



**A Roundtable on the Future of the
Modeling and Simulation
Profession, Industry,
and Marketplace**

**Briefing to DoD
M&S Steering Committee
4 June 2010**

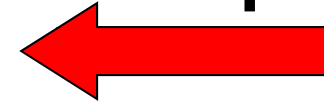




Meeting Agenda

I. Introduction

A. *SimSummit* Organization and Concept-of-Operations Review



II. Discussion Topics

A. Technology

B. Workforce Development

C. Industrial Development

D. Business Practice

III. Conclusion



Executive Committee

- National Training Simulation Association (NTSA)
- Modeling and Simulation Society International (SCS)
- Simulation Interoperability Standards Organization (SISO)



SimSummit Concept

- What? - Round-table of preeminent M&S 'organizations'
- Who? – Interested organizations from Industry, Government and Academia ... facilitated by non-profit Societies
- When / Where? – Opportunistic overload of organized events
- Why? – Influence the future of the M&S Discipline, Profession, Industry, and Market
- How? – Collective, consensus-based discussion decision, and action



***SimSummit* Membership**

COMMERCIAL

AEgis Technologies Group, Inc.

The Boeing Company – Phantom Works

Booz-Allen Hamilton (BAH)CACI, Inc.

CACI Inc.

CAE Professional Services

Computer Sciences Corporation (CSC)

Dynamic Animation Systems (DAS)

Northrop Grumman

RAM Laboratories, Inc.

Raytheon Company

Science Applications International Corporation (SAIC)

Teledyne Brown Engineering

UK SeBA Forum



SimSummit Membership

EDUCATION

Arizona Center for Integrative Modeling and Simulation (ACIMS)

Auburn Modeling & Simulation Group (AMSG)

Georgia Tech – Modeling and Simulation Research & Education Center
(MSREC)

John Hopkins University – Applied Physics Laboratory (JHU/APL)

McLeod Institute of Simulation Sciences (MISS)

Old Dominion – Virginia Modeling, Analysis and Simulation Center (VMASC)

University of Alabama in Huntsville – Center for Modeling, Simulation and
Analysis (UAH CMSA)

University of Central Florida – Institute for Simulation and Training (IST)



***SimSummit* Membership**

PROFESSIONAL/INDUSTRIAL SOCIETIES

ACM Special Interest Group on Simulation (SIGSIM)

Alabama Modeling and Simulation Council (AMSC)

Liophant Simulation

McLeod Modeling and Simulation Network (M&SNet)

National Center for Simulation (NCS)

National Modeling Analysis Simulation and Training Coalition (NMASTC)

National Training Systems Association (NTSA)

New England Modeling and Simulation consortium (NEMSC)

Simulation Interoperability Standards Organization (SISO)

The Society for Modeling and Simulation International (SCS)



SimSummit Membership

GOVERNMENT

DND Future Forces Synthetic Environment (FFSE)

DND Synthetic Environment Coordination Office (SECO)

Defence & Science Technology Laboratories Synthetic Environment Efforts

National Aeronautics & Space Administration (NASA)

NATO Modelling & Simulation Group (NATO-MSG)

National Institute of Standards & Technology (NIST)

UK Directorate of Analysis, Experimentation and Simulation (DAES)

U.S. Air Force Agency for Modeling and Simulation (AFAMS)

U.S. Army / Battle Command, Simulation & Experimentation Directorate

U.S. Coast Guard (USCG)

U.S. DoD / Modeling and Simulation Coordination Office (M&SCO)

U.S. Marine Corps Technology Division

U.S. Navy / Navy Modeling and Simulation Office (NMSO)



Power of a 'Topical Agenda'

TOPICAL AGENDAS:

- Sensitize communities to significant shared issues and opportunities
- Frame the domain of debate, decision, and action
- Provide 'hooks' to which organizations and constituencies can subscribe (common) interest
- Provide loci for programmatic commitment and coordination of cooperative effort



Review of Candidate Topics

Topics of Interest

	Commercial	Education	Government	Societies
	Edge Technologies Group Inc.			
	The Boeing Company - Phantom Works			
	CACI Inc.			
	Greenley & Associates			
	RAM Laboratories, Inc.			
	Raytheon Company			
	SANCO			
	Georgia Tech / MSRECE			
	John Hopkins University (JHU/APL)			
	McLeod Institute of Simulation Sciences (MISS)			
	Old Dominion University (ODU/ASC)			
	University of Alabama (U/AMSC)			
	Arizona (AC/AMS)			
	University of Central Florida (USFC)			
	DND SECO			
	DSTL			
	NASA - KSC			
	NASA - LRC			
	NATO MSS			
	NIST			
	UK SECO			
	US AFAMIS			
	US Army BCS&D			
	U.S. DoD DMSO			
	U.S. Marine TECOM			
	NAVY/MSMO			
	ACM SIGSIM			
	NCS			
	NTSA			
	SISO			
	SCS			

