Spring 2003

Simulation Today

Simulation Modeling Services (877) 474-6858

Special Interest:

Regular Features:

Has Simulation's Time Come?

There is one thing stronger than all the armies in the world: and that is an idea whose time has come.

- Victor Hugo

Simulation has long been an integral part of the military, manufacturing and material handling industries, but it has not achieved mainstream status in other areas. In the past few years, however, it has spread into fields such as healthcare and service industries. Hospitals and fast food restaurants are using it to plan their new facilities and processes. Another growth area for simulation is homeland security. The newly formed Transportation Security Administration (TSA) has hired many industrial engineers to analyze and design new security measures, many of which include flow and queuing exercises. TSA's industrial engineers and other government contractors are now using simulation to analyze the movement of passengers and baggage around security checkpoints and screening systems.

Since September 11 there has also been a focus on using simulation to help address disaster preparedness for hospitals, sports venues, airports and entire metropolitan areas. Why is simulation such a good fit for these applications? Because it allows users to conduct what-if scenarios that would be impossible to carry out with mock-ups or drills. It seems that maybe simulation's time has come.

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Simulation Software Selection

With so many discrete event simulation packages on the market, how can you decide which is right for you? Several free and formal methodologies are documented in on-line simulation conference proceedings (see References). But before jumping into a rigorous selection process, start by asking some basic questions. You may find the decision is easier than you thought.

What is the project objective?

A common understanding of the objective will help frame discussions with internal company resources a well as vendors and service providers. It is also prudent to define the expectations for the longer term. Will models be disseminated across the organization for others to use? Is it possible that other departments will want to use simulation once they see your success? Who will be building the models and who will be running them? How much of your time will be dedicated to modeling? Will the models be focused on one type of process (e.g., assembly lines, counter operations, material handling) or could they represent a wide range of systems? The goal here is to determine if

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Simulation Software Selection (continued)

What's the most important characteristic to consider when purchasing a simulation package?

Flexibility?
Ease of use?
Price?

Customer support!

you need a general-purpose package or one that is tailored to a specific application.

How much are you willing to spend?

Simulation software can range from $500 to $50,000, but don't forget to factor in costs associated with initial training and annual maintenance. Basic training can run from a few days to a week. Annual maintenance is usually around 15% of the purchase price. This is a very valuable piece of the package – not only will you receive technical support, but patches and new versions will be free of charge. Some vendors also offer on-line support and access to FAQs and problem databases. Many lower cost tools include technical support as part of the purchase price but don't offer automatic upgrades as part of an annual maintenance program. They expect you to purchase a new version.

Will you need detailed animation?

Some simulation tools are flowchart based or provide limited capability for animating a process. If animation is not required, the cost and complexity of the simulation tool can be reduced. However, keep in mind that even if animation is not important to you as the modeler, it can help when validating the model with people involved in the target process. Some people are very visual thinkers and don't do well with tables of numbers or flowcharts.

Is speed a factor?

When simulating large systems with lots of entities or conducting complex computations, the run time for a simulation may be a factor. One approach to evaluating tool speed is to conducting a benchmark test. Each vendor is given a well-defined problem. They build the model and present the results, including the computer runtime. This is a tricky prospect for the general consumer since the problem must be structured to test all the salient aspects of a simulation package. More than likely you'll end up relying on the vendor's claims. However, one factor you do have control over is your computer. Make sure you get the fastest available machine with lots of memory and a high performance graphics card. Factor this into the project costs.

How will data flow into and out of the model?

Simulationists often build user interfaces for data entry and results review. This means the end user doesn't necessarily need to know anything about the simulation tool. The simulation runs in the background. Ask the prospective vendor how this function is implemented in their tool and have them demonstrate it. Will you need to know how to write Visual Basic code to build such an interface? Or is it more user friendly?

Will you need 3D?

Simulating conveyor systems traveling between floors or experiencing drastic elevation changes may lead you to consider a 3D package. This might also be the case for factory layouts, assembly lines and distribution centers, where machine and work-in-process accumulation space is a factor in the analysis. The 3D nature of the model aids in visualizing the system in both the model development and presentation phases. 3D can help viewers get a better feel for how the system fits into its surroundings.

