

# Transforming to Network Centric Operations

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# Transformation

...Meeting the Challenges of the New Competitive Landscape

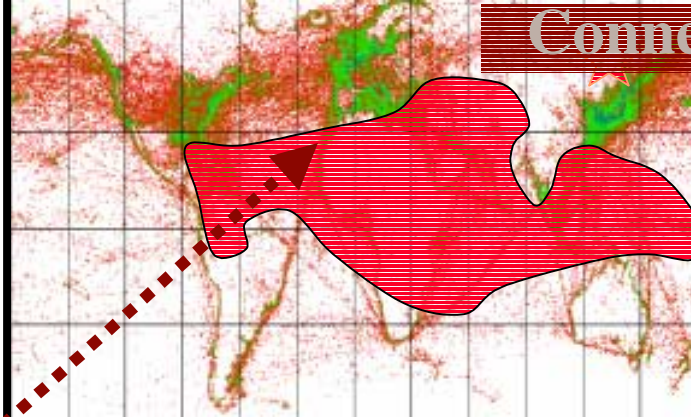
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*Information Age*

*Means  
Competency*

*Connectedness*

**Security=Defense+All Else**



*Globalization II*

*Globalization III*

*Ends  
Relevancy*

**Containment**

**Security=Defense**

*Industrial Age*



# Competency for the Age



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## Industrial Age

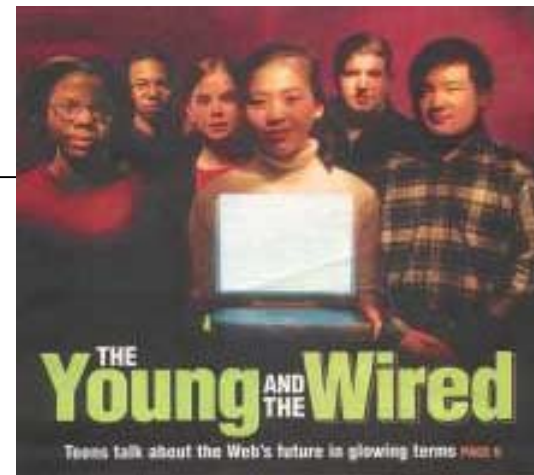
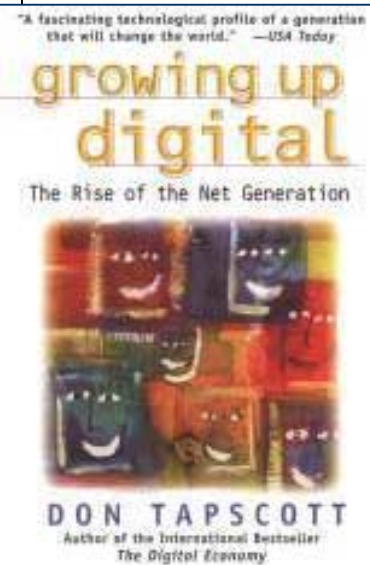
- Success = Scale + Scope
- Top Down - Centralized
- Vertical Integration
- Information Hoarding
- Local Awareness
- Arms Length Relationships
- Make and Sell
- Inwardly Focused



## Information Age

- Success = Adaptability + Agility
- Empowering the "Edges"
- Virtual Integration
- Information Sharing
- Increased Transparency
- Collaboration & Synchronization
- Sense and Respond
- Externally Oriented
- Accelerated Innovation & Experimentation

- *New Rules*
- *New Behaviors*
- *New Competencies*
- *New Relationships*



accenture

**Chinese to Become #1 Web Language by 2007**

{Now it gets interesting.}



# Transformation

...U.S DoD Perspective



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- ✓ Continuing process
- ✓ Creating/anticipating the future
- ✓ **Co-evolution of concepts, processes, organizations and technology**
- ✓ **New competitive areas / competencies; revalued attributes**
- ✓ Fundamental shifts in underlying principles
- ✓ New sources of power
- ✓ Broadened capabilities base

- *New technology context*
- *Broadened threat context*
- *New strategic context*

***A Broad and Sustained Competitive Advantage***



# A US Transformation Goal: Desired Attributes of a Transformed Joint Force



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- **Fully Integrated:**
  - All DoD component capabilities are born joint and are able to **integrate** into a **focused effort with a unified purpose**
- **Networked:**
  - Linked and synchronized in time and purpose— **allowing dispersed forces to communicate**, maneuver, and **share a common operating picture**
- **Adaptable:**
  - Forces that are **tailorable and scalable**, prepared to quickly respond to any contingency
- **Expeditionary:**
  - **Rapidly deployable**, employable, and sustainable—regardless of anti-access, or area denial environments
- **Decision Superior:**
  - **Gain and maintain information superiority** to shape the situation or react to changes
- **Decentralized**
  - Uses **collaborative planning** and shared knowledge to empower subordinate commanders to **compress decision cycles**
- **Lethal**
  - **Capability to destroy** an adversary and/or his systems in all conditions and environments

*Source: United States Armed Forces - Joint Operations Concepts (JOpsC)*



# *How a Networked Force Operates: Network Centric Warfare*



Creates an **Information Advantage** and translates it into a decisive **Warfighting Advantage**

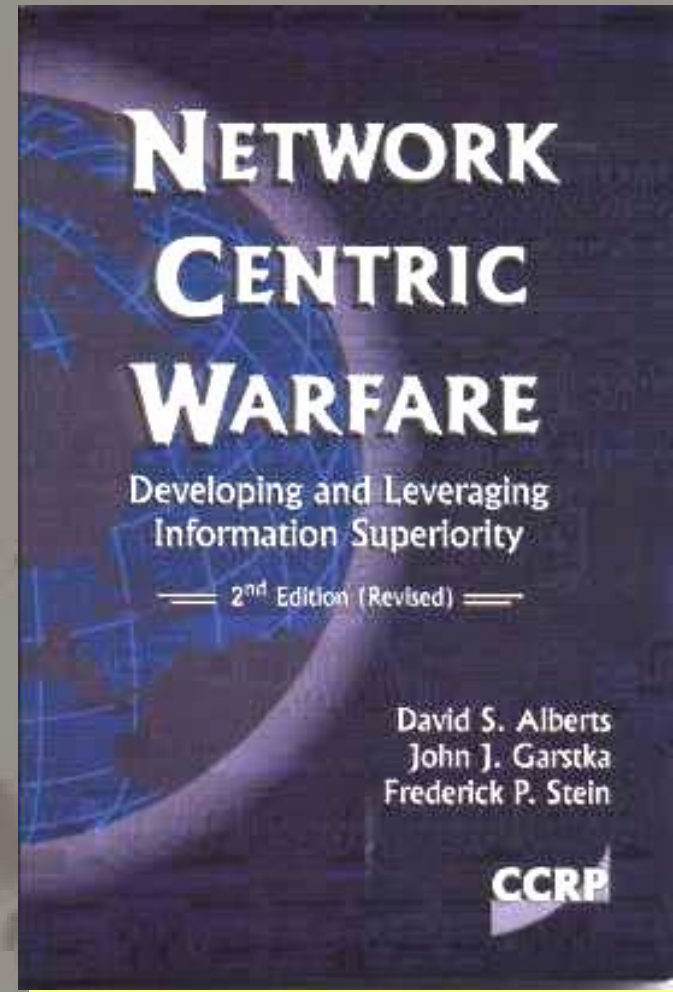
**Information Advantage** - enabled by the robust networking of **well informed** geographically dispersed forces

Characterized by:

- Information sharing
- Shared situational awareness
- Knowledge of commander's intent

