

*“No More Second Opinions: Organizing
DoD M&S Within the Acquisition
Cycle”*

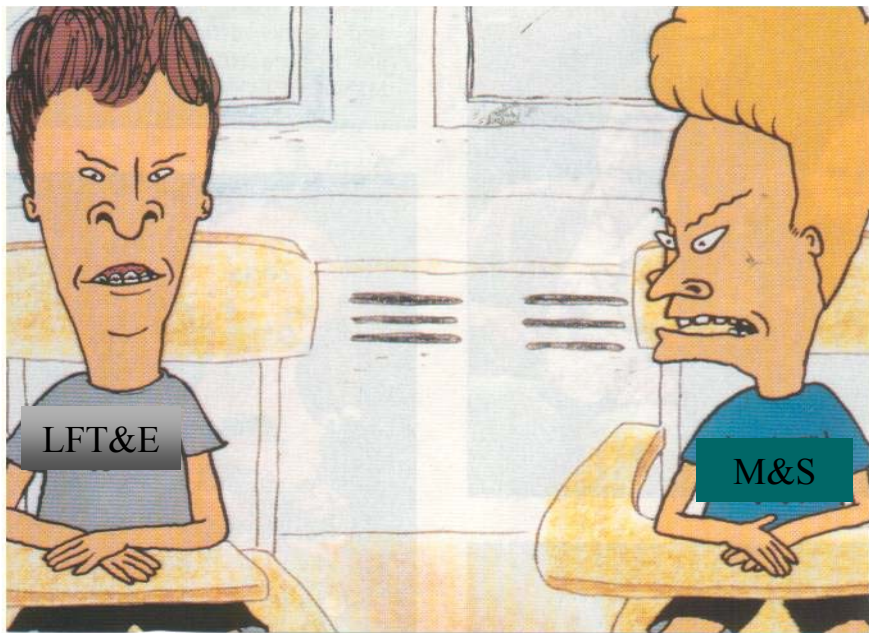
by

*James F. O’Byron
The O’Byron Group*

443-528-2711

**NDIA T&E Conference,
Jacksonville, FL
March 9, 2006**

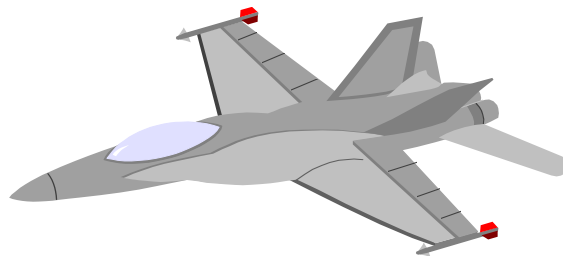
M&S AND T&E ARE PARTNERS, NOT COMPETITORS



