

Future Combat Systems Use of M&S for T&E

DoD Modeling and Simulation Conference
Acquisition and T&E M&S Practitioners Panel
Phil Zimmerman, FCS M&S, and Analysis

13 Mar 08

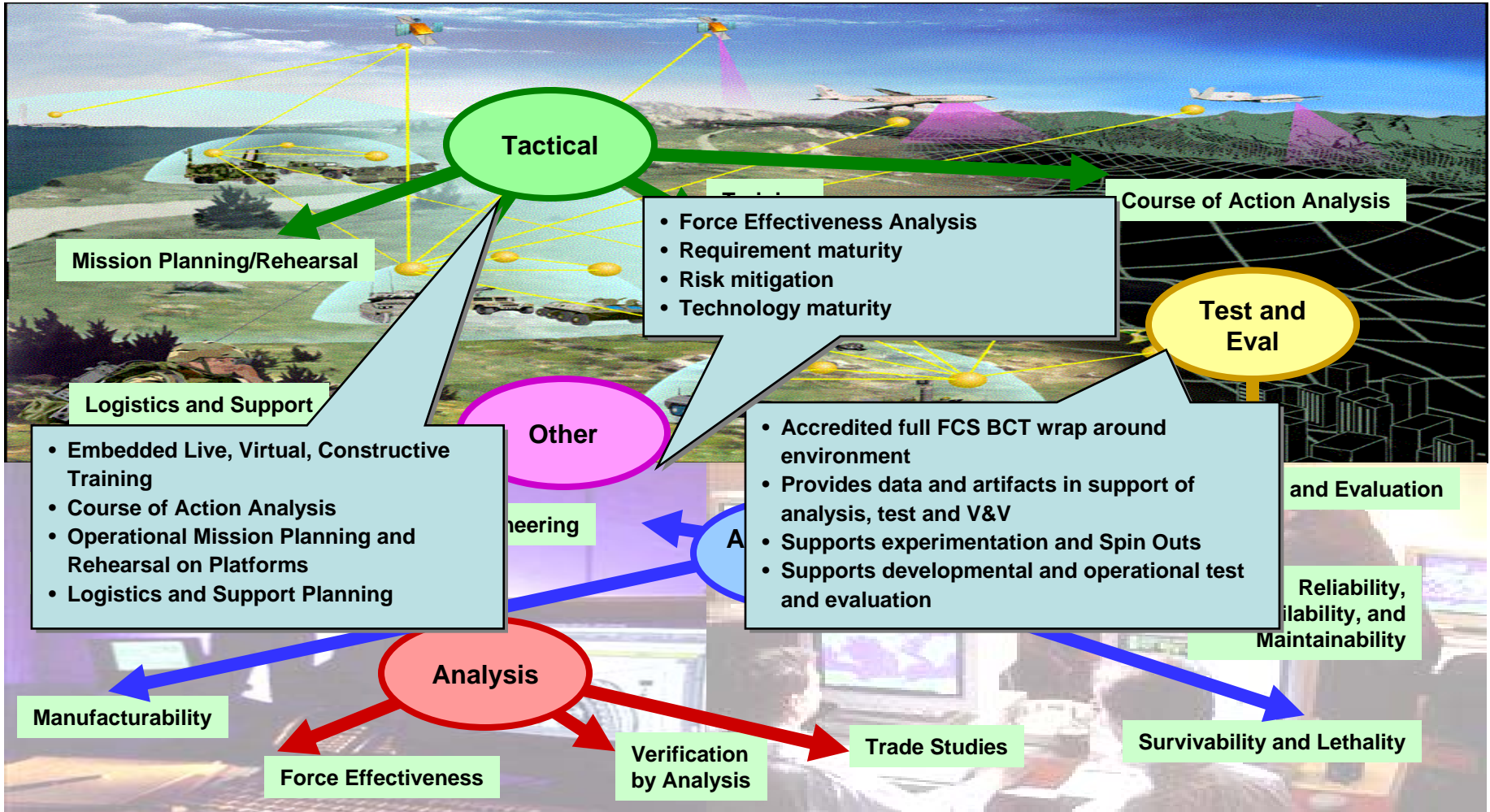
Report Documentation Page

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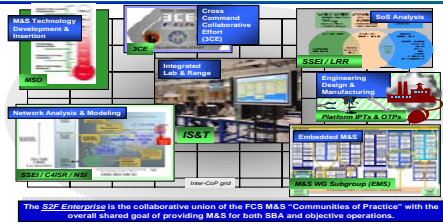
M&S Overview