TOPICS	Commercial	Education	Government	Societies
TECHNOLOGY				
Research Agenda				
Conceptual modelling				
Composability				
Interoperability				
Data Management				
Architecture Management				
Standards				
PROFESSIONAL DEVELOPMENT				
Stakeholders				
Community-of-Practice				
WD Needs / Requirements				
Body-of-knowledge Specification				
Curricular Management				
Professional Certification				
Code of Ethics				
INDUSTRIAL DEVELOPMENT				
Identity, recognition				
Scope				
Fragmentation Versus Synergy				
Labor Classification Codes				
Industrial Classification Codes				
M&S Asset (life-cycle) Management				
Organizational Relations				
Event Coordination				
BUSINESS PRACTICE				
Economics of M&S				
M&S Market Description				
M&S-based Enterprise				
Business Case Specification				
Acquisition/Procurement Application				
M&S Investment (Technology/Asset/Application) and ROI				
Reuse of M&S assets				
Cost of ... M&S asset development, uses, etc.				
Value of ...				
Economic Impact				

TOPIC	QUESTION / ISSUE
TECHNOLOGY	What M&S powerful M&S technologies are available? What technology investment is desired?
Research Agenda	What is / ought-to-be the M&S technology research agenda?
Conceptual modelling	How can / do we abstract from our appreciation of the 'referent' to establish a conceptual model suitable for M&S development, qualification, integration, and use?
Composability	How can / do we cost-effectively compose persistent M&S assets into higher-order ensembles?
Interoperability	How can / do we cost-effectively guarantee interoperability of M&S assets reused in alternative contexts or integrated into higher-order ensembles?
Data Management	How can / do we cost-effectively acquire, qualify, use and re-use referent characteristics / scenario / and behavior data and simultaneous asset operation data?
Architecture Management	What are the implications for M&S of architecture-management concepts and practices (being) applied to: enterprise, objective systems, simulation assets, etc.?
Standards	How do standards affect M&S cost-utility? What standards are worth investment? How should standards definition, promulgation, and compliance be administered?



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Technology

- Body of Knowledge (Index)
- Research Agenda
- Conceptual Modeling
- Simulation System Composition
- Credibility – VV&A
- Standards



M&S BOK Index Program



**Modeling & Simulation
Body-of-Knowledge Index
(M&S BOK Index)**

Prepared for:
SISO SIW and SCS SpringSim

March 21, 2009

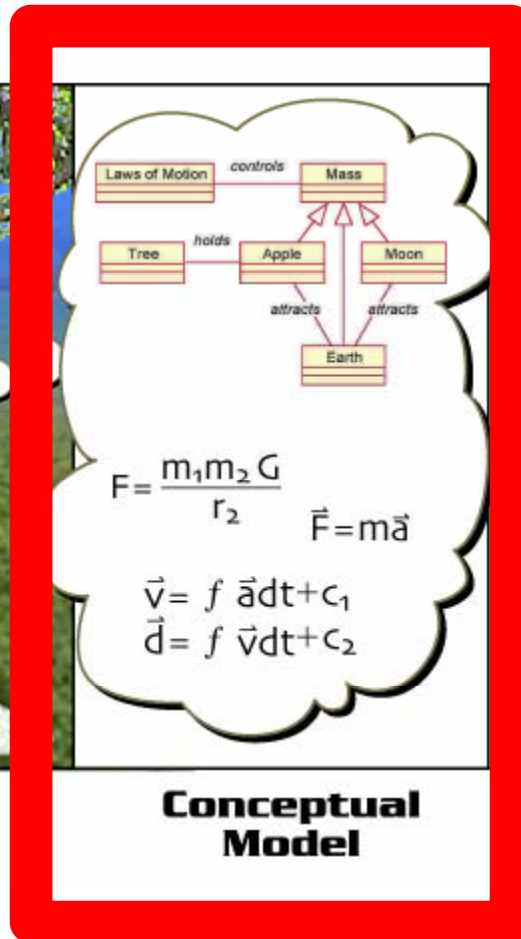
Bill Waite
Bwaite@AEgisTG.com

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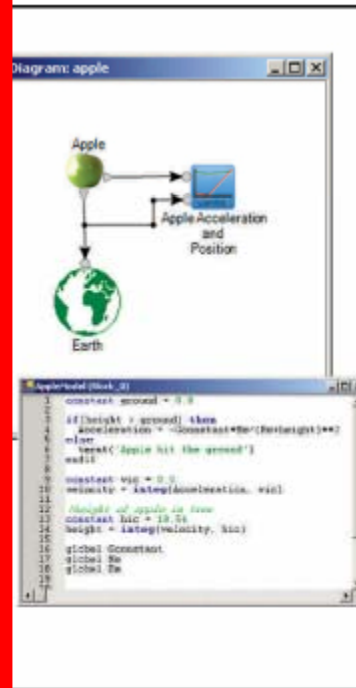
Conceptual Modeling



