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Title: **OMG, OGC, SISO and Web3D Consortium form WebSim Partnership**

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If, for purposes of modeling and simulation (M&S), we want our computer systems to enable us to share data, and if we want one computer to be able to invoke processes on other computers, these systems need to be able to communicate. Communication means transmitting or exchanging through a common system of symbols, signs, or behavior. Standardization means agreeing on a common system. Do we have, or can we have, a common system, a standards platform, for M&S?

An ACM SIGGRAPH Carto Project Survey Summary Report released in March, 1997 reported the results of a survey of a group of computer professionals involved in M&S applications that required geographic information. Regarding standards, the report noted that, "Little consistency is evident in the data types employed or in the tool sets used by this group of computer graphics and cartographic professionals. Nearly all respondents were aware of efforts in the geographic information industry toward establishing standards. Only a few reported having directly participated in these standards efforts."1

The World Wide Web has shown us how it pays for everyone to be on a network with many accessible, usable resources, resources made available through the universal use of a few standard interfaces and encodings. In the seven years since the Carto Project report, M&S developers and their customers, like other systems developers and their customers, have grown increasingly weary of stovepiped architectures and so they have embraced standards. They have also worked to help shape these standards, which are almost all consensus standards, to suit their purposes.

In May, 2003, the WebSim Partnership -- the Object Management Group (OMG), Open GIS Consortium (OGC), Simulation Interoperability Standards Organization (SISO), and Web3D Consortium -- together announced the "First Workshop on Web Enabled Modeling and Simulation." The four organizations agreed last year to collaborate on open, non-proprietary standards for Modeling and Simulation (M&S) and related technologies. The First workshop, held in October 2003, helped to illuminate the current state of the technology and to establish a plan for going forward. A Second Workshop on Web Enabled Modeling and Simulation will take place October 12-15, 2004 in the Washington, DC area to build on this foundation. (See http://www.websim.net for details.)

Below we look briefly at each organization and then explain why they have partnered.

The Partners in the WebSim Partnership

SISO -- The Simulation Interoperability Standards Organization (SISO) facilitates simulation interoperability across a wide spectrum. SISO provides forums, educates the M&S community on implementation, and supports standards development. The initiative that eventually became SISO originated over ten years ago with a small 1989 conference called, "Interactive Networked

[1] ACM SIGGRAPH Carto Project Survey Summary Report March 1997 Prepared by Theresa-Marie Rhyne, Carto Project Director, Director-at-Large, ACM SIGGRAPH and David A. Taylor Carto Project Administrator.

Simulation for Training". That conference attracted approximately 60 people who saw the benefits of capturing technology consensus in standards, and they worked to make this happen as networked simulation technology matured. The conferences developed into the Distributed Interactive Simulation (DIS) Workshops, focused on creating standards based on the SIMNET project. Under the leadership of the Defense Modeling and Simulation Office (DMSO), the High Level Architecture (HLA) was developed to support reuse and interoperability across the large numbers of different types of simulations developed and maintained by the US Dept. of Defense (DoD). It was adopted by the DoD in August, 1996. In late 1996, the DIS organization transformed itself into the organization called SISO.

Web3D Consortium -- The Web3D Consortium is a member-funded industry consortium committed to the creation and deployment of open, royalty-free standards that enable the communication of real-time 3D across applications, networks, and XML web services. The consortium addresses the full range of 3D applications, including medical applications and mechanical and architectural design as well as 3D terrain modeling. The Consortium's main standard is X3D, an extensible open file format standard for 3D visual effects, behavioral modelling and interaction. X3D is the enhanced successor to the pre-XML Virtual Reality Markup Language (VRML). XML encoding enables 3D to be incorporated into web services architectures and distributed environments and facilitates moving 3D data between applications.

