

“Somewhere something incredible  
is waiting to be known.”

-Carl Sagan

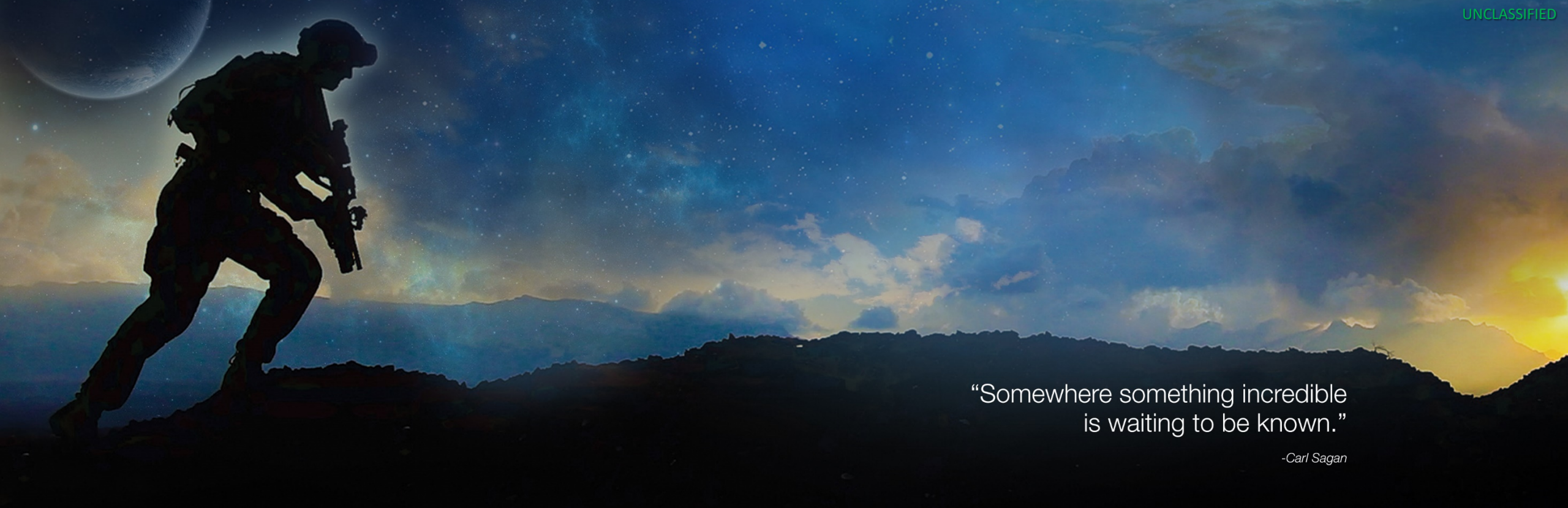
## **SPECIAL OPERATIONS FORCES INDUSTRY CONFERENCE**

*Win • Transform • People*

Lisa Sanders *Director, Science and Technology*

**INTRODUCTIONS/OPENING REMARKS**





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COL Michael McGuire *Director, Combat Developments*

**FUTURE OPERATING ENVIRONMENT**



# Future Operating Environment

The Future Operating Environment is a world of “Convergence”: the point where the gap between non-state and state actor capabilities diminishes and the threat to force and mission success increases significantly.

SOF’s “Bold Ambitions” are to be more:

- 1) AVAILABLE: Agile and mobile enough to be decisive
- 2) INVISIBLE: Deny the ability to obtain decisive information
- 3) OMNISCIENT: Maintain information overmatch
- 4) INVULNERABLE: Defeat lethal and targeting capabilities

Special Operations Forces missions will not significantly change, but the environment in which they are conducted is, and will continue, to change significantly.