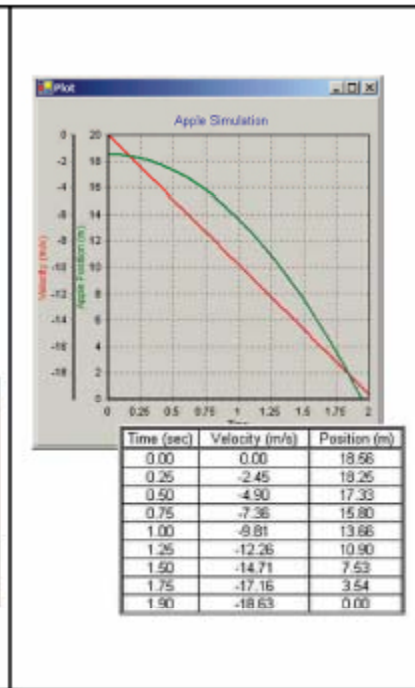
Real World



Conceptual Model



acslXtreme Simulation



Analytical Results



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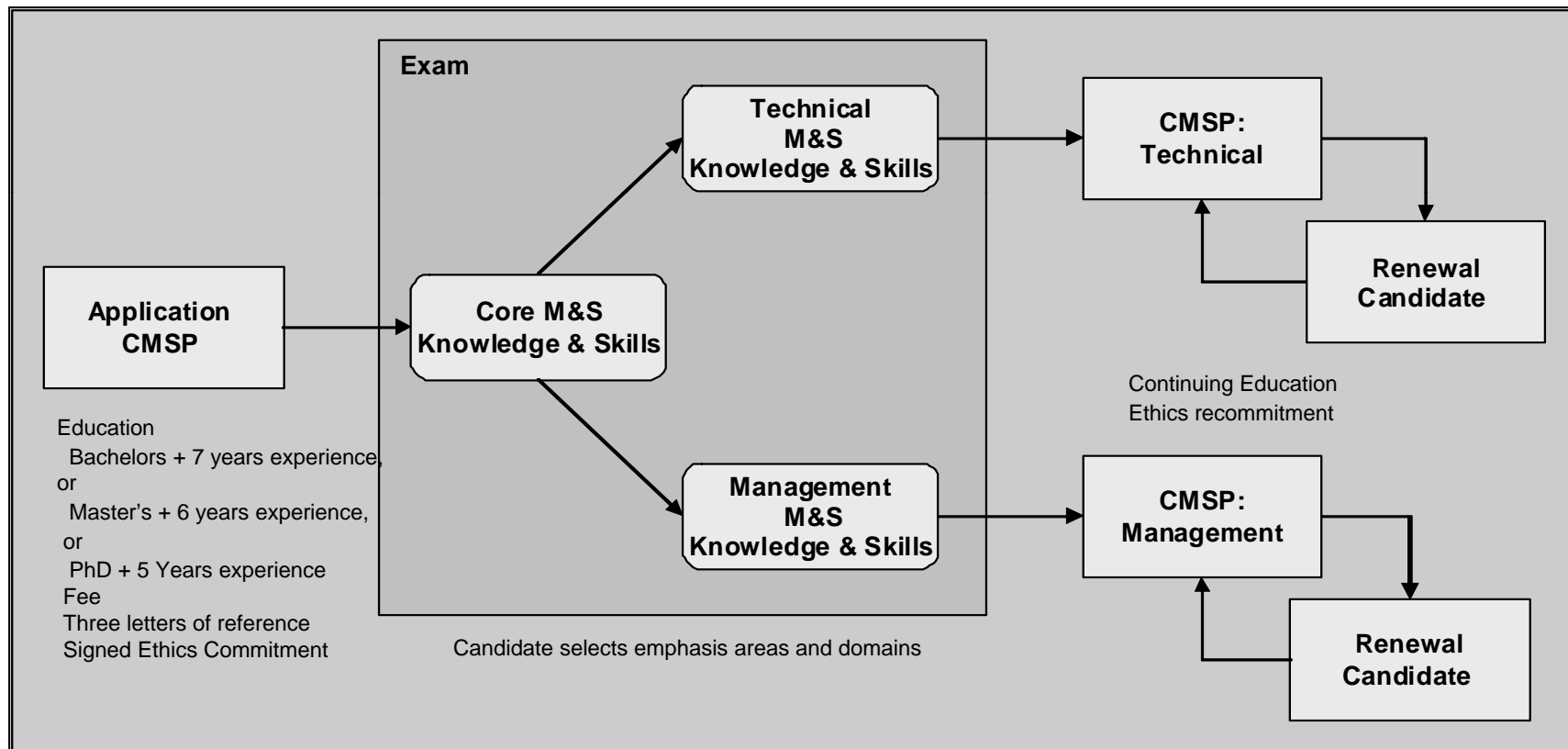