MODELING AND SIMULATION IN TEST & EVALUATION

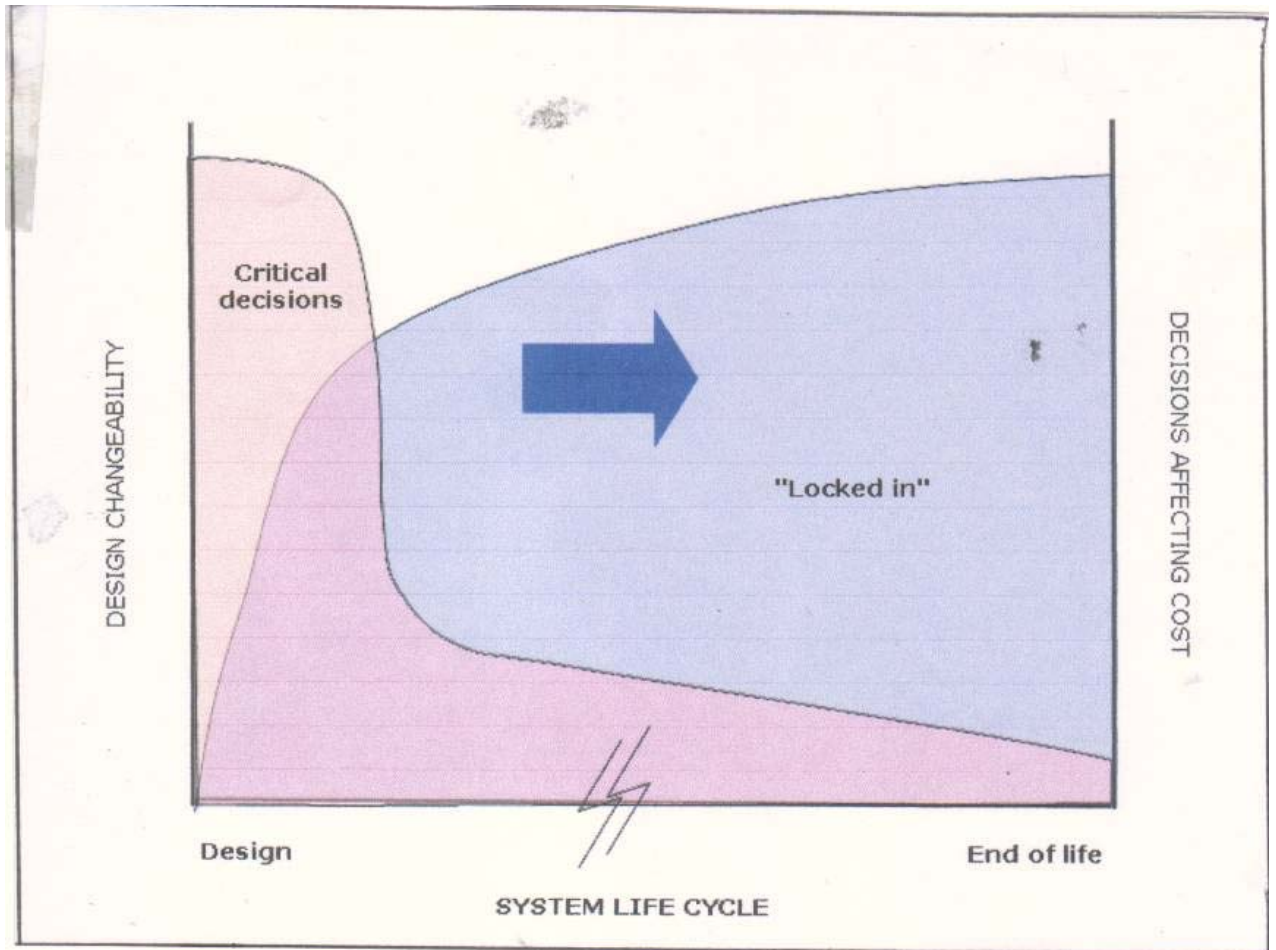
Modeling and simulation are an integral part of T&E and not to be looked at as a substitute, nor a means to save money.

M&S and testing are mutually supportive and none is complete without the other.



M & S PLAY A VITAL ROLE EARLY ON IN SYSTEM DESIGN AND VERIFICATION

Source: R. Garrett, "Opportunities in Modeling and simulation to Enable Dramatic Improvements in Ordnance Design," presented to the Committee on Bridging Design and Manufacturing, National Research Council, Washington, DC., April 29, 2003.



A Proposal That Might Work: Program Manager Magazine

MODELING AND SIMULATION

Meet "MASTER" — Modeling & Simulation Test & Evaluation Reform

Energizing the M&S Support Structure

JAMES F. O'BRYON

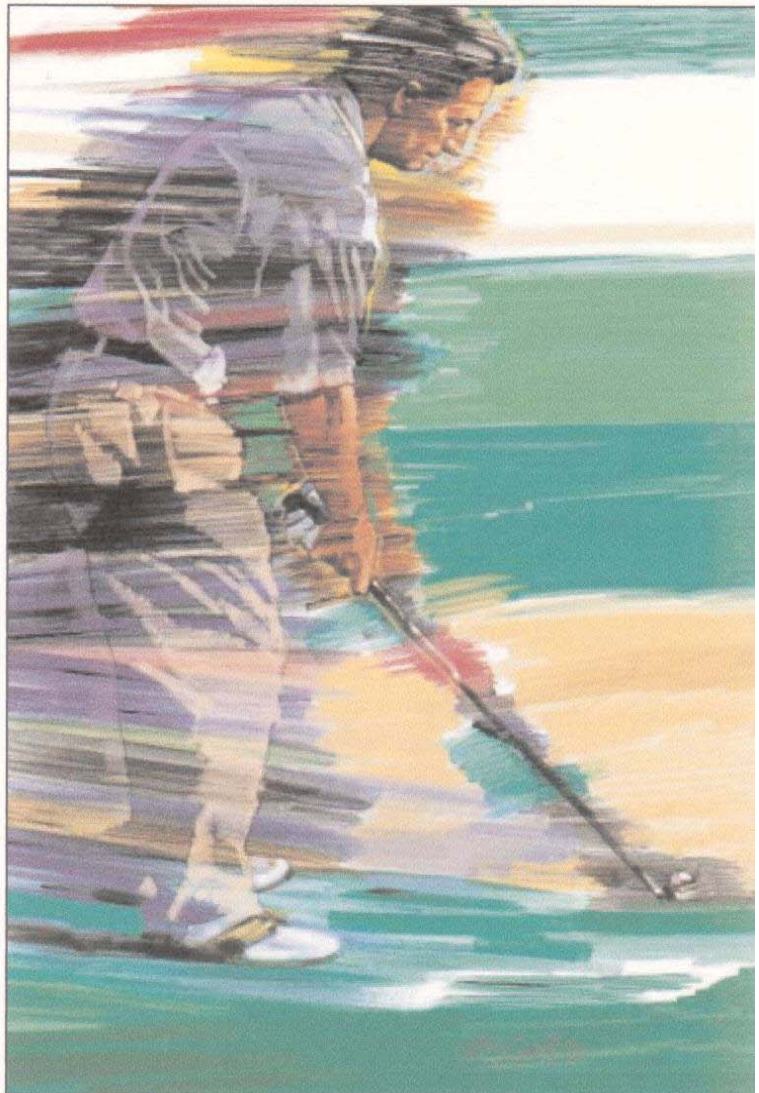
In the following few pages, I discuss my personal thoughts on an issue of paramount importance not only to the Department of Defense, but also to the nation's defense. My hope is that this article will provoke serious thought and meaningful action to resolve the issues raised.

