Missions & Means Framework: Theory

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To Make It Work … Need Five Things

1. Composable Framework and supporting Procedures

2. Critical Mass of End-User Content and supporting Access

3. Business Model for Life-Cycle Sustainment and supporting Program Elements

4. Tools, Utilities and supporting Standards

5. Education, Training, and Certification
Fundamental Missions and Means Framework Principles

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- Employ the same **Canonical Representation** to Capture Purpose and Abstraction
- Separate **Human-Consumable Language** and **Machine-Consumable Language**
- Separate the **Mission** from the **Means**
- Separate **Synthesis** from **Employment**
- Separate **Parts** from **Packages**
- Employ a Layered **Decomposition**
- Interface **Operations** and **Forces** through **Capabilities** and **Effects**
- Separate Cognitive **from** Physical, Actual **from** Perceived, Tangible **from** Intangible:
- Link **Missions** and **Means** in Packages
A Two-Sided Missions & Means Framework

Figure 1
1. Establish multiple FOBs, on order conduct handover FOB security to 3d BN 504 PIR
2. Defeat rebel forces W/SW of Capital
3. Secure OBJ CAMEL

1. Achieve air superiority
2. Destroy WMD capability
3. Facilitate control of energy centers
4. Destroy resisting Rebel forces

1. Destroy WMD
2. Seize oil and gas pipelines and prod facilities
3. Seize the RHC fac of the IFP mil forces
4. Seize vital infrastructure with min coll damage
5. Facilitate the transition of power
6. Destroy Rebel forces in zone

1. Seize RHC fac with min coll damage
2. Defeat Rebel forces W&S/W of Capital
3. Conduct vertical maneuver to Capital

1. Defeat enemy forces withdrawing to Capital
2. Seize bridge vic OBJ BISHOP
3. Conduct air assault with 1 dismounted INF CO
6. Context, Environment (Military, Civil, Physical, etc.)

5. Index: Location & Time

4. Tasks, Operations

3. Functions, Capabilities

2. Components, Forces

1. Interactions, Effects

7. Mission

BLUFOR

OPFOR

(O) SN 4 Restore legitimate government in order to 7 Protect national interests
(ST) 4 Establish military and civil conditions to 7 Restore legitimate government.
(OP) 4 Isolate the rebel government to 7 Help establish desired conditions
(TA) 4 Prevent reinforcement of capital to 7 Help isolate the rebel government
(TA Atomic) 4 Block access on main route into capital to 7 Prevent reinforcement of capital

(SN) 4 Deter use of force in order to 7 Ensure survival of regime
(ST) 4 Establish military, civil and political conditions to 7 Deter use of force.
(OP) 4 Conduct asynchronous ops to 7 Help establish desired conditions
(TA) 4 Pre position forces in key areas to 7 Enable asynchronous ops
(TA Atomic) 4 Occupy defensive positions to 7 Prevent enemy access to capital

(SN) SN 3 Employ forces, SN 5.2.4 Decide on need for military action
(ST) ST 1.3.6 Conduct Ops in depth
(OP) OP 1.2.5 Conduct offensive operations
(TA) ART 8.1.2 Conduct an attack
(TA Atomic) ART 8.5.25 Seize an area (Objective)

3. Functions, Capabilities

Move, Sense, Communicate, Engage, Restore
Observe, Orient, Decide, Act

SN: National Intel/Communications assets
ST: Joint Task Force
OP: Air, Ground, Maritime, SOF components
TA: FCS equipped Unit of Action (UA)
TA Atomic: Combined Arms Battalion (CAB)

SN/ST: WMD, SOF forces
OP: Missile Units, Elite Division w/ newer equipment
TA: Conventional Brigades w/ old equipment
TA Atomic: Infantry Battalions w/ old equipment

Figure 6
8.1 Conduct Offensive Operations

- 8.5.1 Attack By Fire an EN force /position
- XX-XX Conduct Autonomous Surveillance
- MTP 07-3-1220 Fire Priority TGT
- MTP 34-5-0052 CGS Mission Activities
- MTP 34-5-0041 Conduct UAV Flight Operations

1.3.3.2 Conduct Area Recon

MTP 34-5-0041 Conduct UAV Flight Operations

SoSIL

Virtual Loop

Live Loop

Live Network Connection between Systems

Sample Task Set Applied to Generic OT Model
First **Synthesis**, Then **Employment**

**Organized By**

1. Conditions
2. States
3. Performance
4. Utility

**Expressed As**

- **MoE**
- **MoP**
- **Architecture**
- **Phenomena**

**Top Down**

- Missions, Operations
- Tasks, Capabilities
- Components, Forces
- Interactions, Effects

