

Report from the System Life Cycle (SLC) Forum of the 2011 Spring Simulation Interoperability Workshop

Boston, MA, USA

April 6, 2011

Presented to: National Defense Industrial Association (NDIA)
Systems Engineering (SE) Division
Modeling and Simulation (M&S) Committee
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Simulation Interoperability Standards Organization (SISO) Background

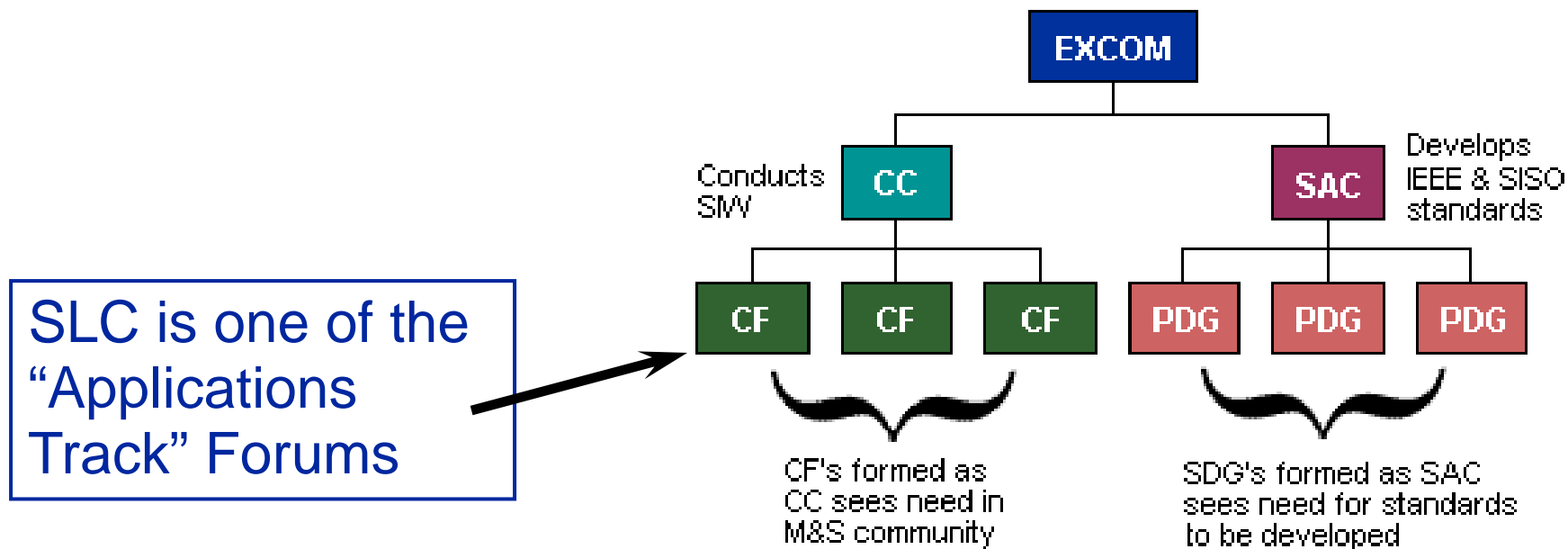
Vision Statement

SISO is dedicated to the promotion of modeling and simulation interoperability and reuse for the benefit of diverse M&S communities, including developers, procurers, and users, world-wide.

Mission Statement

SISO's mission is: To provide an open forum that promotes the interoperability and reuse of models and simulations through the exchange of ideas, the examination of technologies, and the development of standards.

SISO Organizational Structure



Legend:

EXCOM	Executive Committee
CC	Conference Committee
SAC	Standards Activities Committee
CF	Conference Forums
PDG	Product Development Groups

System Life Cycle (SLC) Forum

Forum Focus

- The System Life Cycle (SLC) forum focuses on M&S and related enablers of integrated, collaborative enterprises for system/vehicle or weapon system product development, particularly from a life-cycle wide, mission capability/system-of-systems perspective.
- Topics of Interest include:
 - Policy
 - Processes
 - Tool suite strategies
 - System/product simulations
 - Enterprise process simulations
 - Collaboration / optimization means
 - Work force implications
- SLC includes executable models of work flow, manufacturing, distribution, transportation and customer, patient, crowd, or traffic flow.
- Priority is on actual, broadly applicable experiences in all of these areas.