First, A Look Back

Since arriving in the Pentagon just over 12 years ago, and for more than a decade before that serving as a weapons analyst in the Department of Defense (DoD) infrastructure away from the Washington area, I have been witness to numerous and surprisingly similar technical and management discussions about the need to get the modeling and simulation capabilities of the DoD organized, incentivized, under control, and more efficient to better serve the weapons development and acquisition process.

These discussions included such issues as a common and meaningful model architecture, model inter-connectivity, language consistency, validation, model proliferation, and configuration control. They've also covered the problems of duplication, modeling "stovepipes," the lack of meaningful and up-to-date documentation supporting M&S, and of course, the lack of model realism.

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TRUTH # 1



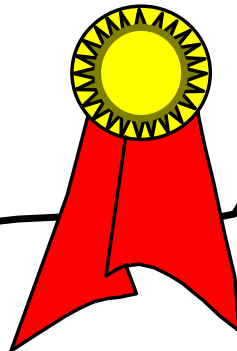
TRUTH # 2

**“PMs & PEOs
Control
Largest
Funding
Blocks”**



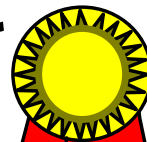
TRUTH # 3

**“PMs &
PEOs Will
Benefit From
Realistic
M&S”**



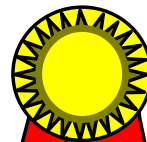
TRUTH # 4

**“PMs Have
Short Time
Horizons
And, Hence,
On Their
Investment
Decisions”**



TRUTH # 5

**“Realistic
M&S Is Not
Necessarily
Viewed As A
Benefit By
The PM”**



TRUTH # 6

**“The Golden
Rule: Them
That Have
The Gold,
Make The
Rules”**



What's Needed?

“MASTER”

**MODELING AND
SIMULATION TEST AND
EVALUATION REFORM**

What is 'MASTER'?

- **MASTER is a management approach to modeling and simulation in support to the defense department's policy of simulation-based acquisition**
- **It will provide**
 - **critical-mass funding**
 - **add discipline to the development of modeling and simulation**
 - **assure that funds expended on modeling and simulation are spent to further *the state of the art*, including VV&A**
 - **add connectivity across various model vectors being developed**
 - **free up the Program Manager's time & concerns about modeling and simulation support**
 - **assure the most realistic models & simulations are exercised in designing testing, evaluating, training, fielding and fighting our systems.**

Consortium Discussion

Program Managers would initially describe their system(s), acquisition strategy, and M&S requirements to a consortium which would then parse out these needs into vectors of M&S technical responsibility.

Consortium Members, who are charged with having knowledge of *state of the art*, as well as where it exists within and outside of their respective organizations, would make the decisions as to which M&S tools best suit the PM's needs and where the funds would be expended to meet the specific requirements of each Program Manager's system(s). They would upgrade extant models where available and originate M&S only when absolutely necessary. In many instances, these investments would be allocated to organizations external to the Consortium Membership itself.

Must Have Up-Front Investment in M&S!!

