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(U) Integrating Event (IE) 20-04



Final Report

**Experimentation Division, G-3/5/7
Futures and Concepts Center
U.S. Army Futures Command
950 Jefferson Avenue
Fort Eustis, VA 23604**

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(U) Integrating Event (IE) 20-04 Final Report

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REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
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1. REPORT DATE (DD-MM-YYYY)		2. REPORT TYPE		3. DATES COVERED (From - To)	
30-10-2020		Technical Report		1 March - 30 October 2020	
4. TITLE AND SUBTITLE Integrating Event (IE) 20-04 Final Report				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Downs, Michael Broderick, David MAJ Hasbrouck, Shane MAJ Novitske, Zak MAJ				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Experimentation Division, G-3/5/7, Futures and Concepts Center (FCC) ATTN: FCFC-RFE 950 Jefferson Ave Fort Eustis, VA 23604				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Futures Integration Directorate (FID), Futures and Concepts Center (FCC) ATTN: FCFC-DR 950 Jefferson Ave Fort Eustis, VA 23604				10. SPONSOR/MONITOR'S ACRONYM(S) FID, FCC	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT DISTRIBUTION STATEMENT A. Approved for public release.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT The Future Force Modernization Enterprise (FFME) Annual Mission Guidance (AMG) 2020-2025 tasked The Research and Analysis Center (TRAC) Experimentation Directorate (TRED) (now Experimentation Division (ED), G-3/5/7) to lead, plan, coordinate, and execute an analytical event to enable Futures Integration Directorate (FID) to identify vertical and horizontal integration issues in the refined functional, supporting, and operational and organizational (O&O) concepts in the Army Concept Framework (ACF). Integration issues identified include the network, required capabilities and dependencies, information, and Counter-Unmanned Aerial Systems (C-UAS).					
15. SUBJECT TERMS echelons above brigade, brigade combat team cross-domain maneuver, aviation, cyber / electronic warfare, fires, maneuver in multi-domain operations, intelligence, protection, special operations, command and control, concept integration, vertical integration, horizontal integration, required capability, dependency, seam, friction point, unresolved dependency					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Michael Downs
U	U	U	UU	33	19b. TELEPHONE NUMBER (Include area code) 757-501-5302

Standard Form 298 (Rev. 8/98)
Prescribed by ANSI Std. Z39.18

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(U) Acknowledgements

(U) The individual and collective efforts of many people from several organizations contributed to the success of Integrating Event 20-04. The following list represents the complete team and key stakeholders.

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(U) Executive Summary**1. Purpose.**

The purpose of this report is to provide a summary on the execution of and results from the Integrating Event (IE) 20-04, held 24-28 August 2020. The Future Force Modernization Enterprise (FFME) Annual Mission Guidance (AMG) 2020-2025 tasked The Research and Analysis Center (TRAC) Experimentation Directorate (TRED) (now Experimentation Division (ED), G-3/5/7) to lead, plan, coordinate, and execute an analytical event to enable Futures Integration Directorate (FID) to identify vertical and horizontal integration issues in the refined functional, supporting, and operational and organizational (O&O) concepts in the Army Concept Framework (ACF).

2. Key Takeaways.

Based on the event problem / analysis questions, constraints / limitations / assumptions (CLAs), scenario (vignettes), and methodology:

- The nine focus functional / supporting concepts are mostly integrated (vertically and horizontally) and will enable the division to converge capabilities and resolve the three Multi-Domain Operations (MDO) armed conflict problems (penetrate, dis-Integrate, and exploit).
- The analysis identified one integration issue (Network) that, if not resolved, would prevent implementation of the Army Operating Concept (AOC) and lead to mission failure.
- Further analysis of the remaining functional / supporting concepts in the next integrating event is necessary to complete this iteration of the integration assessment.
- Refined articulation of required capability and dependency statements across the concepts to enable traceability analysis is necessary to complete this iteration of the integration assessment.

Due to COVID-19 restrictions, the team planned and conducted the event entirely distributed via the Battle Lab Collaboration Simulation Environment (BLCSE) and the Commercial Virtual Remote (CVR) (Microsoft Teams) collaboration environment. The team accomplished all event goals with no degradation of timeliness or product quality.

3. Event Description.

Mission analysis and discussion during the measurement space workshop determined the best method for achieving the desired results in IE 20-04 would be a seminar wargame. An Office of the Secretary of Defense (OSD)-approved United States European Command (EUCOM) theater scenario using the AimPoint Force focused on the division fight in 2028 provided operational context for the analytical discussion of the concepts.

Further analysis led to the decision to focus on mature (v0.7 and above) concepts:

Functional / Supporting Concepts

- Echelons above Brigade
- Brigade Combat Team Cross-Domain Maneuver
- Aviation
- Cyberspace / Electronic Warfare
- Fires
- Maneuver in MDO
- Intelligence
- Protection
- Special Operations

O&O Concepts (vertical only)

- Corps (context only)
- Division
- Armored Brigade Combat Team
- Stryker Brigade Combat Team
- Infantry Brigade Combat Team
- Combat Aviation Brigade
- Reconnaissance and Security Squadron
- Division Fires Command

Concept writers and analysts from each Capability Development Integration Directorate (CDID) (including Space and Missile Defense Command (SMDC) and US Army Special Operations Command (USASOC)), concept integrators from the FID Concepts Integration Futures Integration Team (FIT), representatives from Joint and Army Concepts Division (JACD) / Directorate of Concepts (DoC), representatives from Future Operating Environment Directorate (FOED), a representative from J7 / Joint Staff, and analysts and planners from ED and MCBL participated in the event. The Mission Command Battle Lab served as the host of the event, FID as the sponsor, and ED as the planner and lead analyst.

Participants explored the concepts' contributions to accomplishing the division tasks / activities during vignettes related to the MDO problems of penetrate, dis-integrate, and exploit. Concept writers explained their concepts in terms of the military problem, central idea, solution synopsis, required capabilities (RCs) and dependencies, and potential integration issues, then laid out what their organizations do to ensure the division is able to converge capabilities to solve the MDO armed conflict problems. Concept integrators identified potential issues throughout the event.

4. Key Findings.

a. Integration Issues.

- **The Network**

Issue: Multiple conceptual descriptions of the network exist. (Friction Point)

Discussion: Multiple concepts describe generic network requirements that appear to be separate, distinct networks (fires integrated network, the intel network, etc). Through discussion, we determined these requirements to be descriptions of attributes required of the Army Network vice separate, distinct networks. Concepts should describe dependencies upon the network rather than writing requirements for their own networks. Dependency statements should describe what the concepts need to do on the network – informing capability, capacity, security, etc., requirements. Mission Command (MC) CDID, as the network owner, is responsible for identifying network RCs in the Command and Control (C2) Concept. Consensus was reached during the event: There will be a single Army network developed by C2 and all proponents will have their own applications on the network.

Proposed Resolution: Refine concepts to properly address network RCs and Dependencies.

Office of Primary Responsibility (OPR): MC CDID (supported by all other CDIDs)

Risk¹: Operational – **Critical** / Capability Development – **Medium**

- **RCs / Dependencies**

Issue: RCs and Dependencies are not consistently articulated both within and between concepts and are not adequately traced or linked. (Seam)

Discussion: RC Statements describe what the Army must do to accomplish the conceptual ideas established in a concept. Dependency Statements describe inter-concept reliance for the accomplishment of an RC. The Concept Development Writer's Guide and Addendums prescribe

¹ The FID concept integrators assessed risk (the consequence of not resolving the issue) for each integration issue. The team defined risk as both:

- Operational – Degree to which the integration issues between / among concepts will impact the implementation of the AOC - AimPoint Force division's ability to converge capabilities and resolve armed conflict problems.
- Capability Development – Degree to which the integration issues between / among concepts will impact delivery of capabilities to the Army.

The FID concept integrators used professional military judgment and achieved group consensus to assign the appropriate risk level (None, Low, Medium, High, and Critical).

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the description of RC and Dependency Statements. This standardization is not being enforced across all concepts leading to issues with consistent intra- and inter-concept traceability. This traceability is essential to ensuring we have the right set of RCs and Dependencies. Until we are able to analyze this traceability fully, the integration assessment cannot be considered complete.

