BUILT FOR TODAY.

DESIGNED FOR TOMORROW.

Military Systems Analyses in an Ill-Posed World: Illustrating a Solution

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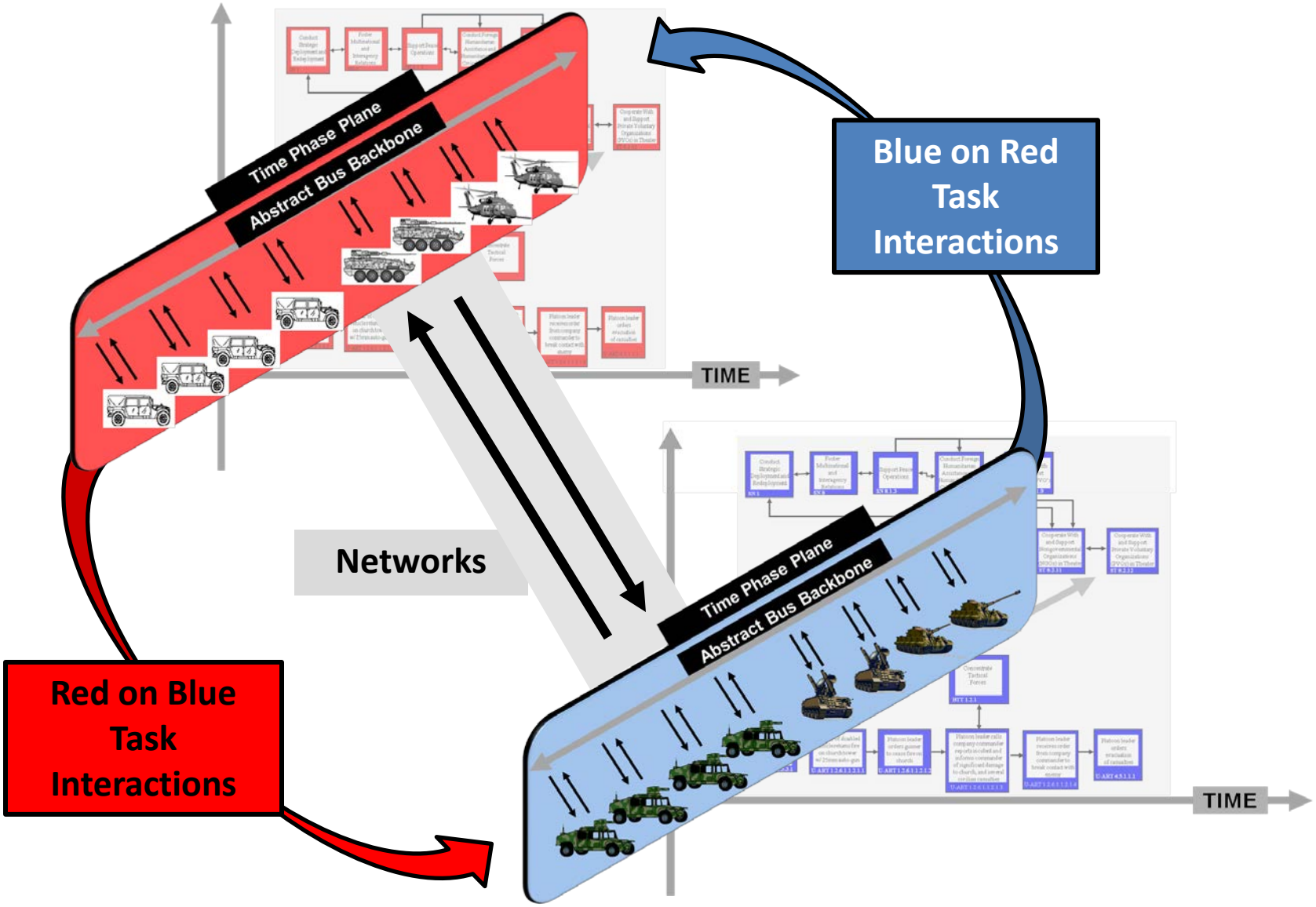
Purpose

Build on preceding presentation by illustrating and explaining application of the concept

Outline

- Key Take Away from First Presentation
- A Potentially Ill-Posed Problem
- A Use Case to Illustrate
- Development and Discussion of Products and Their Usefulness
- “So What” for T&E

OWNFOR and OPFOR Interact over Time



What do we want to know?

- Sample Question Set
  - How do Joint Light Tactical Vehicle (JLTV) Mission Role Variants (MRV) contribute to Effectiveness, Suitability, and Survivability (ESS)
    - What are the operational and system requirements?
    - How were they derived?
    - Do JLTV MRVs satisfy system and operational requirements?
    - Do JLTV MRVs contribute to mission effectiveness of the units to be fielded?

