

# Now Bring Simulation In-house to Support Good Decision Making

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## **Abstract**

Simulation modeling enables organizations to make better decisions by letting them see the impact of proposed changes before they are implemented. Simulation modeling is traditionally done by individuals distant from the system to be modeled. This creates a chasm between the people that know and operate the system, and those that model the system. Simulation modeling is it's most powerful when it is done by the people that understand the system, issues, and opportunities within the system. This paper describes new technology that now makes it practical to bring simulation in-house.

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## **Bring Simulation In-house to Support Good Decision Making**

Now more than ever enterprises need to perform at their best. The high-performance enterprise must continuously change to adapt to new markets, products, and methods. Enterprises that can embrace and affect continuous change and improvement will be the successful enterprises of the future.

Simulation modeling enables organizations to make better decisions by letting them see the impact of proposed changes before they are implemented. In the past this powerful method was often limited by the complexity of learning and using the modeling tools. As a result simulation was either not used, or was contracted to outside consultants or an internal center of expertise whenever a major system change was being considered. In either case the modeling was done by separate group of simulation experts and was a disjoint activity to the primary and on-going focus on continuous process improvement. This creates a chasm between the people that know and operate the system, and those that model the system. This chasm has limited the successful use of simulation within many organizations.

Simulation modeling is it's most powerful when it is done by the people that understand the system, issues, and opportunities within the system. Using outside consultants can be more costly, time-consuming, and less effective than doing the same project in-house. By bringing simulation in-house the time and cost required to bring an outside consultant "up to speed" on your systems is eliminated. You not only save your own time and resources, but you avoid paying others to learn what you already know. Likewise the cost and time required associated with modeling errors caused by miscommunications or misunderstandings of the system are eliminated. In addition the cost of getting an outside bid, reviewing proposals, and managing a contractor is also eliminated when a simulation is brought in-house. In many cases ideas evolve as the system is being modeled, and this leads to the need to develop additional variations of the model. With outside consultant this leads to additional costs and delays associated with contract modifications.

However more important than the extra costs and lost time is missing out on the knowledge gained in the modeling process. The process of modeling a system is a beneficial process in itself and can often lead to insights into the system that might otherwise be missed. The act of modeling puts a spotlight on the operations of a system that are otherwise taken for granted and not questioned. By being emerged into the modeling process, simulation becomes a tool to try out new ideas and find hidden cost and performance in the system. The model provides a vehicle where ideas can be quickly evaluated and the system continuously improved. Hence simulation becomes a tool that is used on an on-going basis for gaining insights into the system behavior and exploring and analyzing changes rather than a tool that is only rarely used to evaluate major proposed changes to the system. The opportunities to continuously reduce costs and improve performance are too critical and central to the business to outsource to a 3<sup>rd</sup> party.

However to make this practical users need a simulation modeling tool that is easy to learn and use, and supports rapid model building. Managers/engineers do not have time to learn complex software that requires extensive training and programming skills. A tool is required that allows managers/engineers to quickly build models and use those models to gain insights into their systems.

Simio is designed specifically to address this need. With Simio, models can be built by those with knowledge of the system being modeled as opposed to a separate team of simulation experts. Simio models are built using a new object-based modeling paradigm that for the first time makes models fast and easy to build. Simio seamlessly integrates the object and process modeling paradigms to combine the ease of use of pre-built objects with the flexibility of processes (without programming) to give you a more accurate portrayal of your system.

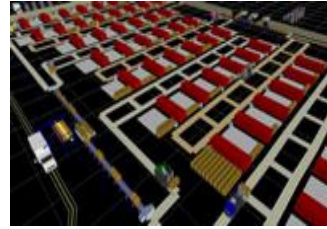
Simio makes 3D animation a simple and natural part of the modeling process. For the first time you can have a truly immersive 3D experience without the added cost and complexity. This makes it easy to communicate the behavior of the model throughout the organization – from the shop floor to the top floor. The animated 3D model becomes more than analysis tool – it also becomes a way to communicate and sell new ideas within the organization. New ideas can be quickly put to the test within the 3D animated model, and the results become vividly clear for all to see.

With Simio's unique architecture you add new modeling objects using graphical processes without programming. This makes it possible for users within your organization to build and share new modeling objects. This is also an area where outside consultants or centers of expertise within your organization can be used to improve the modeling process by providing your modelers with specialized objects focused on your systems. This lets you leverage simulation expertise within or outside your organization to further enhance the rapid modeling capability of Simio without compromising the core benefits of bringing simulation in house.

Simio software lets users build simulation models of complex real-world systems. Such systems are found in a variety of fields including manufacturing, supply chain, logistics, health care, pharmaceuticals, and assembly and packaging. Simio provides an "object-oriented" approach in which the system is described by "intelligent objects," which represent physical components such as forklifts, and conveyors.

The interaction of these objects is what reveals system behavior. Models resemble the real system, since an object's logic and animation are jointly created. This makes it easy to quickly model a complex system such as a warehouse.

Simio lets you empower the people in your organization that know your systems best to model and gain insights into for changing and improving your systems. It changes the role of simulation from a tool that is rarely used to evaluate major investments, to a tool that is used on a routine basis to continuously evaluate ideas for change to reduce costs and improve performance within the system. Simio lets you make simulation a strategic tool for continuous change within your organization.



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#### About the Author

C. Dennis Pegden, Ph.D., Founder and CEO of Simio LLC, is recognized as a simulation industry leader. He led in the development of SLAM (marketed by Pritsker and Associates) and then founded Systems Modeling Corporation, now part of Rockwell Automation. Dennis led the creation of the market-leading simulation products SIMAN® and Arena®, as well as the finite capacity scheduling product Tempo (later renamed RS Scheduler). [dennis\\_pegden@simio.biz](mailto:dennis_pegden@simio.biz) [www.simio.biz](http://www.simio.biz)