Proposed Resolution: To ensure vertical and horizontal integration:

- Revise the Concept Development Writer's Guide to clearly standardize the appropriate description of both RC and Dependency Statements and provide an appropriate placement for them in the concept construct;
- Enforce guidance regarding RC and Dependency Statements across all concepts;
- Establish a standardized traceability matrix that accompanies the concepts for staffing (identifies the conceptual idea from which the RCs are derived, and provides the link from a Dependency in one concept to an RC in another concept).

OPR: DoC (supported by all CDIDs)

Risk: Operational – **High** / Capability Development – **High**

- **Information**

Issue: Several concepts have dependencies that address Information. However, there is no clear consensus on how those dependencies will be serviced by RCs that currently reside in the Information Concept (v0.3). (Unresolved Dependency)

Discussion: MDO requires a synchronized (converged) approach to the development and employment of Information capabilities. Concepts must clearly articulate the requirements (RCs/Dependencies) that allow the Army to dominate in the Information Environment (IE). Employment of Information enables both Decision Advantage and Information Advantage, but success in each case may be defined differently. Tension exists amongst various players vested within Information – Combined Arms Center (CAC), Cyber Center of Excellence (CoE), Intel CoE, etc., which creates friction points in assigning conceptual responsibility to develop RCs / Dependencies and DOTMLPF-P² capability development responsibilities.

Proposed Resolution: Review and revise, as appropriate, the revised Information Concept (v0.5) RCs to ensure the Dependencies in other concepts can be properly linked to them.

****A post event decision to halt work on the Information Concept and a future decision regarding whether or not to have an Information Concept, could result in continued unresolved dependencies. Information related RCs must reside in a concept or across several concepts.**

OPR: Cyber CDID (or as directed based on most recent leadership guidance) (supported by all the other CDIDs)

Risk: Operational – **High** / Capability Development – **Medium**

- **Counter-Unmanned Aerial Systems (C-UAS)**

Issue: Fires Concept RCs may not adequately address C-UAS Groups I-III dependencies across all concepts. (Friction Point)

Discussion: C-UAS is a comprehensive Army / formation requirement and as such, is discussed across the concepts (functional and supporting). All units may need a self-defense active protection capability against UAS Groups I-III. Fires CDID is the force proponent for this

² Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy

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capability as designated in DA G3/5/7 EXORD and FRAGO 1. Fires CDID is the Air and Missile Defense (AMD) proponent. It is important to make a distinction between UAS Groups I-III and IV-VII. Fires “owns” the mission for both sets of UAS. As the proponent for AMD RCs, and the OPR for C-UAS (including Groups I-III), Fires CDID is responsible for the development of C-UAS solution approaches. The Fires Concept should describe RCs articulating what the Army must do to defend against UAS Groups I-III. The other concepts should address C-UAS Levels I-III by describing their dependencies on the appropriate Fires Concept RCs.

Proposed Resolution: Refine concepts to address the need to employ non-Air Defense Artillery (ADA) unit active defense against UAS Groups I-III and include C-UAS dependencies specific to their proponent to enable Fires CDID in the development of an Army-wide solution approach.

OPR: Fires CDID (supported by all other CDIDs)

Risk: Operational – **Medium** / Capability Development – **High**

b. Insights:

- **Lexicon**

Insight: Multiple concepts are using the same or similar terms with different meanings which causes horizontal integration challenges. There is no lexical adjudicator.

Discussion: Several terms are not clearly defined or consistently used in the concepts. Examples include:

- **Maneuver:** Several different types of maneuver exists in the concepts: independent v. semi-independent, cross-domain v. all-domain v. multi-domain. Confusion also exists about what it means to maneuver in the non-physical space (Cyberspace, Space, Electromagnetic Spectrum (EMS), and the IE).
- **Information:** Information Concept does not define Information leaving all other concepts to self-interpret.
- **Fires:** The Fires Concept defines fires as anything that causes an effect. This is not reflected in other concepts (i.e., Cyber-EW, Space, and Information).
- Also includes other terms that require adjudication: Network, Dependent RCs, Convergence, Exploit, etc.

Recommendation: DoC develop a dictionary of terms with adjudicated meanings. Revise concepts accordingly to eliminate confusion and to ensure horizontal integration.

- **Vertical Integration with Joint Concepts**

Insight: The current iteration of Joint concepts began development after the AOC was published and are not yet complete. Consequently, the AOC **may** not align with the Joint concepts.

Discussion: Since the Joint concepts are currently in development, we do not know what will be expected of the Army in Joint operations. Additionally, Army concepts rely heavily on Joint support and we cannot assess if the Joint Force will be able to meet our conceptual requirements. There is a possibility that the published AOC and the Joint concepts may not be aligned once the Joint concepts are published.

Recommendation: Once the Joint concepts are published, FCC assess Army concepts to confirm alignment and, if necessary, make appropriate refinements to ensure vertical integration of the AOC to the Joint concepts and the Army concepts to the refined AOC.

- **Experimentation Toolset and Processes**

Issue: We cannot fully validate concepts through experimentation because we do not have adequate models and simulations.

Discussion: Currently, we are using subjective qualitative methodology (Professional Military Judgment) to assess effects in the non-traditional domains and environments (Cyberspace, Space, EMS, and the IE). We do not have the models and/or simulations to replicate the quantitative effects of conceptual capabilities within these domains and environments.

Recommendation: FCC develop models and simulations for experimentation to adequately replicate capabilities in the non-traditional domains and environments.

5. Way Ahead.

ED will enter the results from IE 20-04 into the Experimentation Module of the Forge data environment. This action ensures the results inform Futures and Concepts Center and Army Futures Command future experiments. Additionally, participant CDIDs will iterate on their results from IE 20-04 in table top exercises at battle labs throughout Fiscal Year (FY) 21. Finally, the results are foundational to future integrating events conducted in FY21.

Responsible parties will take appropriate actions to resolve the identified integration issues and insights.

(U) Integrating Event 20-04 Final Report

1. Introduction.

Purpose.

The purpose of this report is to provide a summary on the execution of and results from the Integrating Event (IE) 20-04, held 24-28 August 2020.

Background.

The Future Force Modernization Enterprise (FFME) Annual Mission Guidance (AMG) 2020-2025 tasked The Research and Analysis Center (TRAC) Experimentation Directorate (TRED) (now Experimentation Division (ED), G-3/5/7) to lead the planning, coordinating, executing, and reporting results of an integrating experiment that allows all concept proponents to evaluate their revised functional, supporting, and operational and organizational (O&O) concepts in the context of Multi-Domain Operations (MDO).

The AMG also tasked the Mission Command (MC) Capabilities Development and Integration Directorate (CDID), in coordination with TRAC (now ED, G-3/5/7), to plan, coordinate, and execute an experiment to evaluate adjustments to revised functional, supporting, and O&O concepts and to ensure those adjustments are horizontally and vertically integrated.

Director, Futures Integration Directorate (FID) took ownership of the event as the Sponsor.

2. Planning.

To craft an integrating event to enable FID to assess the concepts and identify vertical and horizontal integration issues, ED led a series of workshops drawn from proven analytic methodologies. Each workshop had specific inputs and planned outcomes culminating in the development of the event Analysis Plan. Due to COVID-19 workplace restrictions, the team³ conducted the planning distributed via the Commercial Virtual Remote (CVR) (*Microsoft Teams*) collaboration environment. The team adapted quickly and successfully to working remotely and experienced no degradation in quality or timeliness of the work products.

Problem Formulation Workshop.

In April 2020, ED and FID conducted a problem formulation workshop based on initial guidance from Director, FID. The workshop participants conducted initial mission analysis and literature review and refined the initial guidance.

Table 2.1 – Problem Formulation Workshop Results	
Problem Statement	
Army Functional, Supporting, and O&O concepts may not be vertically and horizontally integrated to enable the AimPoint Force ⁴ division to achieve convergence and successfully resolve the MDO problems of penetrate, dis-integrate, and exploit in the close and deep maneuver areas from D-day to D+30 in the European Command (EUCOM) Area of Responsibility (AoR) in 2028.	
Analysis Questions	
• Are the Functional/Supporting concepts vertically integrated (implement the Army Operating Concept (AOC))? • Are the O&O concepts vertically integrated (implement the Functional / Supporting concepts)? • Are the Functional / Supporting / O&O concepts horizontally integrated (mutually supporting)? • What are the Integration Issues between the concepts? • What are the Potential Resolutions to the Integration Issues?	