**Warfighting Advantage** - exploits behavioral change and new doctrine to enable:

- Self-synchronization
- Speed of command
- Increased combat power



*Exploits Order of Magnitude Improvement in Information Sharing*

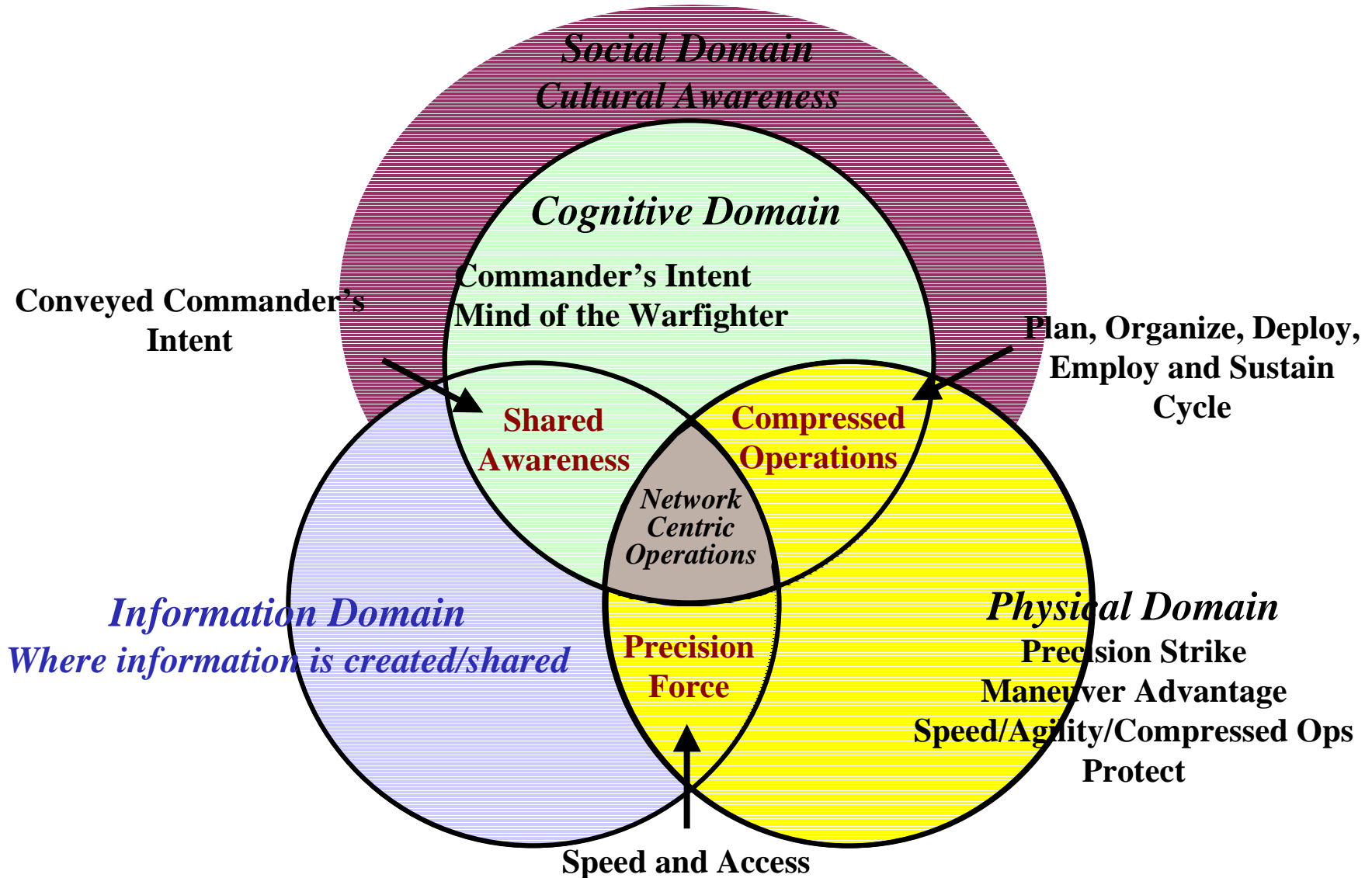


# Competing in the Information-Age

*...the power of Network-Centric Operations*



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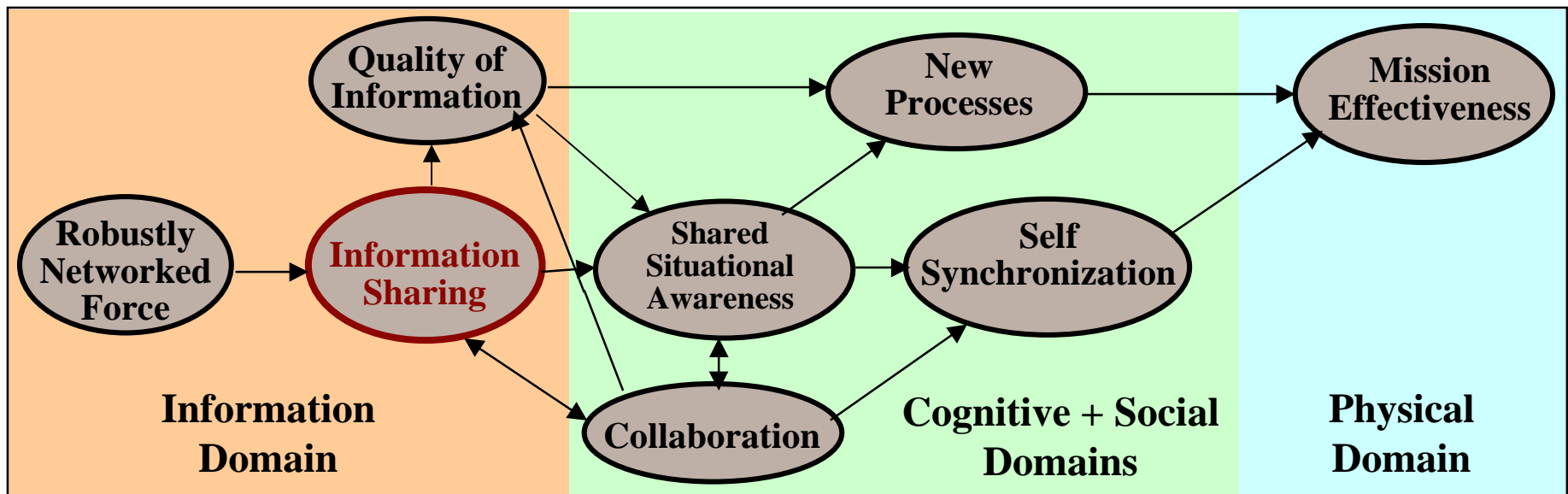
# Tenets of Network-Centric Operations



*...The new value chain*

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- A robustly networked force improves information sharing
- Information sharing and collaboration enhances the quality of information and shared situational awareness
- Shared situational awareness enables collaboration and self synchronization, and enhances sustainability and speed of command
- These in turn dramatically increase mission effectiveness





# STRYKER

BRIGADE COMBAT TEAM



U.S. ARMY

The Army - At War and Transforming



# Study Context



## *Office of Force Transformation*

- Operational Environment
  - Small Scale Contingency (SSC)
  - Early Entry Operations in a rapid response/deployment scenario
- Analysis focus: Certification Exercise (CERTEX) for U.S. Stryker Brigade Combat Team (SBCT)
  - Joint Readiness Training Center
  - Scenario: SBCT Attack on Shughart-Gordon
- Baseline for comparison
  - Non-digitized light infantry brigade
- Measurable results and differences:
  - Measures of Mission Effectiveness (MOEs):
    - Force Effectiveness, Survivability
  - Measures of C2 effectiveness:
    - Quality of Situation Awareness, Speed of Command, Quality of Decisions, Force Synchronization



# Stryker Brigade Overview



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## New Organizational Structure

- RSTA = More Eyes on the Ground
  - 3X Cavalry troops
  - UAV
  - HUMINT Team in each Recon Vehicle
- Snipers in all Infantry Companies
- Signal, Engineer, Anti-Tank Co
- Military intelligence company
- Field Artillery Battalion
- Brigade Support Battalion (CSS)

## New Operational Concepts

- Simultaneous distributed operations
- Develop situation before contact
  - *“See First, Understand First, Act First, Finish Decisively”*
- Precision Maneuver
  - Rapid Massing & Dispersion
- Select time & place of combat
  - To avoid surprises/ exploit advantage

## Networking and Automated C2 Capabilities

- FBCB2, MCS
- Rapid info fusion & visualization
  - ABCS
- Multi-echelon collaborative planning
  - Bde-Bn-Co interactions

## Synergy: Mobility ↔ Agility

- Physical mobility
  - Stryker light armored vehicle
  - Fast, Quiet: called the “Ghost Brigade” in Iraq
- C2 agility
  - Enabled by network and ABCS

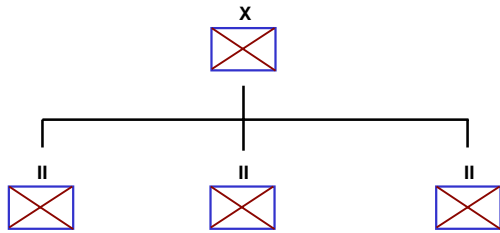


# Organizational Change: Comparison of Traditional and New Organizational Concepts

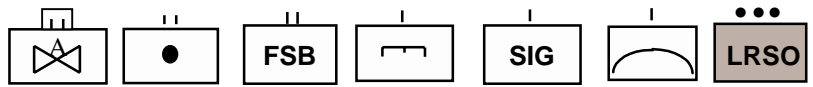


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## Lt Inf Bde

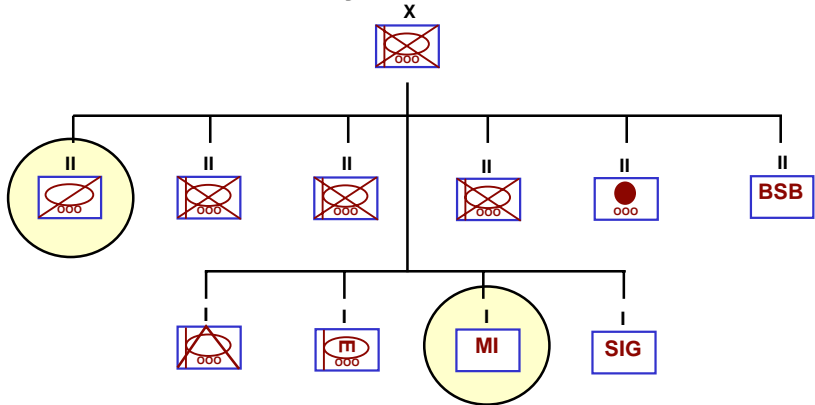


Organic Units

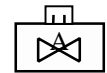


OPCON or DS to Lt Inf Bde at JRTC.

## Stryker Bde



Organic Units



OPCON or DS to Lt Inf Bde at JRTC.

- *Stryker units all organic except for Aviation*
- *Stryker Bde - approximately 700 More “Boots and Eyes on the Ground”*
- *Stryker Bde - significantly more reconnaissance capability*
- *Stryker Bde MI Company - significant analysis and HUMINT capability.*



# Improved Interactions & Collaboration



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### Lt Inf Bde

- Limited Interaction by FM Radio only
- Sequential planning and decision-making
- Brigade Commander Location:
  - Forward with subordinates
- OR**
- Collaborating with staff at the TOC
- Follow the 1/3 – 2/3 Rule to give time for:
  - Time-Intensive Sequential Planning
  - Distribute Paper Detailed Orders
  - Battalion Reconnaissance
  - Sharing Understanding of Plan
  - Rehearse Planned Synchronization
- Bde Cdr must select the COA early before he has gained situational awareness

### Stryker Bde

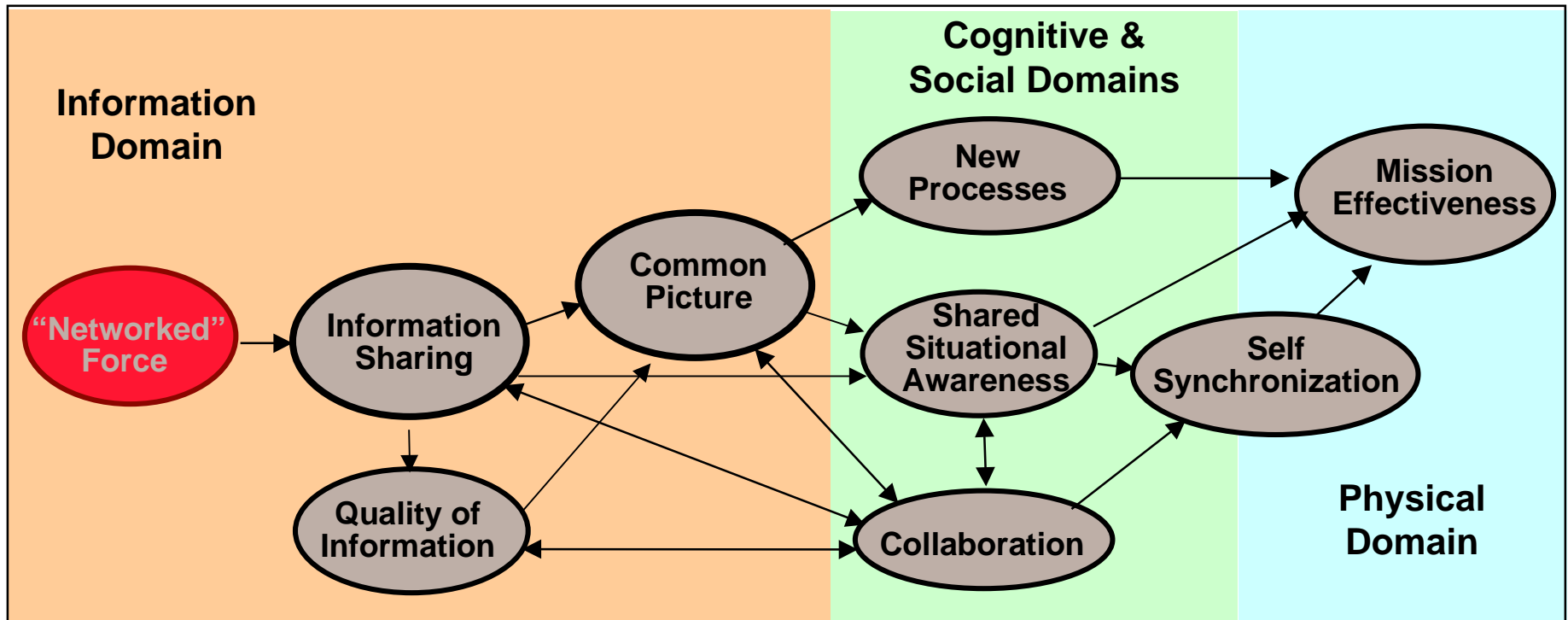
- Widespread Horizontal Interaction
- Parallel & collaborative planning and decision-making
- Brigade Commander Location:
  - Forward with subordinates
- AND**
- Collaborating with staff at TOC using network in his Command Vehicle
- Flexible Use of Time Available using:
  - Abbreviated Collaborative Planning
  - Transmit Digital Mission Orders
  - Increased Brigade Reconnaissance
  - Sharing Understanding of the Situation
  - Agile, Self-Synchronizing Units
- Bde Cdr may defer COA selection after he has gained situational awareness



