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HOW TO UTILIZE DATA

to stay competitive

The next level of warehouse automation



Introduction to
a data-driven future



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A fully self-managed warehouse



Summary:
The data-driven future is now



Introduction to a **data-driven future**

Warehouse automation has come a long way from its humble beginnings in 1913 when Henry Ford introduced the moving assembly line, an early solution for material handling automation. Today, you can optimize your warehouse performance by utilizing a data-driven, fully connected software ecosystem.

Unlocking data and taking advantage of the newest technology is proven to increase your accuracy and productivity. And, by utilizing a fully connected software ecosystem, you can achieve a complete warehouse solution that maximizes warehouse automation, thereby increasing warehouse productivity.

In the last couple of years, adapting to new technology has become even more critical as customer demands increase and your competitors become faster and more efficient. On top of that, many of our customers report increased difficulties related to recruiting reliable labor.

At Element Logic, we want to take warehouse automation one step further by allowing our software to use artificial intelligence to optimize all warehouse functions. To achieve this, we will enable you to combine data from various automated systems and software. Benefits include better staff and resource planning. The goal is to work smarter, not harder.

We have always valued the power of data. In 1985, we collected data from pedometers worn by warehouse workers to understand how we could optimize the warehouse layout to improve working conditions and provide our customers with the highest possible order throughput. Utilizing data to optimize warehouse performance is a tradition we continue to build on, and this is reflected in the launch of our data

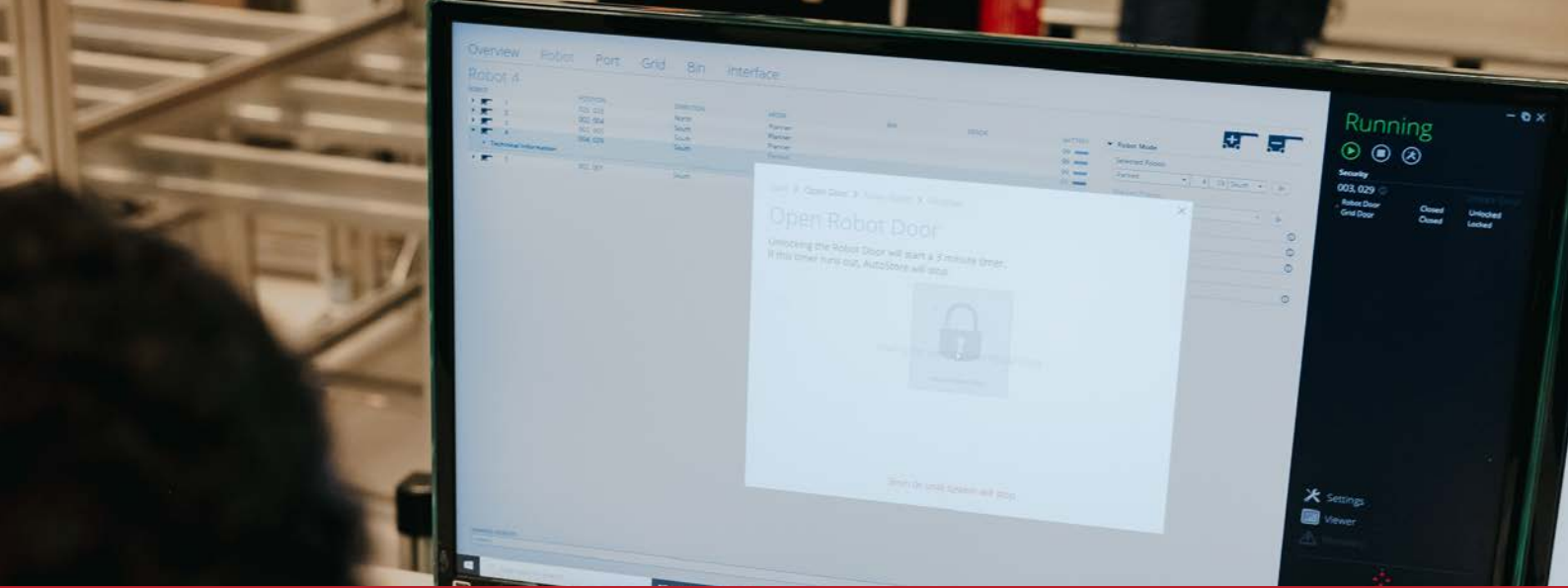
platform, eLogiq. The data platform unlocks valuable data from multiple sources to give you insights, analyzes, and predictions when optimizing your warehouse operations.

Being able to provide you with a fully connected, data-driven software ecosystem has been our dream since 1985. And it is finally possible.

