Advanced Simulation Course for Army Simulation Management Professionals

Gene Paulo
Department of Systems Engineering
Naval Postgraduate School
eppaulo@nps.edu
(831)656-3452

Stephanie Few
Department of Systems Engineering
Naval Postgraduate School
smfew@nps.edu
(704)274-5178
NPS tasked by the Army Simulation Proponent Division to develop, deliver, and sustain an executive level course

Course sponsored by the Simulation Proponent Division, office of the Army Modeling & Simulation Directorate for the US Army
Course Purpose:
Two week senior leaders course for LTC/COL level FA57 and senior civilians in the Army M&S Community.

Focus:
Provide a NON-technical perspective of significant M&S issues.
**Scope:**

- Equip students with better M&S management skills at Direct Reporting Unit (DRU), Army Command (ACOM), and Program Executive Officer (PEO) level.

- Familiarize students with current M&S management concerns throughout the Acquisition Life Cycle, specifically the different M&S applications in use during each phase.
Prototype Course:

- **Objective:** Discover educational gaps, identify appropriate target audience, and determine potential for future offerings.
- **Delivered:** 11-22 May 2009
- **Location:** NPS Center for Executive Education (CEE)
Prototype Course:

Student Body: 20 Total

- Senior Civilians: 30%
- Active Duty Officer: 70%
Prototype Course: NPS Department Participation

– Computer Science
– Graduate School of Business & Public Policy
– Modeling, Virtual Environments, and Simulation (MOVES)
– Operations Research & Simulation Experiments & Efficient Designs (SEED) Center
– Systems Engineering
Prototype Course: SME Participation

– NPS Thesis Students
– GSResearch LLC
Prototype Course: Breakdown

• **Module 1: Management Concerns Regarding M&S**
  - Week 1 (Lessons 1-5)

• **Module 2: Lifecycle M&S Issues**
  - Week 2 (Lessons 1-4, plus Guest Lectures)
Prototype Course: Topics

Module 1: Management Concerns Regarding M&S

- **M&S Education (Lesson 1)**
  - Role of SIM professional, development & significance of MSBOK, and *what* should an M&S curriculum contain for DoD M&S professionals

- **M&S Requirements (Lesson 2)**
  - Overview of DoD M&S, M&S Standards, LVC, M&S Requirements Generation, M&S Fidelity and Resolution, VVA, DoD Stakeholders, DoD Organizations, Governing Docs, Army M&S Domains

- **M&S in Testing (Lesson 3 & 4)**
  - T&E Overview, Why We Test, Different Testing Types (DTE, OTE, LFTE and Military Experimentation)

- **M&S in Analysis (Lesson 5)**
  - Overview of DoD Analysis Domain and Development of Analytical Simulation Study
Prototype Course: Topics

Module 2: Lifecycle M&S Issues

• M&S Acquisition (Lesson 1 & 2)
  – Focus of M&S in Acquisition, JCIDS and use of M&S in JCIDS, DoD Life Cycle and M&S in DoD Life Cycle, M&S Challenges in Acquisition over the DoD Life Cycle, M&S Contracting Considerations, SIM Based Acquisition (SBA)

• M&S in Risk, Cost, and Decision Analysis (Lesson 3)
  – M&S in Risk and Cost Analysis in Program Management, M&S support in Decision Making

• Future Trends in Simulation (Lesson 4)
  – M&S Convergence of Live, Virtual, and Constructive Simulation
  – Serious Games and massively Multiplayer Games, Agent Based Models, Other New M&S Trends

• Guest Lectures (Provided expert knowledge and techniques)
  – Concept Refinement
  – M&S Education Opportunities for DoD Communities
Prototype Course: Supplemental Materials

- Case Studies
- Lesson Pre-Reads
- Handouts
- Group Exercises
- In-Class Tool Application
- Instructor Lead Discussion
Lessons Learned...
• **Course Assessments**
  – Each student completed a daily assessment, a weekly evaluation, and overall course evaluation.
  – Each daily evaluation focused on the topic delivered that day
  – Student feedback will be incorporated into future course offerings

• **Some Changes:**
  – FA57s Only
  – Incorporate more SMEs from DoD and Industry
  – More Practical Exercises
The Way Forward...
Next Course:
26 April – 7 May 2010
Naval Postgraduate School -CEE
Contact us for more information...