**Bottom Up**
## Transformation Support

### Mission Definition:  
JCID requires formal statement of national security strategy, strategy and overall concept for accomplishing, and joint operational concepts

MMF records this in the multi-sided (OWNFOR / OPFOR) specifications: L-7 Purpose/Mission referencing L-6 Context/Environment and L-5 Index/Location/Time

### Mission Analysis:  
JCID terms FAA – JTS calls METL-based readiness requirements

MMF employs MDMP to derive specified / implied tasks, identify conditions, select measure, and assign standards

### Capability Assessment:  
JCID requires a functional concepts decomposition (to do what)

MMF employs O3,4S synthesis operator to derive “catholically agnostic” decomposition of L-3 Functions/Capabilities based on L-4 Tasks/Operations

### Integrated Architectures:  
JCID / DoD 5000.2 require integrated Operational, Systems, and Technical standards architecture views

MMF employs integrated architectures to provide concepts, rules, and technologies to assemble Stocking Perspective parts into Assembly Perspective packages

### Mission Evaluation:  
JCID requires an FSA to determine degree to which alternative DOTMLPF solutions do / do not remove FNA-identified capability gaps

MMF conducts FSA as follows:
- **O1,2E Employment operator** provides the degraded (or enhanced) states generated by L-1 Effects packages on L-2 Component parts
- **O2,3E Employment operator** uses architectures to determine L-3 Capability package performance based on L-2 Component part states and appropriate architecture rules and constraints
Warfare is the most complex and demanding of all human activities. The framework must have an explicit, scalable strategy for managing complexity and quantifying demand.

**Fundamental Missions and Means Framework Principles**

- Explicitly state **Purpose** and **Abstraction**
  - Employ the same **Canonical Representation** to Capture Purpose and Abstraction
  - Separate **Human-Consumable Language** and **Machine-Consumable Language**

- Separate the **Mission** from the **Means**:

- Separate **Synthesis** from **Employment**:

- Separate **Parts** from **Packages**

- Employ a **Layered Decomposition**

- Interface **Tasks** and **Components** through **Capabilities** and **Interactions**

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Representation Dimensions

- **Internal Knowledge**
  - (Verbal Instruction, Memorized Procedures, Combat Readiness)

- **Persistent Natural Language**
  - (Presentation Slides, Prose Narrative, Structure Pseudo-Code)

- **Fully Structured Views**
  - (Activity Model, E/R Diagram, Behavior Diagram, Object Models)

- **Canonical Representation Framework**
  - (Fully Normalized Component Repository)

**Increasing Utility**

**Enforcement of Semantic Content**

**Structural Maturity of Syntax**
Migrating Representations at Multiple Levels of Structural Maturity and Semantic Enforcement

- Fully Structured Views
- Persistent Natural Language
- Internal Knowledge
- Additional Work or Knowledge Required
- Canonical Representation Framework
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What We Do Not Show You!

XML-based Semantics and Syntax
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Mission & Means Framework

Reference Library (Stocking Perspective)

Means

Operators

Synthesis

Employment

Effects

1 Interactions

Mission

By Whom

How Well

Do What (Playbook)

Where & When

Under What Circumstances

What & Why

Assembly Perspective

Mission & Means Framework

Purpose

Context

Environment

Index & Time

Operations

Capabilities

Forces

Components

Tasks

Functions

01,2

04,1

03,4

02,3
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A Two-Sided Missions & Means Framework

6. Context: Environment (Military, Civil, Physical, etc.)

7. BlueFor Purpose: Why = Mission

5. Index: Location & Time

4. Mission Tasks

3. Capabilities

2. Components

1. Interaction Conditions

BLUFOR

O_{1,2}

O_{2,3}

O_{3,4}

Receive the Mission

Synthesis

Road to War

Cdr’s Intent

Msn Analysis: Specified Implied Essential Tasks

IPB Limits & Constraints

OPFOR

O_{1,2}

O_{2,3}

O_{3,4}

Before

After

COA Development

Task Organization / Req. for Spf

Road to War

Receive the Mission

Synthesis
A Two-Sided Missions & Means Framework
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**Separate Parts from Packages**

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Chains versus Networks

Chain
Too brittle, simple pattern, simple control, scaled
“business end” most poorly connected, hard to reconfigure or change flow

Network
Very robust, complex pattern, complex control, scale free
“business end” best connected, natural to reconfigure or change flow