# Future Operating Environment

## Themes



**Chaos**  
Unrelenting, far-reaching transformation that disorders beliefs and weakens traditions



**Constraint**  
Institutional inadequacies, weakening global institutions, increased competition



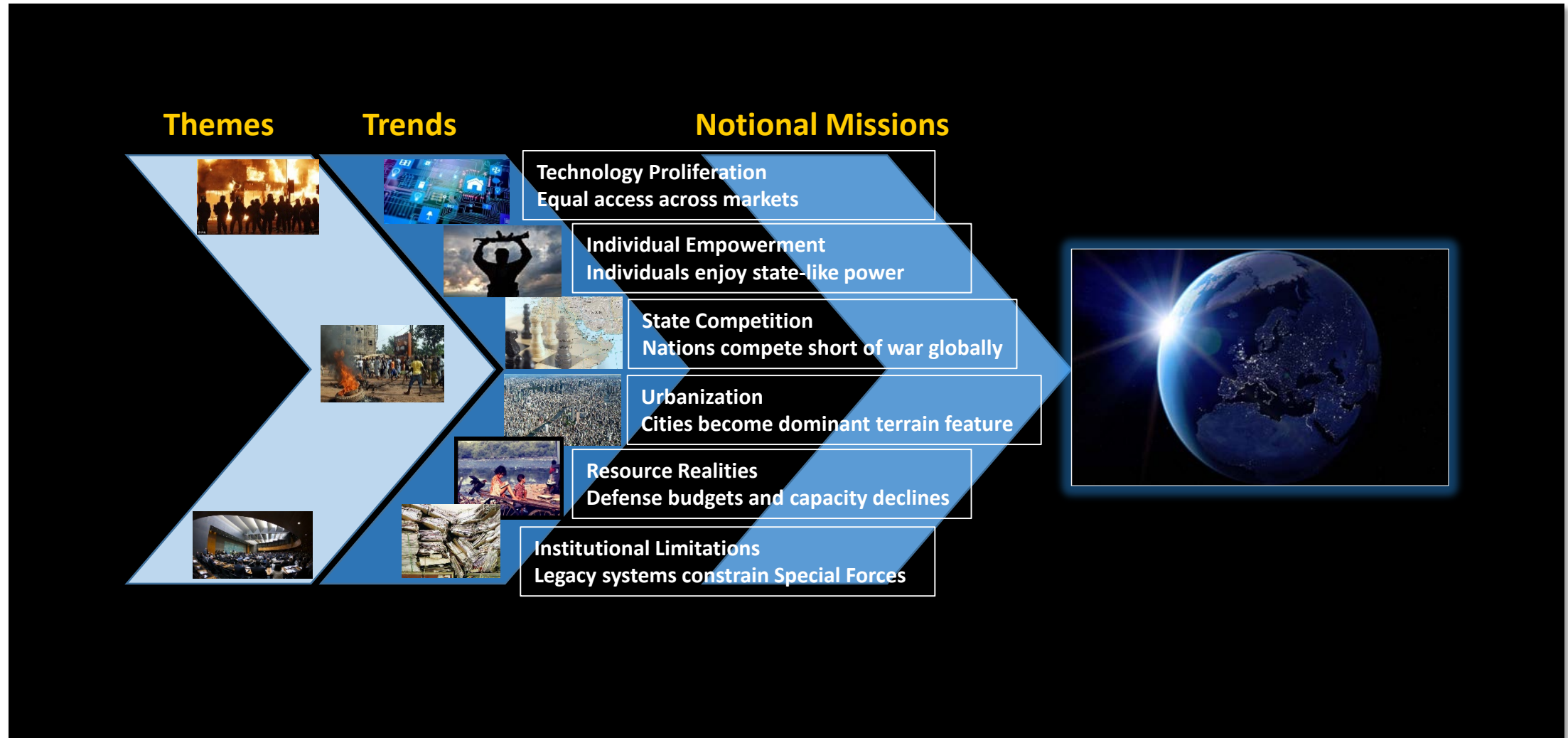
## Trends

## Notional Missions

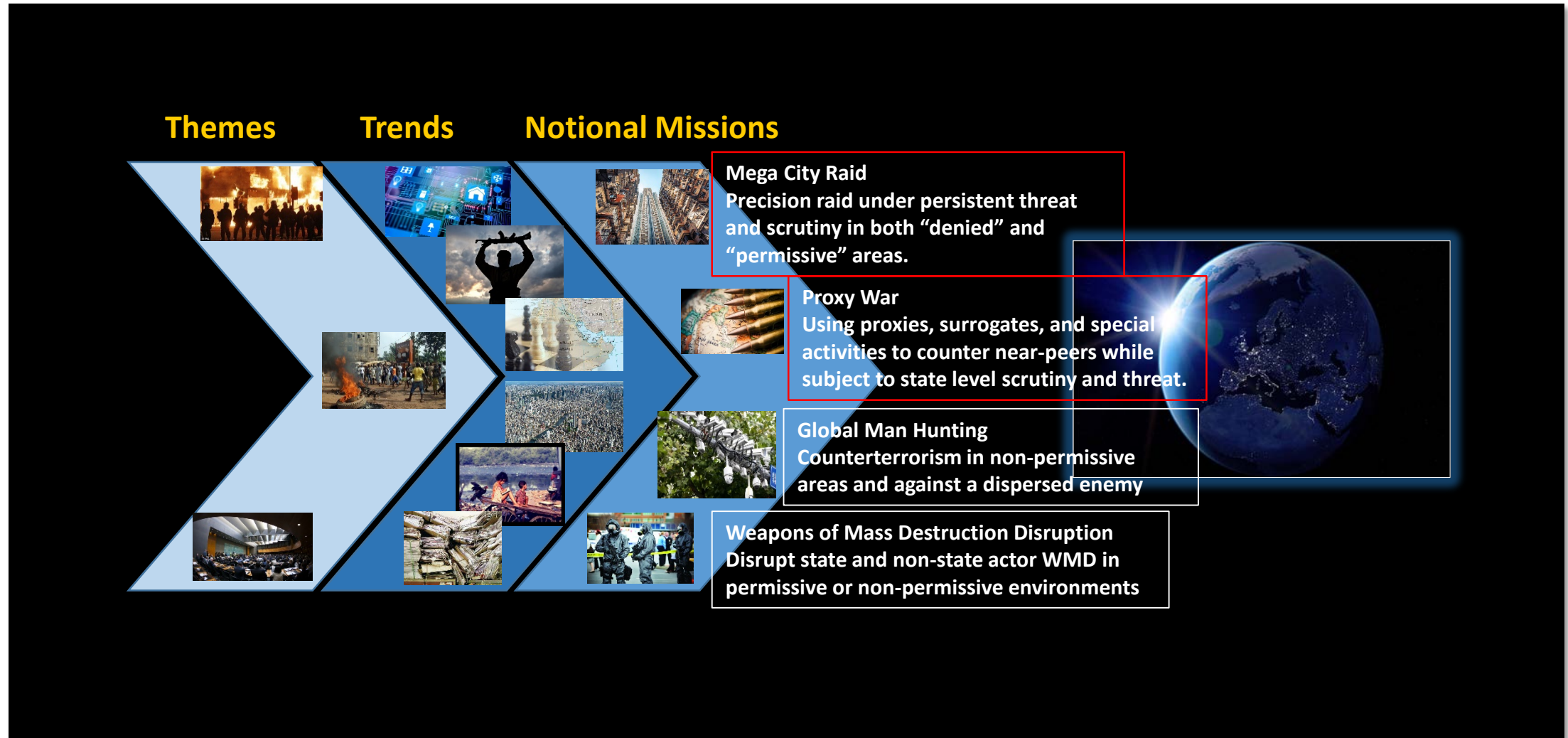


**Convergence**

# Future Operating Environment



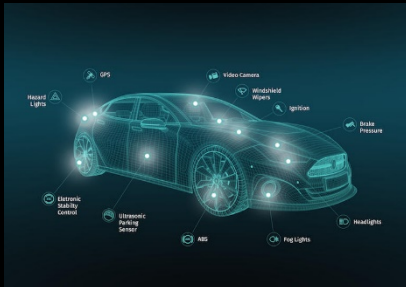
# Future Operating Environment



# Notional Mission: Mega City Raid Challenges

## Cars

- By the thousands, both self-driving and with drivers
- Clog roads, limiting rapid movement
- Potential sensor data requiring Artificial Intelligence and Big Data Analytics to exploit