Naval Postgraduate School – SE Department

Dr. Gene Paulo
Course Facilitator & Instructor
(831) 656-3452
eppaulo@nps.edu

Ms. Stephanie Few
Research Assistant
(704) 274-5178
smfew@nps.edu
Questions?
Backup Slides…
How the Army Uses M&S

**Analysis Community**

Conduct analyses on performance, effectiveness, survivability, tradeoffs, cost/benefit, logistical systems, personnel systems, army force structure and risk.

- Combat Xxi
- AWARS
- CASTFOREM
- Janus
- Spreadsheet Modeling
- CMS2
- APHAKS
- JCOM
- AMP
- MIDAS and GAMS

**Intelligence Community**

Provide actionable events designed to stimulate/simulate the proper HUMINT, SIGINT, and GEOINT intelligence disciplines gathered in real world operations.

- TACSIM
- BSS
- IEWTPT
- CSP
- MUSE
- NWARS
- QSID
- JCATS
- JLLCCTC Federation

**Planning Community**

Conduct a system of systems approach to various planning tools (i.e. Force Management Model)

- ARFORGEN
- CFST
- APIT
- APEX
- MIDAS
- EUST
- APOD/AST
- INFO-21
- JOPES and JFAST
- JDLM
- ADEPT

**Who**

- CAA, TRAC, AMSAA

**Impact**

- Total Army Analysis products, determining effectiveness of weapon systems, determining performance and system characteristics of equipment and system purchases, determining effectiveness of force management decisions

- Training intelligence personnel for COIN operations, and OIF/OEF activities

**Army G2, USAIC, JIITC, Intelligence soldiers in the Operational Army**

- HQDA, Army Command, ASCC, DRIUs, Operational Units Staffs
How the Army Uses M&S

**What**

- JLCCTC Federation
- HIITL sims and simulators
- Controlled field experiments
- BLCSE
- MATREX and 3CE
- ATIN
- OTC
- ACRT
- AWARS
- One SAF
- EDSIM
- CMS2
- FireSIM
- CAMEX

**Impact**

Conduct of experiments involving soldiers and leaders within the live, virtual and constructive environments for exploring concepts, capabilities requirements and solutions across DOTMLPF and the AC2DP process.

TRADOC, RDECOM, SMDC, USASOC, AMEDD, PEOs, Battle Labs, FORSCOM

**Who**

ASAALT, RDECOM, PEOs

**Experimentation Community**

Exploring, testing and validating warfighting ideas and concepts to transform the way soldiers fight future battles.

- JLCCTC Federation
- HIITL sims and simulators
- Controlled field experiments
- BLCSE
- MATREX and 3CE
- ATIN
- OTC
- ACRT
- AWARS
- One SAF
- EDSIM
- CMS2
- FireSIM
- CAMEX

**Acquisition Community**

Provide virtual and constructive test beds thru which weapon, equipment and ammunition factors can be prototyped, tested and evaluated during the acquisition process.

- ANSYS LS-DYNA
- ProE, ANSYS
- One SAF
- MSC Adams
- MPR3D
- AJEM
- MUVES
- CB Sim Suite
- ALOHA
- PVTM
- Visual Weight
- MUVES
- SIV
- Casualty Reduction Model
- BlastX

**Testing Community**

Employ M&S throughout program life cycle to support requirements definition; design and engineering; test planning, rehearsal, and conduct of an Army test.

- Live/Virtual/Constructive
- 4DWX
- Overarching Contamination Avoidance Model
- CBSNE
- DSOM
- JLCCTC Federation
- EDSIM
- IMASE
- COLPRO
- DETES
- DMS3
- EGI/CEGS
- ETS
- NETS

Evaluate the performance of tested items, systems and/or organizations, early examination of soldier interface and missions, determines system performance and safety.

Army T&E, ATEC
How the Army Uses M&S

Training & Operational Community

Delivering an integrated Live, Virtual and Constructive training environment that support the ARFORGEN model and mission rehearsal requirements.