# Stryker Brigade Combat Team: Key NCW Relationships



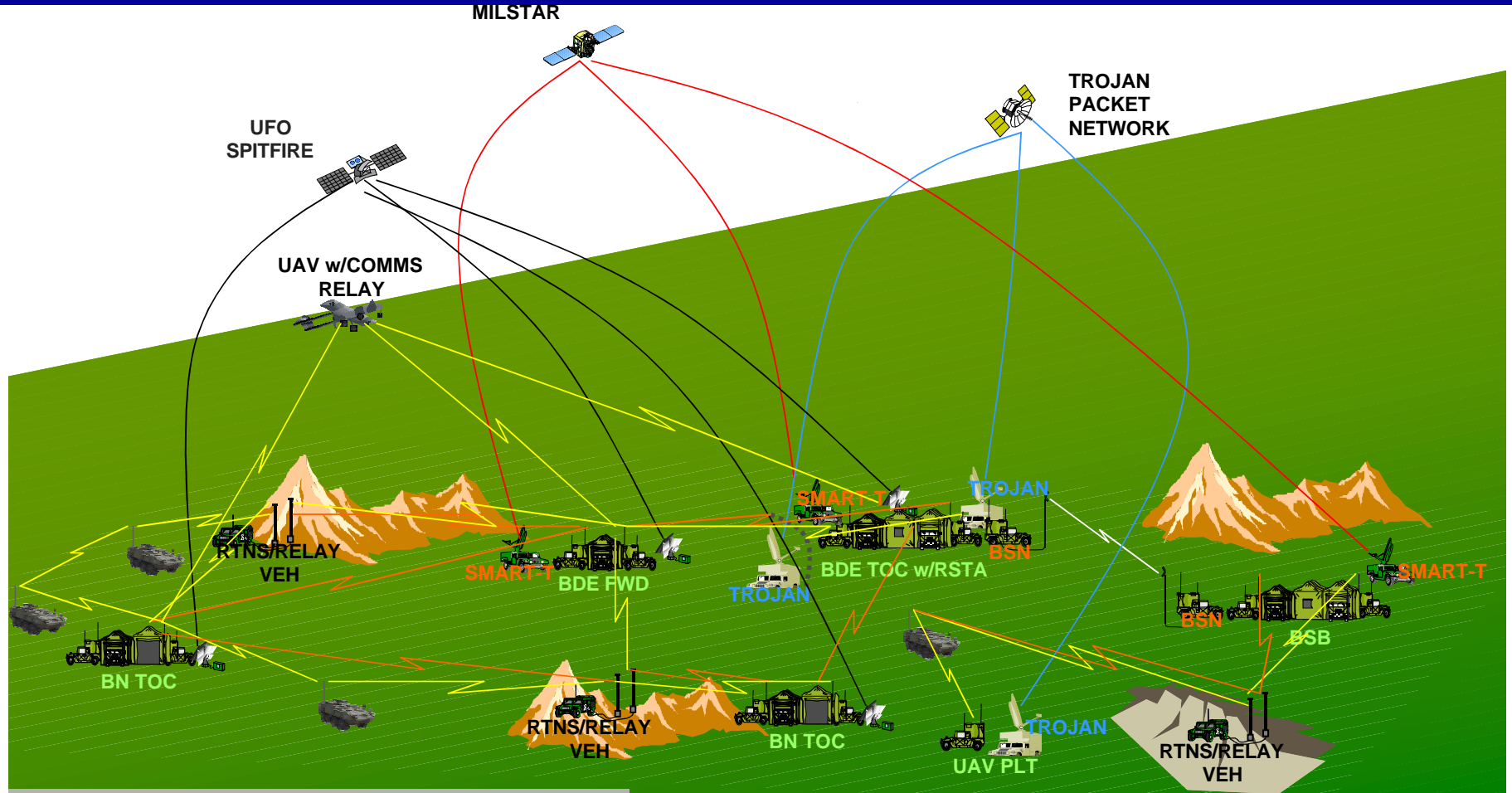
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# Stryker: The Network

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- EPLRS (14.4Kbs mean Rate)
- NTDR (28.8Kbs mean Rate)
- PSC-5 Spitfire(16Kbs max Rate)
- TSC-154 SMART-T(1536Kbs max Rate)
- TROJAN SPIRIT TERMINAL(1536Kbs max Rate)
- BSN-HCLOS Radio(8192Kbs max Rate)

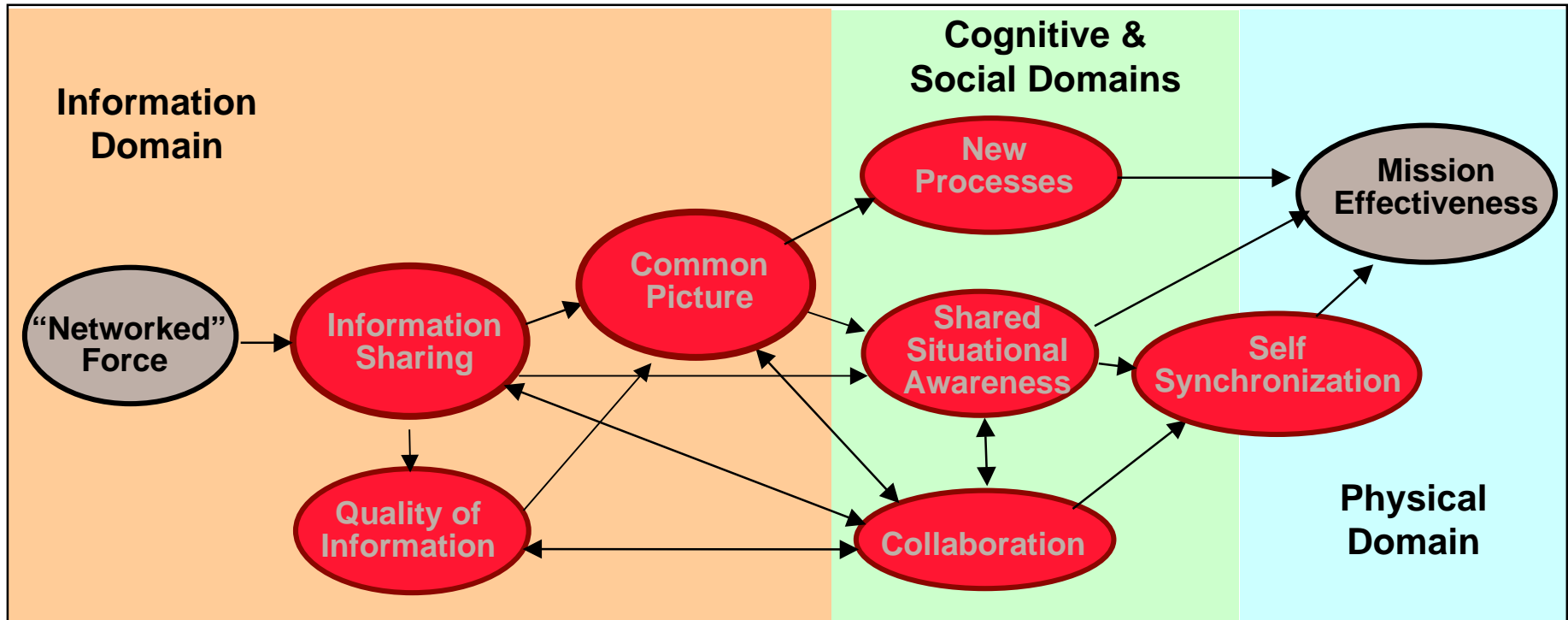
**Digital Network Ready Nodes:  
75% or more of Stryker Bde Combat Vehicles  
Are Network Ready**



# Stryker Brigade Combat Team: Key NCW Relationships



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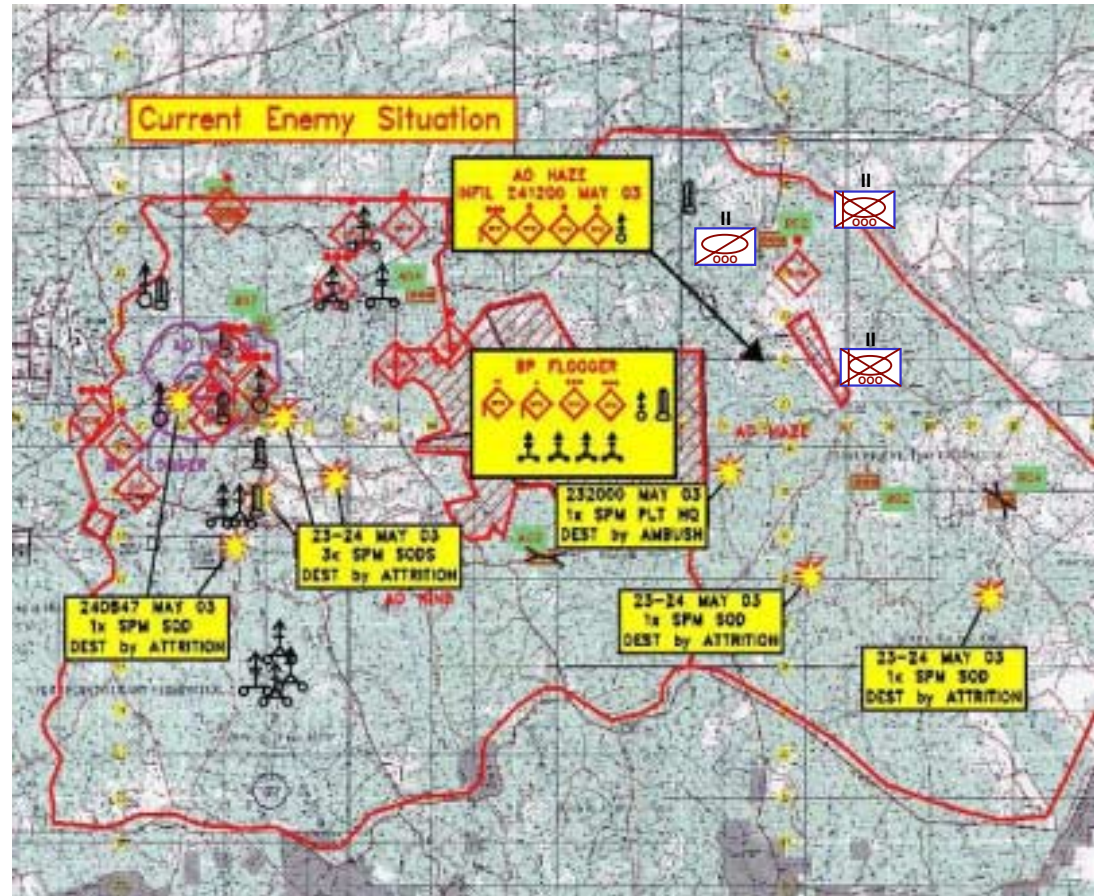
# Scenario - Enemy Situation



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## Realistic, Complex, Challenging Enemy

- Contemporary Operating Environment (COE)
- Conventional Threats:
- Unconventional Threats:
- Irregular Threats:
- Criminal Organizations harass civilians.
- Civilians on the Battlefield
- International Media Presence