Sample Operational Context

Vignette from JLTV CONOPS: Multiple Urban Centric Center of Gravity Assaults

Situation

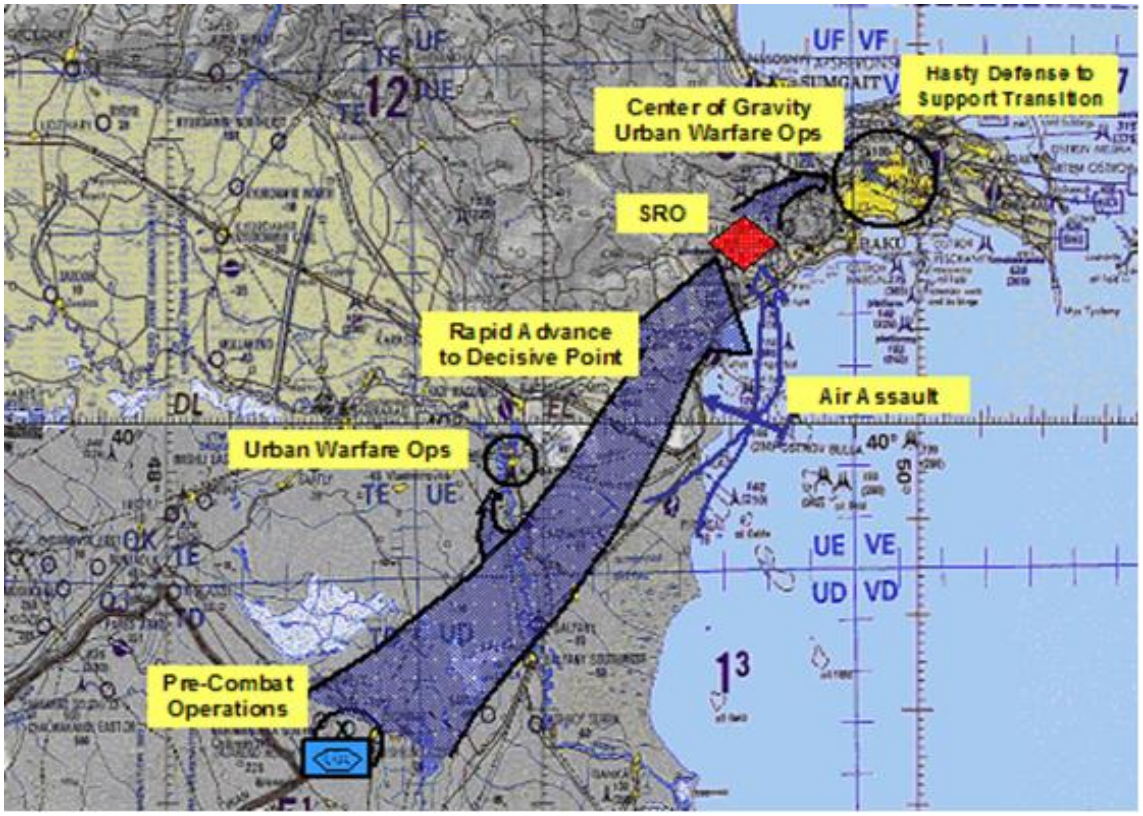
- Rapid advance. Urban assaults
- Hybrid threat in urban areas

Mission

JLTVs provide protected mobility during urban assaults.

Concept of Operation

- Support forces w/ mobility for C2
- Reduce logistical footprint while supporting sustainment and transportation.



Systems Used for Vignette

- JLTV Cat B Fire Team Carrier (FTC)
- JLTV Cat B C2 On the Move (C2OTM)
- JLTV Cat A General Purpose (GP)

Sample System Use Case (JLTV B FTC)

4200 Pounds Trailer Tow Capacity

4500 Pounds Cargo Capacity

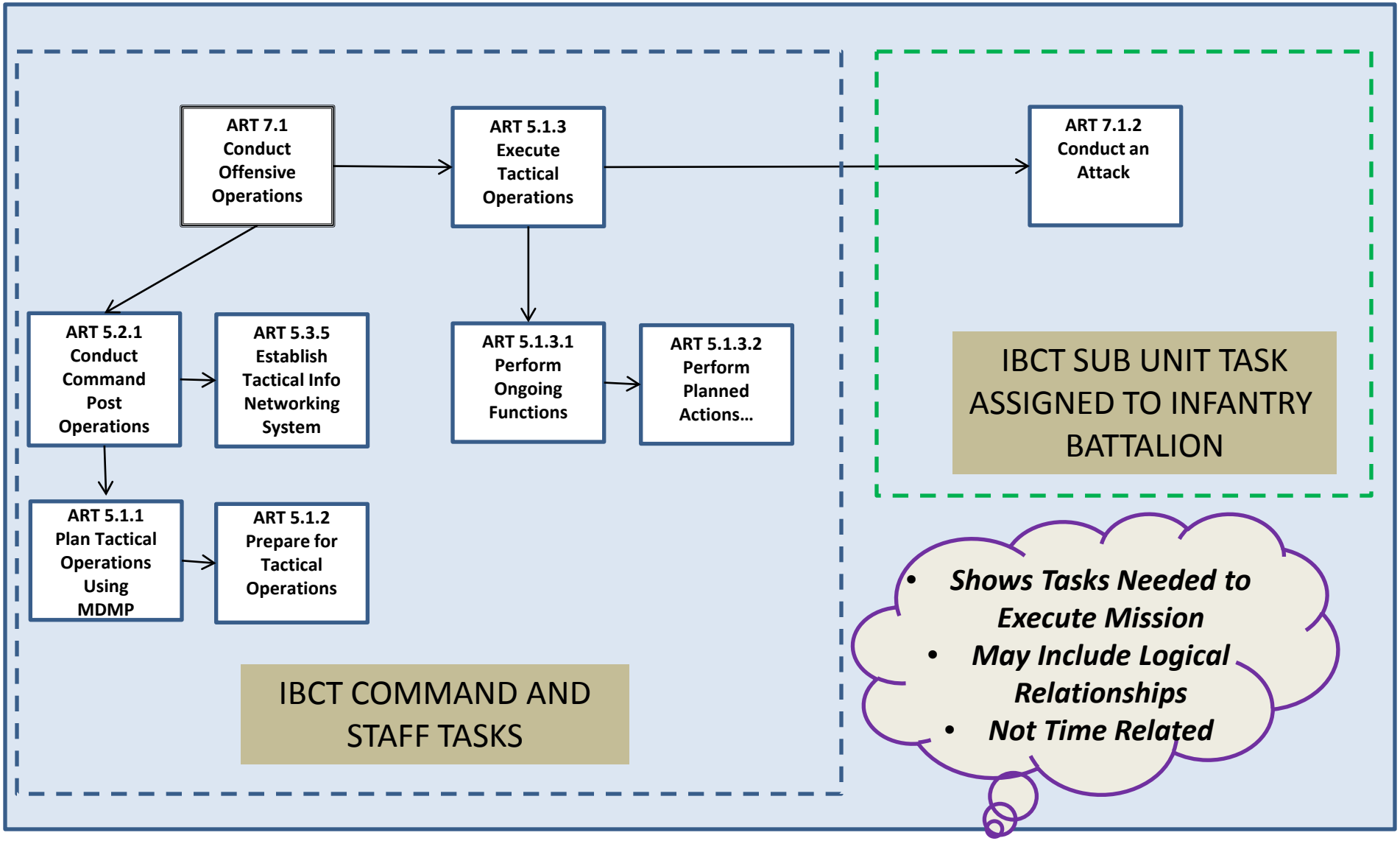
Average Duration = 4 days; 80 operating hours; 400 miles at GVW on internal fuel capacity

