DATA LIGHTHOUSE
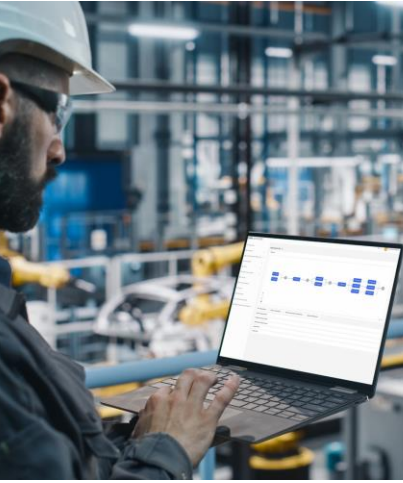
THE FUTURE OF SUPPLY CHAIN OPTIMIZATION

There are **four big challenges** for an optimal production plan.

**We solved them.**

Check out how.

1 Uncertainty in the production process

While Software like SAP APO has been a popular choice for many companies, it does have some limitations that affects its performance. The results of the linear programming algorithm are highly dependent on the input data, and small variations in input data leads to significant changes in the solution. This means that when there is a drift between the input data and reality, it results in low accuracy of the planning process, making it unreliable in situations where the input data is uncertain or inaccurate. The significant disadvantage is limited capabilities in risk calculation. Especially when it comes to complex and dynamic problems when making planning decisions.

Generic advanced planning and scheduling systems aim to increase the accuracy of future predictions using refined data and mathematical models. The resulting calculations are based on simple assumptions, including the mean manufacturing time per part, which are affected by factors such as raw material changes, machine status, and manufacturing data like temperature etc.

For example, the cycle time is not always the same and is usually distributed in a non-normal way, which is caused by problems in the production process.

Common cycle time distribution histogram
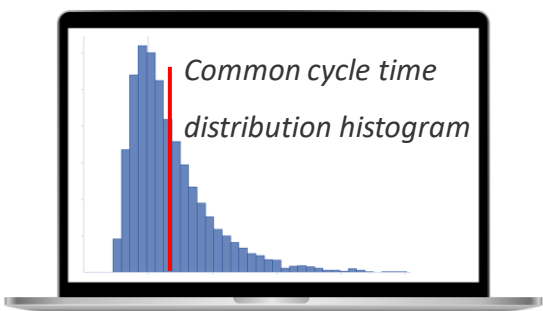
Such planning systems can reduce the gap between planned and actual values, but only for standard behaviors. In a large value stream, it is unlikely that all processes will run as expected.
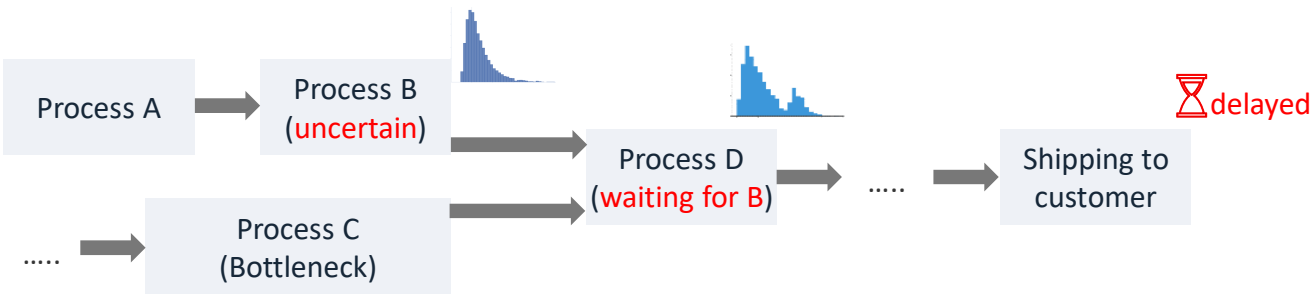
Our planning software is capable of advanced risk calculation and can therefore predict and mitigate complex and dynamic problems. It uses stochastic optimization on top of discrete simulation, accounting for uncertainties by modeling them probabilistically. This allows your business to make informed decisions that consider the likelihood and impact of different scenarios.

