Mission Threads and Analytic Framework Applied to Coalition Interoperability Assurance & Validation

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Unclassified
System of Systems Testing

Today’s complex software intensive systems require a different look at how we acquire and test capabilities for our users!

Systems must work together to allow collaboration in order to execute a Mission!
One mission thread is not independent of the others and each drives the other threads in various ways.
Coalition Interoperability

A Combat Support Agency

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CENTRIXS-I

AMN

CORE

CTE2

INTEROPERABILITY

Operational USER

TOP DOWN

AV OV

DATA EXCHANGE

Minimum Operational Requirement (MOR)

TTP

SICF

CAN

BCIS

DEU

OVERTASK

UK

NORAX

NOR

SIMACET

SPA

AUSAX

AUS

USA

CAESAR

ITA

FRA

UK

NOR

DEU

CAN

ITA

CTE2

NED

CZE

POL

DEN

SWE

2/13/2012

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Measures Development

Mission Thread Analytic Framework

- Step 1: Mission Objectives → Mission Desired Effects → Mission Attributes → Mission Measures
- Step 2: Tasks or Activities → Task Attributes → Task Measures
- Step 3: System/SoS → System/SoS Attributes → System/SoS Measures

Each arrow represents traceability; ultimately from objectives to system/SoS measures.
**Mission Decomposition**

**Mission:** The task(s), together with the purpose, that clearly indicates the action to be taken and the reason therefore. JP 1-02, Apr 2010

**Mission:** Close Air Support

**Sub-Task:**

- **Release Weapon**
  - Weapon ready
  - Aircraft Computer

- **Navigate to Target**
  - Target Data Update
  - Sensor Laser
  - IMU
  - Comm GPS

- **Acquire and Track Target**
  - Weapon Location
  - CC&D Wx
  - Target Data Update
  - Target Illumination

- **Kill Mobile Target**
  - Guidance
  - ROE
  - Weapon Guidance Laws
  - Separation

**Mission is scalable...**

Achieving objectives enables mission accomplishment with desired effects created by accomplishing tasks.
BACKUP
Streamlined, Agile CTM Process

Assurance & Validation (A & V) Thread

A1
Identify A & V Goals & Objectives

A3
Develop Measures

A4
Identify Data Analysis Requirements

A2
Describe Coalition Mission Thread

A5
Develop Scenarios & Vignettes

System Engineering & Change Management Thread

S1
Describe & Validate CTE2 “As-Is” Design

S2
Identify CTE2 Design Changes

S3
Describe & Validate CTE2 “To-Be” Design

S4
Describe Instrumentation

S5
Implement A & V Event CTE2 Design

Planning Conference

A & V Management Thread

M1
Develop Roles & Responsibilities

M2
Coordinate A & V Support

M3
Schedule A & V Event

M4
Schedule/Deconflict CTE2 Regression

2/13/2012