Threats. In the IBCT, this mission requires that the crew be provided with protection against anticipated threats:

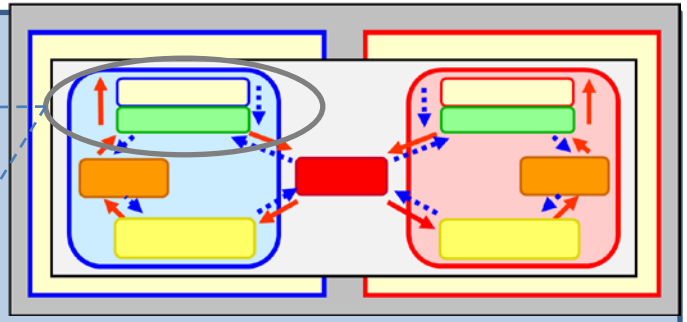
Threat Likelihood by Missions

Missions	Small Arms	RPG	EFP	Mine Center	IED Side	IED Center	Over-Head	Mine Wheel
Multiple Urban Centric (Assaults)	High	High	Medium/ Low	Medium	Medium	Medium	High	Medium
Stability and Reconstruction	High	High	Medium/ Low	Low	Medium	Medium	Low	Medium/ Low

Static Mission Decomposition
Infantry Brigade Combat Team (IBCT)



