SimPlan Newsletter

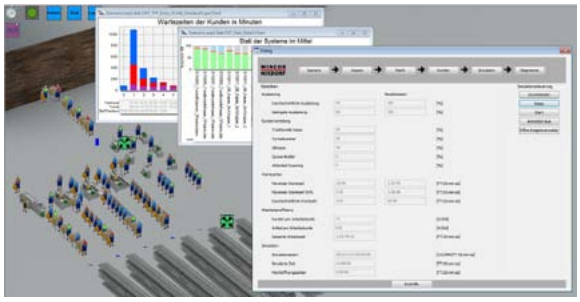
March 2014

News from the world of simulation

Simulation in practice

SimPlan and Wincor Nixdorf Retail Consulting help retailers optimize checkout planning

Wincor Nixdorf Retail Consulting and SimPlan AG have developed a checkout simulation tool in a six-month joint project. The collaboration, which was commissioned by a leading German retail company, had the goal to represent the flow of customers in the checkout area of supermarkets as realistically as possible in a simulation program and to thus gain insights into waiting times, checkout capacity utilization and further ratios.



Changing various parameters, for example using different checkout systems or adjusting customer types and preferences, allows making reliable forecasts of customer waiting times.

With the help of a variety of experiments, checkout scenarios were developed that optimally support the retailer's corporate strategy with regard to store sizes and locations, and managed to decrease waiting times for customers, in some cases drastically.

The simulation tool offers its users an operative as well as strategic instrument to plan optimal checkout areas.

With the wide variety of checkout technologies available, the tool greatly reduces the complexity of the decision which of them to implement.

The tool makes clear recommendations about the ideal number of checkouts and the most suitable technology to be used. It offers a wide range of traditional checkout-types to choose from with one or up to four pack recesses, as well as self-service checkouts or even fully automatic scanning systems.

The risk of expensive and complex pilot studies with unsuitable checkout technologies is greatly reduced. Due to real transaction data, process times and customer types, the simulation tool's user is very close to the real requirements and effortlessly gets meaningful results for store planning.

Software Trainings

We offer different training courses in several of our offices in Germany. If you are interested in a training at your company please ask for an individual offer.

Software training courses

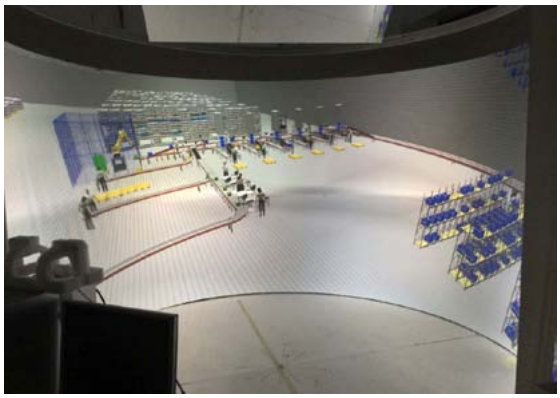
- Plant Simulation
- Enterprise Dynamics
- SimView
- AutoMod
- Simul8
- Demo3D

➔ More information and contact

Solution Partner PLM SIEMENS

Virtual Factory Planning in the 3D-CAVE

The demands on factory and production planning are ever-changing; one trend with massive influence on the planning environment is that product lifecycles are shortening. Consequently, planning cycles need to be reduced as well. At the same time, planning needs to be increasingly flexible regarding variations and scalability of the systems.



The research project „VIFA3D – Virtuelle Fabrikplanung in der 3D-CAVE" (VIFA3D - Virtual Factory Planning in the 3D-CAVE) developed a solution that can support the planning process. The project combined the concept of virtualisation in the 3D-CAVE with material flow simulation in production and logistics systems and thereby created a planning and communication tool.

Independently of each other, the two technologies used already offer enormous advantages for the planning process. The 3D-CAVE facilitates the realistic representation of complex systems, so that they can be easily understood even by people without any planning background. Moving within the 3D environment and exploring the planning concept this way allows comprehensive conception and thereby a high level of identification with the planned system.