³ Team – The team is the collection of participants in this event; in context, the term sometimes refers to various sub-groups conducting a described task, other times, it refers to the entire group.

⁴ AimPoint Force – Approved by Commander, AFC on 13 February 2020 for use in experimentation.

Measurement Space Workshop.

In May-June 2020, ED, MC Battle Lab (BL), and FID conducted a measurement space workshop to frame the problem and develop the data collection and management plan (DCMP). Measurement space identifies the intersection of the problem and the operational conditions contributing to the problem. This intersection is the space where the conditions contributing to the problem will most likely reveal themselves in operationally relevant ways. Establishing the measurement space informed the development of the event methodology; scenario; vignettes; methods, models, and tools (MMT); and data requirements.

At the beginning of the workshop, the team identified two first-order challenges: 1) no existing approach to assessment of concept integration and 2) lack of shared familiarization of the concepts. The team addressed the first challenge by taking some time to explore how integration of concepts might be assessed and agreed on a process with defined terms⁵. The team addressed the second challenge by conducting presentations / discussions of the current versions of the concepts to ensure everyone attained a common starting point in understanding the conceptual ideas.

During the workshop, the team decomposed the event problem, first, into the three MDO armed conflict problems: penetrate, dis-integrate, and exploit. Then, the team extracted from the AOC and Echelons Above Brigade (EAB) Concept the division activities / tasks described to resolve each of the problems. This decomposition formed the basis of the horizontal integration assessment (operational context within which to explore the concepts and identify the integration issues) and core of the DCMP. The team believed that by exploring the concepts' contributions to accomplishing these tasks (required capabilities (RCs) and dependencies⁶) it could properly assess if the concepts mutually supported each other to enable the division to converge capabilities to resolve the armed conflict problems. The team also believed it could effectively assess the vertical integration of the concepts without the operational context required of the horizontal integration assessment primarily because vertical assessment only involves comparison and traceability of the concepts' components to ensure implementation of the AOC.

Because the concepts were in various stages of development, some much more mature than others, the team decided to focus on the more mature (v0.7 and above as of 15 Aug 20) concepts:

Functional / Supporting Concepts

- Echelons above Brigade
- Brigade Combat Team Cross-Domain Maneuver
- Aviation
- Cyberspace / Electronic Warfare
- Fires
- Maneuver in MDO
- Intelligence
- Protection
- Special Operations

O&O Concepts (vertical only)

- Corps (for context only)
- Division
- Armored Brigade Combat Team
- Stryker Brigade Combat Team
- Infantry Brigade Combat Team
- Combat Aviation Brigade
- Division Reconnaissance and Security Squadron
- Division Fires Command

⁵ Concept Integration – The process of ensuring concepts are mutually supporting (vertically and horizontally integrated) to solve the MDO problems.

Vertical Integration – The process of ensuring that concept ideas (military problem, central idea, components of the solution) identified in particular functional or supporting concepts are aligned to the same concept ideas of the higher tier concept of the Army Concept Framework.

Horizontal Integration – The process of ensuring that concept ideas (RCs and dependencies) identified in particular functional or supporting concepts are congruent (effectively work together) with the other functional and supporting concepts; and that the dependencies identified in that same concept are accounted for in the appropriate adjacent concepts.

⁶ Required Capabilities – Capabilities necessary to conduct operations described in the concept. “What does the Army need me to do”?

Dependencies – Capabilities needed from another concept to conduct operations described in the concept. “What help do I need to do what the Army needs me to do”?

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Because only nine of the 14 functional / supporting concepts and only seven (some outdated) of the to be determined number of division related O&Os were ready for assessment and there was insufficient time to develop a large adjudicated event, the team decided an iterative approach to the assessment was necessary. At least two follow-on events will be needed to complete the full assessment: a similar event to assess the remaining five concepts and a larger, adjudicated event to assess the entire set of O&Os related to the division fight. Consequently, the team did not conduct the vertical integration assessment of the O&Os. The team also believed qualitative data in the absence of adjudicated, quantitative data would be sufficient to identify the horizontal integration issues between the concepts in this first iteration.

Table 2.2 – Measurement Space Workshop Results	
Key Constraints, Limitations, and Assumptions	C - The event execution will adhere to the COVID-19 social distancing guidelines and travel restrictions in place at the time of execution. L - Concepts will be at various stages of development during planning and execution reducing the level of assessment on those that are less mature. L - Time will not allow horizontal integration assessment of O&O concepts in this iteration. A - COVID-19 guidelines and restrictions at the time of execution will allow for the event to be conducted distributed via Battle Lab Collaboration Simulation Environment (BLCSE)⁷. A - Adjudication with a collection of quantitative metrics will not be necessary to identify initial concept integration issues. A - Operational context is not necessary to explore / assess vertical integration.
Methodology	Develop Event, Assess Vertical Integration, Assess Horizontal Integration, Analyze Data, Identify Integration Issues / Resolutions, Produce Report
Scenario	Approved Defense Planning Scenario (DPS) for European Theater; Operational Environment (OE) in 2028; AimPoint Force
Method	Seminar Wargame (A focused discussion of military operations using a map or other tools to depict combat activities. Interactions among combat forces are not adjudicated. Outputs are principally qualitative. Resource use is low. Human in the loop is required.). The event will be distributed via BLCSE.
Models	Maps, Graphics, Concept of Operations (CONOPS)
Tools	Traceability Matrix, Discussion Template, <i>Facilitate Pro (FacPro)</i> ⁸ , Survey
Data	Concept Components, Division Activities / Tasks, Contributions to Task Accomplishments, Formations, Observations, Potential Issues, Potential Resolutions (See Appendix B – Data Collection Management Plan.)

Vignette Development Workshop.

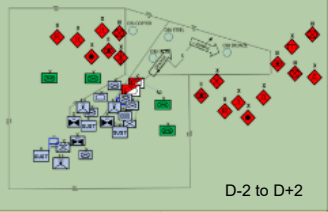
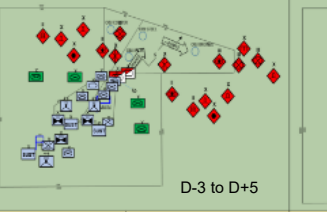
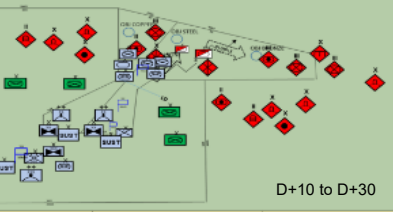
In June 2020, ED and MCBL conducted a vignette development workshop to determine the requirements for the vignettes to be used during the event. With assistance from Future Operating Environment Directorate (FOED), MCBL constructed three operational vignettes with associated scenario products.

The vignettes followed the problem decomposition construct of the DCMP, one for each MDO armed conflict problem. Each vignette supported discussion periods broken down according to the major tasks and sub-tasks, associated with penetrate, dis-integrate, and exploit.

⁷ Battle Lab Collaboration Simulation Environment – A centrally managed SECRET network environment with collaboration tools / models and simulations connecting the CDID Battle Labs and other experimentation partners across the community that enables distributed experimentation.

⁸ *Facilitate Pro* – A commercial software application (one-to-many conferencing tool) that allowed the participants to respond to elements of the DCMP, comment on one another's responses, and record their thoughts instantaneously and simultaneously.