Infantry Battalion Mission Decomposition



ART 7.1.2 Conduct an Attack

ART 4.1 Provide Logistics Suippport

ART 2.3 Perform Intel, Surv, and Recon

ART 7.1.2 Assault an Objective

ART 1.5.2 Occupy Assault Position

ART 4.1.1 Provide Maintenance Support

ART 2.3.3.3 Conduct Area Recon

ART 1.5.5 Conduct Landing Zone Ops

ART 1.2.2.3 Employ Bounding Overwatch

ART 7.5.26 Support by Fire

ART 3.3 Provide Fire Support

ART 1.8 Employ Obscurants

ART 4.1.2 Provide Supplies

ART 2.3.4 Conduct Surveillance

ART 1.3.4 Conduct an Approach March

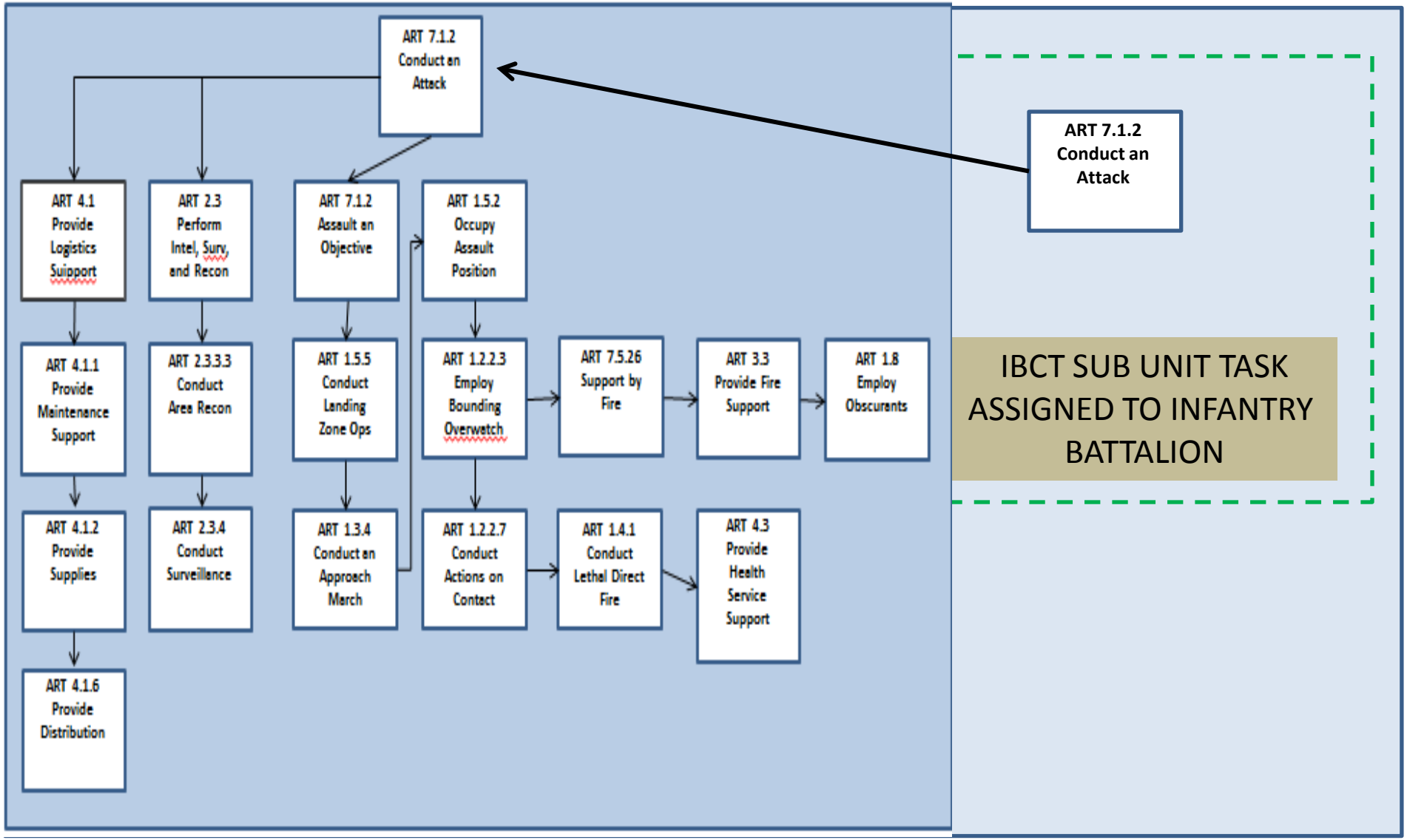
ART 1.2.2.7 Conduct Actions on Contact

ART 1.4.1 Conduct Lethal Direct Fire

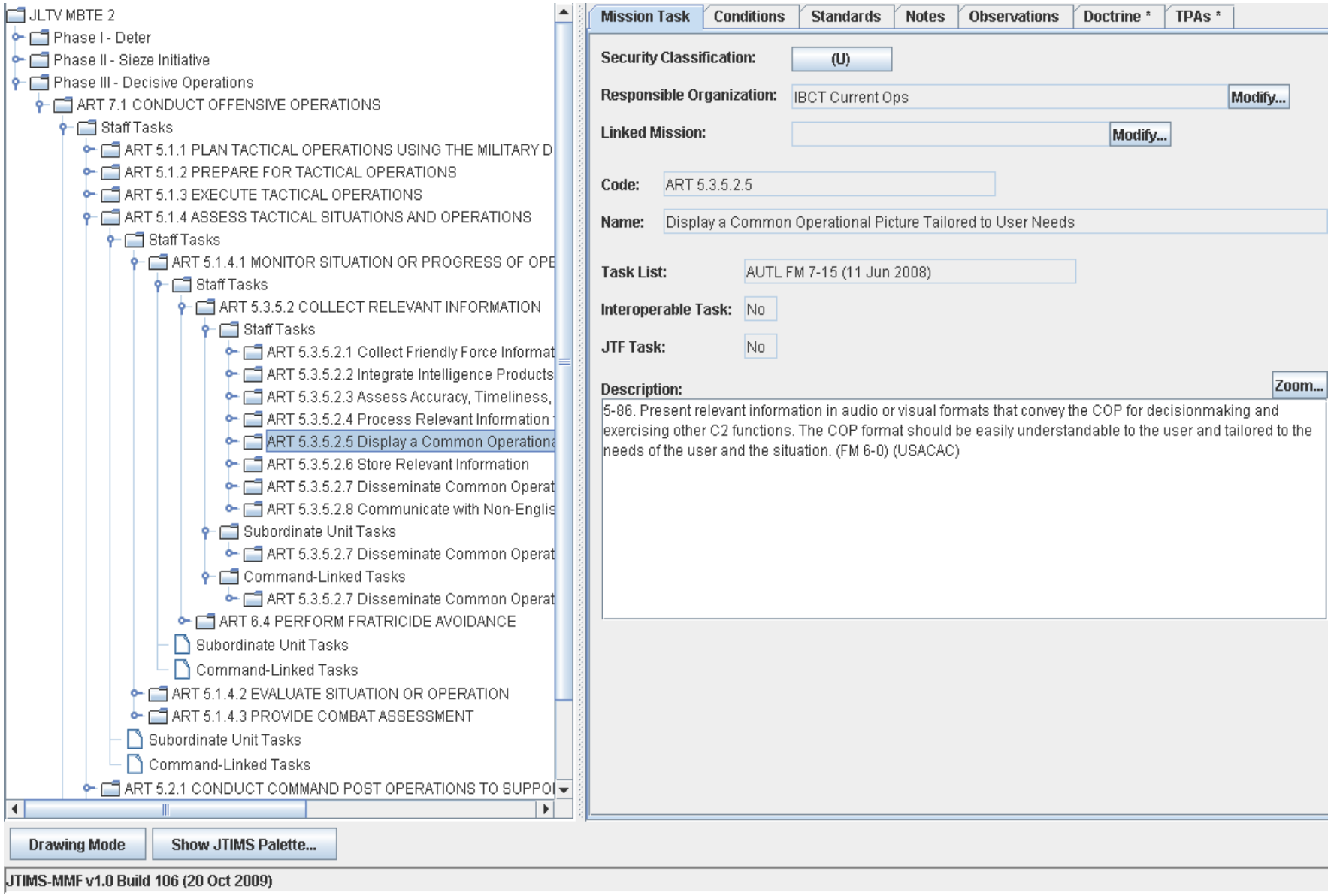
ART 4.3 Provide Health Service Support