Don't under-estimate the "gee wiz" factor of 3D tools. If the simulation is being used to sell a concept or a proposed system (internally or externally), the punch of an impressive 3D simulation may be the thing that really engages the members of the audience or differentiates you from the competition.

On the other hand, 3D

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PROGRAM (pro'-gram)

n. A magic spell cast over a computer allowing it to turn one's input into error messages.

v. To engage in a pastime similar to banging one's head against a wall, but with fewer opportunities for reward.

- Anonymous

Upcoming Events

Society for Health Systems (SHS) Management Engineering Forum 2003
February 7 & 8, 2003
San Diego, California
www.iienet.org

Healthcare Information Management Systems Society (HIMSS) Annual Conference
February 9 - 13, 2003
San Diego, California
www.himss.org

ProMat 2003
February 10-13, 2003
Chicago, IL
www.promat2003.com

Modelling, Identification, and Control (MIC'2003)
February 10-13, 2003
Innsbruck, Austria
www.iasted.com

WestPack 2003
February 19-21, 2003
Anaheim, CA
www.westpackshow.com

Modelling and Simulation (MS 2003)
February 24-26, 2003
Palm Springs, CA
www.iasted.com

Modelling and Simulation 2003
February 24 - 26, 2003
Palm Springs, California
www.iasted.org

National Manufacturing Week
March 3-6, 2003
Chicago, IL
www.manufacturingweek.com

SAE 2003 World Congress
March 3-6, 2003
Detroit, MI
www.sae.org

Asian Flexsimposium 2003
March 10, 2003
Singapore
www.flexsim.com

WESTEC
March 24-27, 2003
Los Angeles, CA
www.sme.org

2003 Advanced Simulation Technologies Conference (ASTC '03)
March 30 - April 3, 2003
Orlando, Florida
www.scs.org

Simulation Solutions 2003 Conference
March 31 – April 2, 2003
Las Vegas, Nevada
www.simsol.org

SouthPack 2003
April 30 – May 1, 2003
Atlanta, GA
www.southpackshow.com

INFORMS Conference on OR/MS Practice
May 4-6, 2003
Phoenix, AZ
www.informs.org

Rapid Prototyping & Manufacturing 2003
May 12-15, 2003
Chicago, IL
www.sme.org

Institute of Industrial Engineers (IIE) Annual Conference
May 18 – 21, 2003
Portland, Oregon
www.iienet.org/annual/

EASTEC
May 20-22, 2003
West Springfield, MA
www.sme.org

SimTecT 2003
26-29 May 2003
Adelaide, Australia
www.simtect.com

ODYSSEUS 2003
Second International Workshop on Freight Transportation and Logistics
May 27-30, 2003
Mondello (Palermo), Sicily, Italy
www.unipa.it/Odysseus/

Brooks-PRI Automation Simulation Symposium 2003
June 2-6, 2003
Salt Lake City, UT
www.automod.com

Industrial Simulation Conference (ISC-2003)
June 9-12, 2003
Valencia, Spain
biomath.rug.ac.be/~eurosis/conf/isc/isc2003/index.html

GoldSim User Conference
June 19-20, 2003
Seattle, WA
www.goldsim.com

2003 Summer Computer Simulation Conference (SCSC '03)
July 20 - 24, 2003
Montreal, Canada
www.scs.org

2003 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS '03)
Montreal, Canada
July 20 - 24, 2003
www.scs.org

Call For Paper or Presentation Due Dates

Care to have information on your conference, call for papers, or simulation software included in Simulation Today?

Send us an email with the details and it we'll run it in the next issue

Due February 14, 2003
2003 International Symposium on Performance Evaluation of Computer and Telecommunication Systems
(SPECTS '03)
July 20 - 24, 2003
Montreal, Canada
www.scs.org

Due March 1, 2003
Brooks-PRI Automation Simulation Symposium 2003
June 2-6, 2003
Salt Lake City, UT
www.automod.com

Due March 3, 2003
Winter Simulation Conference
December 7-10, 2003
New Orleans, LA
www.wintersm.org

Due March 15, 2003
EURO/INFORMS
July 6-10 2003
Istanbul, Turkey
www.informs.org

Due May 1, 2003
Applied Simulation and Modelling (ASM 2003)
September 3 - 5, 2003
Marbella, Spain
www.iasted.com

Due May 1, 2003
INFORMS Annual Meeting
October 19-22 2003
Atlanta, GA
www.informs.org

Due June 1, 2003
2004 SAE WORLD CONGRESS
March 8-11, 2004
Detroit, MI
www.sae.org

Simulation Software Selection (continued)

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tools are generally more expensive, require more time to develop a model than 2D counterparts, and are overkill for situations that don't take advantage of the 3D nature of the tool (e.g. business process analysis).