Table 2.3 – Vignette Development Workshop Results

Scenario “X”: (with minor modifications based on required learning) Originated by TRAC, Approval Authority: DoD (J7)						
Vignette 1: Penetrate		Vignette 2: Dis-Integrate		Vignette 3: Exploit		
						
Discussion 1	Discussion 2	Discussion 1	Discussion 2	Discussion 1	Discussion 2	Discussion 3
Contest Maneuver Forces	Maneuver Across Operational Distance	Neutralize Mid-range Fires Systems	Conduct Operational Maneuver	Defeat Mid-range Systems	Neutralize Short-range Systems	Maneuver to Isolate & Defeat Land Forces
• See with Layered ISR. • Degrade Enemy Intelligence Effectiveness in the Close Area. • Deny Enemy Objectives.	• Degrade enemy long-range ISR. • Mitigate effects of enemy attacks in the Support Areas.	• See mid-range fires systems. • Strike mid-range fires systems.	• Maneuver forces in the Close Area to stimulate the enemy's mid-range systems. • Employ physical and virtual deception.	• See and strike. • Maneuver to compel employment. • Dislocate the enemy defense, then attack and overrun.	• Conduct rapid campaign of cross-domain offensive maneuver. • Receive, allocate, and deploy enablers to weight the effort.	• See. • Maneuver to isolate. • Maneuver to defeat.

3. Execution.

Vertical Integration Assessment.

The team determined operational context was not required to assess vertical integration of the concepts. FID concept integrators, assisted by CDID concept writers and led by ED/MCBL analysts, conducted the vertical integration assessment in July-August 2020, prior to the seminar wargame portion of the event. The team developed a traceability matrix containing the components of the concept constructs (military problem, central idea, solution synopsis, RCs and dependencies / mission threads and tasks, RC implementation, and dependencies) for each functional / supporting / O&O concept and the AOC. The team performed pair-wise comparisons of: functional concepts' components to the Maneuver in MDO (MMDO) Concept, EAB Concept, and AOC; supporting concepts' components to their “parent” functional concept, MMDO concept, or EAB concept, as appropriate; and O&O concepts' components to their “parent” functional concepts, as appropriate.

Academics / Rehearsal.

To free up time to maximize discussion periods during the horizontal integration assessment, ED / MCBL analysts and concept writers conducted briefings to and rehearsals with participants during the week of 18-22 August 2020. Presentations included Event Orientation / Analysis Plan, OE / Threat / Scenario, *FacPro* Orientation, DCMF, Concept Summaries, and Concept Contributions.

Horizontal Integration Assessment.

The team conducted the horizontal integration assessment through a series of facilitated discussions within the established operational context during the week of 24-28 August 2020. Participants explored the concepts' contributions to accomplishing the division tasks / activities during vignettes related to the MDO problems of penetrate, dis-integrate, and exploit. Concept writers explained their concepts in terms of the military problem, central idea, solution synopsis, required capabilities (RCs) and dependencies, and potential integration issues, then laid out what their organizations do to ensure the division is able to converge capabilities to solve the MDO armed conflict problems. FID concept integrators asked clarifying questions,

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coaxed out potential integration issues, and offered viewpoints from the perspective of Level III integration.⁹ The team identified potential integration issues and explored potential resolutions.

Based on a request from Director, FID, the team also took some time to consider what might be different if this discussion was being conducted using a scenario in the Indo-Pacific Command (INDOPACOM) AOR.

Data Collection.

Participants utilized *FacPro* as the platform for data collection. Prior to execution, MCBL analysts entered the data requirements from the DCMF and additional questions (5 each) submitted by the CDIDs into *FacPro*. They set up rooms for each discussion period / major task and pre-populated the room with the associated questions to focus the exploration. As the discussions ensued, the participants easily navigated to the appropriate question and entered their observations / comments. While everyone had access to and entered comments into *FacPro*, each represented organization used a designated analyst to serve as a recorder to ensure all observations / comments were captured. Additionally, MCBL provided note takers as a backup.

Concept integrators identified potential issues throughout the event and categorized them as:

- Integration Issues: Issues within the event scope (prevent mutual support of the concepts). These issues and their recommendations are well defined and supported. Integration issues were further classified as:
 - Seam – Necessary contributions of the concepts that are missing.
 - Friction Point – Contentions between two or more concepts,
 - Unresolved Dependency – Unresolved (not linked) / unidentified reliance upon required capabilities from other concepts.
- Insights: Issues that were outside the event scope (not integration issues per se), but important to enabling integration as concepts move forward. These issues and their recommendations are also well defined and supported.
- Observations: Potential issues that were identified by Threat Emulation Force (TEFOR) during the event and by the participants during the INDOPACOM excursion. These issues require additional exploration to both validate the problem and develop appropriate recommendations.

Participants.

One hundred and six (106) people from 17 organizations took part in the event. Participants included concept writers and analysts from each Capability Development Integration Directorate (CDID) (including Space and Missile Defense Command (SMDC) and US Army Special Operations Command (USASOC)), concept integrators from the FID Concepts Integration Futures Integration Team (FIT), representatives from Joint and Army Concepts Division (JACD) / Directorate of Concepts, representatives from Future Operating Environment Directorate (FOED), a representative from J7 / Joint Staff, and analysts and planners from ED and MCBL. Two representatives from Joint Modernization Command (JMC) and The Research and Analysis Center (TRAC) observed the event. The Mission Command Battle Lab served as the host of the event, FID as the sponsor, and ED as the planner and lead analyst.

Due to COVID-19 workplace restrictions, the team conducted the vertical integration assessment distributed via *Microsoft Teams*. The team conducted the academics / rehearsals and horizontal integration assessment distributed via BLCSE. Participants utilized the BLCSE capabilities in their BLs or nearby nodes to participate. Participants at Fort Eustis utilized a BLCSE extension into the Morelli Auditorium for the first time, supporting 25-30 personnel properly social-distanced. ED's Models and Simulations Branch contributed significantly to the success of the event by their work to enable this capability. Efforts are underway to endure

⁹ **Level III integration** – Aggregation of RCs and dependencies from the functional and supporting concepts applied to the MDO problems. “Can the Army do it”?

this capability for use in future distributed events of this type. Only TEFOR members incurred travel costs to Fort Leavenworth (already funded in their contract). The participants agreed that BLCSE worked well and event goals were achieved.

4. Analysis.

Data.

All of the data collected was qualitative (free text comments leveraged against the prompted questions in *FacPro*). The team recorded 918 observations, each being one comment from one participant. Each record included vignette, discussion period, task, question aligned to the task, commenter's name, organization of the commenter, time of the comment, and free text comment.

Analytic Scrum Summary.

Following the horizontal integration assessment, ED and MCBL analysts and FID concept integrators participated in an analytic scrum to analyze the data set collected in the assessments and develop the initial insights.

In Week 1 (31 August-4 September 2020), ED and MCBL analysts scrubbed the data files to create an unclassified version to use during Week 2 discussions. The team also organized the data in relation to the potential issues identified during the event. In Week 2 (7-11 September 2020) ED and MCBL analysts and FID concept integrators analyzed the data and refined the initial list of integration issues and supporting evidence into issues, insights, and observations.

During the weeks of 14-18 and 21-25 September 2020, ED analysts and FID concept integrators continued to refine the list of issues into Initial Insights (described the issue, identified the potential resolutions and responsible organizations, and assessed risk).

Risk Assessment.

To give leadership some idea of the relative importance of the identified problems, the FID concept integrators assessed risk (the consequence of not resolving the issue) for each integration issue. The team defined risk as both:

- Operational – Degree to which the integration issues between / among concepts will impact the implementation of the AOC - AimPoint Force division's ability to converge capabilities and resolve armed conflict problems.
 - Critical – Prevents implementation of the AOC and would result in mission failure.
 - High – Probable that AOC cannot be implemented and would severely degrade mission success.
 - Medium – Possible that AOC cannot be implemented and would result in some degradation to mission success.
 - Low – Small chance that AOC cannot be implemented and would result in minor adverse impact to mission success.
 - None – Issue is administrative or in no way prevents the full implementation of the AOC or impacts mission success.
- Capability Development – Degree to which the integration issues between / among concepts will impact delivery of capabilities to the Army.
 - Critical – No required DOTMLPF-P¹⁰ solution will be developed.
 - High – Significant resources will be expended on delivering the wrong DOTMLPF-P solutions.

¹⁰ Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy

- Medium – Good chance wrong / incomplete DOTMLPF-P solutions will be delivered.
- Low – Minimum impact on delivering the correct DOTMLPF-P solutions.
- None – No impact on delivering the correct DOTMLPF-P solutions.

The FID concept integrators used professional military judgment (PMJ) and achieved group consensus to assign the appropriate risk level.

Topic Modeling.