ART 4.1.6 Provide Distribution

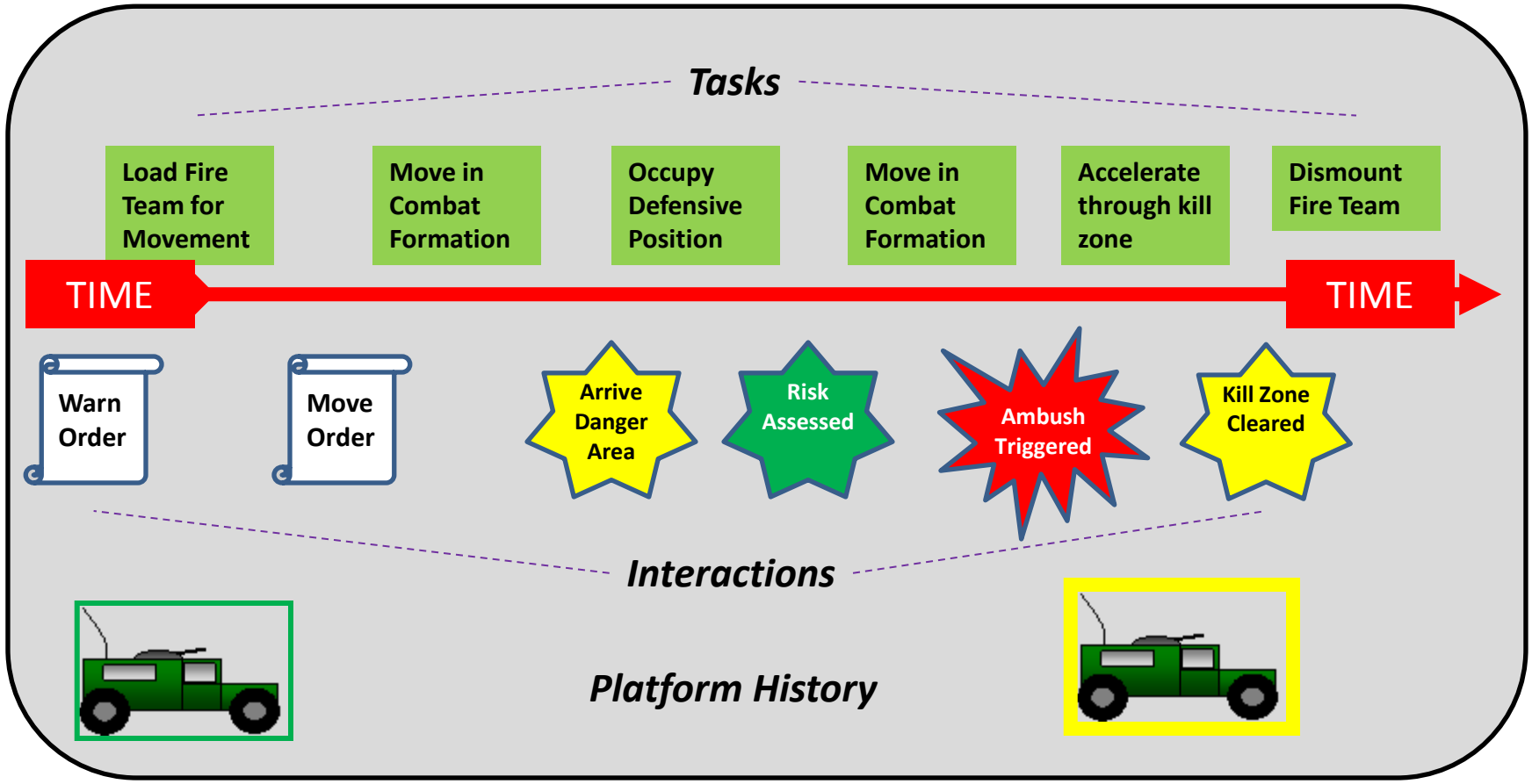
Linkage from IBCT to Infantry Battalion



Mission Task List with Task Information



Single Platform Task Network



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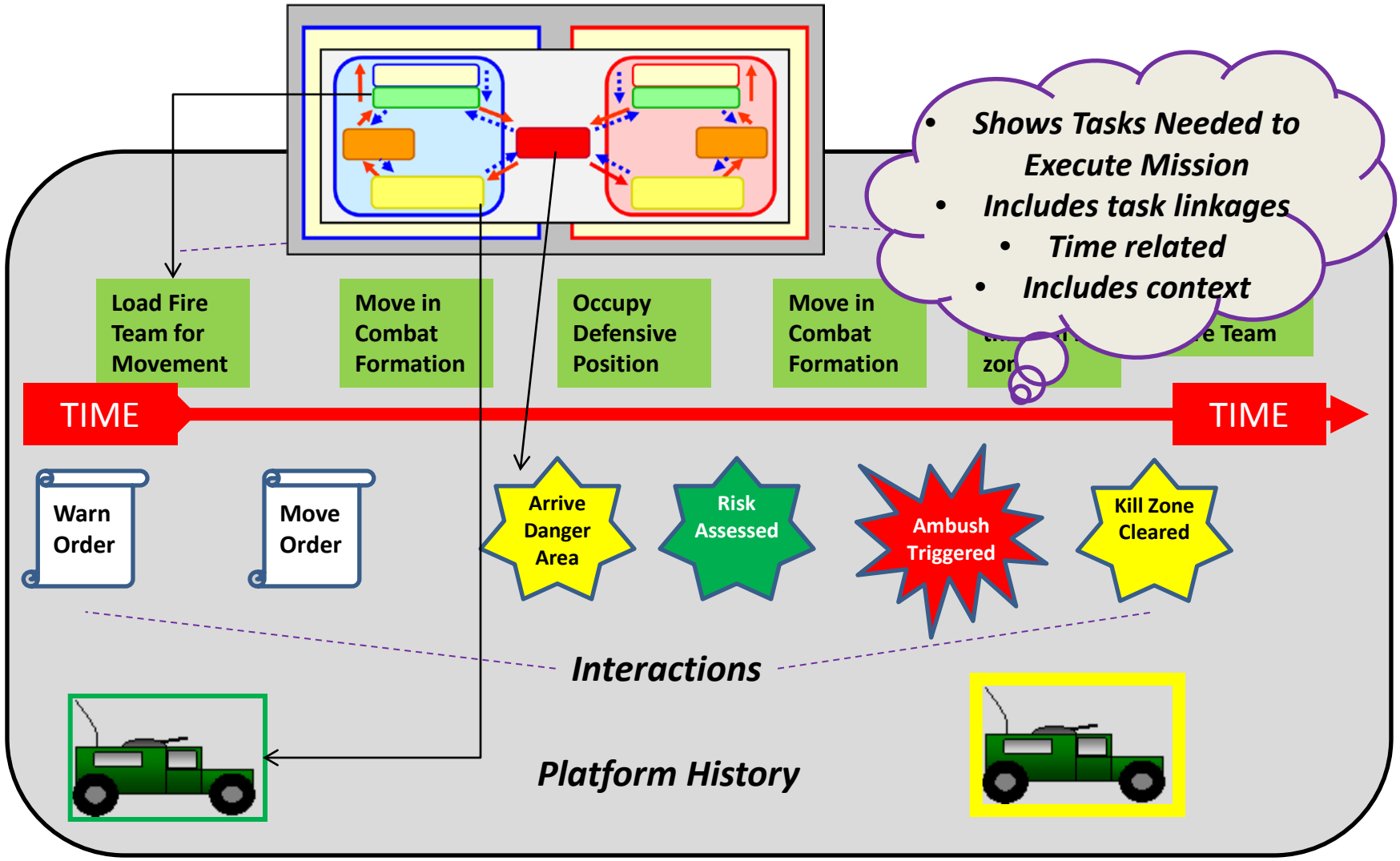
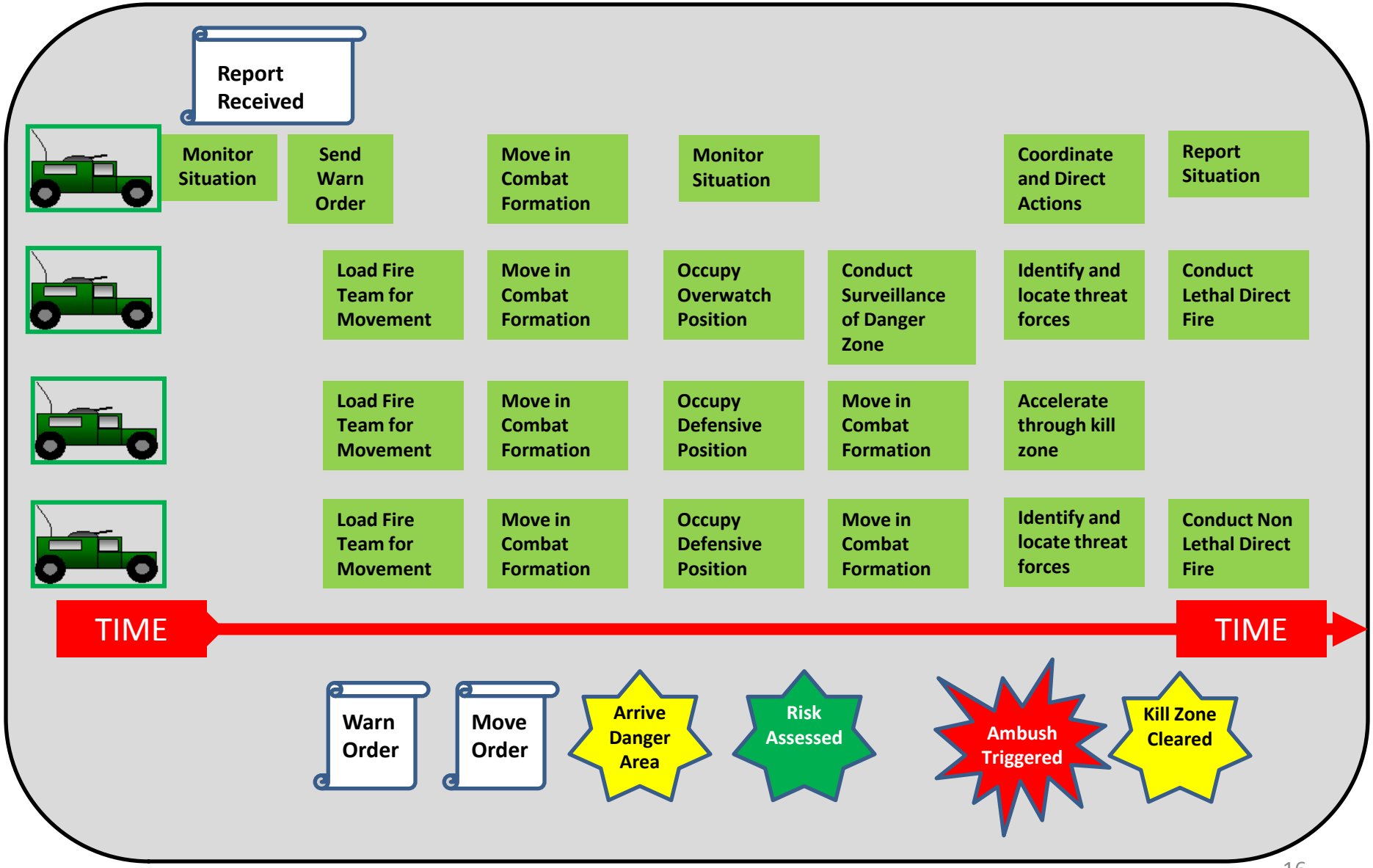
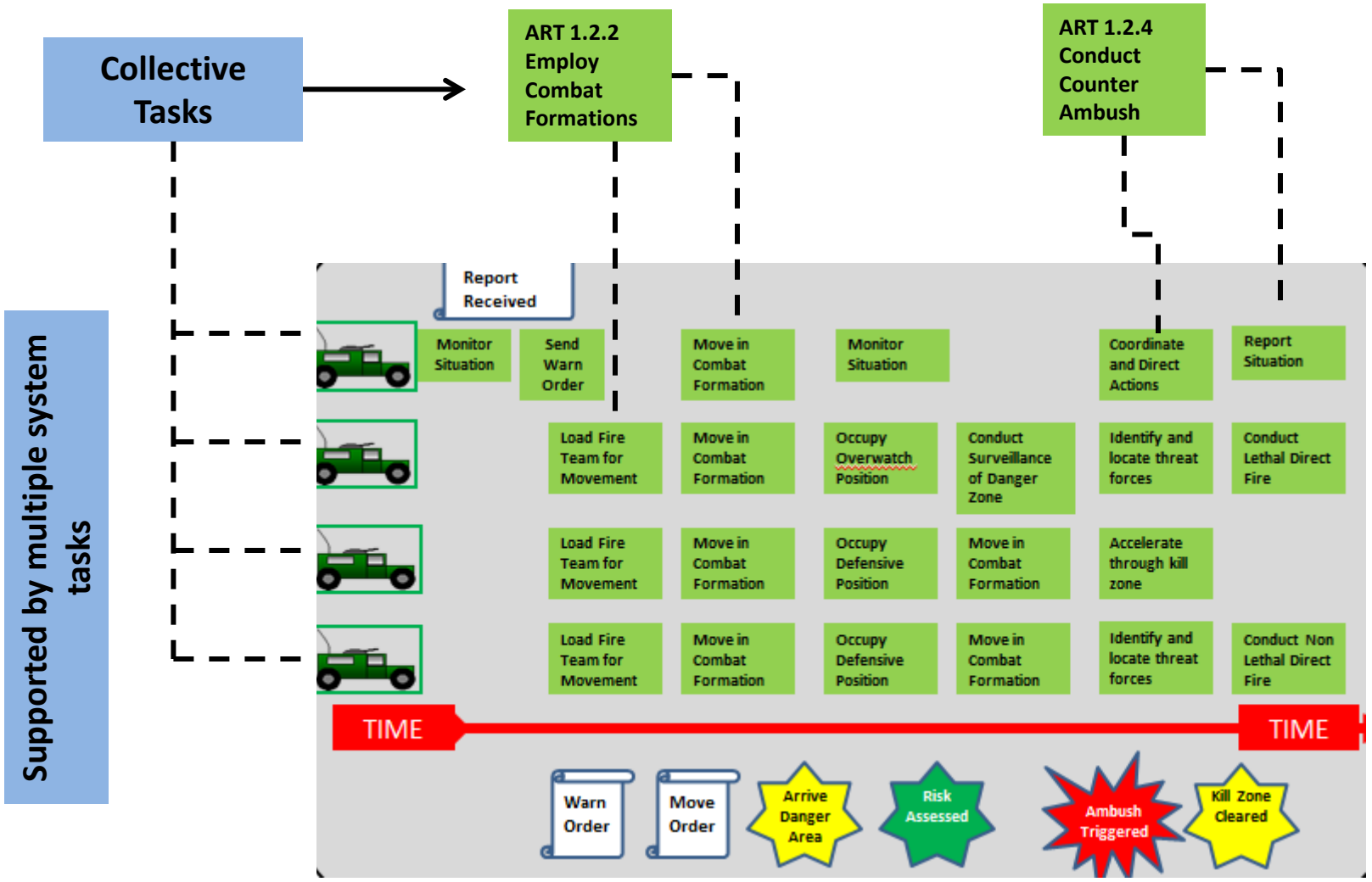