This whitepaper will describe to you how software and data can enable you to optimize your warehouse operations and stay competitive with constantly increasing customer demands.



Sutharshan Nadarajah
Technology Director
Element Logic



Current challenges within intralogistics

Today, customers expect to receive orders within hours of placing them. They demand delivery updates on when it is expected to arrive, and they have little tolerance for errors and poor customer service.

The massive growth in eCommerce during the pandemic, combined with ever-increasing globalization, are significant reasons why customer demands are increasing. Consumers have never had more choices available to them than they have today. They browse from the comfort of their homes and can buy from companies all over the world. They know what they want – and they want it now.

The constant race to meet customer expectations on a global scale is not only about competitive pricing. Service and delivery need to be impeccable, which

requires you to utilize all available resources to keep up with your competitors. “Yet, most warehouses do not utilize their most valuable resource – data. And data is gold,” Sutharshan Nadarajah summarizes.

Nadarajah is the Technology Director at Element Logic. He and his Software Research and Development team have worked tirelessly over the last few years alongside Microsoft to develop a complete software ecosystem that unlocks valuable data from its silos and combines it so you can create a data-driven, optimized warehouse.

While warehouse automation is the first step towards staying competitive in today's market, a data-driven, automated warehouse

is the next step to secure your competitive edge today and tomorrow.



Our software ecosystem consists of the following in-house developed systems

eLogiq

Data platform that collects, integrates, and processes data from multiple sources. It provides you with valuable warehouse performance insights, analysis, and predictions. By combining data from multiple sources, we empower you to avoid negative trends, view benchmarking, and tweak processes so you can optimize your warehouse and stay competitive.

eManager

The brain of AutoStore. eManager is our warehouse execution, management, and control system for AutoStore. eManager optimizes and manages AutoStore warehouse performance from goods receipt to outbound processes and enables you to maximize the efficiency of your AutoStore warehouse processes, boost productivity, reduce costs, and improve end-customer satisfaction.

eController

The software toolbox for simulating automated warehouse workflows and integrating automated equipment, including conveyor systems, box erectors, packing machines, and more. eController offers you extended control of the movement of goods and orders throughout your warehouse.

eOperator

Our robotic piece-picking technology runs on our software eOperator. The robotic arm integrates with AutoStore and handles orders automatically. By incorporating eOperator into your warehouse operations, you can achieve secure and accurate picking, cost-effective labor, and a streamlined supply chain with a high level of profitability and fast ROI.



PART II

The “know” in “know-how”





Valuable data and where to find it

Data is gold, but where should you dig to find it? “The most valuable warehouse data is found in various software solutions itself,” Nadarajah explains.

This data includes:

- Daily, weekly, monthly, and yearly order peaks
- Popular products at different times throughout the day
- Technical data about robots and other hardware
- Picking speed
- Historical order data
- Maintenance data

You can use a single data platform across your organization by combining your unique warehouse data with third-party data. This prevents data silos and provides you with a holistic view of your warehouse operations, enabling you to stay competitive in your industry.

