

Commander, Operational Test and Evaluation Force



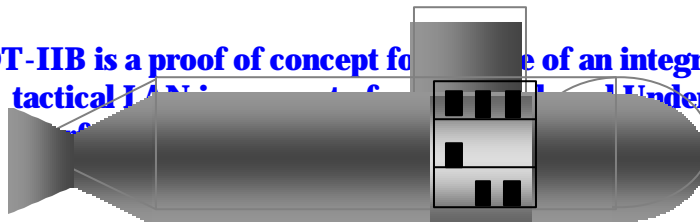
Use of a Modeling and Simulation Test Bed for an Operational Test

LT Alex Hoover

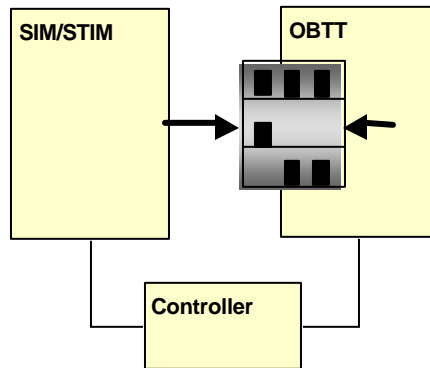
October 29, 2002

Problem Statement

OT-IIB is a proof of concept for the use of an integrated tactical IAN (Integrated Air and Naval) Undersea



Problem Statement



The use of an M&S Test Bed for OT

- **Use Case Definition**
- **Pros & Cons of M&S as a Test Bed**
- **Scoping V&V for sufficiency and efficiency**
- **Using one V&V as a basis to accredit for multiple tests**
- **Building robust V&V that minimizes the impact of lifecycle change**
- **Used decomposition and synthesis technique**

Use Case Definition

- **Upfront definition of Intended use**
- **Effectiveness COI**
 - **CONOPS**
 - **Tactics**
 - **Situational Awareness**

Pros and Cons of OT in M&S

- + **Repeatability and focus**
- + **Absolute ground truth and processed truth**
- + **Immediate feedback; On the fly change in scope**
- + **Security based on facility**
- **Requires “catharsis”**
- **Required periodic resetting to achieve detailed control**
- **Can’t distinguish between M&S or system issues**
- **Scenario can internally diverge**

Repeatability and Realism

- **Must not mistake detail for relevance**
- **Realism must be scoped to the level of input to the tactical decisions measured**
- **Repeatability must be scoped against the potential state space**

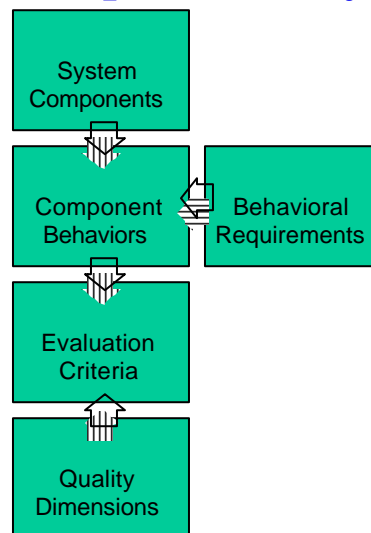
Sufficiency and Efficiency

- **V&V must cover state space of the intended use**
- **Verification overlaps design checking**
- **Validation overlaps debugging**
- **V&V is FREE!**

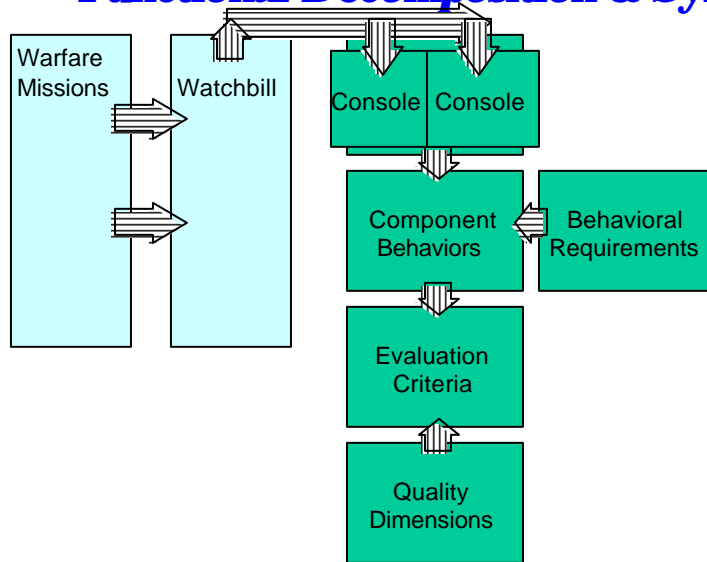
One V&V, Multiple Accreditations

- **Decompose the intended use into**
 - **System**
 - **Behavior**
 - **Quality**
- **Bottom level measures can be evaluated with respect to several standards**