Workforce Development

- Body of Knowledge (Index)
- Professional Competency Needs
- Instructional Curricula
- Code of Ethics
- Professional Certification
- Science Technology Engineering and Mathematics (STEM) Entailments
- Workforce Development Campaign Program

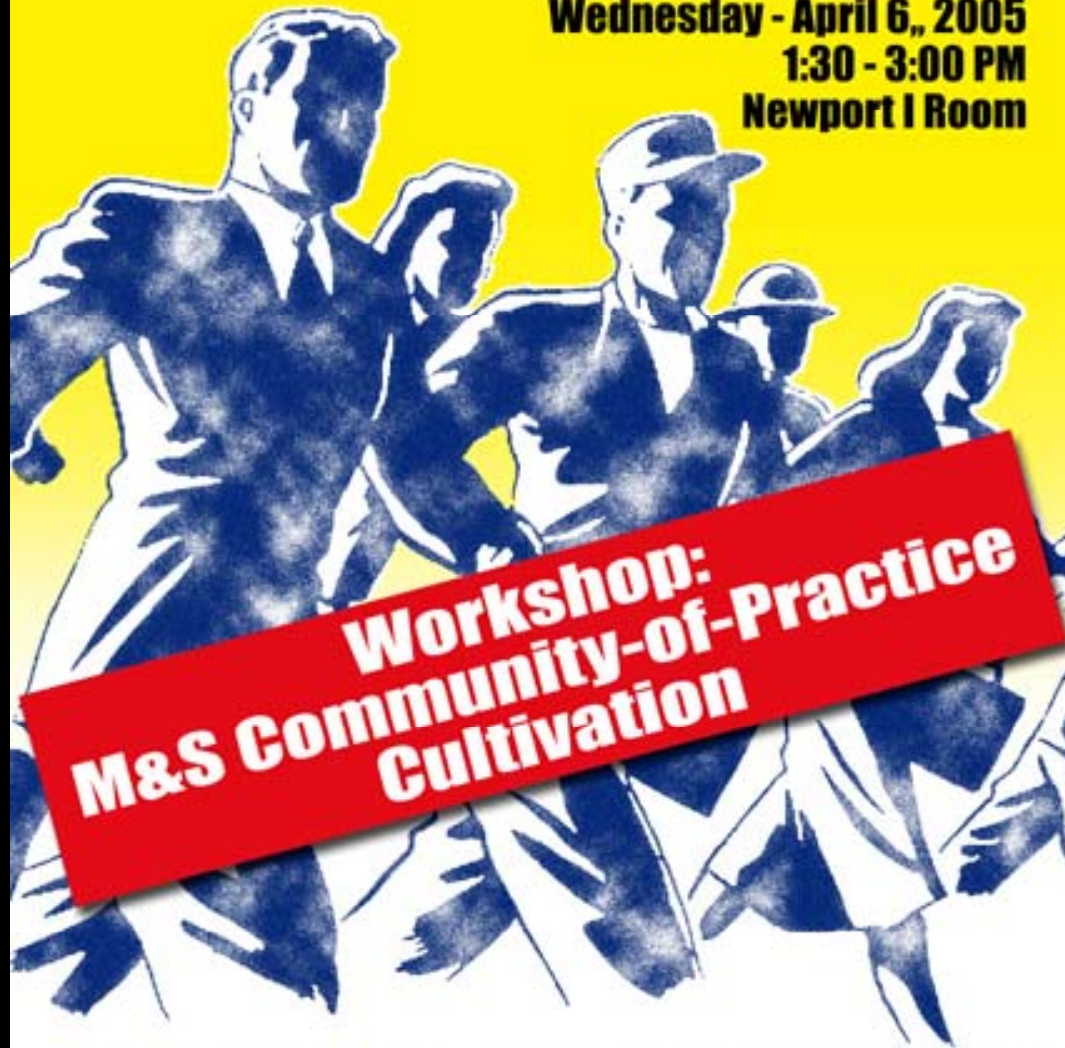


Updated CMSP Process



M&S WORKFORCE DEVELOPMENT

Wednesday - April 6, 2005
1:30 - 3:00 PM
Newport I Room



**Workshop:
M&S Community-of-Practice
Cultivation**

Commercial Education Government Societies



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Domain

Standing

International



National



Inter-regional



Regional



Organizational



M&S Industrial Development Environment



Industrial Development

- Industrial Identification – Self-conscious Recognition
- Organizational Relations
 - Industry
 - Professional Societies
 - Government (Legislature / Executive, Inter-Departmental, Multinational)
- Organizational Development
 - National Organizational Presence
- National M&S Enterprise Campaign



M&S Caucus



Purpose of the Caucus?

The Caucus will showcase M&S initiatives, promote the M&S industry, and will be a forum to understand the policy challenges facing this growing and versatile technology.

<http://forbes.house.gov/Biography/MSCaucus.htm>



Caucus Leadership Summit



[www.ndia.org
/meetings/01
C0/Pages/def
ault.aspx](http://www.ndia.org/meetings/01C0/Pages/default.aspx)

