



**U.S. Army Developmental Test Command**



# **Examining the Business Case for M&S**

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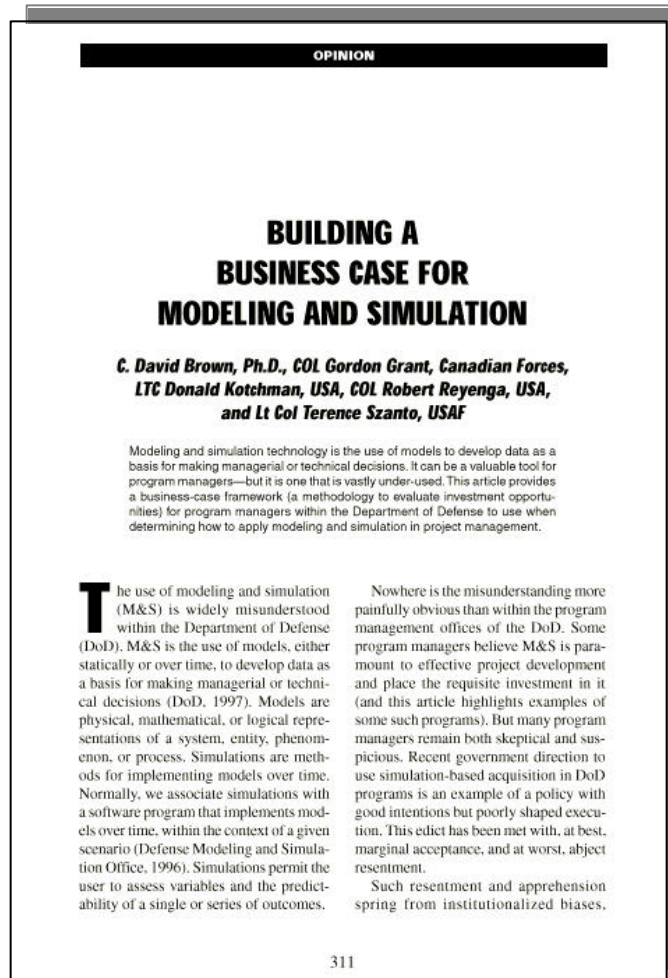
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# Background



- Paper prepared for ICAF
- Published in Fall 2000  
*Acquisition Review Quarterly*
- Focus: How Can PMs Justify M&S?
- Answer: Not Easily!



# Business Case Framework



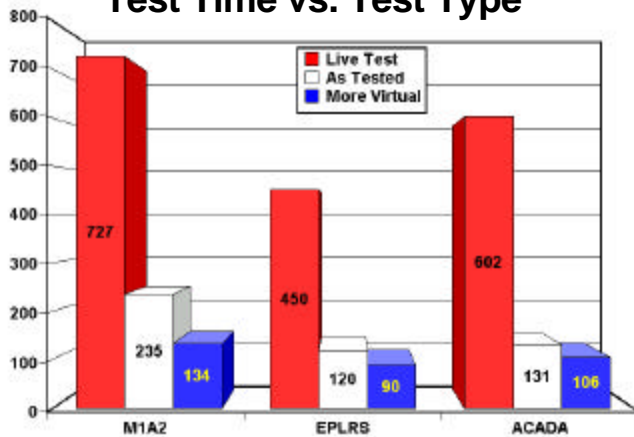
- **Establish a Baseline**
- **Establish a Vision and Direction**
- **Quantify the Costs and Benefits of Alternatives/ Capabilities**
- **Evaluate Alternatives**
- **Conduct Sensitivity Analysis**
- **Develop a Migration Strategy**
- **Monitor the Process and continue to assess results through formalized feedback**



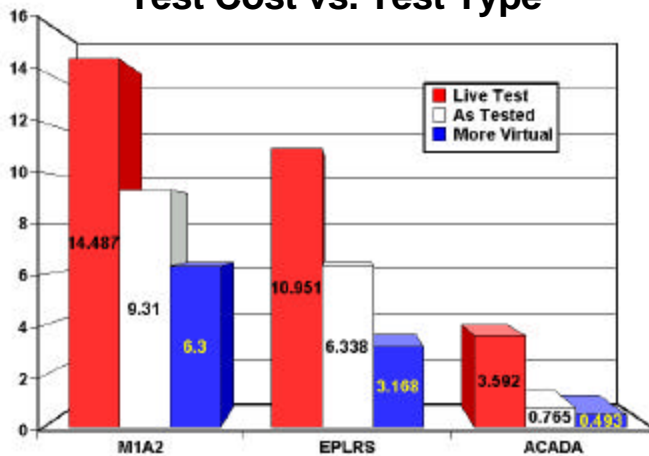
# Strategies I've Used



Test Time vs. Test Type



Test Cost vs. Test Type



**Goal:** Show that using M&S Saved time and money relative to conventional methods.

**Method:** Track time and cost for M&S-based tests, then estimate backward and forward in time.

**Result:** Doesn't work. People don't believe estimates.



# Strategies I've Used

*continued*



**Cost Avoidance**

~\$67M / Year Cost Avoidance

Avoidance to date: ~\$160M/over POM: \$495M  
Investment to date: ~\$94M/over POM: \$100M