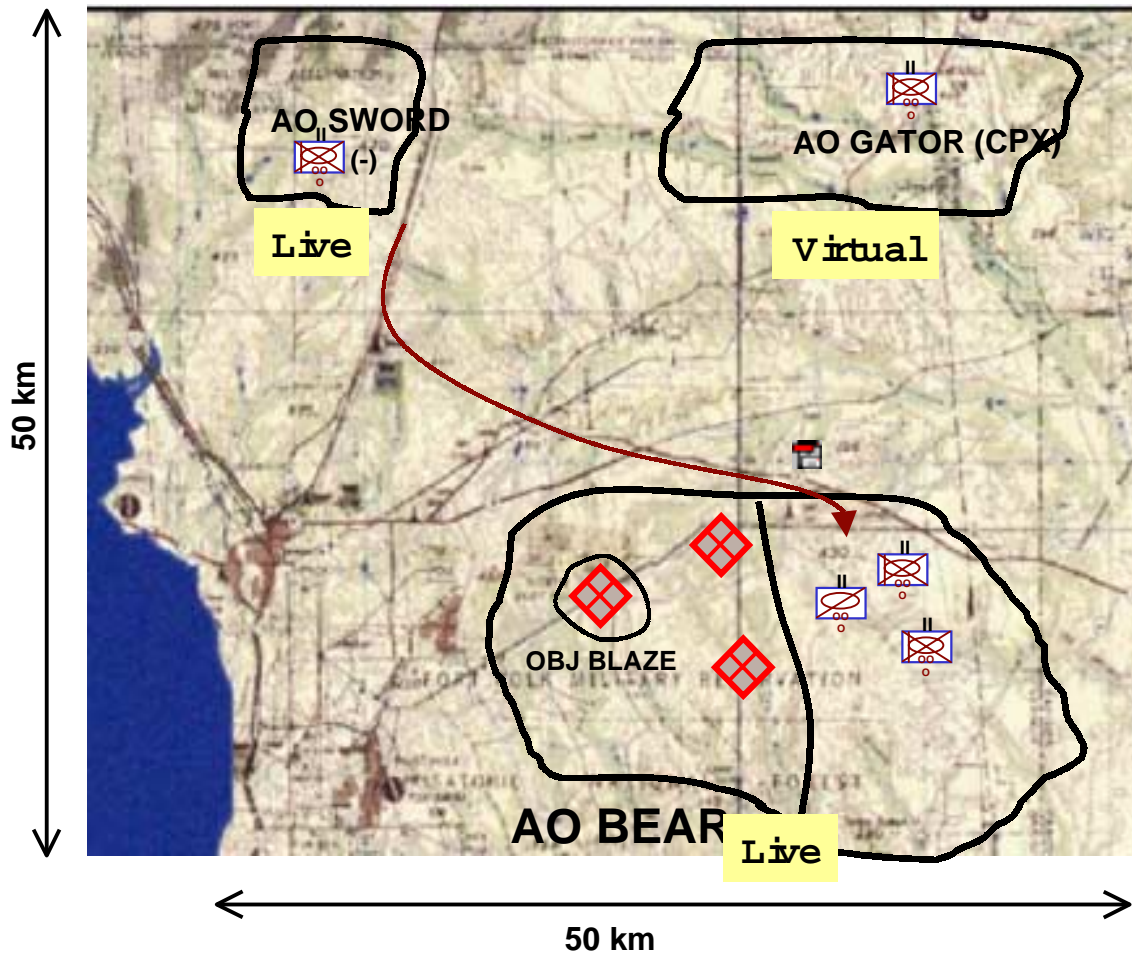


# Scenario - Friendly Situation



## Small Scale Contingency

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- **SBCT On-Going Tasks**
- **Secure** FOB to deploy follow-on forces
- **Attack** in zone to defeat enemy insurgents.
- **Provide** Force Protection to local civil authorities
- **Conduct** Stability and Support Operations (**SASO**) to maintain popular support
- **Attack** to seize OBJ Blaze (Shughart-Gordon).
- **Transition** control of SHUGHART-GORDON to civil authorities.
- **Defend** to defeat enemy mechanized attack.

NCO capabilities enable conduct of simultaneous, independent operations in non-contiguous areas.



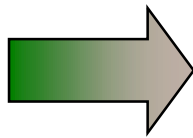
# Operational Concepts



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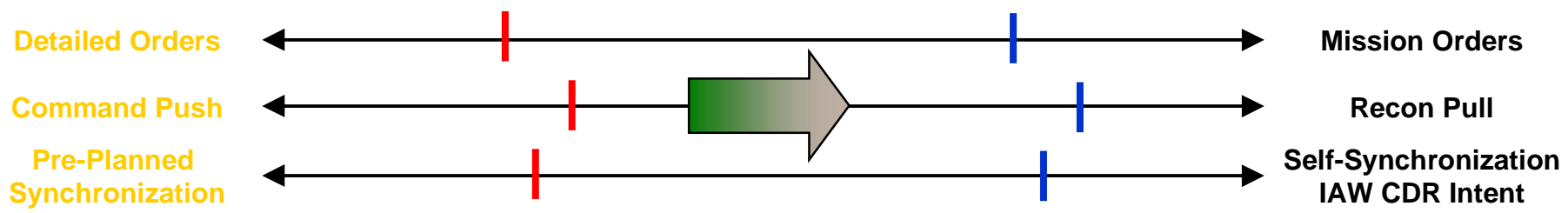
## Lt Inf Bde

- Make contact
- Develop the situation
- Maneuver reserve forces



## Stryker Bde\*

- *SEE First* - Make ISR Contact
- *UNDERSTAND First* - Develop Situation Out of Contact
- *ACT First* - Maneuver Out of Contact to Position of Advantage / Shape the Enemy
- *FINISH DECISIVELY* - Make Contact on Your Own Terms and Synchronize Combined Arms at the Decisive Point



**Stryker Bde commanders endeavor to exploit NCW capabilities to make more effective use of mission orders, reconnaissance-pull operations, and self-synchronization guided by the Commander's Intent.**

\* Central goals articulated in Stryker Bde doctrine

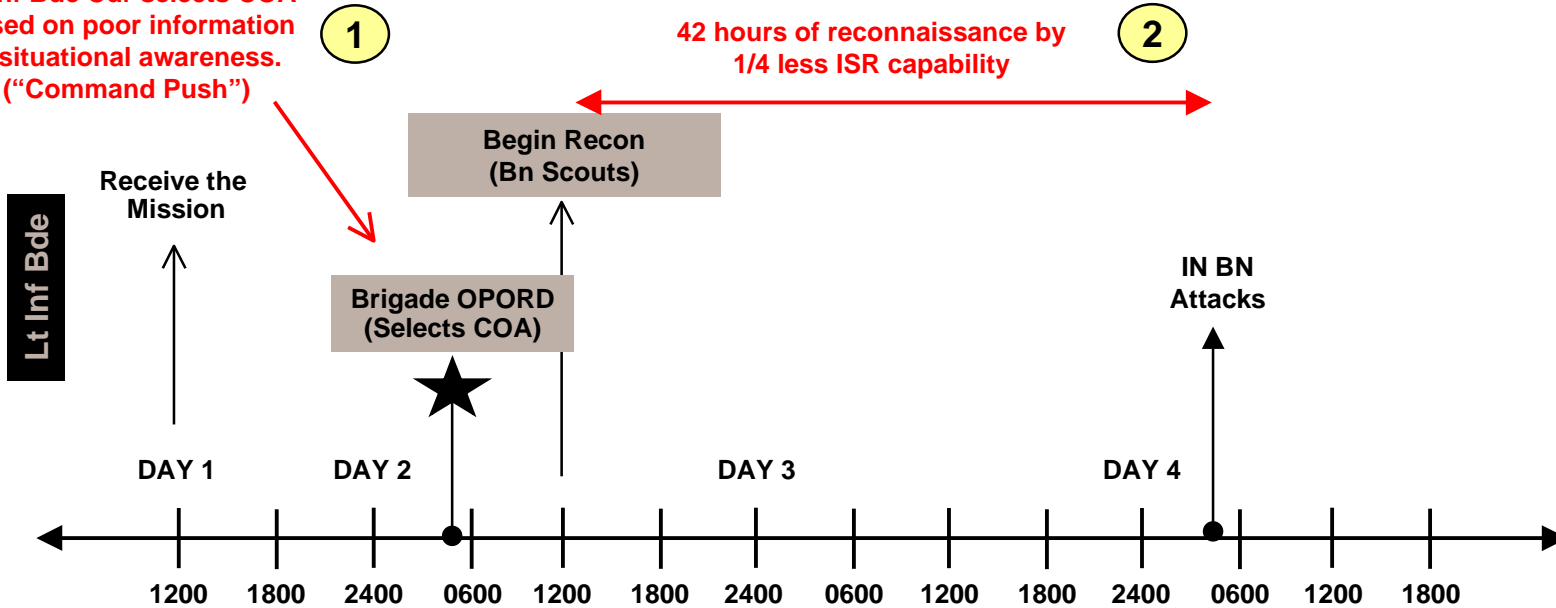


# Command Push

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Lt Inf Bde Cdr selects COA based on poor information & situational awareness. ("Command Push")

42 hours of reconnaissance by 1/4 less ISR capability





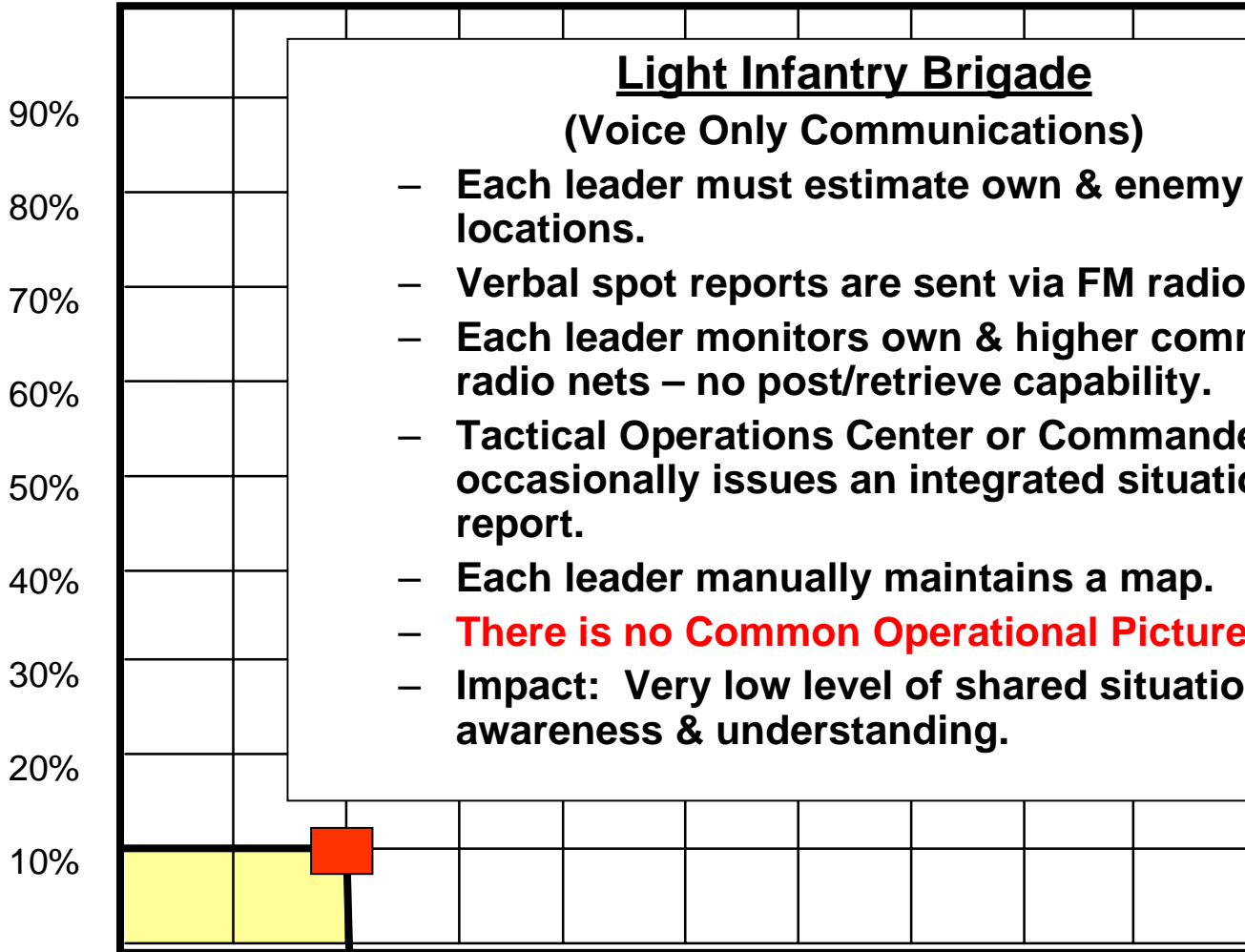
# Light Infantry Brigade:

Poor Information Position – Limited Situational Awareness



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Completeness of Information on Adversary Forces



## Light Infantry Brigade

(Voice Only Communications)

- Each leader must estimate own & enemy locations.
- Verbal spot reports are sent via FM radio.
- Each leader monitors own & higher command radio nets – no post/retrieve capability.
- Tactical Operations Center or Commander occasionally issues an integrated situation report.
- Each leader manually maintains a map.
- **There is no Common Operational Picture**
- Impact: Very low level of shared situational awareness & understanding.