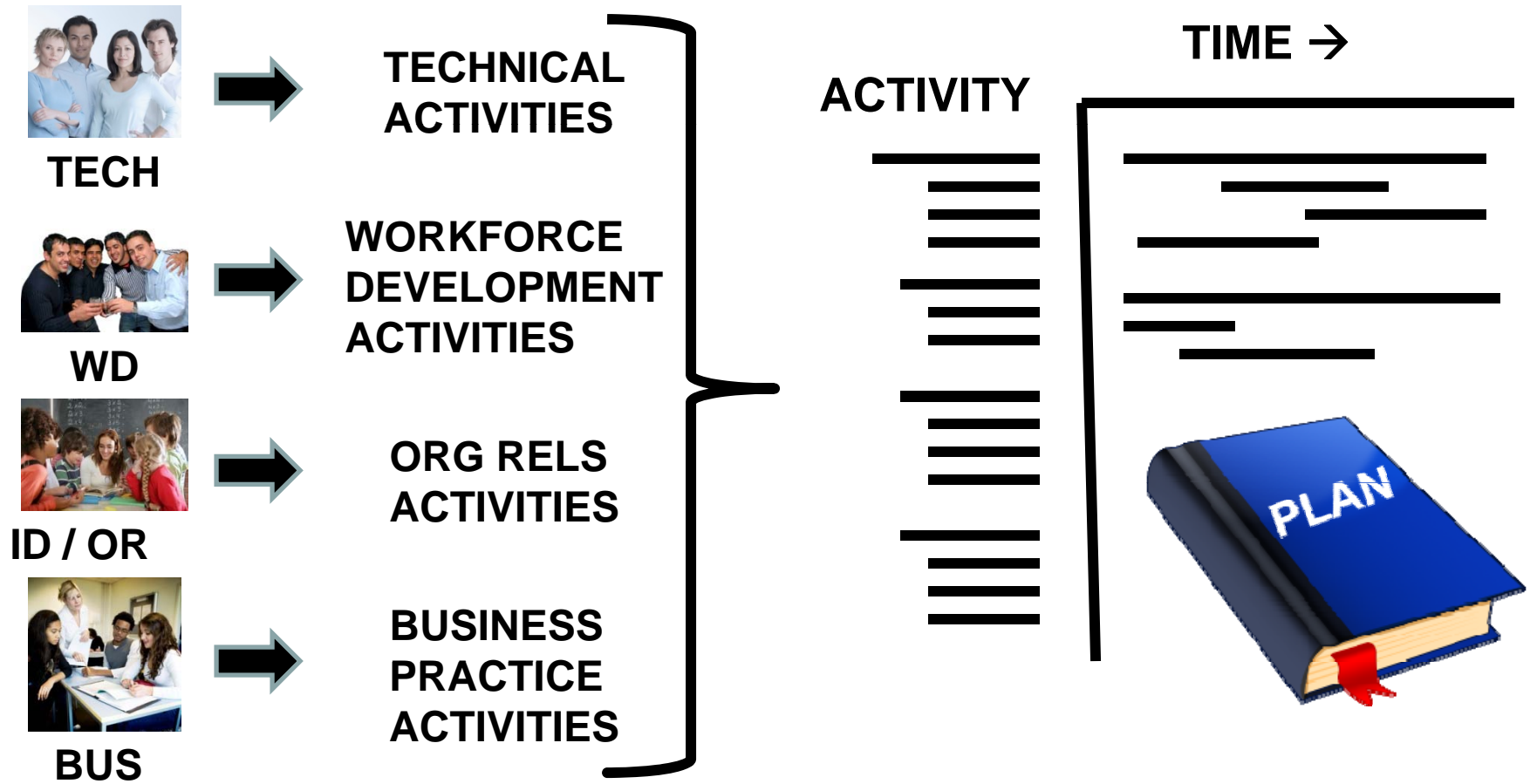


Leadership Summit Meeting

**Commit to ‘Real-ize’ H.Res.487,
- declaring Modeling and Simulation a
“national critical technology” -
by establishing, implementing, and
initiating a comprehensive
“National M&S Enterprise Campaign”
to accelerate evolution of the M&S
discipline, workforce, industry and
market.**



National M&S Enterprise Campaign Definition