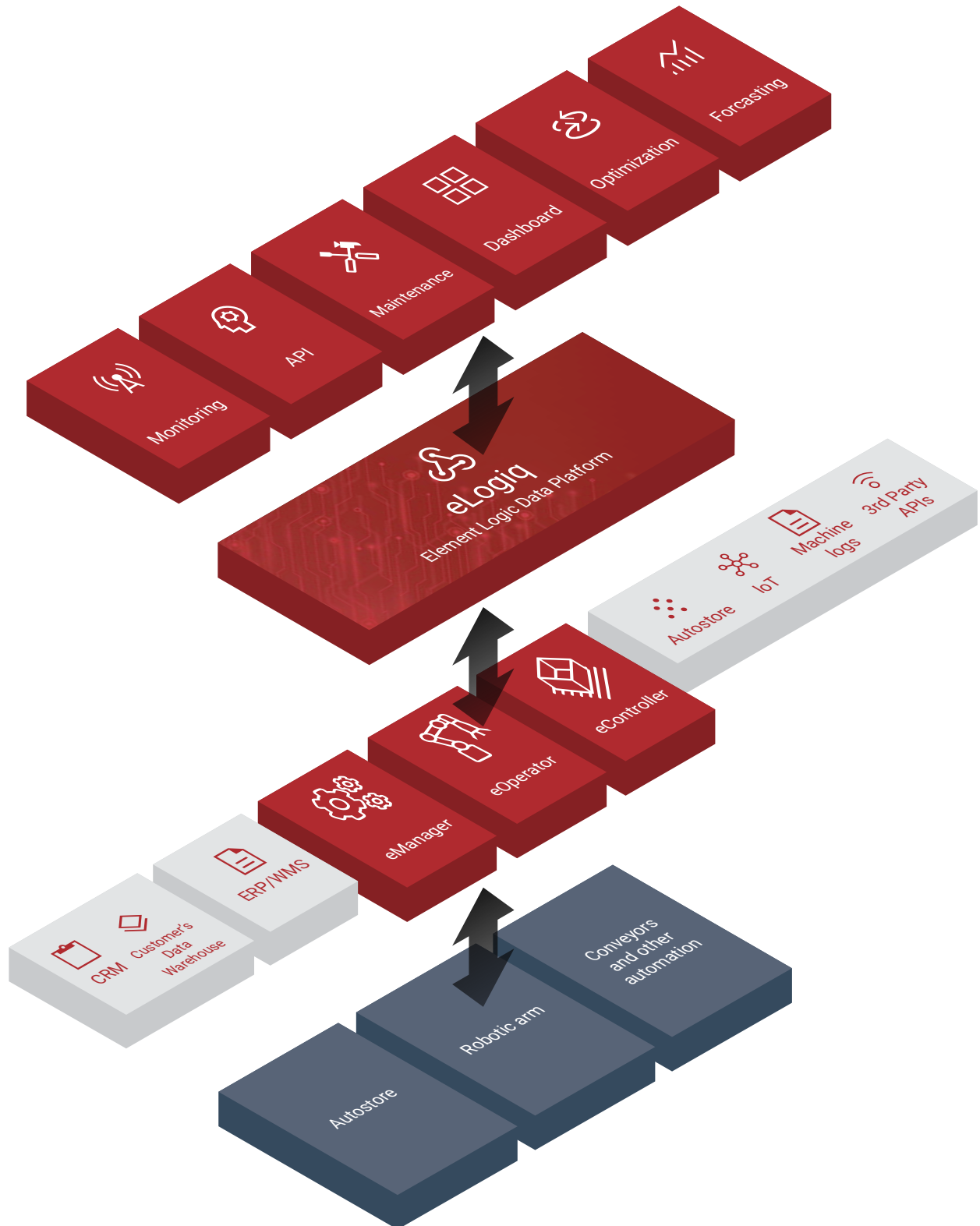
Unlocking data from its current silos can improve your warehouse performance by allowing you to:


- Keep track of ROI and KPIs
- Get data-driven recommendations on workflows
- Identify the best processes
- Facilitate aftermarket operations
- Develop simulation capabilities, such as digital twins, to test new strategies before implementing

Historically, data has mainly been used to create limited, static reports describing what has already happened in your warehouse. By integrating real-time data from multiple sources, you can use the data to predict what will happen, empowering you to plan accordingly.

This shift means that instead of utilizing data for time-consuming manual processes that provide limited insights, you can gain access to data-based actionable insights.

“The reporting era is finally history. Now we can utilize the full potential of data,” Nadarajah says.



 Bins picked today

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Six golden rules for choosing the right warehouse software

It is no secret that software and data utilization can improve warehouse efficiency and accuracy. What matters most is that you invest in warehouse software that solves real challenges you face, increases your revenue, and optimizes your warehouse performance.

Keep the following in mind when choosing the right software solution for your warehouse:

#1 – User-centric

Software is user-centric when it is user-friendly, intuitive, and accessible. This is achieved when the software developers work closely with the actual users to understand user pain-points and incorporate user feedback during the software development process. The goal is software that is “plug-and-play” and doesn’t require a user manual.

#2 – Standard and scalable

Software solutions must be standardized to be useful and affordable for a wide range

of customers. If user-defined functions are required that are also important for other customers, they are integrated into the standard. This means that functionalities are constantly being expanded.

#3 – Modular

Software solutions with modular elements allow you to pick and choose the modules and functionalities you need. This means you end up with a solution that reflects exactly what you need.

#4 – Seamless experience

To get a fully interconnected warehouse solution, you need to be able to easily integrate the software with existing external systems. This way, you can operate your entire hardware fleet from a central software system with one interface for all tasks, saving you time and resources.

#5 – Tech-first and first mover

The software technology must be based on leading-edge technology. This makes maintenance and further development more manageable. It must also easily integrate

with new technology when available to continue to provide even more value to customers. By leveraging the strength of available technology and frameworks, you can focus on optimizing your business.

#6 – Value and data-driven

The software needs to provide valuable insights for the users and for itself. Intelligent software tells warehouse workers which tasks they should prioritize, while also leveraging data to develop new ways to increase warehouse automation.