Using simulation, influences and risks resulting from connecting the system's components can be discussed and evaluated. Through this, a level of system knowledge can be reached that would be impossible with static planning methods.

The combination of the two technologies increases their positive effects. The 3D-CAVE allows the user to depict complex layouts with several connected layers. This makes the system analysis with simulation for this type of system much easier. Simulation on the other hand can show a system in motion, which brings the usually static 3D-CAVE to life.

During the project, existing standard software was used as much as possible to be able to work in the ecosystems of planning as much as possible without inefficiencies. The simulation was done using the tool Sim3D, the representation is based on Nvidia drivers and uses the software packages „Immersive Display Pro" and „Calibration Pro" Fly-Elise N.G.

These pre-existing applications were expanded with some custom components so that the two technologies could be integrated. Apart from connecting the applications, further functions were added:

- The user input can be done entirely via Xbox-360 controller
- The input options are presented in an interactive menu
- The communication of the application packages happens largely through network protocols, which makes adding and switching components easy

This solution enables users to build and edit simulation models within the 3D-CAVE using an XBox-360 controller. Therefore a user can for instance build a first version of the model within the CAVE, then continue modeling conventionally at a computer and eventually finish the simulation model in the 3D-CAVE.

The users can move freely in the simulation model and have a 250° panoramic view, which facilitates the mental immersion into the system. In the prototype, up to six people fit into the CAVE at the same time. However, the concept could be extended to allow for more users.

The simulation can be started, stopped and even changed directly from within the 3D-CAVE. Bottlenecks or features of the planning concept can be ideally presented like this and become easily understandable.

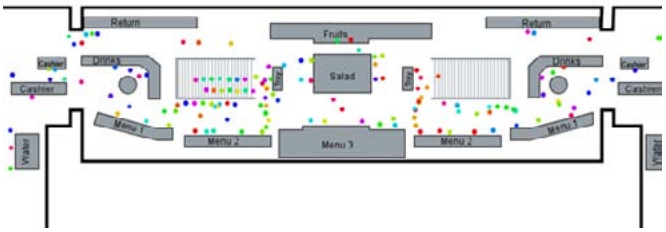
Drees & Sommer uses pedestrian simulation to test the feasibility of renovation concepts

Drees & Sommer, a project management and consulting company based in Stuttgart, accompanied the planning of a staff restaurant with the simulation tool AnyLogic, using computer simulation and live tests.

As part of a plant site expansion, an existing staff restaurant currently laid out for 3.000 guests was to be modernised and adapted for larger numbers of customers. Drees & Sommer supported the planning process by simulating, analyzing and optimizing different renovation concepts.

Development of alternatives that accommodate several criteria:

- Avoiding overcapacities and too large areas
- No extensive queues, crowding or bottlenecks
- Sufficient buffets, checkouts and seats
- Logical and easy-to-see pathways
- Planning for possible crisis situations and developing emergency plans



With the help of pedestrian simulation, the behavior of thousands of guests was modelled, analysed and influenced dynamically in different planning scenarios. Every one of the simulated guests (called "agents") adheres to predefined parameters and, like real people, finds its way through the building.

This way, the different simulation alternatives can be compared quickly and easily. The effects of changes in service times, the number of service points and the layout of pathways become immediately apparent. For example, if the number of arriving guests exceeds the cycle times of the service points, queues form and indicate that planning needs to be optimized for this area. Drees & Sommer used this as a first step to reduce the number of planning alternatives.

Added reliability with live tests

The remaining alternatives where tested by replicating the simulation results in live tests. Here, the future floor plans and room layouts were imitated and around 35 people re-enacted the bottlenecks of each scenario. This improves the evaluation of people density, space utilization and customer well-being.

Minimal effort and costs

For the client, the additional costs of the simulation study were minimal and results were always presented on time.The result was an optimized planning alternative, which allows a smooth pedestrian flow and avoids long waiting times. Future bottlenecks were recognized and eliminated, space utilization was improved and customer flow in the staff restaurant optimized.

Simulation tools

Web application SimChain - modelling and analysis of supply chains

Supply chain simulation is a reliable tool for analyzing the dynamic behavior of complex value streams.