## Drones

- By the thousands, some with facial recognition artificial intelligence
- Clog sky, blocking communications networks
- Relays real-time ground force location
- Armed drones concealed in delivery and other use drones

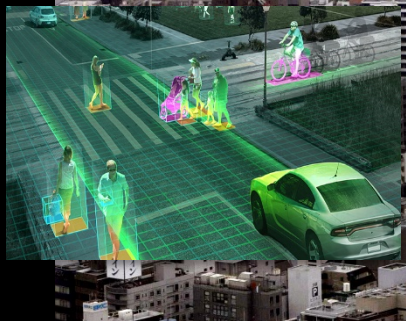


## Global Coverage

- Mobile cameras capture and upload everything via commercial encryption for live-viewing across the globe
- Social media and crowdsourcing generate potential tactics
- Special Forces Operators were collected on and tracked from point of origin to point of operation

## Cyber

- Hired hackers, and volunteers hack the city Closed Circuit Cameras and TV
- Navigation systems are spoofed to misdirect forces



## Subterranean

- Cities moving underground
- Maze of tunnels and sewers
- Traditional communications denied

## Denied Access Zone

- Extremely hostile
- Heavily surveilled
- No government influence

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# Notional Mission: Proxy War Challenges



## State Collection

- **State Signals**  
Intelligence assets are used in combination with human networks and open source information focused on SOF units and their families



## Internet of Things and Artificial Intelligence

- Allows access to information that can be used to identify plans, movement, personnel and aid intelligence collection efforts



## Non-attributable Cyber

- Collect on SOF personnel and movements
- Conduct information operations to provide false information
- Prevent the use of key SOF Command and Control assets

## Anonymous actors

- No state ownership of personnel conducting military-like actions, challenging legal and policy responses



## Encryption

- Communication occurs easily across the globe via commercially encrypted apps

## Military-grade equipment

- Insurgents or other adversaries have access to technologies that reduce SOF physical invisibility



## Non-conventional actors

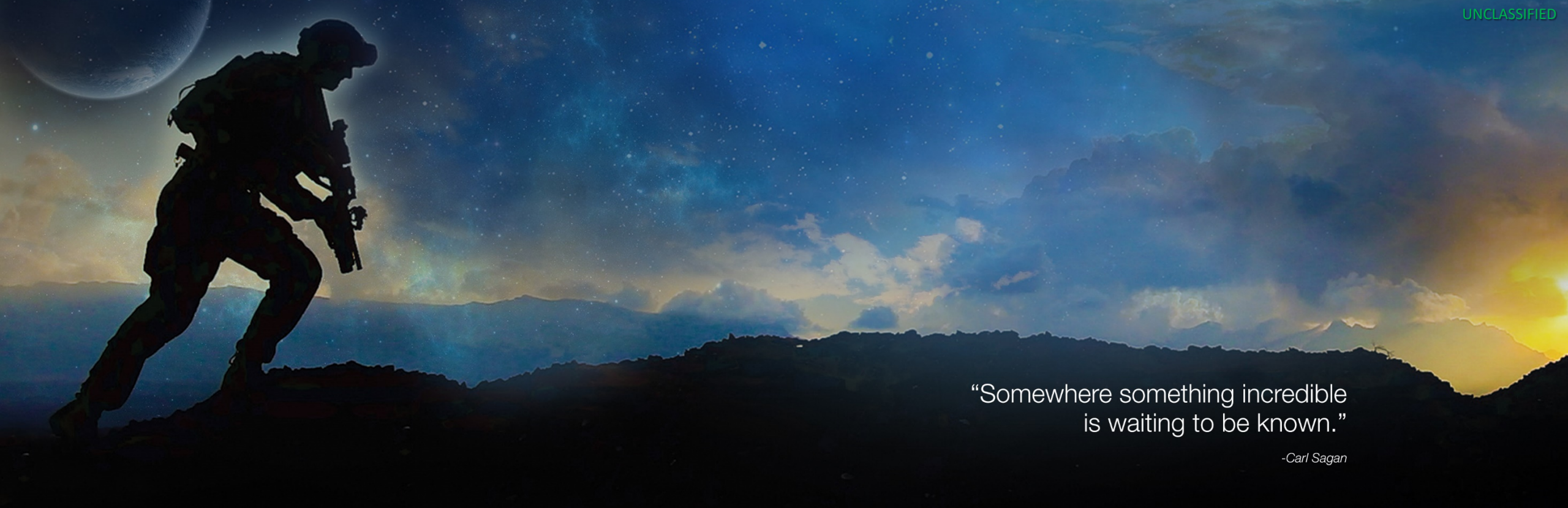
- Paramilitaries
- Motorcycle gangs to cause disruption
- Mass refugee movements to complicate responses