- JLCCTC Federation
- Virtual Simulators
  - C2T
  - AVGATT
  - EST 2000
- One SAF
- JNEMI
- DCARS
- WARSIM
- IETPFT
- JNCTC
- LVC-IA
- Gaming

Pre-deployment training exercises, mission rehearsals, trained and ready soldiers, ABCS & digital system training

Logistical Community

M&S develops a level of understanding of the interaction of the parts of the logistical system, and of the logistical system as a whole, seldom achievable via any other process.

- JDLM
- MIDAS
- JFAST
- ELIST
- TARGET
- PORTSIM
- POPS
- AMP
- JCATS
- JLCCTC Federation
- LOGFED

Deployment timelines, training soldiers in logistical functions and units, efficiencies of logistical operations

Who

CTCs, NTC, JFCOM, RCTCs, all Army units

Impact
New M&S Governance and Management Structure Organized by Communities. Designed to Support & Integrate M&S Activities across the Department. Led by a 1 to 2 Star M&S Steering Committee (M&S SC) to provide governance.

**Components**
- OSD, Joint Staff, COCOMs, Services

**Goal:** Establish corporate M&S management to address DoD goals: Leads/guides/shepherds the $Bs in DoD M&S investments; adds value thru metrics & ROI-driven priorities; and seeks to provide transparency.
Advance Simulation Course: Daily Assessment

Presenter(s):
Session Title:
Date:

Please rate each item on the 1 to 5 scales, where 1 is the lowest rating and 5 is the highest. Two different topics are delivered by different instructors on some of the course dates; therefore, some questions are repeated to access each topic separately. Topic one represents either the morning session or one full day of instruction. When applicable, topic two represents the afternoon session.

1. The objectives were clearly explained: 1 2 3 4 5
2. The content was frequently reinforced with examples:
3. The content was relevant/useful to my current or future job:
4. The value of the lecture(s):
5. The value of the class discussion:
6. The instructor was well prepared for topic one:
7. The instructor was well prepared for topic two (if applicable):
8. The concepts and ideas were clearly presented for topic one:
9. The concepts and ideas were clearly presented for topic two (if applicable):
10. The instructor focused on the applications of concepts for topic one:
11. The instructor focused on the applications of concepts for topic two (if applicable):
12. The instructor interacted effectively with participants for topic one:
13. The instructor interacted effectively with participants for topic two (if applicable):
14. Overall rating for topic one:
15. Overall rating for topic two (if applicable):
16. The value of pre-reads and handouts for topic one (leave blank if n/a):
17. The value of pre-reads and handouts for topic two (leave blank if n/a):
18. The value of the case studies for topic one (leave blank if n/a):
19. The value of the case studies for topic two (leave blank if n/a):
20. The value of small group exercises for topic one (leave blank if n/a):
21. The value of small group exercises for topic two (leave blank if n/a):
22. The overall rating for topic one:
23. The overall rating for topic two (if applicable):

Comment Space provided to list 3 Likes and 3 Dislikes of the day.

20 Assessments Completed Per Day

Totaled the # of ratings (1-5) per assessment, added all assessment ratings together per day for an overall idea of the day’s topic likes, dislikes, and delivery.

Each rating (1-5) total was divided by # of questions completed per day (some questions did not apply) to reach the percentages.

1 –Lowest, 5 –Highest
Army Advanced SIM Course

NPS & SME Recognition

Curtis Blais:  NPS CS & MOVES
Jeff Cuskey:  NPS GSBPP
Chris Darken:  NPS CS & MOVES
John Dillard:  NPS GSBPP
Karl Gunzelman:  GSResearch LLC
Tom Hoivik:  NPS OR
Mathias Kolsch:  NPS CS & MOVES
Tom Lucas:  NPS OR & SEED Center
Dave Matthews:  NPS GSBPP
Don McGregor:  NPS CS & MOVES
David Olwell:  NPS SE
Gene Paulo:  NPS SE
Mark Rhoades:  NPS SE
Susan Sanchez:  NPS OR & SEED Center