“I expect programs to make the **up-front** investment in modeling and simulation application technology, and will be looking for evidence of that investment in program planning and execution.”

*Honorable Jacques S. Gansler, Under Secretary
of Defense (Acquisition and Technology) 1998*

**If there's no new money, where
will the money come from to
fund this "MASTER" initiative?**



Where Would Money to Fund the Consortium Come From?

A modest tax (“greens fee”) would be assessed upon every Program Manager’s total budget. These funds would be placed in the Consortium’s account to provide the needed M&S support to the Program Manager.

The proposed “tax” would be a percentage of the Program Manager’s budget (perhaps 2-3%). This is significantly less than what is currently spent by PM’s on a plethora of isolated M&S activities.

The tax would not be at the discretion of the Program. It would be a policy decision and implemented early on at the OSD Comptroller level.

Funds would be removed early to:

- enable sufficient time to develop the needed M&S, and,**
- avoid the tendency to cut the funding of modeling and testing programs, when problems arise and budgets get tight**

Potential Modeling Vectors Needed for the Testing and Training Communities

SOME EXAMPLES:

TERRAIN

WEATHER

CADCAM SYSTEM DESCR

AERODYNAMIC FLOW/FLIGHT

STABILITY

6 DOF FLY-OUT

TARGET SIGNATURES

SENSOR/FUZING

SMOKE/OBSCURATION

C3I

EW

ACOUSTIC

BALLISTIC

1-1 ENGAGEMENT

MxN ENGAGEMENT

VULNERABILITY

LOGISTICS

MANY OTHERS

What are Some of the Benefits of Forming a Consortium to Oversee M&S Investment Within the DoD?

- 1. It would assure that Program Managers have the best and most realistic model support for their programs.**
- 2. It would establish the necessary consortium protocols for model architecture, languages and protocols, insuring that no funds would be invested in model development or upgrades unless they meet these protocols, thereby facilitating interoperability.**
- 3. It would assure that model investments would be directed toward extending the capability of extant models and simulations rather than spending significant funds reinventing and re-buying codes which exist or exist in part.**

Consortium Benefits?

(Continued)

- 4. The structure would provide an adequate source of funding to extend *the state of the art* in the M&S base, instead of being at the whim of the Program Manager, typically trying to maximize the short-term return.**
- 5. It would focus national expertise in each technical discipline to assure that decisions on which model investments were indeed needed in each of these disciplines.**
- 6. It would free up the Program Manager's time and attention to other management responsibilities and allow the Consortium to provide the needed M&S support for each respective program.**

Defense

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DoD's Technical Information Broker

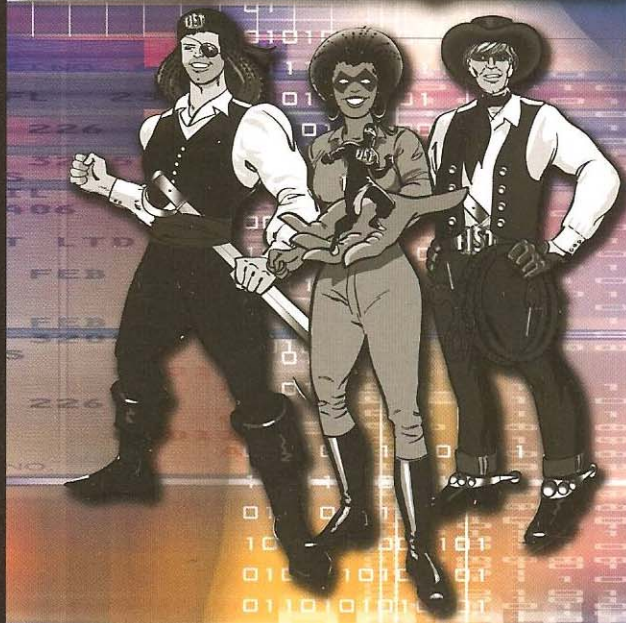
Defense AT&L Interviews
R. Paul Ryan, Administrator
Defense Technical Information Center

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America's Imprudent and Unsustainable Fiscal Path

