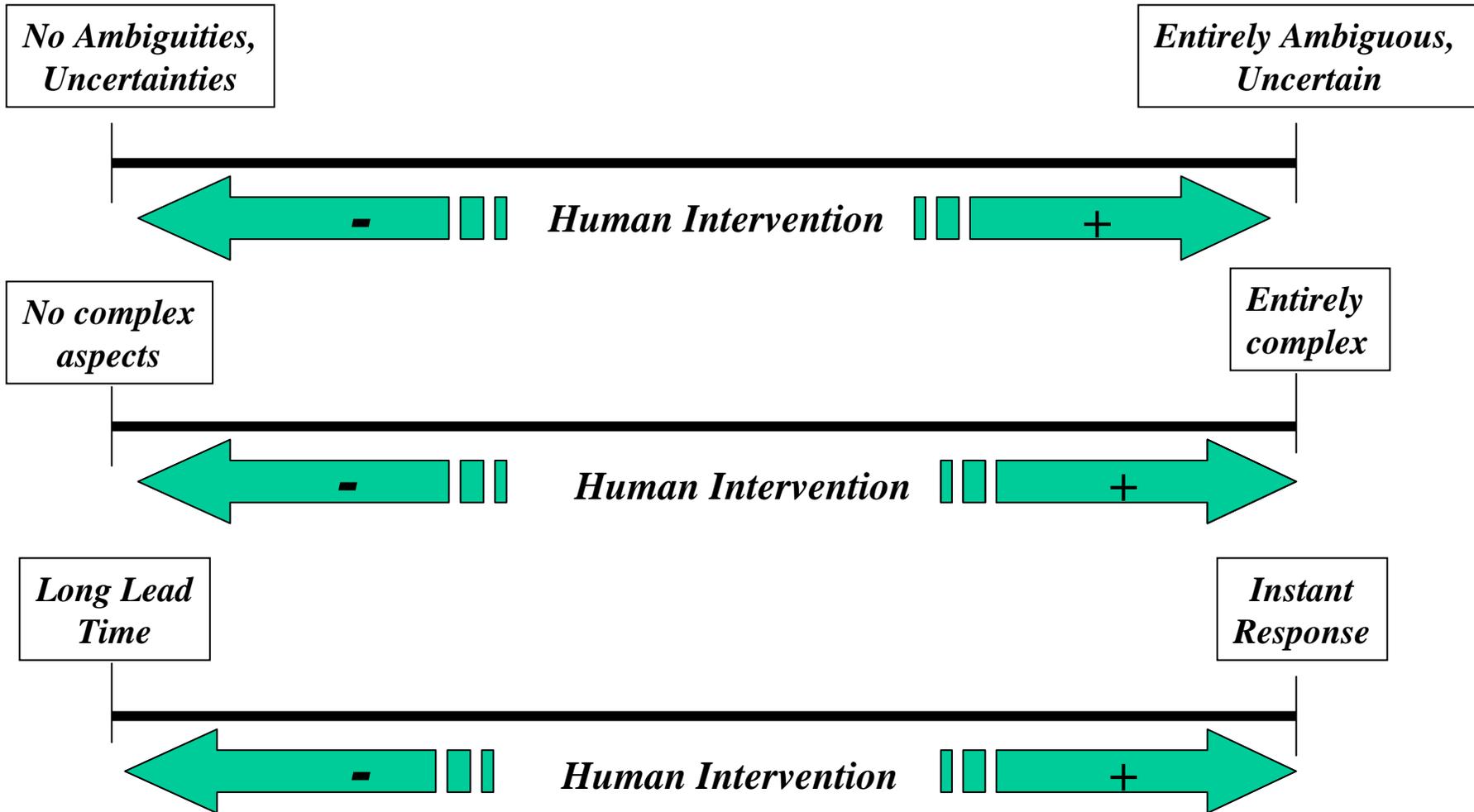
The Human in the Loop

Human-centric approach offers three key trade-offs

- 1. The greater the uncertainties, ambiguities, and unknowables...**
- 2. The greater the complexity...**
- 3. The shorter the decision-time...**

The greater the human intervention required

Three Continua



3. “Classic” Effects-Based Operations

Effects-Based Operations not new

- **Complex world not new**
- **Continua not new**
- **Focus on human dimension, cross-spectrum, whole of nation not new**

How did we handle ambiguity, complexity, short decision times?

