Joining Forces Beyond Naval Aviation T&E
(Can’t we all just work together)

Hank Steinfeld
Paola Pringle

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• The mission has become more complex
• The number of resources involved has increased, we are working with multiple services and systems to achieve an effect
• The schedules have become shorter
• The budget more austere
• The need for better, faster, relevant answers more critical
• How do we get the answer affordably and in time?
In the 1980-90s, Navy platforms relied on the aircraft within the strike package to accomplish missions with no/minimal interoperability.

In the 2000s, Navy platforms started down the path of interoperability within a given aircraft type.

In the conflicts of the future, the threat and environment will dictate that our platforms depend on each other and their interoperability to achieve their missions.

Developmental Test (DT) must evolve to address expanding mission driven interoperability.
• This is our reality
  – Our systems have evolved to complex systems of systems (SoS)
  – Requirements growth and change continue reflecting threat changes
  – Budgets and schedules are short
  – Resources are minimal
    • Staffing is being cut
  – Do more with less has not worked
  – New ways of testing need to be developed

We are long past cutting out waste in our test programs
Evolving SoS

• As we move from single system to integrated systems and now to system of systems working in conjunction with other SoS:
  – Number of interactions increases non-linearly
  – Must be able to understand the interactions into our systems and also out of our systems
  – Need to appreciate the synergistic contributions of the parts
Understanding the Parts

• How can we evaluate ourselves in real-world environments?
  – Is LVC or M&S a means to reduce the risks?

• How can we evaluate the environment we need work in to fight and win?
  – What is the threat that must be countered?

• How do we partner across Naval commands, DoD services, and coalition partners?
  – We are not alone.
  – Must work with and take advantage of other organization’s work to extend ours
Changing emphasis

- Systems testing
- Integrated testing
- Capabilities testing
- Capabilities based test in a mission context
- Looking at the larger mission context and understanding the effects chain

To test effectively, we must understand the kill/effects chain in order to put our systems in context

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Adapting test methods

- By combining evaluation of our live SoS with modeling and simulation of
  - environment
  - Family of Systems
  - Other services
  - Coalition partners assets
  - Collaborative testing
- We begin to create operationally realistic scenarios that can inform our performance and effectiveness directly at much less cost.
Improving Test Relevance

• Consider all stakeholders in test.
  – Few systems/platforms operate fully self-contained

• Use LVC to expand testing options
  – Initial testing may not require high fidelity in M&S
  – The greater the complexity of the environment the more critical the need for creative solutions

• When necessary work with other services and agencies to increase fidelity of test.
  – How do we partner across other services
  – What about coalition partners (releaseability?)

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Live, Virtual, and Constructive

**LIVE**
Real people operating real systems

**VIRTUAL**
Real people using real hardware and software in a simulated environment

**CONSTRUCTIVE**
Simulated people operating simulated systems

* DoD 5000.59-M, “DoD Modeling and Simulation Glossary”
How to Overcome

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https://ndiastorage.blob.core.usgovcloudapi.net/ndia/2012/TEST/13947_Ferguson.pdf

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It’s the Mission!

We work as a team, not alone and un-afraid

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P-8A Inc 3 T&E LVC Overview

- Provided base for Integrated Warfare testing of the various mission areas
- Used in experiments and demos
- Used for troubleshooting weapon system
- Used to provide insight in tactics

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Time is our enemy

• As we take longer to develop and mature systems, our adversary, operating in a different paradigm is fielding faster
  – We based our advantage on better training and equipment, the adversary has passion and will
  – We have begun shifting our focus to technology over training and this has added complexity to our systems our adversary has approached us from a point of simplicity
• How do we overcome this
  – Develop a crawl/walk/run approach
  – Become collaborative in both development and test to get systems to the field faster
  – Add fleet component to development in more than just name
  – Mission focus!
    • conduct mission based CBT&E on ramp
    • Conduct spec compliance testing at contractor under engineering
Paradigm Change

Speed to the Fleet
- Must include test
- Cannot compromise quality
- Will require more ‘Xs’ per sortie per test period

• Understand the difference between ‘does it work?’ and confidence and power
  - Set priorities based on fleet needs, time and budget
  - Must be prepared to answer question of whether we can counter the threat
  - Requirements need to address next year’s threat and not last year’s

• Takes too long between ‘I’ve got a dream’ to ‘system on the ramp’ and it’s getting longer not shorter!
  - Build in flexibility not rigidity i.e. no preclusive solutions

• Oversight is too often a roadblock vice team player

A working solution now is better than a perfect solution too late
What can we do?

• Use all the tools in our toolbox to get the job done including LVC and M&S
• Evolve a crawl/walk/run approach to field incrementally
• Look for synergistic solutions and data from other sources
• Work collaboratively not monolithically
• Stay focused on the mission and avoid stovepipes
• TEAM!
Questions
Points of Contact

• Paola Pringle  805-816-3038
  – paola.pringle@navy.mil

• Hank Steinfeld 301-342-3041
  – henry.steinfeld@navy.mil