10% 20% 30% 40% 50% 60% 70% 80% 90%

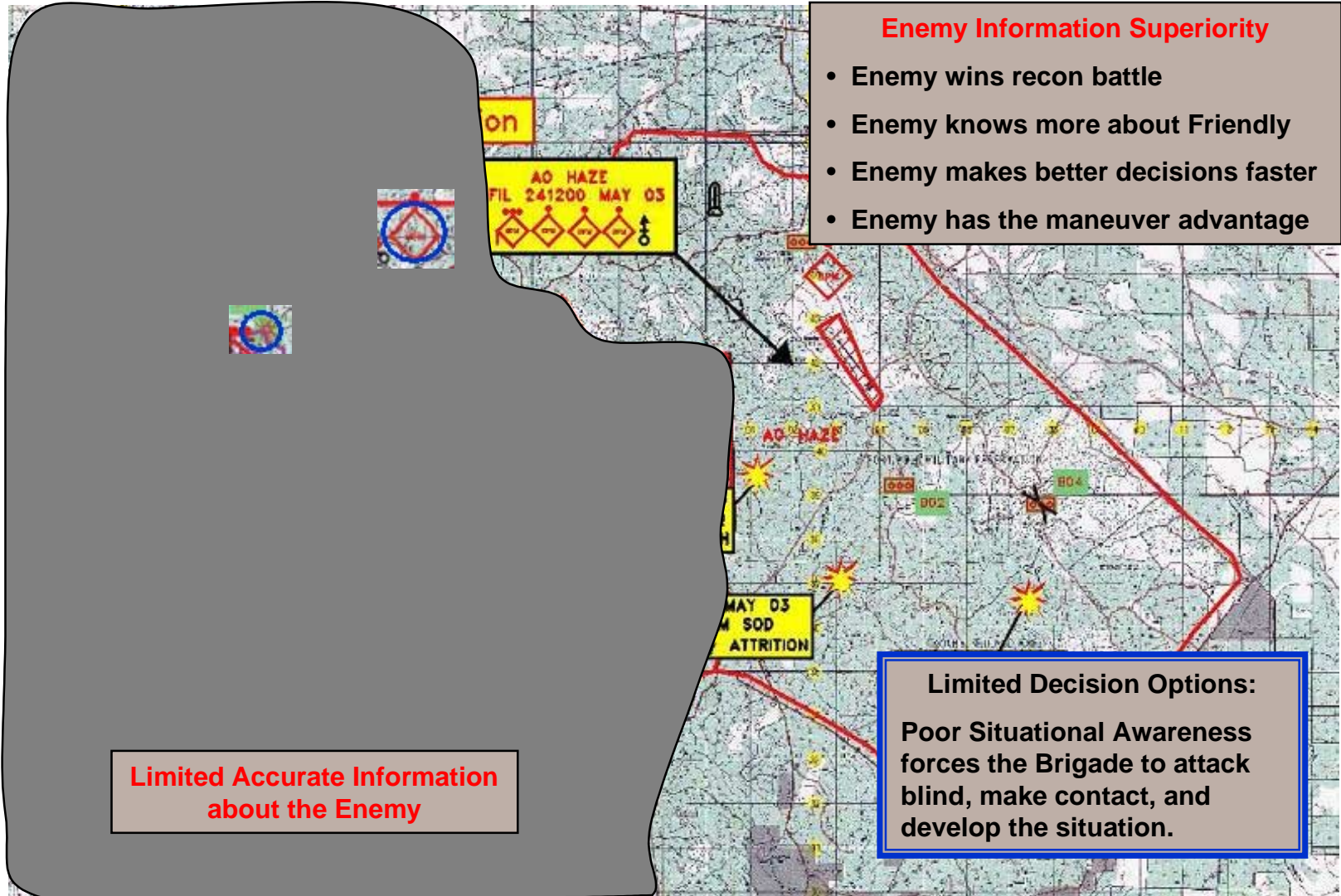
Completeness of Information on Blue Forces



# Light Infantry Brigade Situational Awareness



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**Enemy Information Superiority**

- Enemy wins recon battle
- Enemy knows more about Friendly
- Enemy makes better decisions faster
- Enemy has the maneuver advantage

**Limited Accurate Information about the Enemy**

**Limited Decision Options:**  
Poor Situational Awareness forces the Brigade to attack blind, make contact, and develop the situation.

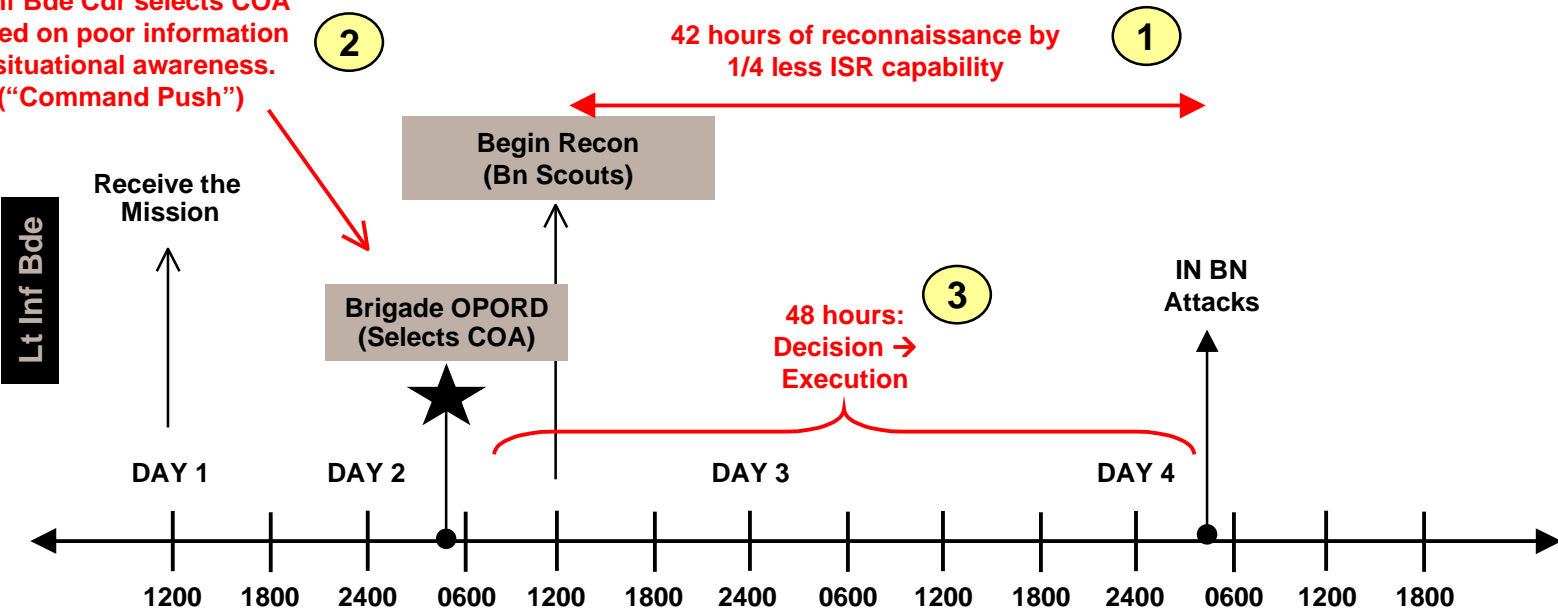


# Traditional Approach



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Lt Inf Bde Cdr selects COA based on poor information & situational awareness. ("Command Push")





# Light Infantry Brigade: Summary



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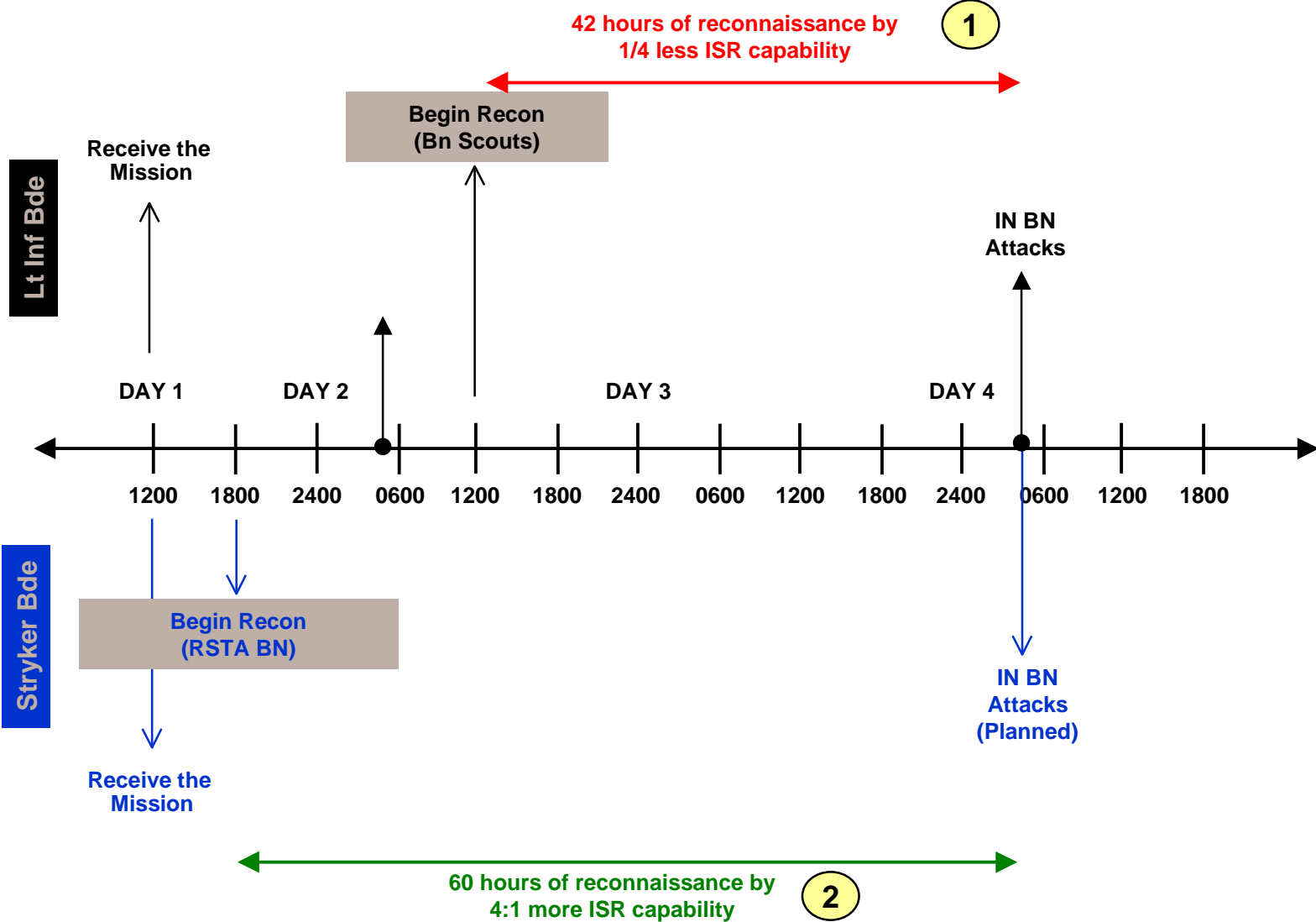
- Blue losses battle for information advantage
  - Blue scouts engaged and destroyed by red force
- Blue Information Position is limited
  - 10% Completeness for Red Force Information
  - 20% Completeness for Blue Force Information
- Limited Shared Situational Awareness & Understanding
- Operational Impact
  - Blue Force attacks into Red Force Strength
  - Blue Force significantly attritted by Red Force
  - Blue Force lacks adequate forces to accomplish mission upon reaching objective
  - Blue Force losses Battle: 10 to 1 loss exchange ratio