As a result, our created plans are already more robust and produce less waste than plans created with linear programming approaches.

2 Continuously modeling reality

Lean manufacturing reduces the need for planning by systematically controlling the production environment, but this only partially solve the problems of shopfloor control in the long run. Synergy effects can only be realized when planning ahead. To do so, planning systems often come at the cost of maintaining and acquiring data which is usually not automated.

Therefore, our software is integrated in the data gathering process for all production related procedures. This allows us to continuously test and enhance our models against the real-world process behavior to achieve a higher model accuracy for better planning results.

Bringing the models of all production and logistics processes together in one supply chain model, allows end-to-end discrete event simulation including uncertainty and risk factors. This is the basis for our optimization technology.

These models can be tested and evaluated to build objective trust in organizations.

3 Real-time integration for short term changes

Continuously receiving data from the ongoing operations processes allows us to automatically determine if the current deviation between the operations and the planned scenario causes the need to automatically recalculate the plan. If necessary, the plan will be automatically updated and distributed to the operations.

A continuous learning process through direct data integration from shopfloor sensor data is important for several reasons like

1. Real-time insights
2. Improved
3. Increased productivity
4. Enhanced quality control
5. Continuous improvement

3
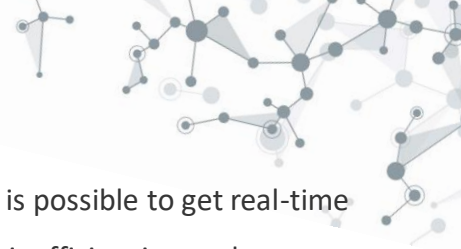
By integrating shopfloor sensor data directly into the learning process, it is possible to get real-time insights into the manufacturing process. This helps to identify issues and inefficiencies as they occur, allowing for rapid intervention to prevent or minimize negative impacts.

Direct data integration enables decision-makers to make more informed decisions. With access to real-time data, we can quickly identify trends and patterns, enabling you to adjust production schedules and make operational decisions based on actual production performance.

By monitoring shopfloor sensor data in real-time and using it to optimize production, it is possible to increase your productivity by identifying bottlenecks in the production process and making changes to improve throughput.

Direct data integration improves quality control by identifying issues as they occur. This enables operators to take corrective action quickly, reducing the risk of defects and improving your overall product quality.

By continuously monitoring and learning from shopfloor sensor data, it is possible to identify areas for improvement and implement changes to optimize production processes. This drives continuous improvement and increases efficiency over time.

Our direct data integration from shopfloor sensor data is essential for effective decision-making and process optimization in manufacturing and process industry, enabling your organization to improve productivity, quality, and overall performance.

Simulation is important for integrated planning optimization because it provides a way to evaluate the performance of different planning scenarios before implementing them in real life. By simulating the production processes using discrete simulation, it becomes possible to model the system and observe how it behaves under different conditions.

This allows decision-makers to test different solutions and plans and evaluate their impact on different parameters, such as production capacity, lead time, inventory levels, and cost. Simulation also enables planners to identify bottlenecks, optimize resource allocation, and improve efficiency, without disrupting the actual production process.

A simulation identifies potential issues and inefficiencies in the system, allowing planners to adjust and refine the planning process accordingly. This leads to more informed decisions and more effective planning strategies, as planners are able to test various scenarios and evaluate the impact of each one before making any changes.

