Turning a problem into an opportunity for the M&S community: Leverage decreasing military budgets to increase the use of simulators by using Simulation platforms

1 PROBLEM STATEMENT

The defense ministries around the world are taking significant cost cutting initiatives across their militaries in order to cope with their reduced financial resources. Governments are downsizing their militaries and cutting down on training budgets. With declining military budgets we will see a reduction in military personnel, operations & maintenance funds, and less procurement of big ticket items. The active duty forces, while getting smaller, will still be expected by the public opinion to fight and win decisively as it has done in the past. Cutting down on training budgets seems to be not the best option to keep the operational readiness of our military forces; at least militaries move towards a balanced mix of live and simulator training for their forces. This situation at a glance appears good to the M&S community but a serious challenge needs to be solved before we take advantage of the increase in the use of simulation for training: the requirements to train the Warfighter will increase but the budget outlook for Modeling & Simulation will remain flat for the out years. With a flat budget for M&S we will have to choose wisely how we invest in solutions in order to maintain a robust training capability for our Warfighters.

2 THE OPPORTUNITY

With decreasing budgets, militaries in USA and NATO partners are looking for lower cost and more effective solutions for their training requirements. Governments consider live training programs to be expensive and logistically difficult, whereas simulators are a more cost effective and agile alternative. There are many examples of these policies, as these:

- The DoD has a priority requirement for the capabilities to enable efficient integration of simulation systems into a common architecture at a low cost. As announced by OSD/CTO in 2014, the Number One Thrust for the FCT program is Interoperability. The DoD requires a Ready For Training, low cost COTS solution for System of Systems Interoperability.
- NATO wants to leverage simulation technologies to do Mission training in virtual environments, substituting live training with virtual training in distributed simulation networks connecting simulations with real C2 and ISTAR systems to train as they fight.

3 THE CHALLENGE

It is a fact that militaries worldwide are currently focusing on increasing the ratio of virtual training versus live training. However, it is also true that they cannot fund as much as they have in the past, and it is a fact that a greater and accountable return of investment is going to be demanded. They will also demand more connected simulations instead of stovepipe simulators that are not ready to train the tactical operations involving coalition forces using different weapons and systems.

The paradox in the market: users demands more simulation solutions but do not have the required budget for them, therefore many potential users are not buying and market is not growing as it could. This paradox is classical in any technological market that has potential to grow but lacks economy of scale to do it. You have many examples as internet, smartphones… These industries were successful to take the technology to the mainstream because they were able to offer a good-enough user experience at an affordable price. The M&S industry needs also to go to the mainstream, but for that, we need to improve the user experience and reduce the cost at the same time. How can we do it?

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4 THE SOLUTION

Right now, many experts in IT industry say that we are now living in the age of Platforms. Platforms are not invented by IT industry, because they have been in use for a long time in other industries as aeronautics and automotive, but IT has helped to extend the knowledge about platforms and their advantages to the people. Platforms are expanding into many markets and can be found today in a variety of industries and on different scales: from near universal platforms as Internet, credit cards and the telephone to newer Internet-based enabled platforms such us Google's Android, Apple's IOS, Skype, Facebook, Paypal, etc.

Platforms are good to create ecosystems and economies of scale because allow different types of users and complementary business partners to connect and benefit from the platform's base functionality. For example, platforms as Android or IOS has helped to create a new industry to Telco companies: the smartphones and tablets. Right now, platforms are being also created by large industrial companies, as General Electric, Cisco, Siemens, etc. to create a new industry: The Internet of Things or IoT.

M&S industry is also an IT industry, very intensive in software, but M&S do not have yet an open platform that can lead the market to grow and position itself into the mainstream market. We have examples of some products that can be considered as platforms in specific niches of application as virtual training but they are using proprietary protocols and architectures and therefore they can not be considered as an Open Platform. An open platform for simulation should have an open interface and be based fully on standards to connect with other systems. Otherwise, a monopoly situation will arise and market innovation will be restricted by the dominance of only one player. Also, closed platforms are possible for individual product systems, but they are often impractical for Systems of Systems, and because of that main large industrial companies are joining to create IoT standards, for example.

In M&S community, there have been several attempts to create an open platform in order to facilitate interoperability and connectivity of assets from different users and business partners, but till now, these attempts has not been able to attract enough users and partners in order to be considered as a true platform.

Simware and his parent company, NADS, has been working since last decade to solve this challenge and to offer the market a new open platform for simulation, his name it is Layered Simulation Architecture or LSA, and it is right now a nominating standard by SISO LSA Study Group. LSA provides convergence of simulation standards into a Data-Centric platform, using OMG DDS standard as the foundation to converge the different simulation standards as HLA, DIS or C-BML, for example. The cohabitation of multiple standards into one architecture makes LSA the first architecture that can be considered an open platform for M&S. It is the first standard in development specifically for the M&S domain with a full Network-Centric and Systems of Systems (SoS) approach.

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5 THE BENEFITS

Only an open platform, as LSA, can allow different companies and users work together to create an ecosystem in which to benefit mutually. Only a fully open platform enables any entity to participate in an interface with the platform without restrictions.

Industry can leverage LSA to upgrade capabilities of existing and legacy systems, by connecting them to other devices and systems in the network. In this way, militaries could do a smart use of the budget: updating systems to deliver tactical training by a fraction of the cost of doing a new development.

Only an open platform will allow to migrate the stovepipe simulators to real smart connected devices. Systems that are able to cooperate with other systems in the network to provide specific capabilities to the users and operators.

New demands as the use of simulation as a service would be fulfilled by a platform compliant with LSA. Only an open platform, fully based on standards, will allow the collaborative work of different services to provide an specific capability to a Smart Connected Simulator

6 ABOUT SIMWARE AND NADS

Simware is the first Simulation platform compliant with the new Layered Simulation Architecture or LSA

Our platform is the first commercial product available to build and federate simulations in compliance with initiatives at SISO and NATO related to the use of Simulations assets as Services in the Network. Simware platform provides, out-of-the-box, seamless interoperability of SISO simulation standards like HLA, DIS or CBML with the OMG DDS standard. Multi-standard compliance makes affordable to any budget the development and deployment of LVC simulations over any kind of network.

Beyond our products, our commitment is with standards, actual and future; because of that, we are working at SISO and NATO to develop the future standards and technical architectures for distributed simulation and for the use of M&S as Services (MSaaS).

Simware is the technological company of NADS. NADS is a simulation company, leveraging radical innovations to make affordable the use of simulation solutions for anyone, anywhere and anytime.

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