- **Relied on the “human in the loop”**
 - **One complex system to deal with another**
 - **Problems:**
 - **Where? When? Why?**
 - **Decisions imperfect, inaccurate**
 - **Solutions:**
 - **Better decision-makers**
 - **Better organization**

The “Human in the Loop”

- **Better Decision Makers**

- **Selecting leaders ... and their staffs**
 - **Social networking**
 - **Selections processes**
- **Training and Education**
 - **Building analogy libraries**
 - **Broad education**

- **Better Organization**

- **Hierarchical but...**
 - **Poor Communications = Significant autonomy**
- **Impact of Communications Revolution**
 - **Low level signaling and Instant global media**
 - **Better communications = Global control**
 - **... down to the strategic corporal**

But...how do we make EBO better?

4. Network Enabling Effects-Based Approaches

- **First Generation Network Centric Operations**
 - Man out of the loop
 - To increase speed of command
 - Sensor to shooter solutions
 - Network architectures vice networking
- **Second Generation *Networking***
 - Man *in* the loop
 - Complex decisions inescapable
 - Communications *and Social* Networking...
 - ...to tap a nation's or coalition's
 - Knowledge/ information resources
 - Analytical/ modeling tools
 - Expertise

*To increase
the probability of
correct human decisions*

New Metrics for Networking

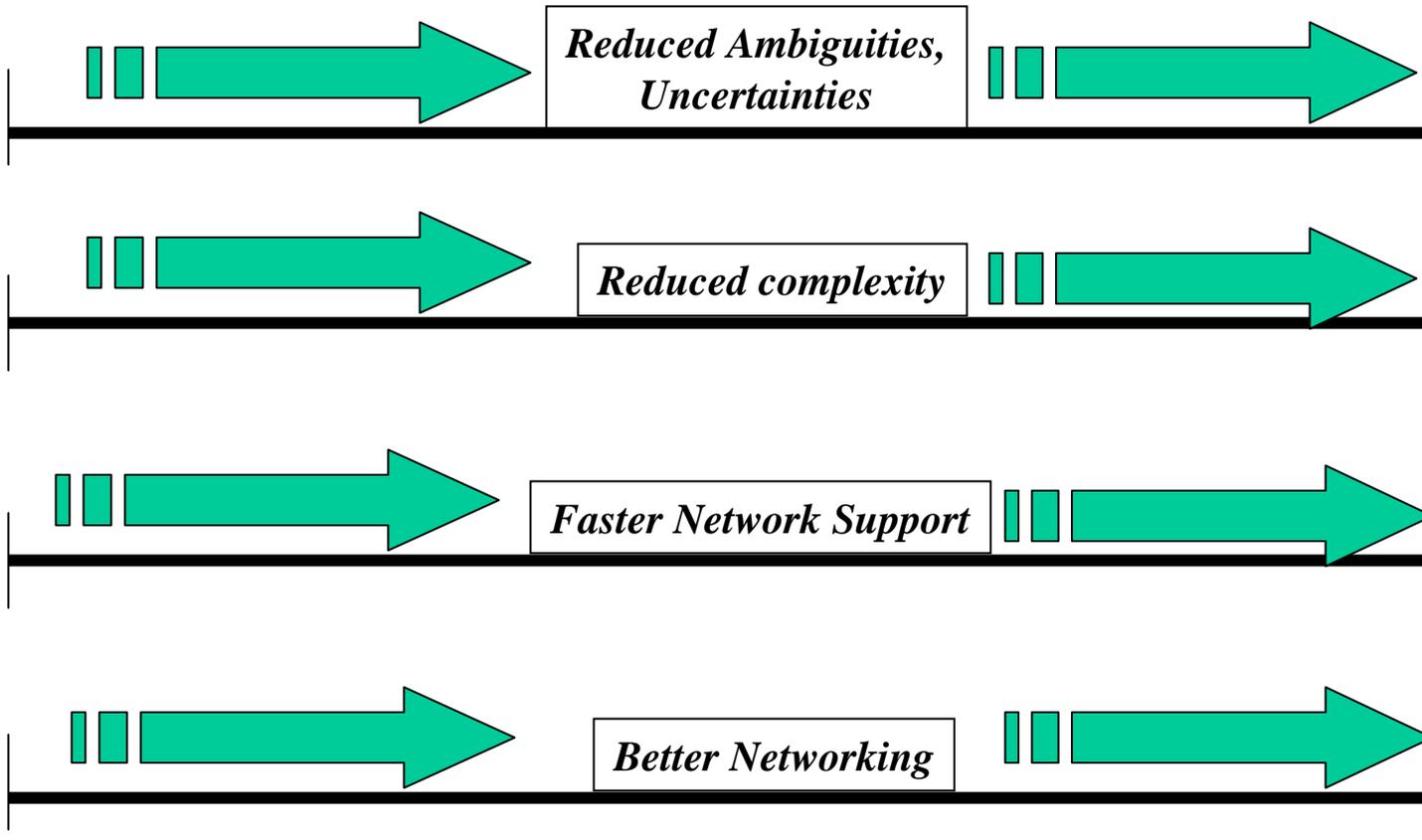
1. **The fewer the uncertainties and ambiguities...**
2. **The less the complexity...**
3. **The faster the support...**