OGC -- The Open GIS Consortium (OGC) is an international voluntary consensus standards organization of more than 260 companies, government agencies and universities participating in a consensus process to develop publicly available geoprocessing interface specifications. The OGC's OpenGIS Specifications support interoperable solutions that "geo-enable" the Web, wireless and location-based services and mainstream information technologies. The OGC's Geography Markup Language (GML) version 3, one of several OpenGIS Specifications relevant to M&S, offers a set of topology constructs and it has introduced a new geometry type for 3D geo-data.

OMG --The Object Management Group (OMG) is an open membership, not-for-profit consortium that produces and maintains computer industry specifications for interoperable enterprise applications. With well-established standards covering software from design and development through deployment and maintenance and extending to evolution to future platforms, the Object Management Group (OMG) supports a full-lifecycle approach to enterprise integration. OMG's Modeling standards, the basis for the Model Driven Architecture® (MDA®), include the Unified Modeling Language™ (UML®) and Common Warehouse Metamodel (CWM™). CORBA®, the Common Object Request Broker Architecture, is OMG's standard open platform with hundreds of millions of deployments running today.

Why they have partnered.

SISO is dedicated to facilitating simulation interoperability across a wide spectrum. To do this, the organization provides forums, educates the M&S community on implementation, and supports standards development for M&S. Recently, the Standards Activities Committee (SAC) of SISO merged with the IEEE counterpart (SISC) so that SISO is now the M&S standard development agency.

Web-enabled M&S is one of the domains of interest. In addition, simulation systems of all domains -- training, procurement, analysis, experimentation, and support of operations -- often involve simulation of the movement of military assets in earth space, so it would be good if simulation applications were interoperable with the countless network-resident geoprocessing web services and geodata stores that are compliant with OGC's specifications. Also, it would be useful for the SISO community if they could depend on interoperability with services and data that have been and are being developed to be compliant with the Web3D Consortium's X3D specification. Because some X3D developers are working with 3D applications to be run on lightweight devices, some of those developers' methods might usefully be borrowed to enhance what can be done in the SISO environment. Because many DoD systems are already based on

the OMG's standard open platform, SISO would naturally want to be sure that platform is harmonized with OMG's specifications.

As the standardization body for M&S, supporting WebSim was logical for SISO, and it is not a coincidence that the four groups first met during a special session that took place during the Spring 2003 Simulation Interoperability Workshop conducted by SISO.

Many members of the Web3D Consortium are concerned with maps and 3-D terrain models displayed over the internet or other distributed networks. Harmonization with OGC's specifications would be desirable because it would be useful to be able to pull in geospatial data from a variety of sources and it would be useful to be able to access web services for operations like coordinate transformation. It would be useful to be able to draw on sophisticated methods for group interaction that have been developed in SISO. And it would be good if developers building to the X3D specification could depend on support in OMG-based architectures.

OGC has developed a uniquely comprehensive framework for developing standards that relate in any way to geospatial data and the processing of such data. This framework has been developed in an open consensus process visible to and participated in by the world's leading experts in geospatial technologies of all kinds. The OpenGIS Specifications are universally regarded as the "gold standard" in this domain. So, SISO, the Web3D Consortium and OMG can, by harmonizing with OGC, offer their stakeholders enhancements that leverage a very sophisticated and inclusive framework for all kinds of raster based and vector based spatial data and spatial processing. From OGC's point of view, in addition to the value of overall harmonization, it is clear that distributed interactive simulation and 3D portrayal present geoprocessing standardization issues that have not yet been addressed in OGC, and OGC members would like to be sure they are addressed in a way that is consistent with the work that has already been done.

OMG, as is clear from what has already been mentioned, has a stake in ensuring that applications compliant with the specialized specifications of these other consortia are readily integrated into broad enterprise architectures based on OMG's specifications.

Conclusion

The "Second Workshop on Web Enabled Modeling and Simulation" in October will be an important event. It continues the cooperative, multi-consortia plan conceived in October 2003 to advance web-based simulation, and it highlights the broad spectrum of accomplishments and challenges that remain to achieve a vision of truly web-based simulation. The leaders of the consortia have seized a great opportunity. We look forward to getting into the important details.

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