**FEWER "THINGS" NEEDED...**

**Targets...**

**AERIAL CABLE RANGE**



\$36M IN, \$20M/YR SAVED

**Soldiers...**

**TEST ITEM STIMULATOR/  
TEST CONTROL CENTER**



\$1M IN, \$ 6M/YR SAVED

**Instrumentation...**

**SMART MUNITIONS TEST SUITE**



\$39M IN, \$2M/YR SAVED

**Goal:** Show that using M&S saved money because you didn't need as much "live" stuff.

**Method:** Track the number of simulated expendables used during a test, and compute the would-cost if done live.

**Result:** Dangerous! If you saved money, somebody's budget's getting cut!



# Strategies I've Used

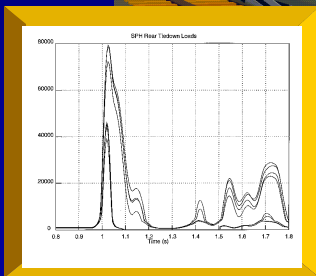
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## Transportability Testing



- Rail Impact
- Loading & Fit
- Lifting & Tie-down
- Partnership w/ MTMC



**Test System  
Design Before  
Prototyping**

**Goal:** Show that using M&S saved money because you didn't have to do the test.

**Method:** Use validated and accredited physics-based models.

**Result:** It works! But, it's rare.



# What We Found in ICAF



**Most program managers justified their M&S investment based on one or more of the following:**

- **reducing design cycle time;**
- **augmenting or replacing physical tests;**
- **helping resolve limitations of funds, assets or schedules; or**
- **providing insight into issues that were impossible or impracticable to examine in other ways.**



# My Current View

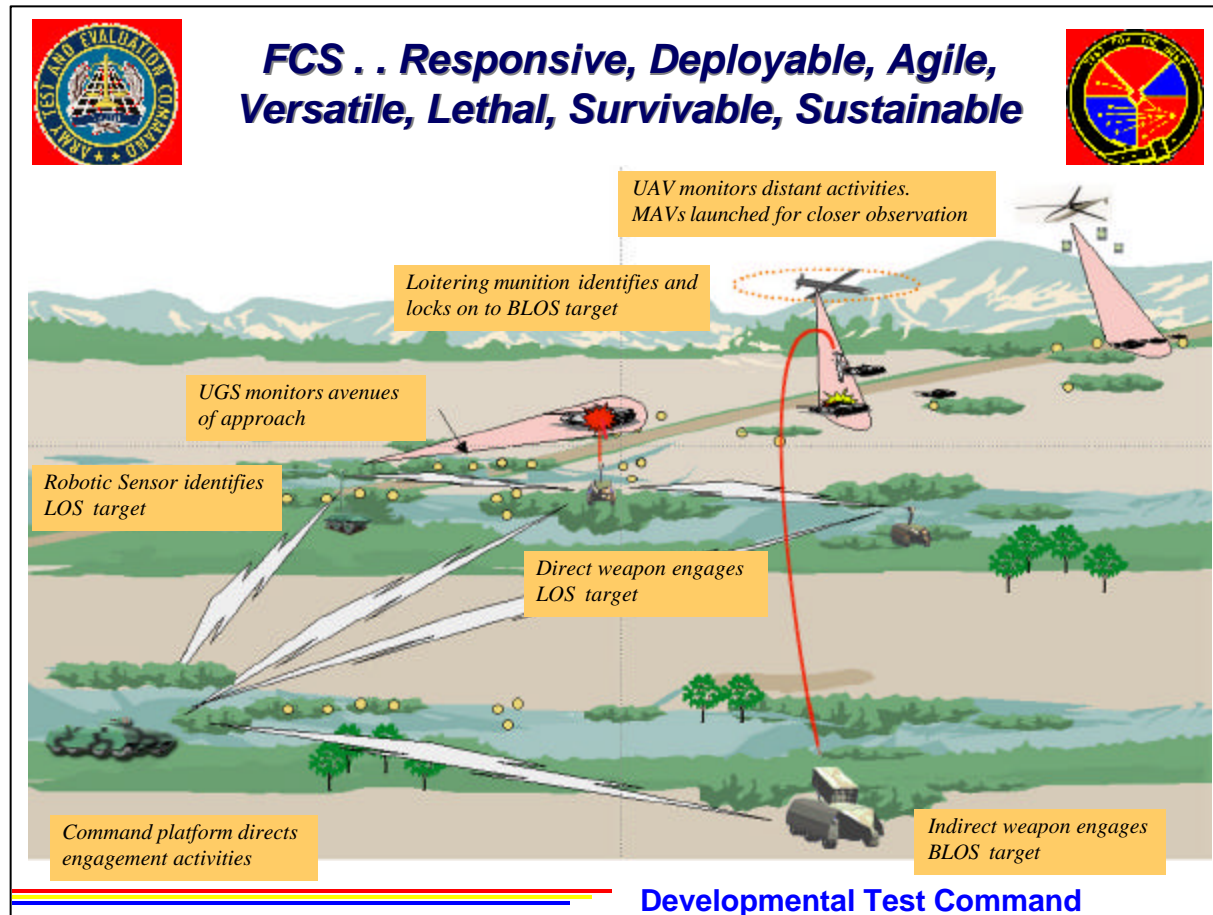


- The System-of-Systems of the Future simply can't be tested without M&S

- M&S is best characterized as a structured method for doing your thinking.

- ROI for M&S is not quantifiable because you never really know how much time & effort it saves.

- Action: Prove Me Wrong!





# Conclusions & Recommendations



- **M&S permits experimentation without risk**
- **M&S is an established business tool**
- **Business case analysis supports justification and brings discipline**
- **Need encouragement to add discipline and structure to the M&S justification process**
- **Requires ready access to policy and guidelines**
- **Managers and staff need adequate training**

***Keep Looking for the Quantifiables!***