Who will be developing the simulation models?

If you're expecting a group of engineers, such as the plant IEs or hospital MEs to periodically develop simulations, rather than dedicating a significant portion of their time, you might consider a less expensive package. These tools have templates and well defined user interfaces that simplify the model development process. Of course, the general rule is that the easier a tool is to use, the less flexible it will be. You may find that you'll eventually run into a modeling problem that can't be solved with that particular tool.

Will you need technical support?

Of course you will! And more than likely, it will be the night before your big presentation when the model stops running. Look for a company that has a mature customer support organization that is dedicated to the tool and available off hours. One simple indicator we use is the turnaround time for our request for updated version information from software vendors for the table on page 5. Often, these messages are ignored or returned days or even weeks later. Our observation is that the responsive vendors are also the ones that give us great technical customer support when we have a modeling issue.

REFERENCES

Tewoldeberhan, T., Verbraeck, A., Valentin, E., Bardonnet, G. 2002. Selecting Simulation Software. An Evaluation and Selection Methodology For Discrete Events Simulation Software, *Proceedings of the 2002 Winter Simulation Conference*, ed. E. Yücesan, C.H. Chen, J. L. Snowdon, and J. M. Charnes, 67-75.

Nikoukaran, J., Hlupic, V., Paul, R.J., 1998. Criteria for Simulation Software Evaluation, *Proceedings of the 1998 Winter Simulation Conference*, ed. D.J. Medeiros, E.F. Watson, J.S. Carson and M.S. Manivannan, 399-406.

Simulation Software

(collected by Simulation Modeling Services)

Tool	Website	Latest Version	Next Release
AnyLogic	www.xjtek.com	4.5	tbd
Arena	www.rockwellsoftware.com	7.00.00	7.00.01 Spring '03
AutoMod	www.automod.com	10.0 Build 1600.112	Spring '03
AweSim!	www.frontstep.com	3.0	tbd
Enterprise Dynamics	www.enterprisedynamics.com	5.0	6.0 in Nov '03
Extend Suite	www.imaginethatinc.com	6.0	7.0 in Oct '04
Factory Explorer	www.wwk.com	2.8.4	2.8.5 unscheduled
FlexSim	www.flexsim.com	1.0	2.0 in Feb '03
GoldSim Pro	www.goldsim.com	7.51 SP-1	8.0 in Summer '03
iGrafx Process	www.igrafx.com	2003	Swedish in Apr '03 & Korean in May '03
MAST-Manufacturing Simulation Tool	www.cmres.com	8.0	8.1 in Jan '04
Micro Saint	www.maad.com	4.1	Fall '03
ProcessModel	www.processmodel.com	4.2.7	5 in 2nd Q '03
ProModel, MedModel, ServiceModel	www.promodel.com	2002 (v5.4)	6.0 on 31 Mar, '03
Sciforma Process	www.sciforma.com	v4.1.0	Mid '03
Supply Chain Builder Product Suite	www.simulationdynamics.com	5.0	6.0 in 1st & 2nd Q '03
SimCAD Pro	www.createasoft.com	6.0	6.1 on 31 Mar '03
SimKit	www.rosim.co.uk	1	1.1.0 on 1 Apr '03
SIMPROCESS Professional	www.caci.com	3.1	3.2 in Mar '03
SIMUL8	www.simul8.com	9.0.0.239	10.0 likely to be May '03
WebGPSS	www.webgpss.com	1.7	1.9 in Jun '03
WITNESS	www.lanner.com	2002 D	2003 in Mar '03

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About Simulation Modeling Services

Simulation Modeling Services is an independent consulting firm specializing in developing computer-based, process-flow simulation models for its clients. We work in a variety of industries including manufacturing, healthcare, material handling, transportation and services. We support many commercially available simulation software packages and work with our clients to select the tool that best fits their requirements. See our website for more details on projects and case studies.

We don't sell software, we sell solutions . . .