# Recon Comparison

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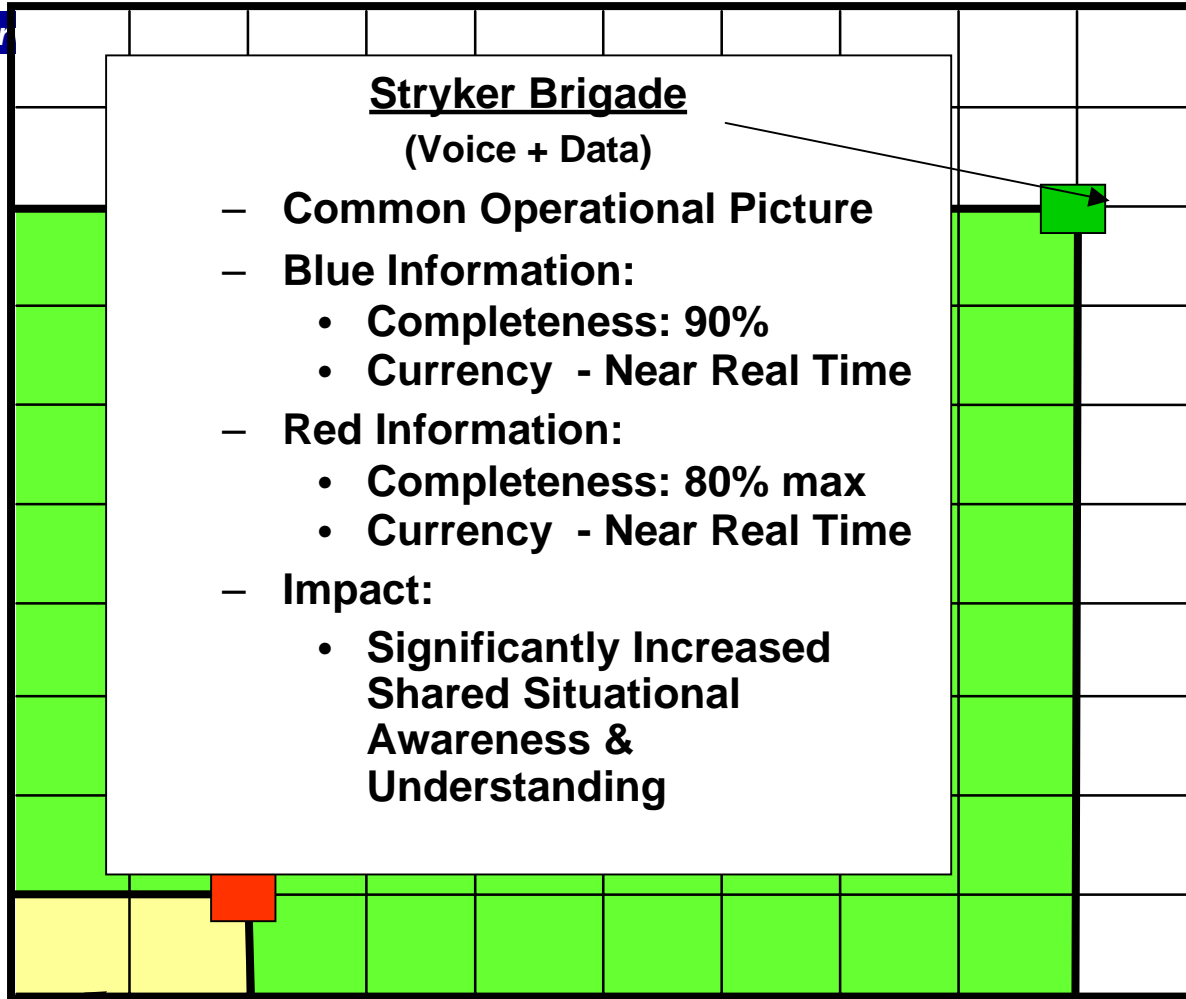
# Stryker Brigade:

## Improved Information Position – Increased Situational Awareness



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Completeness of Information on Adversary Forces



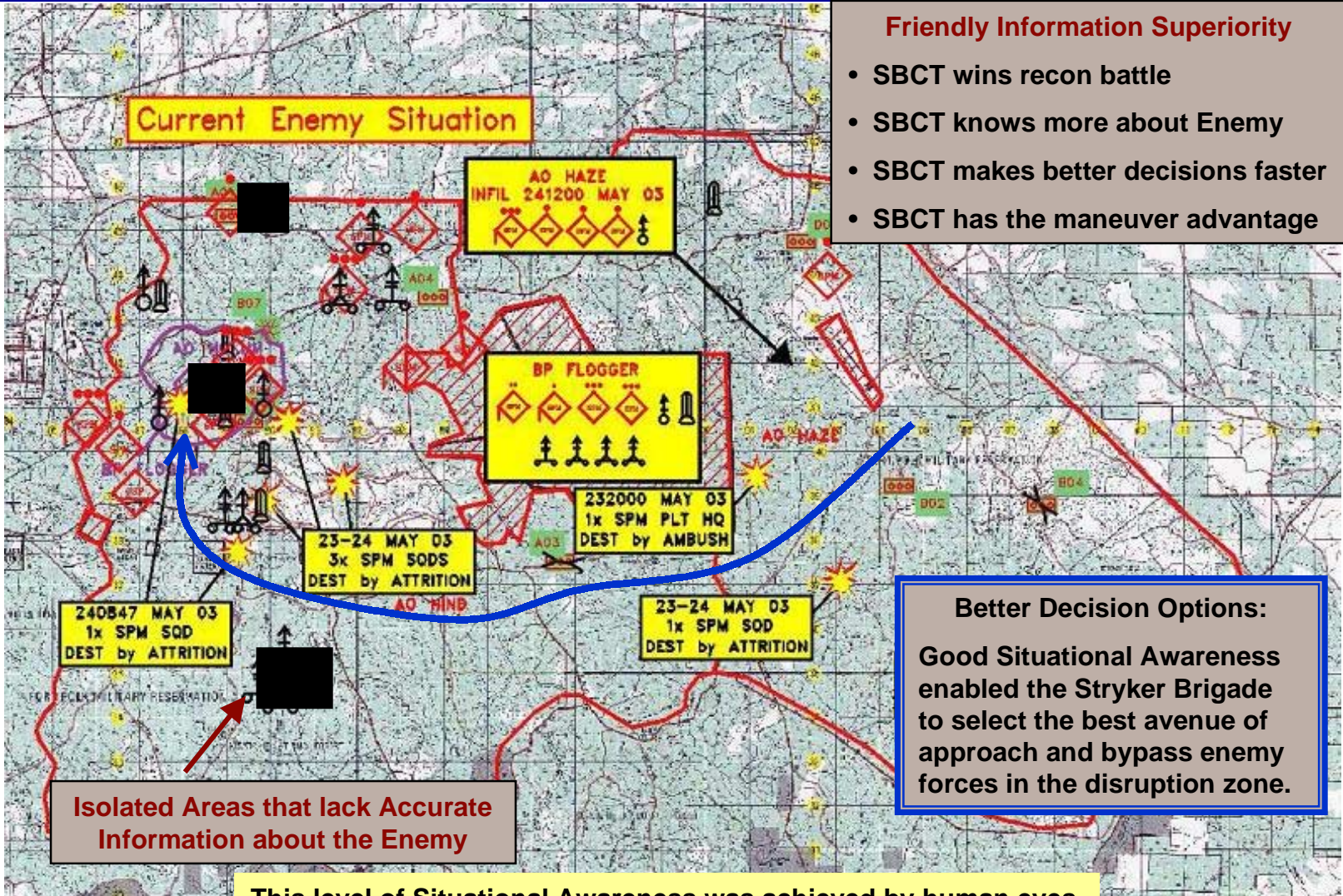
Baseline Infantry Brigade

Completeness of Information on Blue Forces



# Stryker Brigade Situational Awareness

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**Friendly Information Superiority**

- SBCT wins recon battle
- SBCT knows more about Enemy
- SBCT makes better decisions faster
- SBCT has the maneuver advantage

**Better Decision Options:**

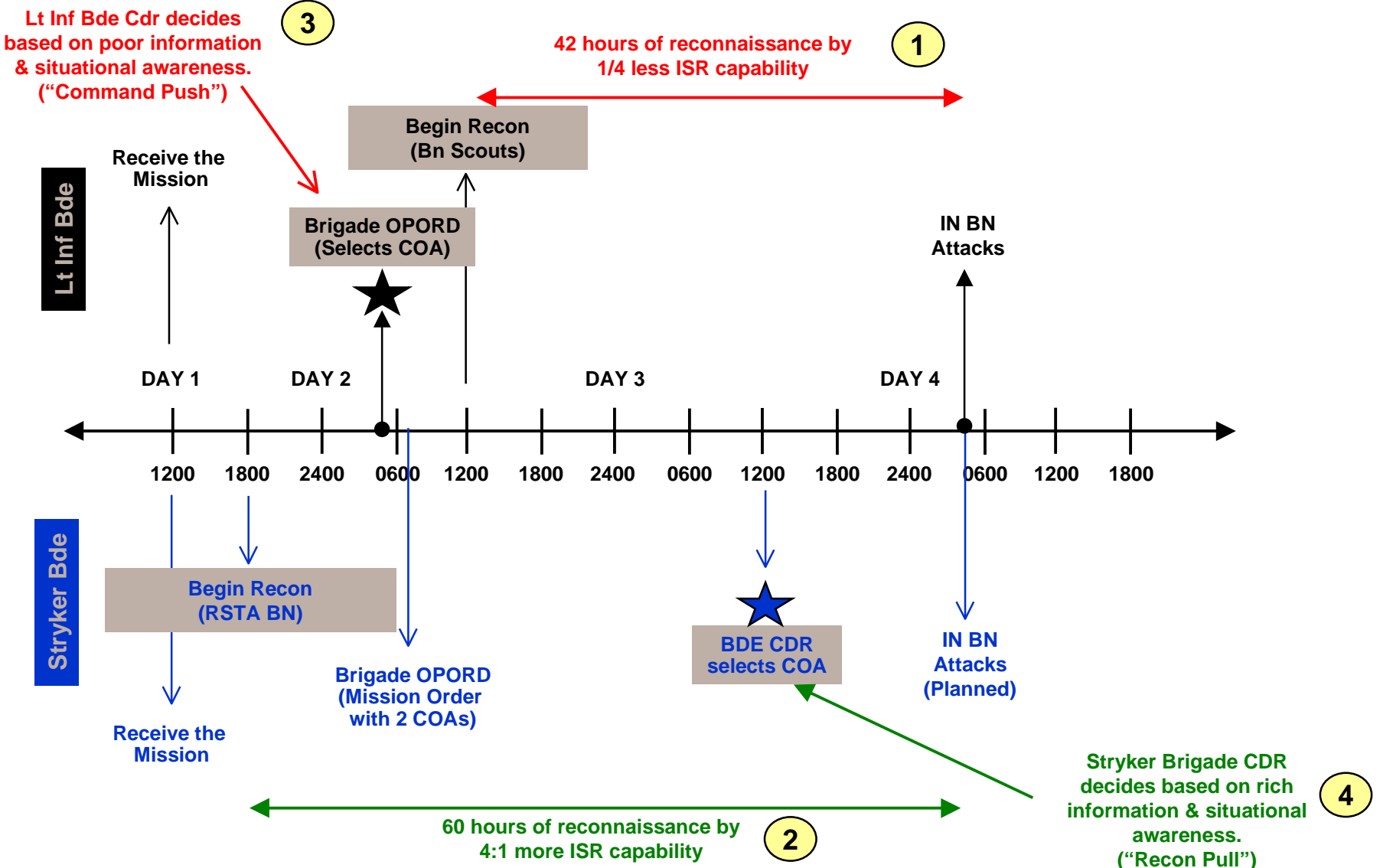
Good Situational Awareness enabled the Stryker Brigade to select the best avenue of approach and bypass enemy forces in the disruption zone.

This level of Situational Awareness was achieved by human eyes in the Cavalry Squadron (RSTA) and confirmed by UAV.