M&S is a key program enabler for all aspects of the program

Modeling and Simulation Implementation Strategy

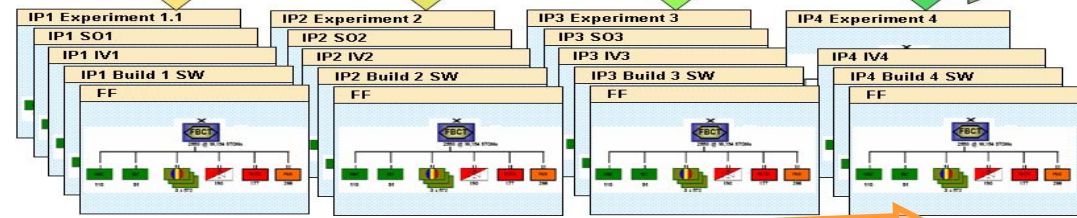
M&S Enterprise Management



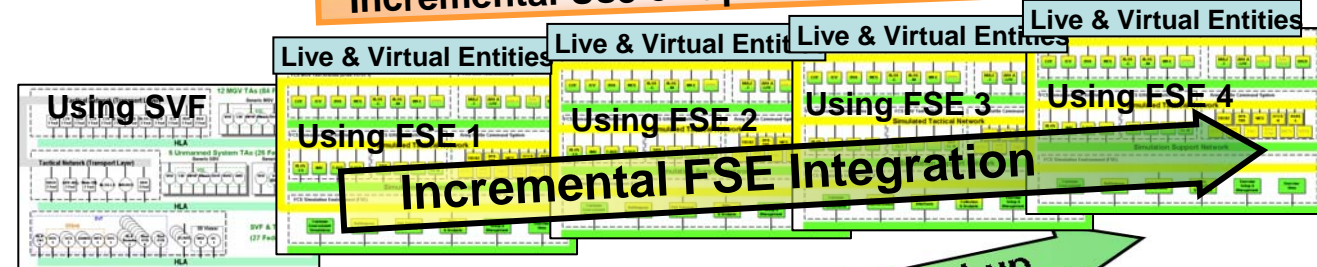
Integration Phases

IP0 Configuration	IP1 Configuration	IP2 Configuration	IP3 Configuration	IP4 Configuration
IV0	Exp. 1.1 SO1 IV1 Build 1 SW FF	Exp. 2 SO2 IV2 Build 2 SW FF	Exp. 3 SO3 IV3 Build 3 SW FF	Exp. 4 IV4 Build 4 SW FF

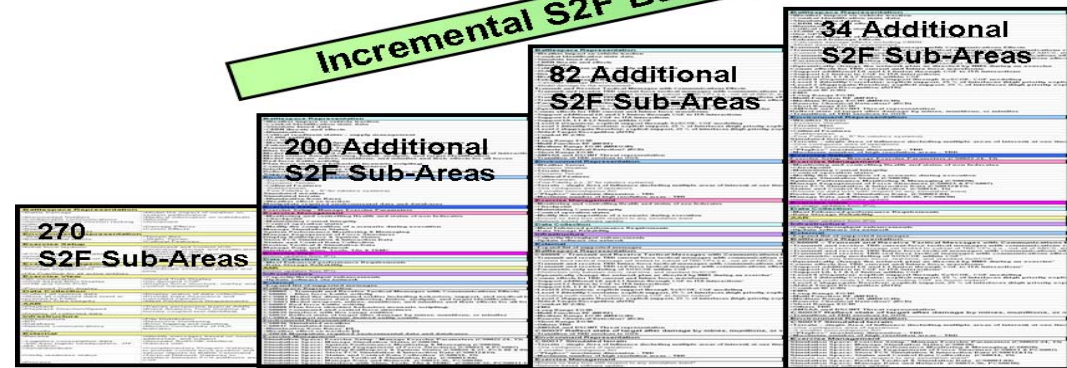
•Phased Functional Allocation
•Incremental SoS Functional Capabilities