In parallel with the human-derived analytic process, ED analysts used Natural Language Processing Tools in R (a statistical computer language) to evaluate the comments captured during the event. The analysts used Latent Dirichlet Allocation (LDA), a topic modeling algorithm, to execute the evaluation. LDA is a common and widely used method for clustering text data that utilizes common words and word pairings to identify topics within the text documents. The methodology identified 16 clusters / discussion topics and the analysts determined that the topics had been previously captured by the human analysis. While topic modeling did not uncover any new issues / insights, it did add some additional confidence to the team's findings.

Initial Insights.

The team reviewed the results of the analysis with the concept writers and presented the Initial Insights briefing to Director, FID on 2 October 2020.

5. Results

1) Integration Issues.

- **The Network**

Issue: Multiple conceptual descriptions of the network exist. (Friction Point)

Discussion: Multiple concepts describe generic network requirements that appear to be separate, distinct networks (fires integrated network, the intel network, etc). Through discussion, we determined these requirements to be descriptions of attributes required of the Army Network vice separate, distinct networks. Concepts should describe dependencies upon the network rather than writing requirements for their own networks. Dependency statements should describe what the concepts need to do on the network – informing capability, capacity, security, etc., requirements. MC CDID, as the network owner, is responsible for identifying network RCs in the Command and Control (C2) Concept. Consensus was reached during the event: There will be a single Army network developed by C2 and all proponents will have their own applications on the network.

Proposed Resolution: Refine concepts to properly address network RCs and Dependencies.

Office of Primary Responsibility (OPR): MC CDID (supported by all other CDIDs)

Risk: Operational – **Critical** / Capability Development – **Medium**

- **RCs / Dependencies**

Issue: RCs and Dependencies are not consistently articulated both within and between concepts and are not adequately traced or linked. (Seam)

Discussion: RC Statements describe what the Army must do to accomplish the conceptual ideas established in a concept. Dependency Statements describe inter-concept reliance for the accomplishment of an RC. The Concept Development Writer's Guide and Addendums prescribe the description of RC and Dependency Statements. This standardization is not being enforced across all concepts leading to issues with consistent intra- and inter-concept traceability. This traceability is

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essential to ensuring we have the right set of RCs and Dependencies. Until we are able to analyze this traceability fully, the integration assessment cannot be considered complete.

Proposed Resolution: To ensure vertical and horizontal integration:

- Revise the Concept Development Writer's Guide to clearly standardize the appropriate description of both RC and Dependency Statements and provide an appropriate placement for them in the concept construct;
- Enforce guidance regarding RC and Dependency Statements across all concepts;
- Establish a standardized traceability matrix that accompanies the concepts for staffing (identifies the conceptual idea from which the RCs are derived, and provides the link from a Dependency in one concept to an RC in another concept).

OPR: DoC (supported by all CDIDs)

Risk: Operational – **High** / Capability Development – **High**

- **Information**

Issue: Several concepts have dependencies that address Information. However, there is no clear consensus on how those dependencies will be serviced by RCs that currently reside in the Information Concept (v0.3). (Unresolved Dependency)

Discussion: MDO requires a synchronized (converged) approach to the development and employment of Information capabilities. Concepts must clearly articulate the requirements (RC / Dependency) that allow the Army to dominate in the Information Environment (IE). Employment of Information enables both Decision Advantage and Information Advantage, but success in each case may be defined differently. Tension exists amongst various players vested within Information – Combined Arms Center (CAC), Cyber Center of Excellence (CoE), Intel CoE, etc., which creates friction points in assigning conceptual responsibility to develop RCs / Dependencies and DOTMLPF-P capability development responsibilities.

Proposed Resolution: Review and revise, as appropriate, the revised Information Concept (v0.5) RCs to ensure the Dependencies in other concepts can be properly linked to them.

****A post event decision to halt work on the Information Concept and a future decision regarding whether or not to have an Information Concept, could result in continued unresolved dependencies. Information related RCs must reside in a concept or across several concepts.**

OPR: Cyber CDID (or as directed based on most recent leadership guidance) (supported by all the other CDIDs)

Risk: Operational – **High** / Capability Development – **Medium**

- **Counter-Unmanned Aerial Systems (C-UAS)**

Issue: Fires Concept RCs may not adequately address C-UAS Groups I-III dependencies across all concepts. (Friction Point)

Note: The Fires concept defines UAS as “unmanned *aircraft* system” and C-UAS as “counter-unmanned *aerial* systems.”

Discussion: C-UAS is a comprehensive Army/formation requirement and as such, is discussed across the concepts (functional and supporting). All units may need a self-defense active protection capability against UAS Groups I-III. Fires CDID is the force proponent for this capability as designated in DA G3/5/7 EXORD and FRAGO 1. Fires CDID is the Air and Missile Defense (AMD) proponent. It is important to make a distinction between UAS Groups I-III and IV-VII. Fires “owns” the mission for both sets of UAS.

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As the proponent for AMD RCs, and the OPR for C-UAS (including Groups I-III), Fires CDID is responsible for the development of C-UAS solution approaches. The Fires Concept should describe RCs articulating what the Army must do to defend against UAS Groups I-III. The other concepts should address C-UAS Groups I-III by describing their dependencies on the appropriate Fires Concept RCs.

Proposed Resolution: Refine concepts to address the need to employ non-Air Defense Artillery (ADA) unit active defense against UAS Groups I-III and include C-UAS dependencies specific to their proponent to enable Fires CDID in the development of an Army-wide solution approach.

OPR: Fires CDID (supported by all other CDIDs)

Risk: Operational – **Medium** / Capability Development – **High**

- **Deception**

Issue: Deception is a significant factor in the success of Multi-Domain Operations (MDO), but is not holistically addressed across the concepts. (Seam)

Discussion: Deception appears 41 times in the AOC (compared to 51 times for convergence). It is called for in almost every task/activity across the five MDO problems. Several concepts mention deception in the body of their concepts, but there are no related RCs or Dependencies in the event's focus concepts. The Information Concept has several RCs that discuss deception, but deception is a large problem set that may need to be addressed by multiple concepts. The Information Concept (currently, at v0.3) lacks the maturity to allow a proper assessment of horizontal integration of this issue.

****A post event decision to halt work on the Information Concept and a future decision regarding whether or not to have an Information Concept, could result in a continued shortcoming and, potentially, unresolved dependencies. Information related RCs must reside in a concept or across several concepts.**

Proposed Resolution: Fully address deception within the concepts and develop appropriate RCs and Dependencies. Additionally, further explore this issue in the next Integrating Event to ensure horizontal integration of deception RC's and Dependencies.

OPR: Cyber CDID (supported by all other CDIDs)

Risk: Operational – **Medium** / Capability Development – **Medium**

- **Corps / Division O&O Concepts**

Issue: The MMDO Concept describes RCs for division and corps, but those capabilities are not implemented in the Division and Corps O&O Concepts. (Seam)

Discussion: The current Division and Corps O&Os were written in concert with the EAB Concept development and were based on Force Package 1. Since their creation, the MMDO Concept and the AimPoint Force package have been developed. There are RCs in the MMDO Concept that are not implemented in the current O&Os. The proposed organization in the O&Os is outdated. The O&Os describe layouts and tasks for the headquarters, but not for the formation as a whole.

Proposed Resolution: Revise Corps and Division O&Os to describe the entire formation, implement the RCs in the MMDO Concept, and align with the AimPoint Force. Also, the Corps and Division O&Os may require more experimentation to understand the proper organization and operation in 2035 and beyond.

OPR: MC CDID

Risk: Operational – **Medium** / Capability Development – **Medium**

- **Conventional Force (CF) Civil Affairs (CA) / Psychological Operations (PSYOPS)**

Issue: The RCs for CF CA / PSYOPS are not present in any functional or supporting concepts. (Seam / Unresolved Dependency)

Discussion:

- The Protection Concept identifies dependencies on Special Operations Forces (SOF) capabilities in the rear support areas. SOF CDID reps noted that there would be CA / PSYOPS capabilities available for support area activities. However, those CA / PSYOPS capabilities would not be SOF, but conventional force assets. Therefore, the dependency on CA / PSYOPS is established, but there are no RCs identified in any functional or supporting concept upon which to depend.
- SOF Concept only addresses the requirements for SOF CA/PSYOPS capabilities for activities, primarily in the deep maneuver and fires area of the battlespace. CF CA / PSYOPS requirements are not documented anywhere in the concepts.
- SOF CDID referred to the “Civil Affairs: 2025 and Beyond White Paper”, which contains RCs for CA, but not for PSYOPs. These 14 RCs articulate activities that take place in the maneuver areas where ARSOF CA forces would operate and not in the support areas where CF CA would operate. Thus, the RCs contained in the white paper do not appear to address capabilities required for CF CA activities.
- The downstream effect of this seam is the inability to provide resources for the Conventional CA and PSYOPs DOTMLPF-P development.