# Recon to Decision

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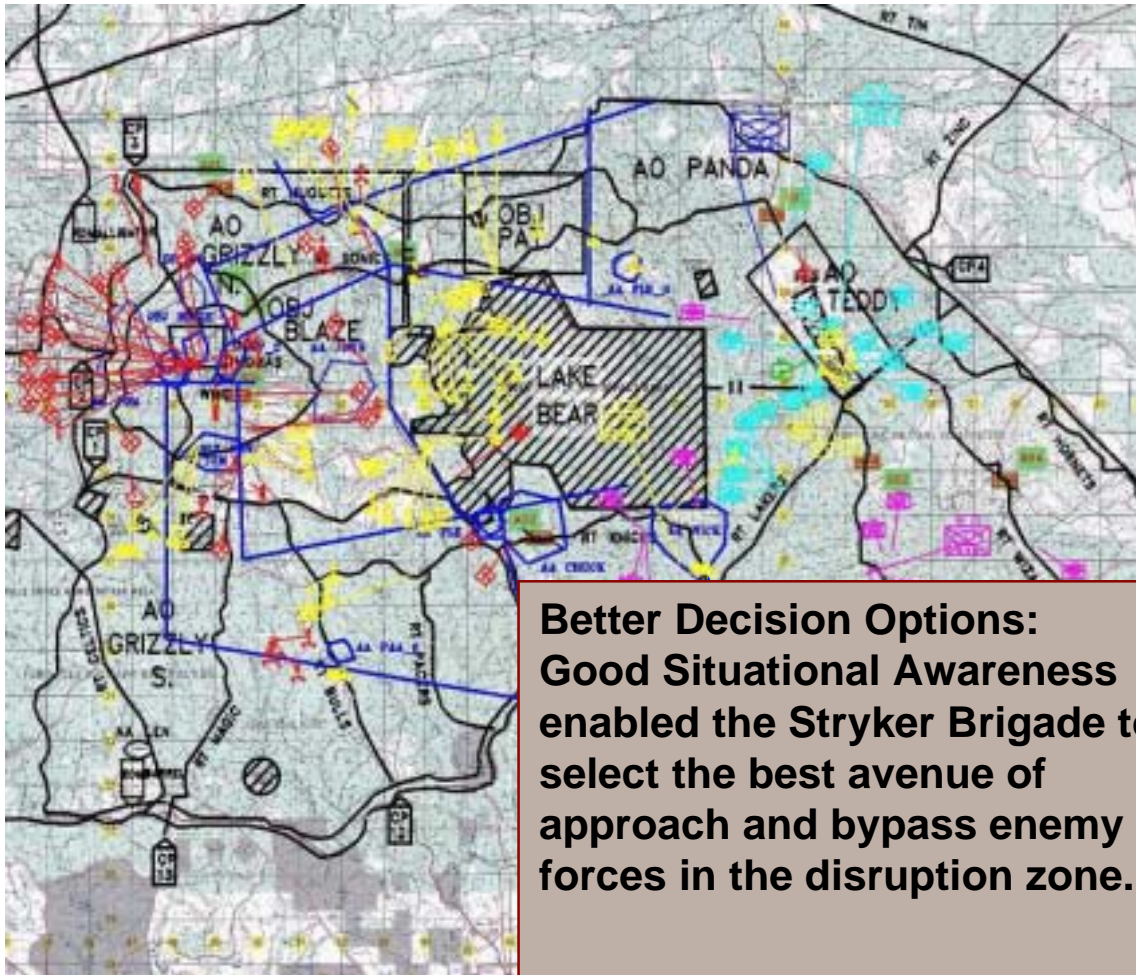




# Scenario - Stryker Brigade Concept of Operations



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**Better Decision Options:  
Good Situational Awareness  
enabled the Stryker Brigade to  
select the best avenue of  
approach and bypass enemy  
forces in the disruption zone.**



### CAV SQDN (RSTA)

- Route Recon
- Recon OBJ Blaze



### SUPPORTING EFFORT

- Attack to clear enemy forces in disruption zone
- Isolate the OBJ Blaze



### MAIN EFFORT

- Follow and Attack to seize OBJ Blaze

MCS Screen Shot  
Day before the Attack

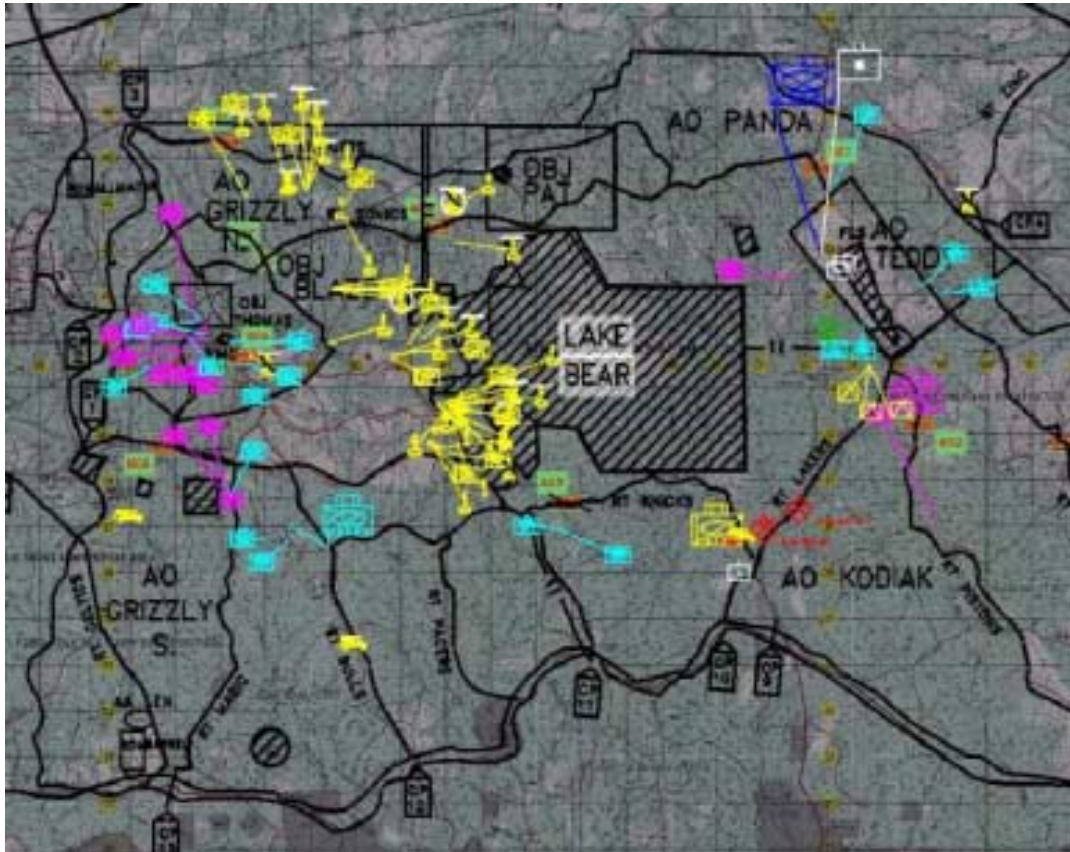
**Concept of Operations is predicated on NCO capabilities  
(high quality information and shared awareness)**



# Stryker Brigade Common Operational Picture: Disposition of Blue and Red Forces During Attack



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MCS Screen Shot during day of attack at Shughart-Gordon



- RSTA identified enemy forces in the disruption zone and OBJ Blaze



- Rapidly bypassed enemy forces in the disruption zone and isolated OBJ Blaze to prevent enemy surprise and engagement main effort



- Planned: Attacked
  - 13 Hours Early
- Attack covered 25 km and seized 20 buildings in 6 hours.

## Infantry Battalion Commander on Self-Synchronization:

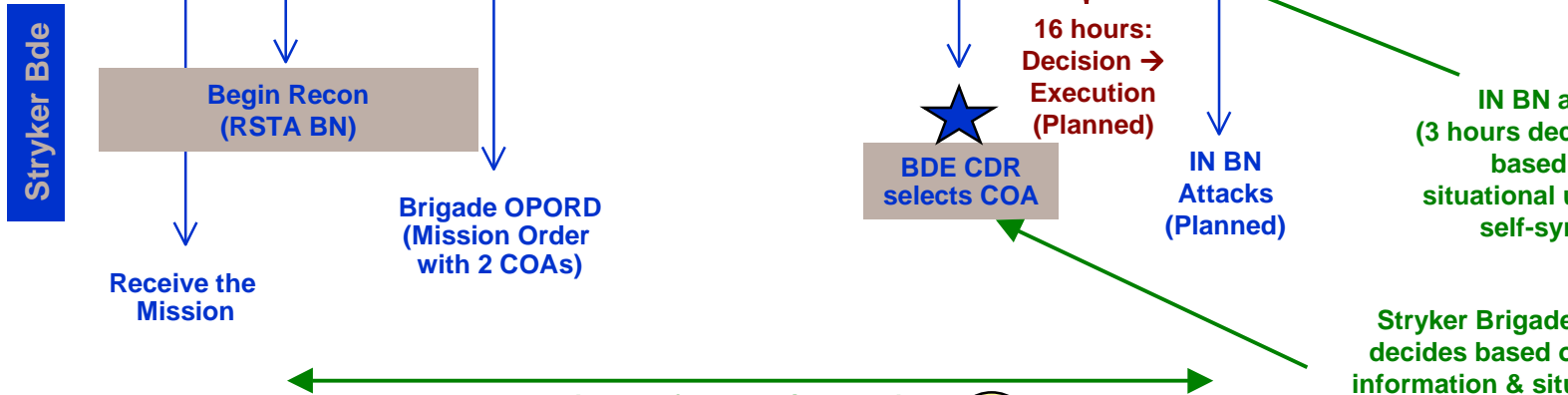
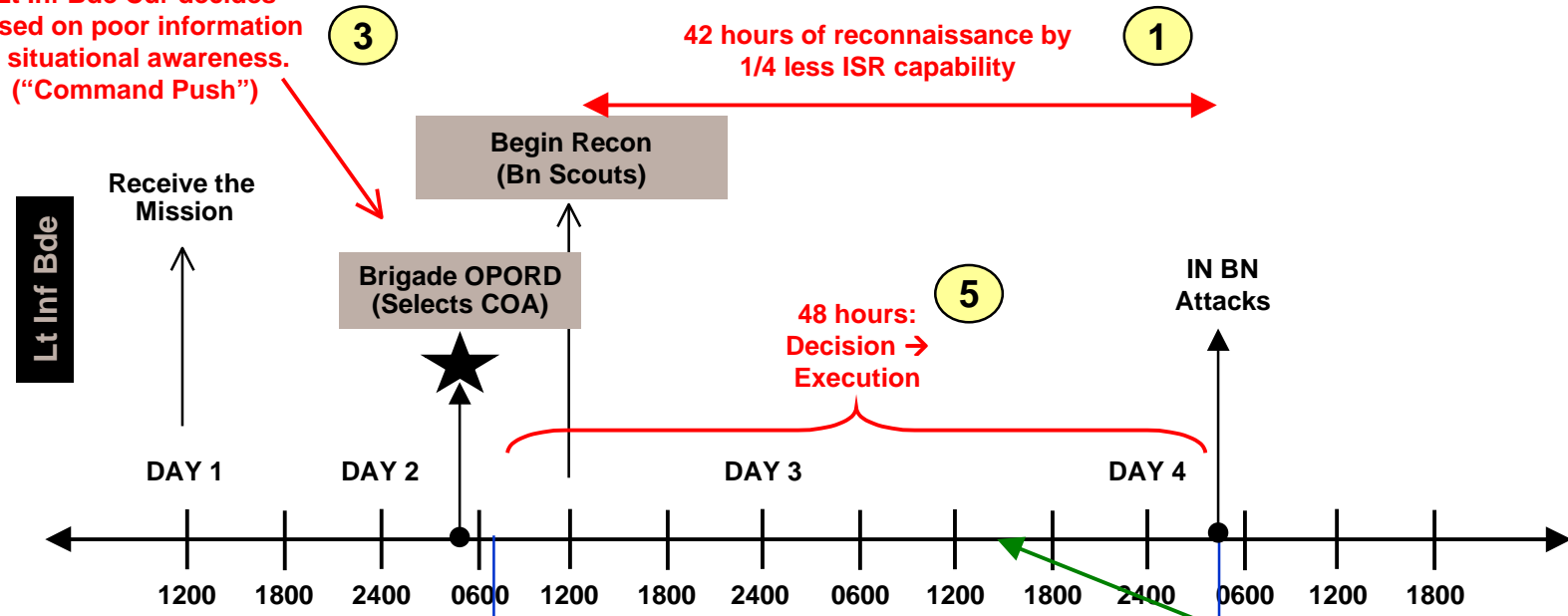
“I could see [on the COP] the lead Bn had accomplished its mission early. I moved up our attack time to maintain momentum.”