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Business Practice

- NAICS Codes
- Labor Market Demand
- Investment Metrics (ROI etc.)
- Business Case Expression
- 'Economics of M&S' Program

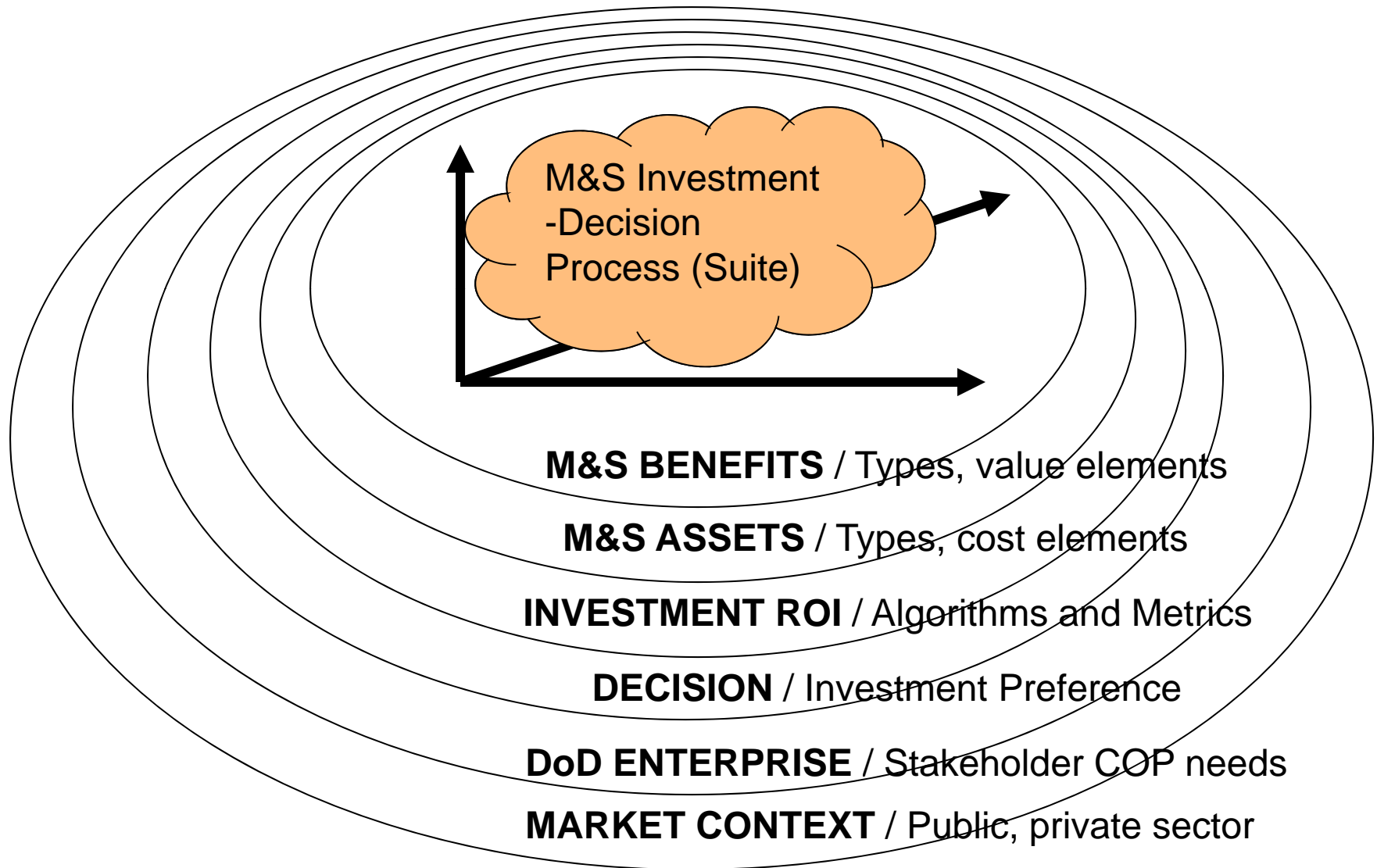
Proposal to Add a North American Industry Classification System (NAICS) Code for the Modeling and Simulation Industry