Proposed Resolution: Revise SOF Concept to include language that articulates in chapter 3 and Annex B all the CA / PSYOPs RCs to support the Army’s role in Joint Force operations.

OPR: SOF CDID

Risk: Operational – **Low** / Capability Development – **Medium**

2) Insights.

- **Lexicon**

Insight: Multiple concepts are using the same or similar terms with different meanings which causes horizontal integration challenges. There is no lexical adjudicator.

Discussion: Several terms are not clearly defined or consistently used in the concepts. Examples include:

- Maneuver: Several different types of maneuver exists in the concepts: independent v. semi-independent, cross-domain vs. all-domain vs. multi-domain. Confusion also exists about what it means to maneuver in the non-physical space (Cyberspace, Space, Electromagnetic Spectrum (EMS), and the IE).
- Information: Information Concept does not define Information leaving all other concepts to self-interpret.
- Fires: The Fires Concept defines fires as anything that causes an effect. This is not reflected in other concepts (i.e., Cyber-EW, Space, and Information).
- Also includes other terms that require adjudication: Network, Dependent Required Capabilities, Convergence, Exploit, etc.

Recommendation: DoC develop a dictionary of terms with adjudicated meanings. Revise concepts accordingly to eliminate confusion and to ensure horizontal integration.

- **Vertical Integration of Joint Concepts**

Insight: The current iteration of Joint concepts began development after the AOC was published and are not yet complete. Consequently, the AOC **may** not align with the Joint concepts.

Discussion: Since the Joint concepts are currently in development, we do not know what will be expected of the Army in Joint operations. Additionally, Army concepts rely heavily on Joint support and we cannot assess if the Joint Force will be able to meet our conceptual requirements. There is a possibility that the published AOC and the Joint concepts may not be aligned once the Joint concepts are published.

Recommendation: Once the Joint concepts are published, FCC assess Army concepts to confirm alignment and, if necessary, make appropriate refinements to ensure vertical integration of the AOC to the Joint concepts and the Army concepts to the refined AOC.

- **Experimentation Toolset and Processes**

Issue: We cannot fully validate concepts through experimentation because we do not have adequate models and simulations.

Discussion: Currently, we are using subjective qualitative methodology (PMJ) to assess effects in the non-traditional domains and environments (Cyberspace, Space, EMS, and the IE). We do not have the models and/or simulations to replicate the quantitative effects of conceptual capabilities within these domains and environments.

Recommendation: FCC develop models and simulations for experimentation to adequately replicate capabilities in the non-traditional domains and environments.

3) **Observations.**

- **INDOPACOM Excursion**

- **Observation 1:** Concepts are designed to be theater agnostic, but there are unique challenges faced in INDOPACOM. Collectively, the group expressed concerns that the AOC is written for EUCOM and that it is misaligned with the emerging Joint strategy in INDOPACOM. This potential disconnect requires additional examination.
- **Observation 2:** The unique challenges in INDOPACOM include: geography, threat, lack of unified partner organizations, infrastructure limitations, differing Joint sustainment interdependencies, different forward presence, and different required munition types. These challenges will be reflected in the conditions/standards of the tasks in the mission threads and manifested in the O&O concepts, not necessarily in the functional and supporting concepts. While the RCs remain theater agnostic, the DOTMLPF-P solutions developed for INDOPACOM may be different from those developed for EUCOM.
- **Observation 3:** Quick maneuver and offensive actions to blunt enemy actions may not be feasible or realistic in INDOPACOM. In MDO, we seize the initiative through penetration, dis-integration, and exploitation. But, given the force posture limitations in INDOPACOM, we may require defensive operations initially to build capacity and capability, then transition from defensive to offensive operations. This may also be an area of potential misalignment with the soon to be published Joint concepts.
- **Observation 4:** In this event, we considered capabilities available in 2028. Some conceptual ideas might not be feasibly accomplished in INDOPACOM with 2028 capabilities. Given a 2035 capabilities set, more conceptual ideas may be accomplishable. Further study and greater use of refined O&O concepts is required.

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- **Observation 5:** The defeat mechanism for INDOPACOM is different from the defeat mechanism in EUCOM. The Army should further explore the center of gravity analysis for INDOPACOM to determine required conceptual refinement.
- **Observation 6:** Idea of protracted conflict (months v. days) – In EUCOM, friendly forces anticipate quickly converging capabilities to overwhelm the enemy forces and transition from armed conflict to re-compete. In INDOPACOM, armed conflict is likely to be protracted and will require more and longer periods of convergence which will stress the concepts and their required capabilities. Further study is required to ensure that concepts are able to sustain a protracted armed conflict period.

- **TEFOR**

- **Observation 1:** Deception is addressed in multiple functional and supporting concepts, but there was not an overall deception concept (available) to coordinate the separate efforts.

Addressed in Deception Issue.

- **Observation 2:** C-UAS is addressed in some functional concepts (Fires, Protection, etc.), but there is not a holistic approach that integrates the various capabilities to defeat Threat UAS (Groups I-III), whether operating individually or in swarms.

Addressed in C-UAS Issue.

- **Observation 3:** The physical protection of assets (Space, Sustainment, C2, etc.) and the impact of their degradation or loss must not be underestimated as a vulnerability that Threat will target. For example, Ground Control Stations may be targeted through multiple means: cyber, sabotage, direction, etc.

Conceptually integrated – needs further exploration for feasibility during experimentation for O&O concepts development. Proposed Study Question: Does the AimPoint Force have the capacity and protection capabilities to both conduct operations and adequately protect assets?

- **Observation 4:** A potential challenge may exist in how all the functional concepts envision dispersed operations when there is only so much space in the area of operations. So, while each concept may be individually executable, when put together, they may be infeasible as a whole.

Dispersion is dependent upon METT-TC factors - potential challenge to disperse forces in Theater 1 scenario. We don't have the data (within the scope of this event) to support assessment of the significance of dispersion to success of MDO in this context. Requires further exploration.

- **Observation 5:** The EMS is an exploitable seam, to include through targeting emitting systems, jamming military and commercial sensors to disrupt C2, and disrupting coalition operations, all intended to delay/confuse decisions.

Accept the challenge that EMS is problem. Concepts identify appropriate RCs and it is incumbent upon Capability Developers to mitigate effects of enemy capabilities when developing solutions.

6. Summary of Findings and Conclusions.

a. Findings.

- Are the functional/supporting concepts vertically integrated (implement the AOC)? The team determined the focus concepts are aligned within the current concept framework and implement the

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AOC. The conceptual ideas in the functional / supporting concepts are nested within the conceptual ideas of the AOC, the EAB Concept, and the MMDO Concept with no outliers. The team was not able to adequately trace the RCs and dependencies to the conceptual ideas from which they were derived.

- Are the O&O concepts vertically integrated (implement the functional / supporting concepts)? The team determined some of the focus O&O concepts were aligned within the current concept framework. The ABCT, IBCT, SBCT, and Division R&S Squadron O&O Concepts properly aligned with the Brigade Combat Team Cross-Domain Maneuver Concept, the Combat Aviation Brigade O&O and Division Fires Command O&O Concepts properly aligned to the Aviation and Fires Concepts, respectively. Although the Division and Corps O&O Concepts are generally aligned to the EAB Concept, they are outdated (Force Package 1) and don't describe the entire formation.
- Are the functional / supporting / O&O concepts horizontally integrated (mutually supporting)? The team determined the conceptual ideas expressed in the focus concepts are mutually supporting. The concepts' contributions to accomplishing the division tasks worked together to solve the AOC's armed conflict problems. The team determined there was insufficient time and an incomplete package of mature concepts available to properly answer this question for the O&O concepts in this iteration.
- What are the Integration Issues between the concepts? The team identified several vertical and horizontal integration issues from analysis of the collected data and participant's observations (See paragraph 5. Results above).
- What are the Potential Resolutions to the Integration Issues? The Team explored potential resolutions to the identified integration issues and recommended the most feasible ones along with their responsible organizations (See paragraph 5. Results above).

b. Conclusions.

