

WHITEPAPER

From virtual to reality

Warehouse simulation as best practice

Introduction

The challenge

Due to the rise in eCommerce, new customer channels and diversified products, warehouse operations have become increasingly dynamic. To plan ahead in this challenging environment, static spreadsheets and database entry are no longer viable options in forecasting intuitive and reliable outcomes.

Within a continuously changing environment, businesses need to evaluate and forecast warehouse layout configurations and operational processes quickly and accurately. The solution lies in software that proactively simulates the actual and predicted outcomes of warehouse design and operations.



“People weigh up the benefits and risks of different outcomes in their everyday life—playing out scenarios to find the optimal pathway in every situation.”

Sean Elliott

Chief Technology Officer, Infios

The solution

Warehouse simulation provides an intuitive user interface to help companies build virtual 2D and 3D “walk-through” visualizations of their entire warehouse operation, covering zones, people, aisle width, storage, marshalling areas, workstations and material handling equipment.

Supply chain operators can forecast operational process changes, and compare different scenarios. By testing designs ahead of a new-build, redesign or expansion plan, they can save significant costs and time.

Most significantly, warehouse simulation can guard against the potentially devastating result of human error—an all-too-real possibility of using a static spreadsheet model.

Every supply chain operator needs to answer one fundamental question—will this work? With warehouse simulation, you can understand and trust the results.



Warehouse simulation: a game changer



Computer simulations in themselves have been around for the past 25–30 years. Until more recently however, these generic applications required complex coding. Today, there are applications designed specifically for warehouse planning, which provide a scale model of your warehouse operations with complete user-friendly functionality. After inputting just a little data, intuitive software intelligence can highlight any internal and external warehouse issues that need to be addressed.

You gain an in-depth visualization of your ideal warehouse and yard operations, along with the automation you need to improve your throughput—from robotic stacking cranes and forklift trucks to conveyor systems and packing machines.

The three predominant scenarios for warehouse simulation are greenfield projects, brownfield projects and emerging change scenarios.

3PLs

For third-party logistics providers (3PLs), both in their ongoing operations and tendering for new projects simulation software produces clear and easy-to-understand multiple scenario planning, zoning and operational workflows, with speed, ease-of-use and brought to life by real-time automation processes.



Greenfield projects

This scenario is for companies that are planning and designing a new warehouse. Intelligent simulation provides the freedom to test different layouts, storage solutions, automation technologies, vehicle movements, gatehouse procedures and workforce requirements. It can also create a longer-term projection for future business expansion (evaluating physical capacity “breaking points”), as well as immediate goals.

In a greenfield scenario, a company may have more time to plan its longer-term strategy from scratch. In the brownfield scenario described below, there may be a more immediately pressing issue to solve.

Brownfield projects

In this scenario, a company is looking to add or change warehouses to accommodate new sales channels, or has a warehouse which no longer suits its purposes within a current configuration. Here, process improvement and the elimination of existing bottlenecks are key. These could be achieved through new automation technologies, rethinking the warehouse layout, extensions to the building, yard and loading bays (if physical warehouse area is restricted, this might involve introducing mezzanine-type extensions), or a combination of all these elements.

The key goal is to determine how each, and all, of these factors integrate to deliver the process improvements that the business needs.

Emerging change scenarios

Within growing supply chain dynamics, companies need to be able to anticipate change, alter their forecasts, design new picking strategies, and rethink their throughput processes and operational capabilities. “What-if” change scenarios equip them to map seasonal peaks and manage proliferating stock-keeping units (SKUs), next-day delivery schedules and returns capabilities.

Through warehouse simulation, organizations can do all of these things, then plan the processes and people to take their business forward.

Critical success factors

There are some predominant factors in a successful warehouse simulation implementation:

- To gain a full picture of how your operations will run through the entire process, it is critical to model the entire area through the warehouse, exterior yard space, loading/offloading bays and surrounding road systems. Only in this way can you build an accurate chain of throughput processes and change planning.
- The more data you already have, the better you can build an accurate representation of what is currently happening. You can then change the model to see the full potential of how it will look in the future. With minimal user input, good warehouse simulation software will allow you to test, learn from and retest your plan against different scenarios, including manpower forecasts.
- The right solution not only provides you with a detailed picture of what your operations will look like. It has the performance metrics to drill down on the details of any operation or operative at any point in time. In this way, you can identify particular strengths or bottlenecks within the overall process. It will also enable you to play different “what-if” scenarios simply and minimal time investment.



“Companies often don’t appreciate how straightforward and effective it is to build robust simulation models, then revisit them over the change lifecycle of their operations.”

Simon Shore

Supply Chain Optimization & Simulation—
Warehouse Layout & Design

The future of warehouse simulation

As supply chain dynamics become more complex, static spreadsheet models—and the time they take to produce them—are no longer an option for companies keen to avoid the costly mistakes of inaccurate data.

Moving forward, intuitive warehouse simulation will ensure that the data and the forecasts that companies receive are both accurate and relevant to their current and future business needs.

Warehouse simulation is increasingly emerging as a key decision-making tool to provide supply chain organizations the agility they need to change within an increasingly volatile business environment.

Reaping the benefits of the virtual supply chain

Warehouse simulation is more than just a planning exercise. You can adjust options to see what is actually going to happen—the interrelationships of different workflows, turning radiuses and characteristics of equipment, the profile of different products over time, and how many people you need for the operation.

Why Infios?

Infios has over twenty years' experience providing warehouse simulation solutions tailored towards each of our clients. Companies including DHL, Waitrose & Partners, Co-operative Group and Palletforce Ltd have all relied on us to provide solutions to address their particular operational issues through 3D visualizations. Our strengths lie in:

- Our global presence, which ensures you have local support wherever you are located.
- Our warehouse simulation models, which consider long-term scenarios, taking into account every aspect of your operations, then provide the thorough data and recommendations to help you make informed decisions and secure the future of your business.
- Our technology, that is widely compatible with your key host systems and provides an interface to import your existing CAD systems.
- Our service provision, that gives you the flexibility to run the software independently (should you choose) with our complete training support—or for us to manage and implement the entire project in close consultation with your operational teams.
- Our solutions, which are tailored for every company size, sector and case-use. They are completely scalable to different degrees of complexity, allowing you to keep aligned with the changing needs of the business.

At a glance

- Clear 3D visualization of your operations from A to Z
- Eliminates the potential design failures of spreadsheet analysis
- Huge time and cost savings in warehouse modelling
- Provides a holistic picture of building, yard and perimeter roads
- Longer-term change and investment models
- Risk mitigation through reliable data

CONCLUSION

Whether designing a new warehouse facility, rethinking an existing premises or exploring change scenarios, the costs of getting it wrong—both in monetary and operational terms—are potentially devastating and something supply chain operators simply cannot afford.

Warehouse simulation ensures that you can get a complete picture of the way your current operations run and how they could look against different scenarios. Organizations such as retailers or 3PLs need to gear their facilities towards the ultra-efficiency levels that only warehouse simulation planning can provide.

In terms of size, the larger the operation the greater the cost benefits of simulation modelling, but there are no boundaries. For any organization within the supply chain that wants to explore how they can get the best efficiency and return from their operations, warehouse simulation is the way forward.

Infios prides itself on being a long-term partner for our clients, and as your business dynamics change, we are on hand to support your emerging needs.

See how Infios's warehouse simulation can help your business:

[FIND OUT MORE](#)