System Life Cycle (SLC) Forum
**Planning and Review Panel
Membership (2011)**

<u>Name</u>	<u>Organization</u>	<u>Position</u>
Tim Jahren	Raytheon	Chair
Ken (Crash) Konwin	M&SCO	Vice-Chair
Jim Coolahan	JHU/APL	Secretary
John Fay	Jacobs Technology	
Rich Reading	Cutlass Systems Engineering LLC	
Sherry Steward	Dept of US Navy	

System Life Cycle (SLC) Forum 2011 Spring Forum Agenda

0815-0830		Introduction & Welcome
0830-0900	11S-SIW-075	Interoperability of Multiple Autonomous Simulators in Integrated Simulation Environments
0900-0930	11S-SIW-032	Lessons Learned from the Pilot Development of a SOA-based LVC Interoperability Framework
0930-1000	11S-SIW-070*	Future Technologies and Processes and their Impact in the Domain of Live-Virtual-Constructive Architectures
1030-1200	Panel Discussion: M&S for Acquisition	
1330-1400	11S-SIW-058	Understanding the Value of M&S
1400-1430	11S-SIW-042	Software Reuse for Modeling and Simulation
1430-1500	11S-SIW-052	Developing Flexible Discrete Event Simulation Models in an Uncertain Policy Environment
1530-1600	11S-SIW-028*	An HLA-Based Approach to Quantify Achievable Performance for Tactical Edge Applications

* [Best Paper Nomination \(SIWzie\)](#)

System Life Cycle (SLC) Forum

Key Points

- **Very well attended panel discussion on “M&S for Acquisition”. Panel discussed numerous examples where M&S has been actively used to support program/system development. It was noted that M&S has been prevalent in program/system development support for some time, but the M&S support provided has not always been clearly acknowledged and understood throughout the industry. Recommended follow up panel using DoD Program Managers next time.**
- **NASA Constellation modeling work was discussed and options presented for configuring the model to make it most useful given the program’s uncertain policy environment – cancelled but still funded. The outcome of this work resulted in a model that was more readily modified to support any future rocket programs, and extremely structured and organized in a way that facilitated rapid customization and verification. Recommend we exploit the inherent synergy between Space and DoD programs. Many Space presentations are relevant to DoD, and vice versa. {11S-SIW-052}**
- **Research effort looked at what what technologies and processes available will have the greatest potential impact on M&S activities. Threw out a net for technologies, some aligned to the sponsor realm, some not: SIW papers, DARPA BAAs, current topics of tech websites, work discovered during Master’s programs, etc. Result produced 9 categories of process/technology areas to be evaluated: Mobile Computing and Augmented Reality, Ubiquitous Surveillance and Automated Reasoning, Event-Model Driven Architectures, Self-Healing/Self-Managing Systems, M&S Social Graph, Crowd-Sourcing, Mashup Software and FIST, Cloud Encapsulation, Everything is a Game. The final exact technologies may differ, but the capability would be the same: Increase M&S activity use by reducing needs on single-point resources and knowledge, Reduce turnaround on new M&S requirements, Expand the user base, Maximize community knowledge while minimizing concerns about transparency and collaboration. {11S-SIW-070}**

Mobile Computing and Augmented Reality (Implementation)

•Description

- M&S Planning and Training capability pushed to in-theater warfighters.

•Benefits

- Empowered end users expands use of M&S beyond single location events.
 - In-transit, In-theater.
- Immersive training environments can be generated virtually anywhere.
- M&S capability can be developed and pushed to anywhere, anytime.



	Urgent Extreme	Electronic Egret	Sequoia Ring	Cave Dive	Relay Exchange
Skill Training	High		High	High	Low
Unit Training	High		High	High	Low
Mission Planning	High	Medium	High	High	High
Environmental Analysis		Low			
C4I Structure	Low	Low	Low	Low	
Acquisition					

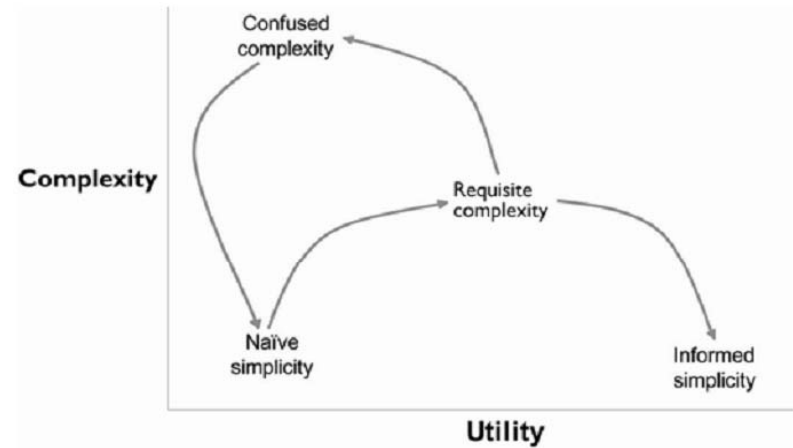
Mashup Software and FIST (Socialization and Adaptation)

●Description

- Use simple modular components to allow community to quickly generate tools.

●Benefits

- Users enabled to satisfy their own requirements.
 - Crowd-source use and experience of community.
- Rapidly deploy Fast, Inexpensive, Simple, Tiny (FIST) “75%” solutions with minimal development from “empty shell” systems.
- Create lightweight versions of existing systems to other platforms (e.g. PDAs).



	Urgent Extreme	Electronic Egret	Sequoia Ring	Cave Dive	Relay Exchange
Skill Training	Low	Low	High	Low	Low
Unit Training	Low	Low	High	Low	Low
Mission Planning	Low	Low	High	Low	Low
Environmental Analysis	Low	Low	Low	Low	Low
C4I Structure	Low	Low	Low	Low	Low
Acquisition		High			High