# Future Operating Environment

**Technology Focus Areas: Within the next 5-7 years, Special Operations Forces need to be able to address critical needs in the following areas:**

- Contested Environment Situational Awareness
- Counter-Autonomous Systems
- Next Generation Characterization and Identification
- Strategic and Tactical Signature Management
- Tactical Communications/Navigation
- Tactical Remote Autonomous Systems and Human/Machine Interface
- Data Analytics/Visualization (as an enabler across all Technology Focus Areas)



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**FUTURES PROCESS/FUTURES FOUNDRY**



# S&T Futures Process

A Foundational Process **that** is Flexible/Adaptable  
**and** Provides a Framework

Iterations Are Mission/Objective Focused **and**  
Enable Brainstorming/Ideation

# S&T Futures Process

## □ Results

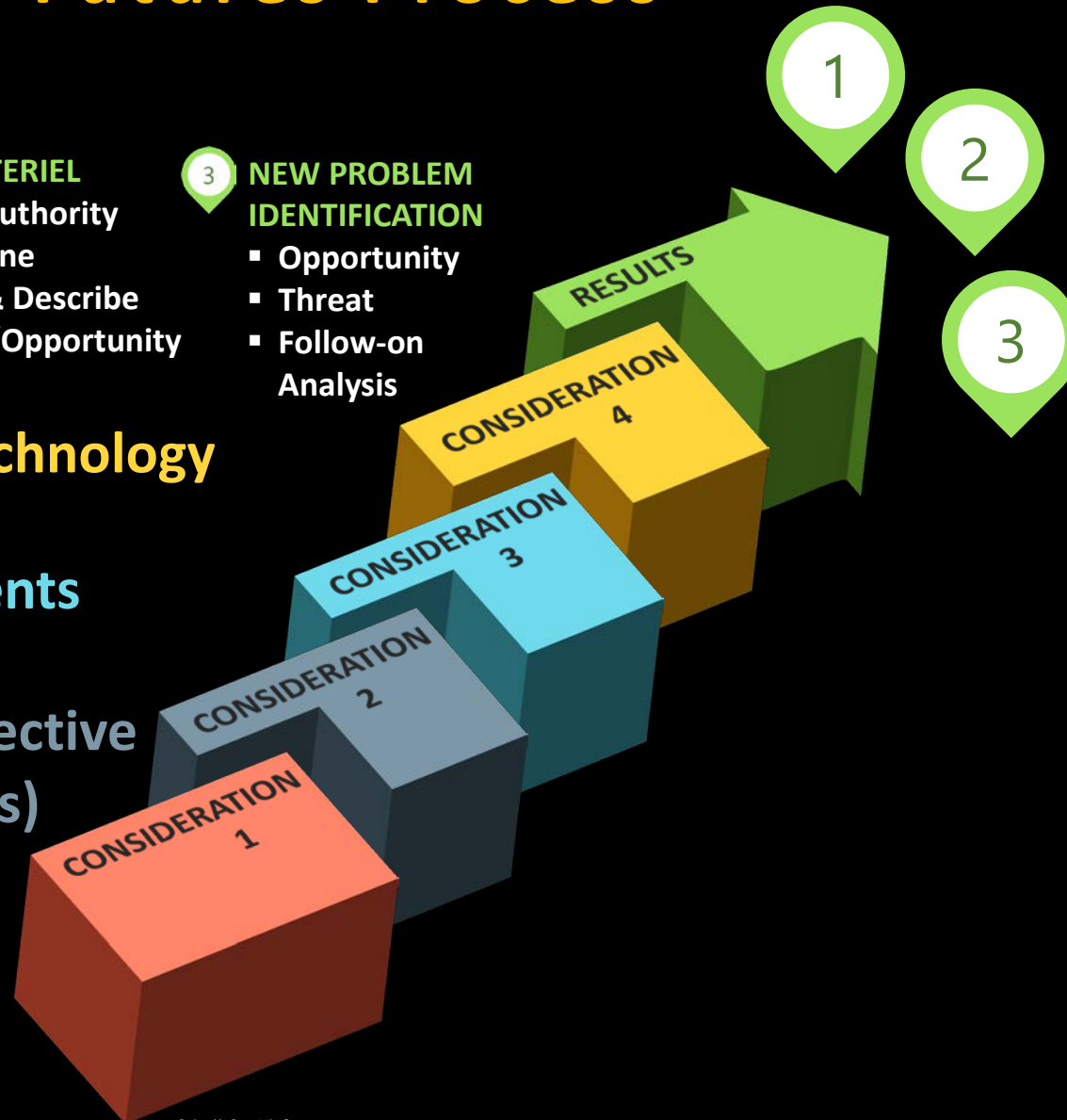
- |   |   |  |
|---|---|--|
| <p>1 <b>MATERIEL APPROACHES</b></p> <ul style="list-style-type: none"> <li>▪ Leap Ahead</li> <li>▪ Asymmetric</li> <li>▪ Divergent</li> </ul> | <p>2 <b>NON-MATERIEL</b></p> <ul style="list-style-type: none"> <li>▪ Policy, Authority &amp; Doctrine</li> <li>▪ Assess &amp; Describe Impact/Opportunity</li> </ul> | <p>3 <b>NEW PROBLEM IDENTIFICATION</b></p> <ul style="list-style-type: none"> <li>▪ Opportunity</li> <li>▪ Threat</li> <li>▪ Follow-on Analysis</li> </ul> |
|---|---|--|

## □ Rapidly Changing Technology

## □ Changing Environments

## □ Varying Mission Objective (Measures of Success)

## □ Changing Strategic Conditions



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# SOF Futures Foundry Events



**SOF Futures Foundry Events use a Design Thinking Approach to Explore Concepts from Future Technology Areas and how they Impact Potential Missions for Future SOF Operators**

**Inaugural SOF Futures Foundry Event Took Place In October 2017**



**Incorporated Design Thinking  
Leveraged Diverse Participants**

**Using 2 SOF Mission Scenarios, Identified 24 Futures Concepts and Associated Sub-concepts/key Technologies with the Potential to Revolutionize SOF Missions 10-15 Years in the Future**

# SOF “Futures Foundry” Event

Next Futures Foundry Event is Scheduled to take Place in June 2018

- Will Incorporate Design Thinking and Leverage Diverse, Non-traditional Participants
- Hyper Enabled Operator is Embedded Within this Construct

**New** Set Of SOF Mission Scenarios, that are Based on the **Future Operating Environment**, will be used to Identify Key Technologies with the Potential to Revolutionize SOF Missions **5-10 Years in the Future**





# QUESTIONS?