Incremental Use of Operational SW & HW



Incremental S2F Build-up



S2F Library

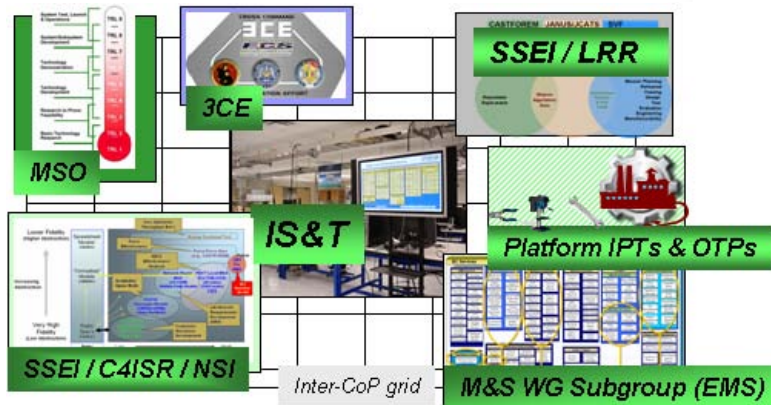
M&S Products

Operational SW & HW



Integration and Test Configurations from S2F Toolset repository

S2F Enterprise Management and Product Development



M&S Technology and Development Insertion

Cross Command Collaborative Effort (3CE)