# Decision to Execution

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Lt Inf Bde Cdr decides based on poor information & situational awareness. ("Command Push")



42 hours of reconnaissance by 1/4 less ISR capability

3

1

5

6

IN BN attacks at 1500 (3 hours decision → execution) based on improved situational understanding and self-synchronization.

4

Stryker Brigade CDR decides based on rich information & situational awareness. ("Recon Pull")

60 hours of reconnaissance by 4:1 more ISR capability

2



# Stryker Brigade: Summary



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- Wins battle for information advantage
  - Maneuvers increased number of blue scouts
  - Defeats red scouts
- Achieves significantly improved information position
  - 80% Completeness for Red Force Information (Max)
  - 90% Completeness for Blue Force Information
- Enhanced Shared Situational Awareness & Understanding
- Operational Impact
  - Successfully executes feint
  - Surprises Red Force
  - Commander observes success on COP - moves up attack 3 hours - maneuvers Blue Force to create position and force advantage
  - Reaches objective with effective force
  - Force clears every building – secures objective – defeats counter attack
  - Force decisively defeats Red Force: 1 to 1 loss exchange ratio

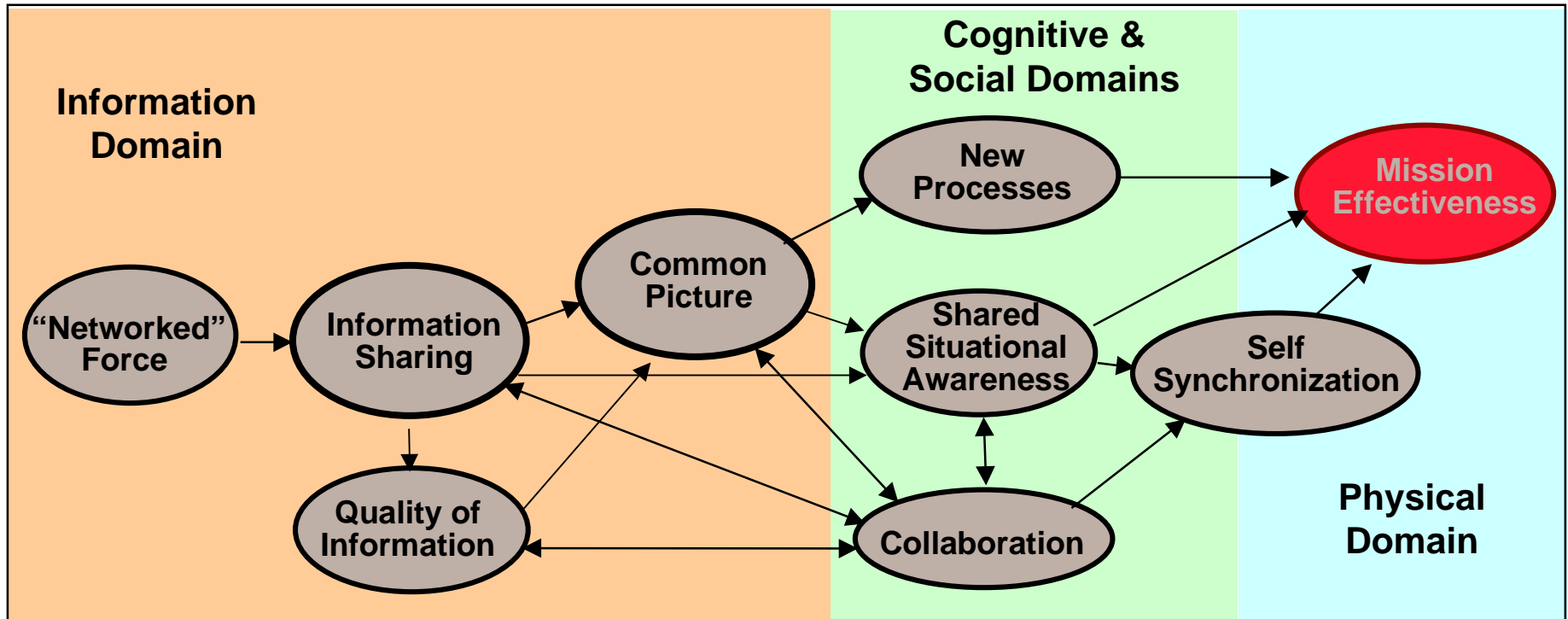




# Stryker Brigade Combat Team: Key NCW Relationships



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# Mission Accomplishment and Survivability



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- “The **most impressive capability** demonstrated by the SBCT was the ability to **affect the enemy’s decision cycle through SA/SU** and combined with mobility and lethality....” (1)
- “The **SU/SA afforded** platoon leaders and commanders the ability to **maneuver** their forces and close with and **destroy the enemy** during urban operations in Shughart-Gordon.” (1)
- Observing 24 units attack Shughart-Gordon as a JRTC O/C, I have never seen a unit clear every building and still retain combat power to defeat an enemy counterattack.” (2)

*\*Sources: (1) JRTC Senior OC Comments,  
(2) LTC Observer in the OE Control Group*

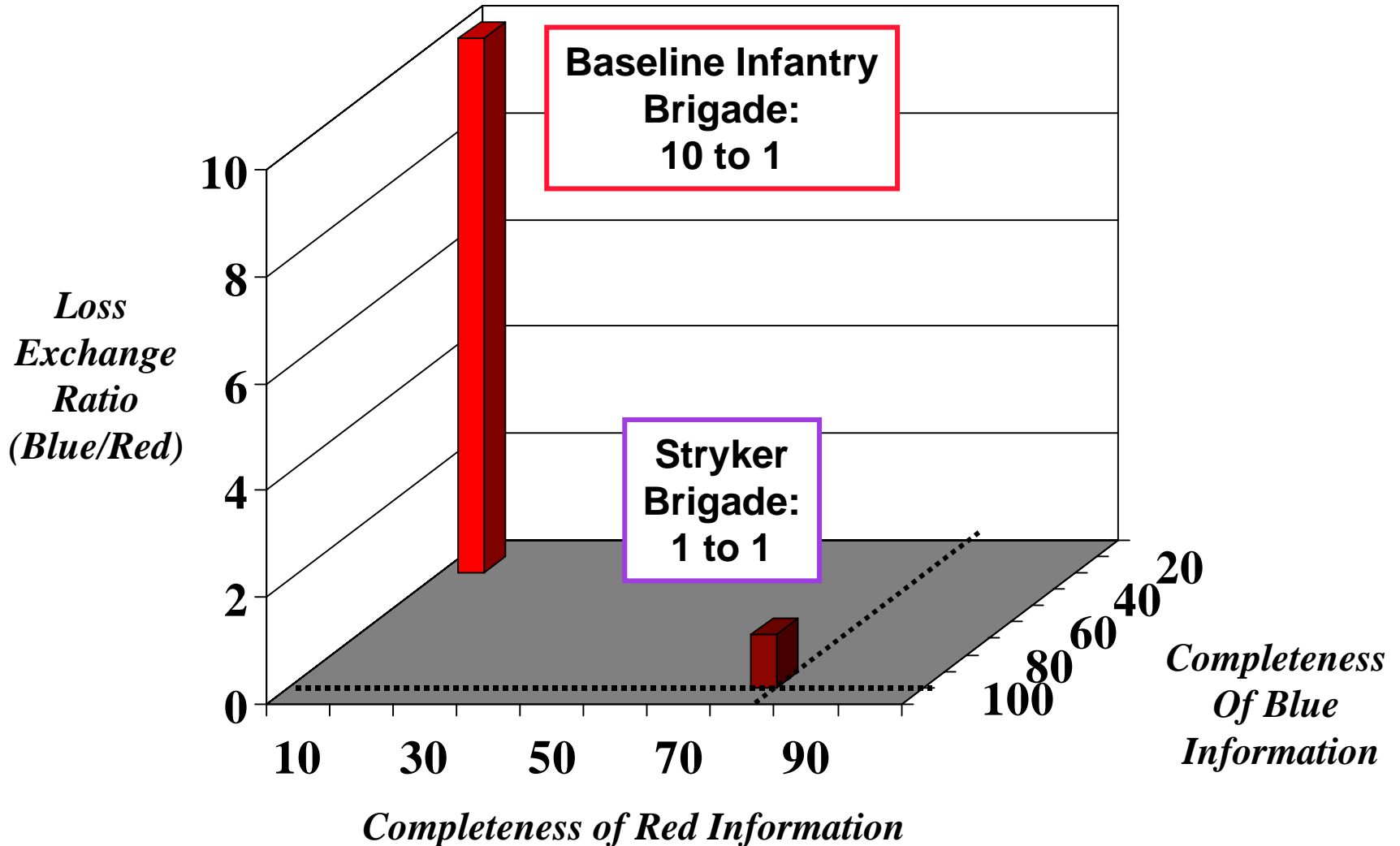


# Stryker Brigade:

## Mission Effectiveness as a Function of Information Position



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# Study Summary



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- **The Stryker Bde is significantly more agile and capable than its closest predecessor – a non-digitized light infantry brigade**
- **Several NCW factors contribute to order of magnitude increase in effectiveness**
  - Networked battle command systems
  - High bandwidth beyond line of sight (B-LOS) SATCOM links
  - Increase in individual/Shared information
  - Interactions and Collaboration
- **Key results from recent SBCT CERTEX at JRTC:**
  - Accomplished Mission, Defeated OPFOR, Cleared Every Building
  - **Friendly:Enemy** casualty ratio decreased from **10:1** to **1:1**
  - Speed of command from 24 to 3 hrs coupled w/ tactical agility
- **Results indicate future potential**
  - JTRS and future SATCOM programs will increase networking capabilities significantly



# Stryker Brigade Combat Team: Innovation Across all Lines of Development



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## Leadership / Leadership Development

*Agile, Confident, Adaptive Leaders*

*Shared Situational Awareness*

## Personnel (Culture)

*Increased Personnel Stabilization*

*Culture of Information Sharing*

## Organization (Structure & Behavior)

*Organic Cavalry Squadron (RSTA) Organic Combined Arms Organic MI & HUMINT Teams*

## Training

*Dedicated training for new Commanders Net-centric operations Complexity*

## Doctrine (Process/Tactics/Techniques/Procedures)

*Mission Type Orders*

*Multi-echelon Collaborative Planning*

*Self-Synchronization IAW CDR Intent*

## Material (Technology)

*Mobility Fire Power UAV ABCS + FBCB2 + BLOS SATCOM*

## Facilities



# Traditional versus New



*...What's Different?*

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- **“Common” Operational Picture**
  - **Reduced “Fog” of War**
- **Shared Situational Awareness (SA)**
  - **Significantly increased SA for :**
    - **Commander**
    - **Subordinate Commanders**
    - **Individual Warfighters**
  - **Decreased “cognitive loading” in developing SA**
- **Command Intent**
  - **Increased shared situational understanding**
  - **Enhanced by capabilities for real-time collaboration**
- **Enhanced Decision Making**
  - **Speed + Better Decisions**
- **Increased Tactical Agility**
- **Reduced Risk**

# Questions / Discussion





# Bottom Line



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## *“Networked Forces Outfight Non-Networked Forces”*

“...it allowed us to make decisions and execute those decisions faster than any opponent.”

*Lt. Gen. David D. McKiernan  
Combined Forces Land Component  
Commander, OIF*