

## Is it Time for a New Approach to Modeling Distribution?

### A More Open Approach to Modeling DC Operations Could Benefit All, Says One Academic; Too Slow, Expensive and Difficult for Many Now

#### SCDigest Editorial Staff

As distribution centers grow in complexity and scope of operations for most companies, there is potentially increased benefit from being able to model and simulate that environment. This can help companies to better understand system performance, test design alternatives, identify potential bottlenecks, and understand the likely result of changes to an existing system.

But that process to date has been awfully hard.

Much of the problem, says **Benoit Montreuil**, a professor of operations and decisions systems in the administration sciences faculty of Université Laval in Quebec City, Canada and current president of the College Industry Council on Material Handling Education, is that the current approach to distribution modeling is too closed and limited.

There is lots of modeling going on in distribution, says Montreuil, by software vendors, hardware vendors, companies themselves – but the overall progress for the industry as a whole in terms of modeling is very slow.

“Modeling as we have done it up to now has to be reinvented,” says Montreuil, in a recent issue of the newsletter of the Material Handling Industry of America (MHIA), an industry trade association.

Montreuil outlines four needed actions:

- **Raise the level of DC modeling:** In other industries, modeling has been for a long time moving away from low level details to a high level of abstraction or perspective. For example, software

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has been moving away from a “lines of code” focus to one based on “objects” that encapsulate functionality. But the distribution industry is often still stuck at CAD-level drawings as the basis of DC models. That thinking needs to be elevated.

- **Develop building blocks:** Montreuil says almost all companies building DC models start from scratch, like “artisans.” The industry needs standards for developing re-usable definitions and objects, giving every one an important head start. Montreuil says that with a “limited set of protomodels, such as producers, assemblers, processors, distributors, fulfillers and transporters, one can describe most operational centers in the world.”
- **Open up:** After all the effort to create these

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models, developers tend to keep them to themselves like great secrets. A g a i n , Montreuil uses a software industry analogy, noting the impact that the open source movement has had on software progress. The industry should expect DC modeling efforts "to be rendered as open as much as possible so that we can all build on each others' shoulders, sharing our expertise and accomplishments," he says.

- **Long-lived models:** Montreuil says that too many models are developed to answer a specific question or for a new facility, and are then discarded. Consultants and vendors will develop a model for a client, but then "put it in the vault," after that, where it does nobody any good. "The model should be designed from the ground up knowing that the user will exploit it for projective throughput and reliability purposes, for analyzing and

improving controls or physical components," Montreuil says. "The model should make it easy to continuously feed it with up to date information, and for it to provide engineers, technicians and managers with an easy to use and powerful tool for multiple purposes during the system's life."



There is activity in several academic quarters to make progress on such ambitious goals, but clearly additional effort is needed.

"Modeling and simulation can add great value in some circumstances, but have been too difficult, slow and/or expensive for many companies to benefit from," says SCDigest Material Handling Editor Cliff Holste. "Montreuil offers some excellent advice on what it will take to change that situation, but how we get the industry behind these changes is a whole other question."