Based on the event problem / analysis questions, CLAs, scenario (vignettes), and methodology:

- The nine focus functional / supporting concepts are mostly integrated (vertically and horizontally) and will enable the division to converge capabilities and resolve the three MDO armed conflict problems (penetrate, dis-Integrate, and exploit).
- The analysis identified one integration issue (Network) that, if not resolved, would prevent implementation of the AOC and lead to mission failure.
- Further analysis of the remaining functional / supporting concepts in the next integrating event is necessary to complete this iteration of the integration assessment.
- Refined articulation of required capability and dependency statements across the concepts to enable traceability analysis is necessary to complete this iteration of the integration assessment.

7. Way Ahead.

ED will enter the results from IE 20-04 into the Experimentation Module of the Forge data environment. This action ensures the results inform Futures and Concepts Center and Army Futures Command future experiments. Additionally, participant CDIDs will iterate on their results from IE 20-04 in table top exercises at battle labs throughout Fiscal Year (FY) 21. Finally, the results are foundational to future integrating events conducted in FY21.

Responsible parties will take appropriate actions to resolve the identified integration issues and insights.

8. After Action Review (AAR).

The Team conducted an AAR at the end of the event. Key takeaways from the discussion were:

- (Improve) Objectives and requirements for the scenario, schedule, study issues and essential elements of the analysis (EEAs) must be established much sooner to improve available planning time.
- (Improve) Process / synthesize homework between suspense and rehearsal week.
- (Improve) TASKORD timeline not sent with enough time to allow scheduling.
- (Sustain) This forum was the right approach. The BLCSE medium worked well in light of a classified scenario.
- (Sustain) Collaboration Tools, BLCSE, *Big Blue Button*, *FacPRO* were helpful to integrate and conduct the event.

Appendix A - References

Annex F (Experimentation) to FRAGORD 1 to OPORD 007-19 (Future Force Modernization Enterprise Annual Modernization Guidance 20-25), 31 July 2019

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Armored Brigade Combat Team (ABCT) Operational and Organizational (O&O) Concept 2028-2040, v0.9, 31 March 2020

Infantry Brigade Combat Team (IBCT) Operational and Organizational (O&O) Concept 2028-2040, v0.9, 31 March 2020

Stryker Brigade Combat Team (SBCT) Operational and Organizational (O&O) Concept 2028-2040, v0.9, 31 March 2020

Division Reconnaissance and Security Squadron Operational and Organizational (O&O) Concept 2028-2040, v0.9, 31 March 2020

Division Fires Command (DFC) Operational and Organizational Concept, v0.9, 17 March 2020

Combat Aviation Brigade Operational and Organizational (O&O) Concept, v0.5, 31 March 2020

Appendix B – Data Collection Management Plan (DCMP)

Army Functional, Supporting, and Operational and Organizational (O&O) concepts may not be vertically and horizontally integrated to enable the AimPoint Force Division to achieve convergence and successfully resolve the Multi-Domain Operations (MDO) problems of penetrate, dis-integrate, and exploit in the close and deep maneuver areas from D-day to D+30 in the EUCOM Area of Responsibility in 2028.

Analysis Question/Study Issue	Essential Element of Analysis	Measures of Merit
1.0 Are the Functional/Supporting Concepts vertically integrated (implement the AOC)?	1.1 Do the Concepts' Military Problems align with the Army Operating Concept's (AOC) Military Problem?	1.1.1 Does the Fires Concept's Military Problem align with the AOC's Military Problem?
		1.1.2 Does the Intelligence Concept's Military Problem align with the AOC's Military Problem?
		1.1.3 Does the Maneuver in MDO Concept's Military Problem align with the AOC's Military Problem?
		1.1.4 Does the Protection Concept's Military Problem align with the AOC's Military Problem?
		1.1.5 Does the Echelons above Brigade Concept's Military Problem align with the AOC's Military Problem?
		1.1.6 Does the Aviation Concept's Military Problem align with the AOC's Military Problem?
		1.1.7 Does the Cyber/Electronic Warfare Concept's Military Problem align with the AOC's Military Problem?
		1.1.8 Does the Special Operations Concept's Military Problem align with the AOC's Military Problem?
		1.1.9 Does the BCT Cross-Domain Maneuver Concept's Military Problem align with the AOC's Military Problem?
	1.2 Do the Concepts' Central Ideas align with the AOC's Central Idea?	1.2.1 Does the Fires Concept's Central Idea align with the AOC's Central Idea?
		1.2.2 Does the Intelligence Concept's Central Idea align with the AOC's Central Idea?
		1.2.3 Does the Maneuver in MDO Concept's Central Idea align with the AOC's Central Idea?
		1.2.4 Does the Protection Concept's Central Idea nest with the AOC's Central Idea?
		1.2.5 Does the Echelons above Brigade Concept's Central Idea align with the AOC's Central Idea?
		1.2.6 Does the Aviation Concept's Central Idea align with the AOC's Central Idea?
		1.2.7 Does the Cyber/Electronic Warfare Concept's Central Idea align with the AOC's Central Idea?
		1.2.8 Does the Special Operations Concept's Central Idea align with the AOC's Central Idea?
		1.2.9 Does the BCT Cross-Domain Maneuver Concept's Central Idea align with the AOC's Central Idea?
	1.3 Do the Concepts' Components of the Solution implement the tenets of MDO?	1.3.1 Do the Fires Concept's Components of the Solution implement the tenets of MDO?
		1.3.2 Do the Intelligence Concept's Components of the Solution implement the tenets of MDO?
		1.3.3 Do the Maneuver in MDO Concept's Components of the Solution implement the tenets of MDO?
		1.3.4 Do the Protection Concept's Components of the Solution implement the tenets of MDO?
		1.3.5 Do the Echelons above Brigade Concept's Components of the Solution implement the tenets of MDO?
		1.3.6 Do the Aviation Concept's Components of the Solution implement the tenets of MDO?
		1.3.7 Do the Cyber/Electronic Warfare Concept's Components of the Solution implement the tenets of MDO?
		1.3.8 Do the Special Operations Concept's Components of the Solution implement the tenets of MDO?
		1.3.9 Do the BCT Cross-Domain Maneuver Concept's Components of the Solution implement the tenets of MDO?
	1.4 Do the Concepts' Required Capabilities (RCs) trace to the Concepts' Components of the Solution (conceptual ideas)?	1.4.1 Do the Fires Concept's RCs trace to the Concept's Components of the Solution?
		1.4.2 Do the Intelligence Concept's RCs trace to the Concept's Components of the Solution?
		1.4.3 Do the Maneuver in MDO Concept's RCs trace to the Concept's Components of the Solution?
		1.4.4 Do the Protection Concept's RCs trace to the Concept's Components of the Solution?
		1.4.5 Do the Echelons above Brigade Concept's RCs trace to the Concept's Components of the Solution?
		1.4.6 Do the Aviation Concept's RCs trace to the Concept's Components of the Solution?
		1.4.7 Do the Cyber/Electronic Warfare Concept's RCs trace to the Concept's Components of the Solution?
		1.4.8 Do the Special Operations Concept's RCs trace to the Concept's Components of the Solution?
		1.4.9 Do the BCT Cross-Domain Maneuver Concept's RCs trace to the Concept's Components of the Solution?