But also...

4. **The better the networking...**

The better the decisions

Four Continua



Better Decisions

...and Scalability Trade-off

Decision Time

Human Role

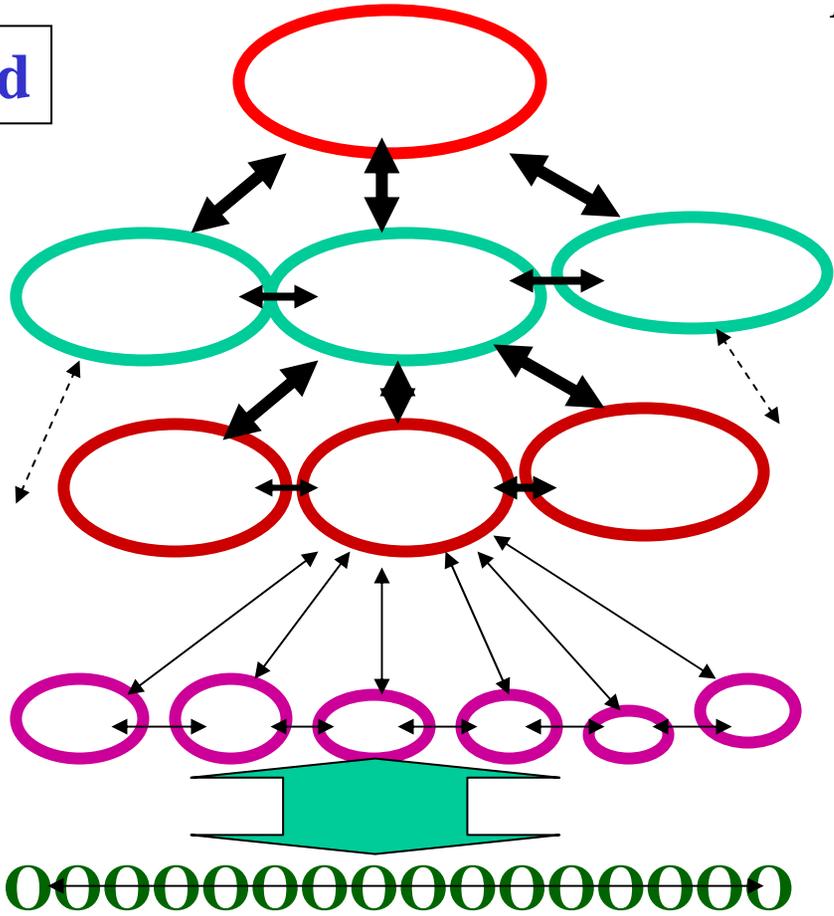
National Command

Military Command

Joint Task Force

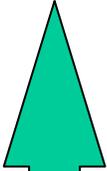
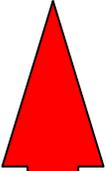
Tactical Unit

Warfighter



Faster

Less



Slower

Greater

5. Whither EBO?

- **Complex Adaptive Systems**
 - Multitudes of interdependent variables
 - Continually interacting changing
 - No “solution” good for very long
 - **Better Effects-Based Operations = Better Decision-making**
 - Combining network enabled and effects-based approaches, but...
 - Dealing with complex adaptive systems means
 - Decision makers
 - Organizations
 - Networking
- Must adapt better and faster than adversaries*
- “Better” = a *Process* for changing/ adapting
 - Built around the human in the loop
 - Dealing with large volumes of complex knowledge and information
 - Hybrid of humans, tools, networking