Multiple Platforms Task Network



Collective Task Network



Basis for Mission Thread Process

- Inputs
  - Mission Task List
  - Force/Equipment List and Task Organization
  - Operational Vignette
- Tools
  - SMEs
  - Wargaming techniques
- Outputs
  - Execution/Synchronization matrix recording:
    - Sequence of tasks and desired outcomes
    - Relationship between desired outcomes and subsequent tasks horizontally and vertically
    - Performance requirements based on analysis of time, distance, etc.

Basis for Mission Thread Process cont.

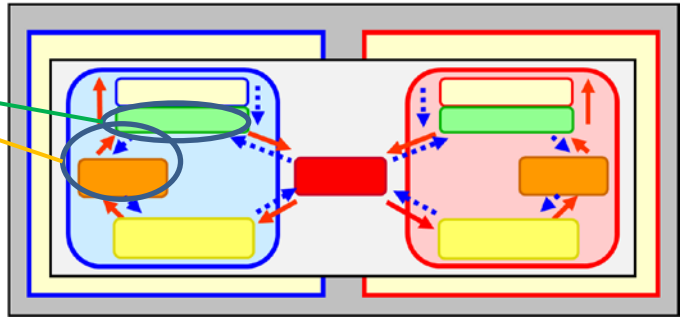
- Seldom done as part of requirements process
- Outputs may be captured but underlying logic is not
- T&E and other stakeholder communities need “how” and “why”, and not just “what” of requirements.