Based on the Siemens PLM software Plant Simulation, SimPlan developed the SCM solution SimChain, which has been in use for years and is now available as a web application.

Everyone from the field of SCM who is interested in trying out SimChian free of charge can request trial access on the SimChain homepage:

➜ www.simchain.net

AnyLogic 7 Software Release

The AnyLogic Company has announced the release of the new version of its product – AnyLogic 7. The developers say this release is a big step forward in product development, and now working in AnyLogic has become easier and faster. The new version also boasts expended functionality.

AnyLogic is a cross-platform general-purpose simulation modeling software. The unique feature of the product is its ability to build simulations with three modeling methods, including agent based modeling, discrete event modeling, and system dynamics. This allows the users to build models using several methods at once and choose abstraction levels. Models' functionalities can be unlimitedly broadened with Java code, which allows for simulation of systems of any complexity and scale. AnyLogic 7 is the most significant product release in 6 years.

The new version features enhanced support for multimethod modeling, which is the characteristic feature of the software. The developers have simplified the process of creation of multimethod models by unifying concepts from different methods. Also, creation of agent based models has now become easier: now it is often enough to use specially designed wizards instead of writing of Java code.

The new Process Modeling Library is one of the most significant updates in AnyLogic 7. Among other things, it extends modelers' capabilities for manufacturing simulation by supporting "pull" entity flow protocol together with traditional "push" protocol. Also, the new library allows for easier simulation of business processes with comprehensive resource policies, e.g. staff management in a hospital.

The Pedestrian Library designed for simulation of pedestrian flows in public buildings and transport objects has also been vastly improved, as now users can simulate movements of more people without impacting model performance. The new Space Markup palette also makes it easier to work with transportation networks and pedestrian areas. Another thing that will make working process easier for those users who build spatial model is that in the new version all the objects interact in the unified 3D space.

All AnyLogic 6 models will continue to compile and run in AnyLogic 7. The software will support smooth transition to the new features by offering the users to convert old model elements into the new ones.

The AnyLogic Company is an international company based in the US and Europe. AnyLogic is used for system simulation in more than 600 companies and 1200 universities worldwide. The most common application areas of the software are logistics, supply chains, manufacturing, healthcare, pedestrian area planning, market and social process research.

AnyLogic Live-Demo & Training Day

See the new features of AnyLogic 7 live on March 24th 2014! Meet AnyLogic head of training services Ilya Grigoryev, find out how to use AnyLogic 7 most efficiently and share your experience with other AnyLogic users.

Information & Registration:
➜ www.simplan.de/Training-AnyLogic

A trial version of AnyLogic 7 is available for download here:
➜ www.anylogic.com

Dates

19.-23. May 2014: CeMAT 2014 in Hannover (Germany)
The world's leading fair for intralogistics

Visit SimPlan **at stand D67, hall 13**.

➜ To the CeMAT homepage
➜ Register for a guest ticket

SimPlan news

Reorganisation of the SimPlan management board

On 31st December 2013, Dirk Wortmann, founding member, shareholder and board member from the very start of the company, left the SimPlan AG management board at his own request. Nevertheless, he will still steer the course of SimPlan's Chinese subsidiary and will remain with the company in an advisory capacity.

Dr. Harry Kestenbaum and Dr. Ulrich Burges have been appointed to the management board. Both are long-standing employees of the simulation service company. Dr. Kestenbaum has taken on the resorts sales and marketing. Dr. Burges' responsibilities on the board include project management and IT. In the course of the reorganization, Dr. Sven Spieckermann, the second member of the original SimPlan management board and responsible for finance, was appointed as CEO. With the expansion of the management board, SimPlan meets the increasing management demands of a growing company.

"We are well-positioned to face the challenges of the coming years. Our focus will remain on growth. Apart from expanding our range of products, we also want to offer our customers further advantages in the scope and speed of our services while maintaining our high project quality. This also necessitates re-thinking our structures and processes." Dr. Sven Spieckermann commented on the management board reorganisation.

Picture: the two new SimPlan board members: (from left) Dr. Ulrich Burges, Dr. Harry Kestenbaum

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