Prepared and Submitted by:

**National Training and Simulation Association
Society for Modeling and Simulation International
Simulation Interoperability Standards Organization
National Center for Simulation
Alabama Modeling and Simulation Council
New England Modeling & Simulation Consortium
Mid-Atlantic Institute for Simulation and Analysis
Virginia Modeling, Analysis and Simulation Center**



DoD M&S Investment Context





Enterprise Perspective

- ‘One or more [organizational units] under common ownership or control’. Generally refers to the broadest scope of organization and operational process relevant to the subject discussion rather than to individual components thereof.



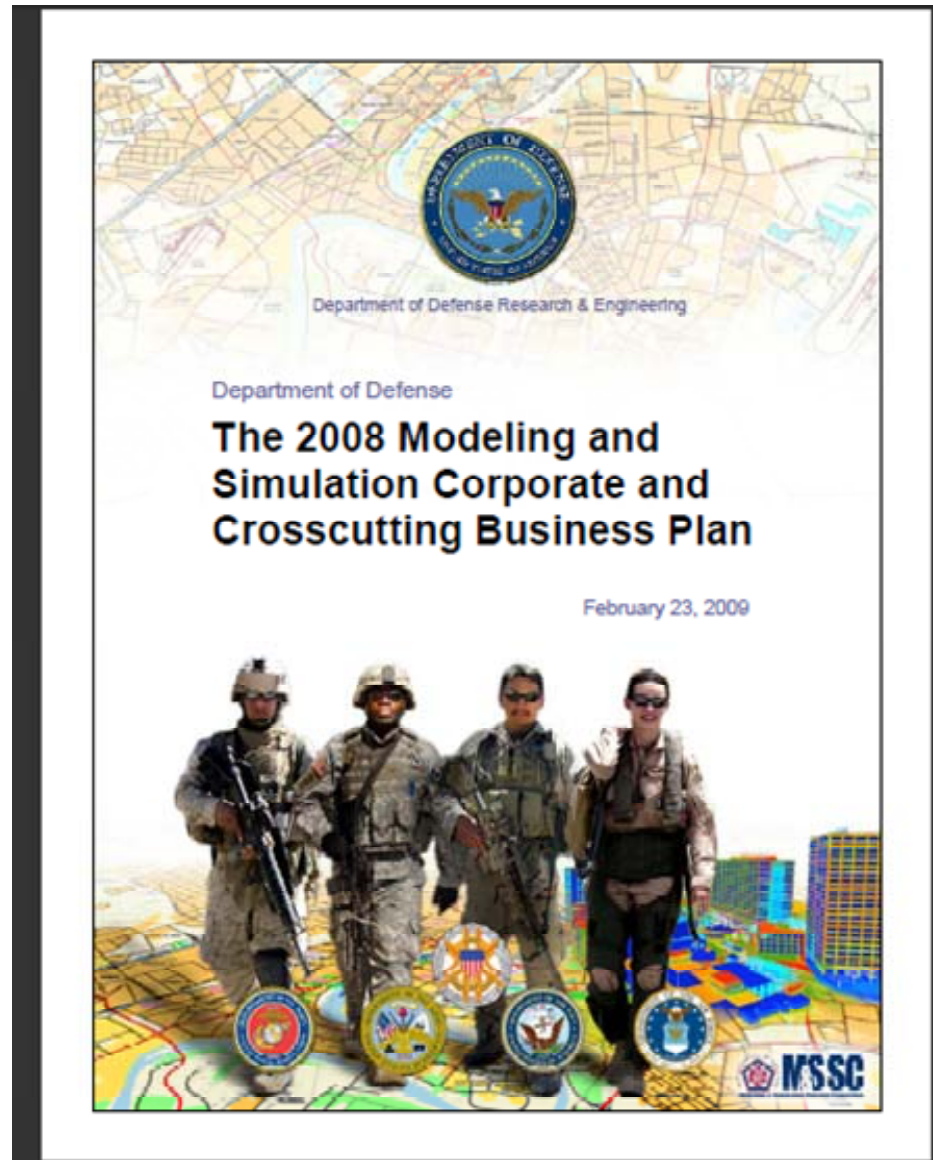
Enterprise Perspective

- ‘The DoD M&S *strategic vision* is to “...empower DoD with modeling and simulation capabilities that effectively and efficiently support the full spectrum of the Department’s activities and operations.” Enterprise-wide goals cited involve enhancements in standards, policies, management processes, tools, and people (the workforce). Each of these goals will require carefully managed investment in order cost-effectively to realize the M&S vision.’