In summary, our simulation provides a powerful tool for integrated planning optimization by allowing planners to test different planning scenarios, identify potential issues and inefficiencies, and make more informed decisions based on the simulation results of multiple uncertain input values. A discrete simulation of all production processes allows to decide about plans by parameter fitting to your company strategy.
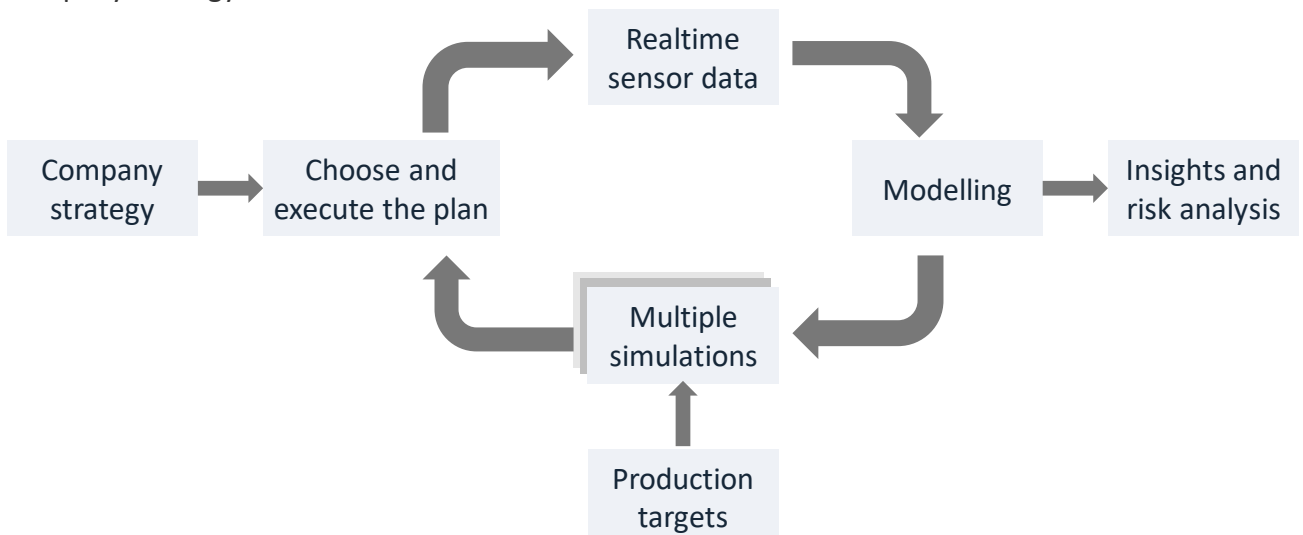
💡 About Data Lighthouse

Data Lighthouse is dedicated to creating autonomously acting supply chain management tools that can make independent decisions and take action, revolutionizing the way businesses operate their supply chains.
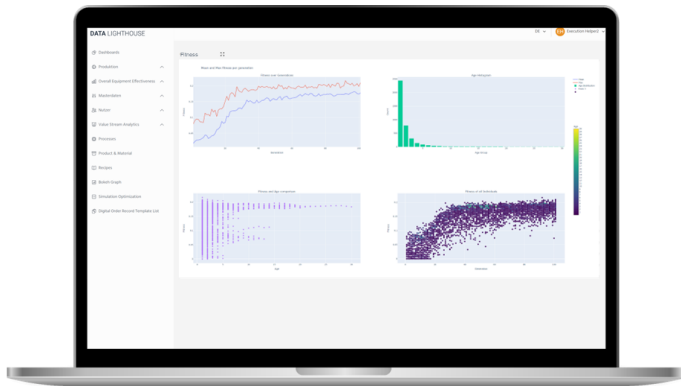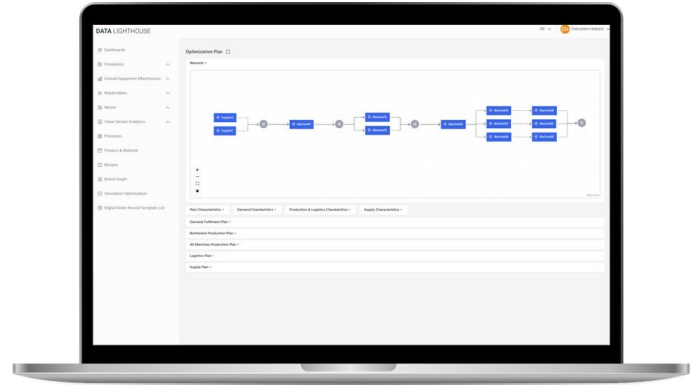
Creating innovative software since 2021, we are working with some of the biggest players in their respective field.

✉ contact@data-lighthouse.com

🌐 www.data-lighthouse.com