Better Decision-Makers

- Selection
- Education, Experience, Training

Better Organizations

- Agility, Flexibility
- Adapting/ Learning

Networking

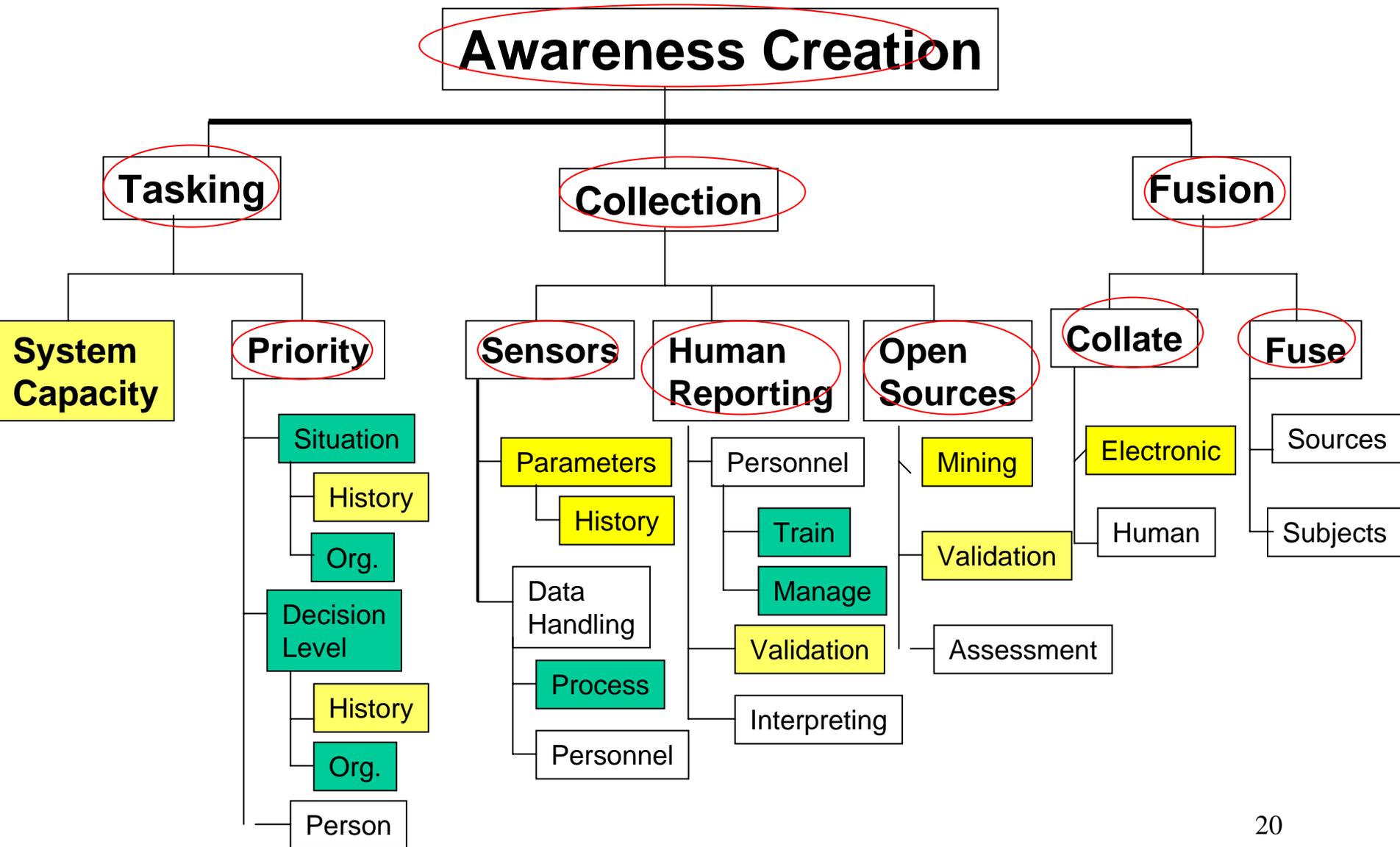
- *2nd Generation Networking*
supporting the “human in the loop”
- Adaptive communications
+ social networking