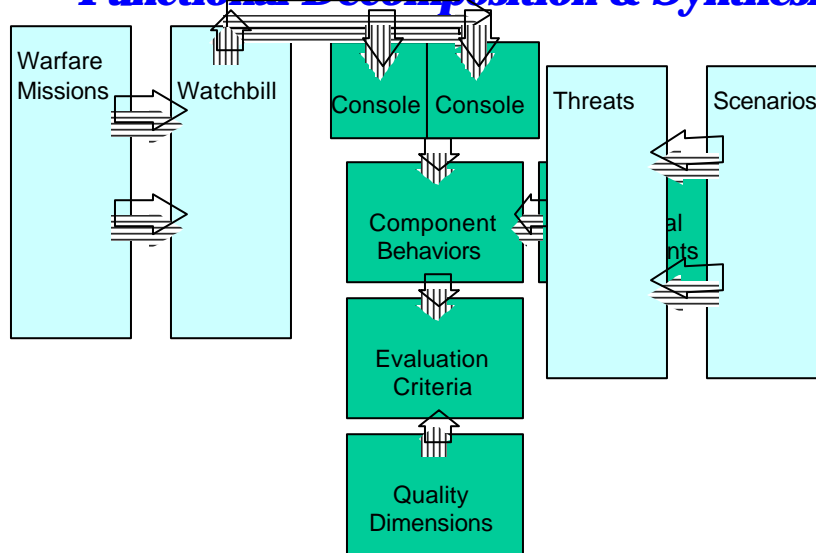
Functional Decomposition & Synthesis



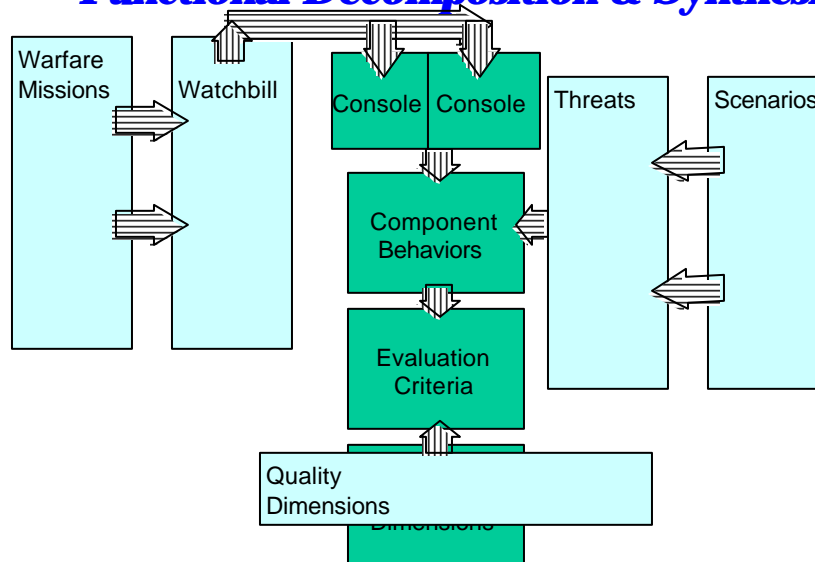
Functional Decomposition & Synthesis



Functional Decomposition & Synthesis



Functional Decomposition & Synthesis



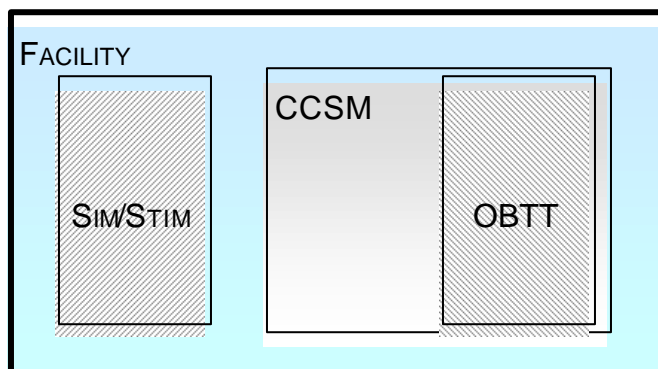
Lifecycle, Change, and V&V

- **Changes only need to re-evaluated at the level beneath where the change occurs**
- **Framework can provide the opportunity to assess bounded system performance during system development and test**
- **Common component behaviors evaluations may be reused for other accreditations**

Questions?



What is COATS?



What is COATS?