Typical Use of Tasks – Necessary but Not Sufficient

TASKS \ CAPABILITIES			MOVE						OBSERVE						
			Travel On Roads			Travel Off Roads			Operate Day	Operate Night/ Obscurred	Obtain Location	Detect Threats		Send/Receive Short Range	
			Max Speed	Med Speed	Min Speed	Max Speed	Med Speed	Min Speed				CBRNE	IED	Data	Voice
Maneuver Warfighting Function	Art 1.2.2.1	Employ Traveling Movement Technique		X			X		X	X		X	X		X
	Art 1.2.2.2	Employ Traveling Overwatch Movement Technique		X			X		X	X		X	X		X
	Art 1.2.2.7	Conduct Actions on Contact		X			X		X	X		X	X		X
	Art 1.3	Conduct Tactical Troop Movements		X			X		X	X		X	X		X
	Art 1.3.2	Conduct a Tactical Road March		X			X		X	X		X	X		X
	Art 1.3.3	Conduct a Tactical Convoy		X			X		X	X		X	X		X
	Art 1.3.4	Conduct an Approach March	X			X			X	X		X	X		X
	Art 1.4	Conduct Direct Fires							X	X					
	Art 1.4.1	Conduct Lethal Direct Fire Against a Surface Target													
	Art 1.5	Occupy an Area			X				X	X		X	X		X
	Art 1.5.1	Occupy an Assembly Area			X				X	X		X	X		X
Art 2.0 The Intelligence War-Fighting Function	Art 2.3	Perform Intelligence, Surveillance, and Reconnaissance													
	Art 2.3.3	Perform Reconnaissance													
	Art 2.3.3.5	Conduct a Reconnaissance patrol													
Art 3.0 The Fires War-Fighting Function	Art 3.3	Provide Fire Support													
	Art 3.3.1	Conduct Fires													
	Art 3.3.1.1	Conduct Surface to Surface Attack													
	Art 4.1	Provide Logistics Support		X			X		X	X		X	X		X
	Art 4.1.1	Provide Maintenance Support		X			X		X	X		X	X		X

AUTL tasks supported by JLTV and associated capabilities.

What's missing?



What's the mission?

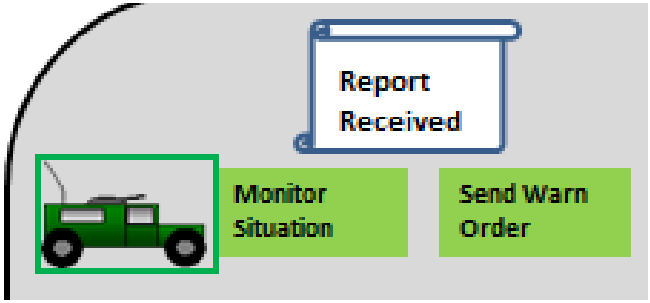
Where and when are these tasks and capabilities needed?

What is the environment?

Why these capabilities?

What's the impact if the system can't deliver?

System Task Analysis



Context:

- Mission - be prepared to conduct attack in order to capture/kill High Value Target
- Company CO can launch platoon(s) if he thinks there is time and risk is acceptable.
- Platoons can move w/in 15 minutes of order and travel time is 30 minutes.
- CO will not launch platoon(s) if information is more than 30 minutes old.

Task -- ART 5.3.4.3 Monitor Situation or Progress of Operations

Purpose – Determine if and when the High Value Target arrives

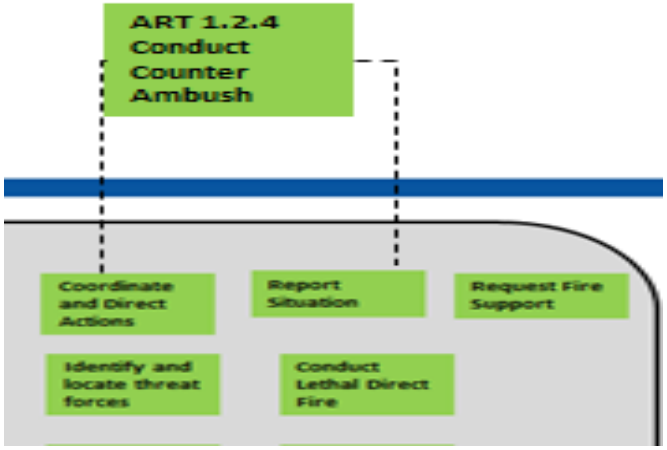
Conditions – Time sensitive (no more than 2 hours on the ground)
- TAI observed by external assets
- TAI 15 KMs from unit location

Standard – Information received and processed w/in 15 minutes of event
- Operator alerted within 5 seconds of message/imagery receipt

System Assigned to Task – JLTV B C2OTM

Supporting Task – ART 2.3.4 Conduct Surveillance (of TAI)

Collective Task Analysis



Analysis – Ambush a major concern.

- Reporting key for situational awareness.
- Ability to survive initial blast and keep moving key in constricted urban setting.
- Inter - vehicle communication key to coordinated response and fratricide avoidance.
- Protect soldiers from small arms fire until they can move out of danger area.

Task -- ART 1.2.4 Conduct Counter Ambush Actions

Purpose – Minimize casualties and maneuver to position of advantage

Conditions – Urban environment
- Limited fields of fire and maneuver space due to buildings
- Threat armed with rifles, MGs and RPG

Standard – Vehicles and personnel out of kill zone within one minute
- Threat ambush force suppressed

Unit Assigned to Task – JLTV equipped light infantry platoon

Supporting Tasks– ART 1.4.1 Conduct Lethal Direct Fire (JLTV B Fire Team); Accelerate through Kill Zone (JLTV B Fire Team)

So What for T&E?

- Guide for development of T&E Plan
  - Data Collection
  - M&S
  - Support
  - Integration
- Basis for stakeholder integration/comms
- Means to move O.T. to left
- Transparent communication of plan, results and justification for resource requirements

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