Ref: “ Metrics for Modeling and Simulation (M&S) Investments”, Nov 2008



DoD “Business Plan”





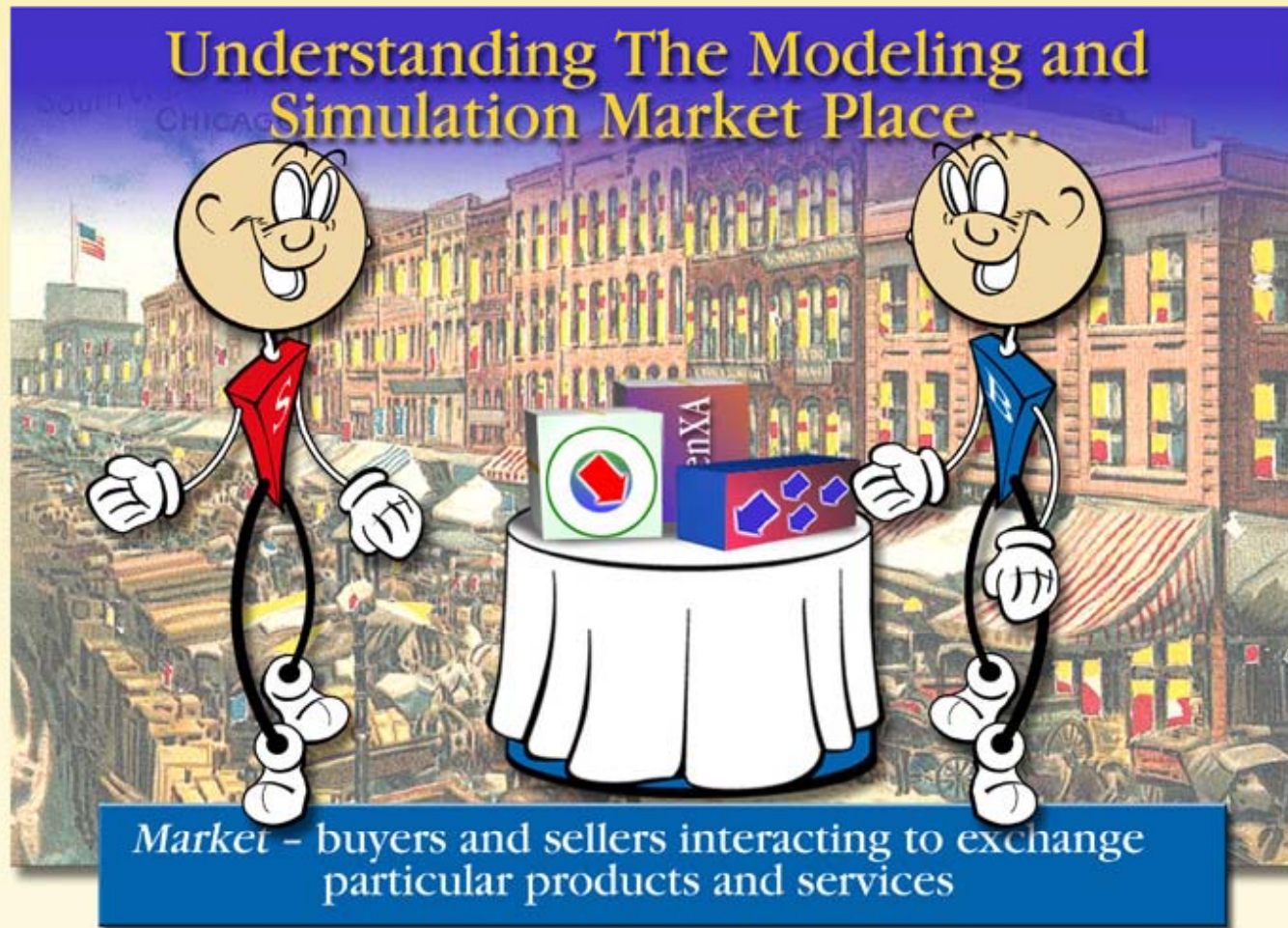
Final Technical Report of
***SimSummit* Survey on**
US DoD M&S Management / Leadership

1 August 2007

Prepared by:
***SimSummit* Round Table**

Prepared for:
**US DoD Modeling and Simulation Steering
Committee Tri-Chairs**

Collegial Initiative on: The Economics of Simulation





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National M&S Enterprise Campaign *EXECUTION*