SoS Analysis

Network Analysis and Modeling

T&E - Integrated Lab and Range

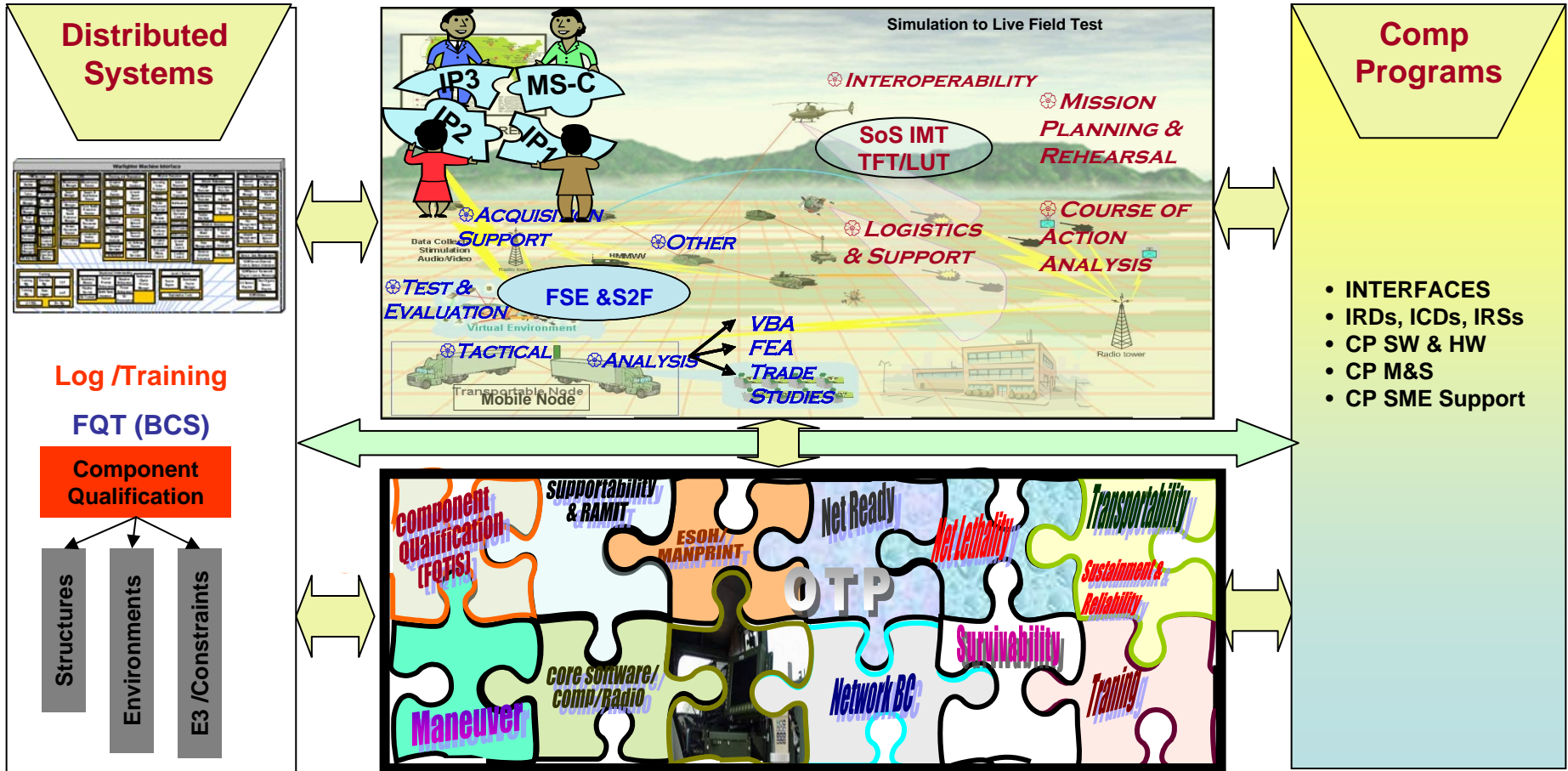
Engineering Design and Manufacturing

Embedded M&S

The S2F Enterprise is the collaborative union of the FCS M&S "Communities of Practice" with the overall shared goal of providing M&S for both SBA and objective operations

- ✓ S2F M&S Requirements Flowed down
 - ✓ Established a Community of Practice
 - M&S technology Insertion in Critical Technology Demos
 - M&S Product alignment to CPM to support IP events
-
- ✓ Successful Integration Events 1-6 for SO1 Testing
 - ✓ M&S Requirements alignment for DT/OT, FDT&E, Training
 - ✓ S2F and FSE component utilization in SO1 TFT, LUT
-
- ✓ Constructive M&S Use in Ongoing FEA, Trade Studies per SoSAP and INAP
 - ✓ Ongoing V&V of M&S for Test/Demonstration (Exp 1.1, IMT1)
 - IMT1 Assessment Data Supports Incremental VbA
-
- ✓ Development/Execution of OnePlan for ETE Network Modeling
 - Utilization of FSE/CES for IMT1, CT Demos. Baseline Analysis, BCSS Trade Studies, Exp 2.2 Lab AOs (DFM, RBD)
 - CES 4.0 - FCS Network Transport Sim Configured w/ FCS Baseline Design (i.e. WLS, Spectrum allocation, etc.)
 - CES 5 and CES 6 with NMS and dynamic Config. of FCS Network.
-
- ✓ Successful use of M&S to complete Exp. 1.1
 - ✓ Completed M&S EI (Delta RAP)
 - ✓ S2F Requirements Baselined in DOORS
 - Successful Conduct of SoSIL CDR for IMT1 – Road to WSMR
 - Successful conduct of M&S V&VA in IMT2
 - Execution of Distributed M&S and Testing Capabilities for IP2+
-
- OTP use Engineering M&S to Support System in Design SIL
 - M&S V&V as part of OTP PDR and CDR (UGS)
-
- ✓ M&S Requirements Definition and Phased Allocation for Embedded M&S (TCC PIDS, CPM)

Integrated SoS M&S and Test Overview



M&S and test activities contribute requisite verification and validation data to successfully demo FCS BCT capability

Summary

- FCS M&S is driven by both the program requirements (the “what”), and the user’s needs (the “how much”)
- Test is one of the users
 - Shares the same program requirements sets
 - Needs are both as a program tester, and a gov’t tester
 - M&S solutions may or may not be different
- Test shares the available M&S assets, and contributes to the asset set (S2F)