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	Analysis Question/Study Issue	Essential Element of Analysis	Measures of Merit
2.0	Are the O&O Concepts vertically integrated (implement the Functional/Supporting Concepts)	2.1 Do the O&O Concepts' Mission Threads / Tasks align with the Components of the Solution in their parent Concept?	2.1.1 Do the Division O&O Concept's Mission Threads /Tasks align to the Components of the Solution in the EAB Concept?
			2.1.2 Do the Armor Brigade Combat Team (ABCT) O&O Concept's Mission Threads /Tasks align to the Components of the Solution in the BCT Cross-Domain Maneuver Concept?
			2.1.3 Do the Stryker Brigade Combat Team (SBCT) O&O Concept's Mission Threads /Tasks align to the Components of the Solution in the BCT Cross-Domain Maneuver Concept??
			2.1.4 Do the Infantry Brigade Combat Team (IBCT) O&O Concept's Mission Threads /Tasks align to the Components of the Solution in the BCT Cross-Domain Maneuver Concept?
			2.1.5 Do the Combat Aviation Brigade (CAB) O&O Concept's Mission Threads /Tasks align to the Components of the Solution in the Aviation Concept?
			2.1.6 Do the Reconnaissance and Security (R&S) Squadron O&O Concept's Mission Threads /Tasks align to the Components of the Solution in the BCT Cross-Domain Maneuver Concept?
			2.1.7 Do the Division Fires Command (DFC) O&O Concept's Mission Threads /Tasks align to the Components of the Solution in the Fires Concept?
			2.1.8 Do the Sustainment Brigade O&O Concept's Mission Threads /Tasks align to the Components of the Solution in the Sustainment Concept?
		2.2 Do the O&O Concepts implement the RCs in their parent Concept?	2.2.1 Does the Division O&O Concept implement the RCs in the EAB Concept?
			2.2.2 Does the ABCT O&O Concept implement the RCs in the BCT Cross-Domain Maneuver Concept?
			2.2.3 Does the SBCT O&O Concept implement the RCs in the BCT Cross-Domain Maneuver Concept??
			2.2.4 Does the IBCT O&O Concept implement the RCs in the BCT Cross-Domain Maneuver Concept?
			2.2.5 Does the CAB O&O Concept implement the RCs in the Aviation Concept?
			2.2.6 Does the R&S Squadron O&O Concept implement the RCs in the BCT Cross-Domain Maneuver Concept?
			2.2.7 Does the DFC O&O Concept implement the RCs in the Fires Concept?
			2.2.8 Does the Sustainment Brigade O&O Concept implement the RCs in the Sustainment Concept?
		2.3 Do the O&O Concepts account for the Dependencies in their parent Concept?	2.3.1 Does the Division O&O Concept account for the Dependencies in the EAB Concept?
			2.3.2 Does the ABCT O&O Concept account for the Dependencies in the BCT Cross-Domain Maneuver Concept?
			2.3.3 Does the SBCT O&O Concept account for the Dependencies in the BCT Cross-Domain Maneuver Concept??
			2.3.4 Does the IBCT O&O Concept account for the Dependencies in the BCT Cross-Domain Maneuver Concept?
			2.3.5 Does the CAB O&O Concept account for the Dependencies in the Aviation Concept?
			2.3.6 Does the R&S Squadron O&O Concept account for the Dependencies in the BCT Cross-Domain Maneuver Concept?
			2.3.7 Does the DFC O&O Concept account for the Dependencies in the Fires Concept?
			2.3.8 Does the Sustainment Brigade O&O Concept account for the Dependencies in the Sustainment Concept?

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	Analysis Question/Study Issue	Essential Element of Analysis	Measures of Merit	Indicators
3.0	Are the Functional/Supporting/O&O Concepts horizontally integrated (mutually supporting)?			
3.1	Do the Concepts work together to enable the Division to achieve convergence in order to penetrate operational stand-off?	3.1.1 Do the Concepts work together to enable the Division to contest enemy maneuver forces?	3.1.1.1 What are the Concepts' contributions to accomplish see with layered ISR?	Layered collection plan. Processing and dissemination.
			3.1.1.2 What are the Concepts' contributions to accomplish degrade enemy intelligence effectiveness in the Close Area?	Air defense against aerial ISR. Tactical deception.
			3.1.1.3 What are the Concepts' contributions to accomplish deny enemy objectives?	Converge joint fires from support area and national level assets. Employ deception in close area. Contest information environment.
		3.1.2 Do the Concepts work together to enable the Division to maneuver across operational distances?	3.1.2.1 What are the Concepts' contributions to accomplish degrade enemy long-range ISR?	Counter Threat SOF and HUMINT. Counter Threat Space ISR. Counter Threat Cyber ISR.
			3.1.2.2 What are the Concepts' contributions to accomplish mitigate effects of enemy attacks in the Support Areas?	Employ deception in tactical and operational support areas. Protect and harden APS. Disperse deployment and sustainment.
3.2	Do the Concepts work together to enable the Division to achieve convergence in order to dis-integrate the enemy's anti-access and area denial systems?	3.2.1 Do the Concepts work together to enable the Division to neutralize enemy mid-range fires systems?	3.2.1.1 What are the Concepts' contributions to accomplish see mid-range fires systems?	Stimulate mid-range threat systems. See mid-range threat systems
			3.2.1.2 What are the Concepts' contributions to accomplish strike mid-range fires systems?	Conduct counter battery fire.
		3.2.2 Do the Concepts work together to enable the Division to conduct operational maneuver?	3.2.2.1 What are the Concepts' contributions to accomplish maneuver forces in the Close Area to stimulate the enemy's mid-range systems?	Seize key terrain. Isolate enemy maneuver forces.
			3.2.2.2 What are the Concepts' contributions to accomplish employ physical and virtual deception?	Employ operational deception in the close area.
3.3	Do the Concepts work together to enable the Division to achieve convergence in order to exploit freedom of maneuver to defeat enemy objectives?	3.3.1 Do the Concepts work together to enable the Division to defeat the enemy's mid-range systems?	3.3.1.1 What are the Concepts' contributions to accomplish see and strike enemy's mid-range systems?	Continued layered ISR. Employ organic fires.
			3.3.1.2 What are the Concepts' contributions to accomplish maneuver to compel employment of enemy's mid-range systems?	Seize the initiative.
			3.3.1.3 What are the Concepts' contributions to accomplish dislocate the enemy defense, then attack and overrun fires and sustainment formations?	Continue to exploit.
		3.3.2 Do the Concepts work together to enable the Division to neutralize the enemy's short-range systems?	3.3.2.1 What are the Concepts' contributions to accomplish conduct rapid campaign of cross-domain offensive maneuver?	Converge: Attack Aviation/UAS. Short Range ADA. EW/Counter PnT. Cyber Space. Fires . Maneuver.
			3.3.2.2 What are the Concepts' contributions to accomplish receive, allocate, and deploy enablers to weight the effort?	
		3.3.3 Do the Concepts work together to enable the Division to maneuver to isolate and defeat land forces?	3.3.3.1 What are the Concepts' contributions to accomplish see?	Employ organic ISR. Access to joint/national assets.
			3.3.3.2 What are the Concepts' contributions to accomplish maneuver to isolate?	Air/Ground Maneuver. Fires. EW. Deception.
			3.3.3.3 What are the Concepts' contributions to accomplish maneuver to defeat?	BCTs conduct Cross-Domain Maneuver. Div converges all domains.

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	Analysis Question/Study Issue	Essential Element of Analysis	Measures of Merit
4.0	What are the Integration Issues between the Concepts?	4.1 What are necessary contributions of the Concepts that have not been accounted for (Seams)?	
		4.2 What are the contentions in contributions between two or more Concepts (Friction Points)?	
		4.3 What are the unresolved / unidentified reliances upon RCs from other Concepts (Unresolved Dependencies)?	

	Analysis Question/Study Issue	Essential Element of Analysis	Measures of Merit
5.0	What are the Potential Resolutions to the Integration Issues?	5.1 How can the identified Integration Issue be resolved ?	5.1.1 Which Integration Issues can be resolved with minor edits to a Concept or Concepts?
			5.1.2 Which Integration Issues can be resolved with major edits to a Concept or Concepts?
			5.1.3 Which Integration Issues need further exploration in another venue to resolve the issue ?
		5.2 What is the risk of not resolving the Integration Issue? (risk of delivering the correct solutions to RCs)	5.2.1 Which Integration Issues are High risk?
			5.2.2 Which Integration Issues are Medium risk?
			5.2.3 Which Integration Issues are Low risk?
		5.3 Who is responsible for resolving the Integration Issue?	5.3.1 What is the Office of Primary Responsibility?
			5.3.2 When should the resolution be completed?