David M. Walker,
U.S. Comptroller General

And Introducing
Defense AT&L's First Graphic Article



DoD's Modeling and Simulation Reform in Support of Acquisition

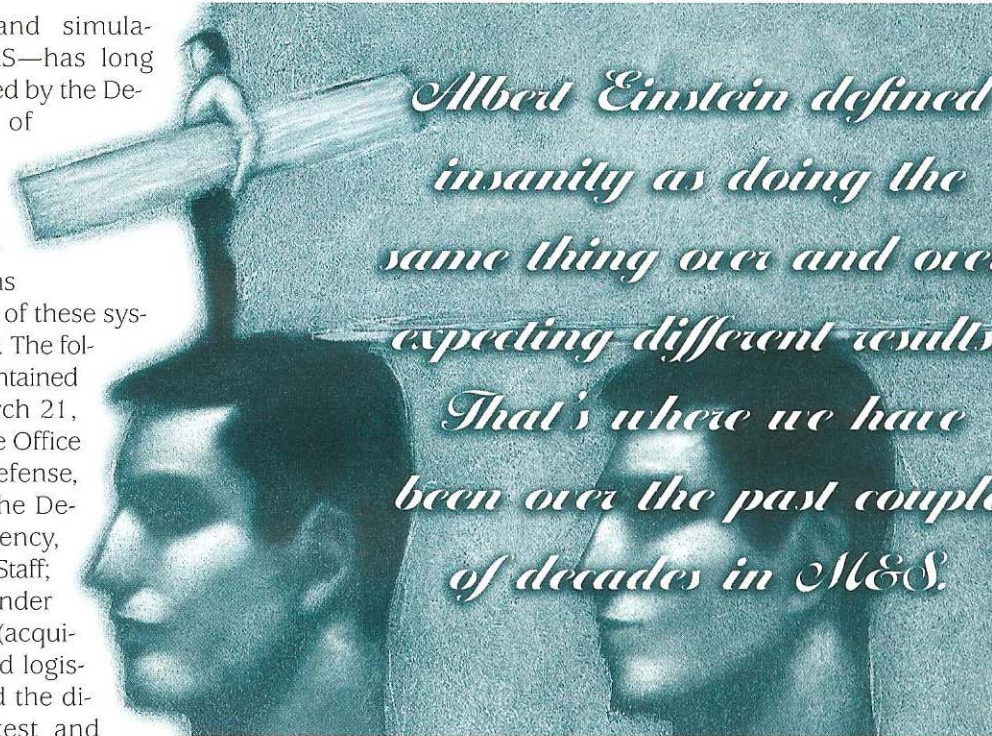
Stop Kicking the M&S Can Down the Road

James F. O'Bryon

Modeling and simulation—M&S—has long been touted by the Department of Defense

as being among its primary methods for reducing time to market for defense systems and reducing the cost of these systems at the same time. The following statement is contained in a letter dated March 21, 2000, addressed to the Office of the Secretary of Defense, Service secretaries, the Defense Intelligence Agency, and the Joint Chiefs of Staff; it is cosigned by the under secretary of defense (acquisition, technology and logistics) (USD(AT&L)) and the director, operational test and evaluation, (DOT&E): “We have stressed that we must make better use of modeling and simulation (M&S) to improve the acquisition process, reduce costs, enhance T&E [test and evaluation], and shorten development times for our new systems. We are convinced that efficient use of M&S throughout the system life cycle will net great dividends in efficiencies.”

Few people would argue that M&S is not an important element in the acquisition process. The question is this: Has there been progress within DoD to efficiently organize, fund, develop, promulgate, and maintain configuration control of the DoD's massive and diverse M&S activities to yield the efficiencies so clearly stated in the letter quoted above? Estimates for how much is spent annually on M&S in the DoD range from \$5 billion to \$30 billion, depending on how one defines M&S. Some of this is spent on M&S in support of training. The majority of



Albert Einstein defined insanity as doing the same thing over and over expecting different results. That's where we have been over the past couple of decades in M&S.

the funds, however, are spent in support of the development, test, and evaluation of new defense acquisition programs.

In an article in the July 2005 issue of *National Magazine*, David W. Duma, the Pentagon's acting director, operational test and evaluation, wrote that the defense Department needs to better manage its simulation programs. I think we've kind of lost our way with modeling and simulation. Multiple agencies are buying duplicate technologies, rather than coordinating efforts. We are using more modeling and simulation. But it's not focused, it's scattered. Everyone is building their own.”

Not a New Problem

I couldn't agree more. So why does the DoD continue to lose its way using more M&S but in a “scattered

O'Bryon served as deputy director, operational test and evaluation in the Office of the Secretary of Defense until November 2001. He currently is a consultant to ORSA Corporation, Aberdeen, Md.

**IF YOU HAVE SOME IDEAS YOU'D LIKE
TO SHARE OR WOULD LIKE TO
CHALLENGE SOME O THESE IDEAS, I
WOULD WELCOME YOUR IDEAS.**



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