*Learning
Interacting
Changing
Co-evolving*

Back up

The Road Map



Sensemaking

Contextualization

History

Compilation

Situation

Time

History

Tasking
feedback

Retrieval

Organization

Knowledge Base

Internal

Subject

External

Interface

Identify

Validate

Mental Model

History

Culture

Organization

Profession

Society

Idiosyncratic

Analysis

Cause/Effect

Process

Organization

Personalities

Cascades

Physical

Psychological

Futures

Cascades

Military

Diplomatic

Economic

Political

Intentions

Future
Actions

Decision-making

Projected Sensemaking

Desired End State

Short Term

By Level

Long Term

By Level

Required Effects

Direct

Indirect

Actions

Observers

Foe

Friend

Neutral

Self

Capabilities Available

Military

Diplomatic

Economic

Political

Allied

Options Choice/Plan

Evaluate/Choose

Create Courses Of Action

Evaluate

Feasibility

Timeliness

Flexibility

Robustness

Choose

Plan Course of Action

Capabilities Assess/Assign

Organic

Non-Organic

Accessible

Coordinate

Military

Diplomatic

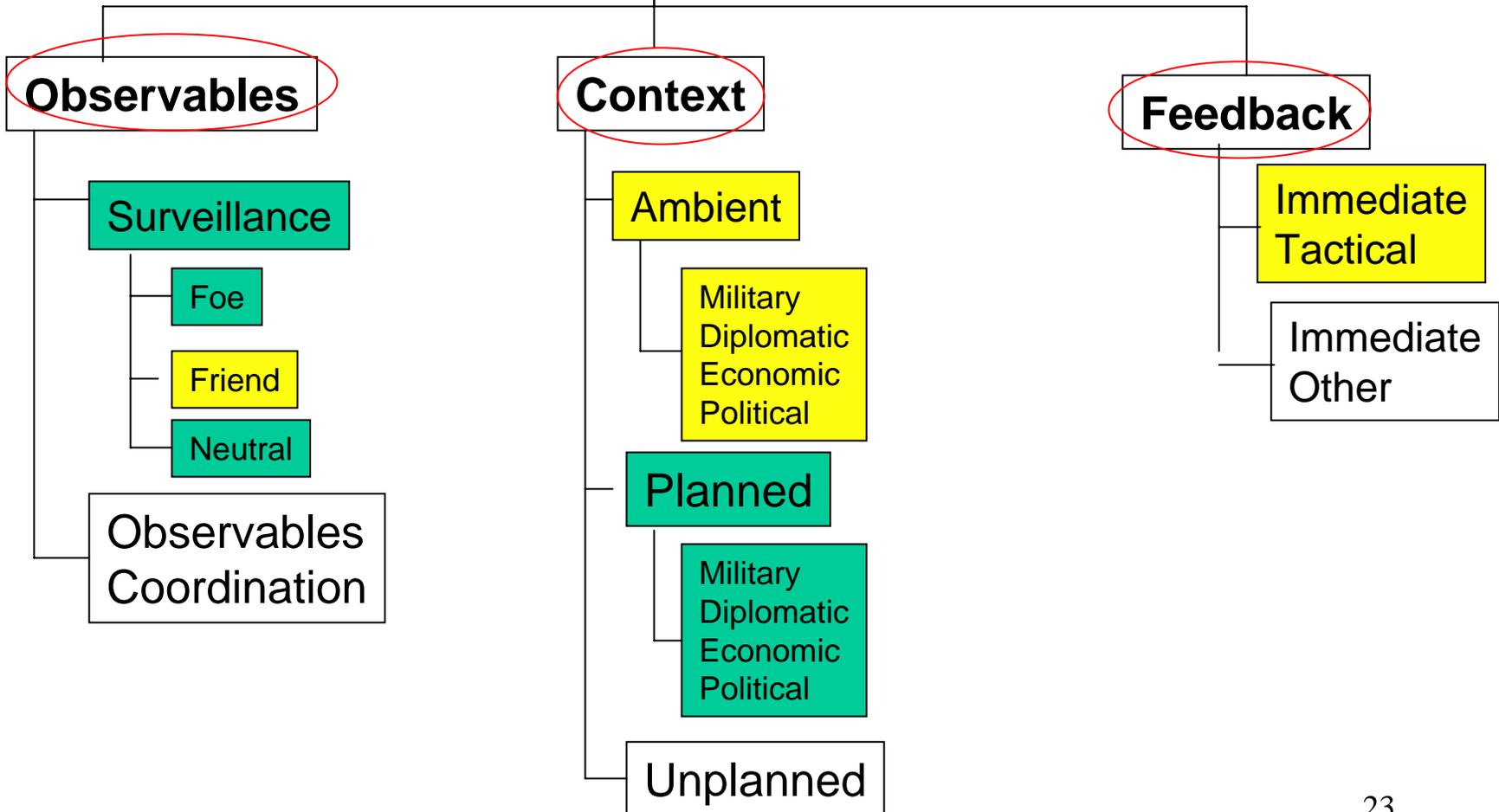
Economic

Political

Communicate

Direction/
Guidance

Execution



Social Influence