Arthur K. Cebrowski, Director, Force Transformation, 18 January 2004
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Tasks Semantics by Level-of-War

Strategic National

Strategic Theater

Operational

Tactical-Joint

Tactical-Service

Universal Joint Task List (UJTL)

e.g. Army Universal Task List (AUTL)

Army Training and Evaluation Program (ARTEP), Mission Training Plans (MTPs), Tactics, Techniques and Procedures (TTPs), Field Manuals (FMs), Technical Manuals (TMs)

Figure 2
Coalition Military Objective: Isolate Capital to Facilitate Restoration of Legitimate Government

Develop Theater Strategic Intel., Surv., & Recon ST 2.0
Support National & JTF Surv & Recon ST 2.2.2

Employ Theater Strategic Firepower ST 3.0
Provide Theater Current Intel. ST 2.4.2.2

Monitor World-wide & Theater Strategic Situation ST 5.1.4

Conduct Theater Electronic Attack ST 3.2.2.2

Provide Theater Strategic C4 SN 5.0
Provide Strategic Direction to Theater Forces ST 5.4

Level 4: Strategic Theater
Level 4: SEAD Drill-down

Employ Firepower
TA 3

Mobility/C-Mobility/ Survivability
ART 5.0

Conduct JSEAD
TA 3.2.4

Fire Support
ART 3.0

Conduct Survivability Operations
ART 5.3

Employ Fires
ART 3.3

Artillery raid
06-2-W107

Execute an MLRS fire mission
06-4-M007

Conduct surface to surface attack
ART 3.3.1.1

Conduct Air to Surface Attack
ART 3.3.1.2

Conduct Naval Surface Fire Support
ART 3.3.1.3

Conduct Nonlethal fire support
ART 5.3.2

Conduct Lethal Fire Support
ART 5.3.1

Conduct SEAD
ART 5.3.1.9
Level 2: Force Structure

United Nations Security Council

- Allied Country NCA
- U.S. Pres./SECDEF
- Allied Country NCA

CINC Supported

CINC Supporting

Coalition CTF

CJFLCC
CJFACC
CJFMCC

Corps AVN BDE
33RD DIV (M)
IDIV IBCT
Hierarchical Integrated Aircraft Avionics Models

Developed Ten Air-to-Air Missile Seeker Models: 5 IR, 3 Active RF, 1 Semi-Active RF, 1 Passive RF

Source: National Air Intelligence Center TMAP Office
MMF: Layered Decomposition

Reference Library (Stocking Perspective)

Mission

Means

Operators

Synthesis

Employment

Interactions

Layered Decomposition By UJTL Levels Of War & Echelons Of Command

Tactical Level
Operational Level
Strategic Theater Level
Strategic National Level

Assembly Perspective

Mission

Ref: 02,3, 03,4, 04,1

Employment: 01,2

Interaction: 01,2

Layered Decomposition

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Figure 1
Traditional Capabilities

- Move
- Communicate
- Sense
- Engage
- Replenish
Communication from Outside Combat Area

**STATE OF BLUE FORCES**

Blue Own-Force Info as Perceived

Information Acquisition

Command-Control

Motivation

Communication

Demoralization

Suppression

Disruption

Destruction

Neutralization

Deception

**STATE OF RED FORCES**

Red Force Intelligence as Perceived

Communication from Outside Combat Area

Sustainment

Movement

Protection

Communication

Motivation

Command-Control

Information Acquisition

Source: A Concise Theory of Combat
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**Link each Mission with Means in Packages**
Deep Attack Process Group

Time (t)

Activity (at Time t)

P3 A2C2

P7 SEAD

P8 JAAT

PG 1a MDMP Corps

PG 1b Avn Bde/MSCs

PG 1c AHB/Bns

PG 2 IPB

PG 3 C2/Battle Management/COP

PG 4 Targeting Process

PG 5 Intelligence/Information gathering

PG 6 Prepare for attack

P2a Pass. Of Lines

PG 9 Engage Enemy

P2b Pass. Of Lines

PG 10 Recover from Attack

PG 2 Intelligence Prep of Battlefield
1. Establish multiple FOBs, on order conduct handover FOB security to 3d BN 504 PIR
2. Defeat rebel forces W/SW of Capital
3. Secure OBJ CAMEL

1. Destroy WMD
2. Seize oil and gas pipelines and prod facilities
3. Seize the RHC fac of the IFP mil forces
4. Seize vital infrastructure with min coll damage
5. Facilitate the transition of power
6. Destroy Rebel forces in zone

1. Achieve air superiority
2. Destroy WMD capability
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