PART III

The “how” in “know-how”





How to capitalize on data and software opportunities

Data and cloud technology have improved our society in several ways and laid the groundwork for organizations to perform even better in the future.

To stay viable in today's market, businesses need to be good at predicting what's next and they need to be able to react in real-time. Businesses with the ability to adapt fast and analyze the newest and most reliable information will succeed and outperform their competitors.

Over the last few years, we have seen great examples of companies that dominate their industry by harnessing the power of data to make game-changing decisions.

Here are a few examples to inspire you:

Google

Google understands how to utilize data to analyze employee performance reviews and

feedback surveys to create a list of data-driven insights into what its employees value. The actions Google took based on this insight improved the performance of its lowest performing managers by an astonishing 75 percent.

With data, you can better understand your workforce, and you can be in a better position to retain high-performing employees.

Uber

Based on predictive data analytics, Uber analyzes historical data and key metrics such as the number of ride requests in a set place at a specific time. The analytics give insights that allow Uber to inform its drivers in advance of possible bottlenecks and thus capitalize on the demand increase.



Companies that can identify trends and effectively position their business accordingly will come out on top in a competitive industry.

Netflix

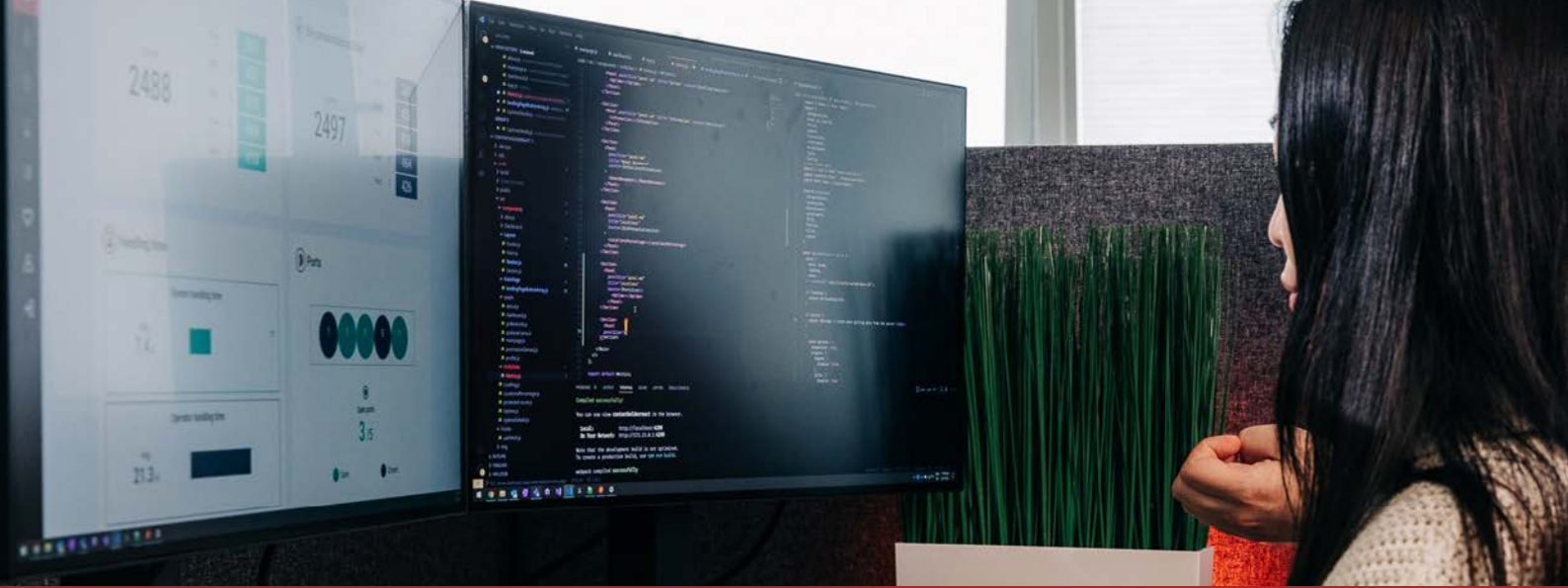
Another company utilizing predictive analytics to win customers is the streaming platform Netflix. By analyzing over 30 million “plays”, four million subscriber ratings, and three million searches on the platform each day, the company used predictive analytics to predict the success of new releases like “House of Cards” and “Arrested Development”.

There is no doubt that behavioral data has a lot of hidden gold when determining the success of a new product or solution.

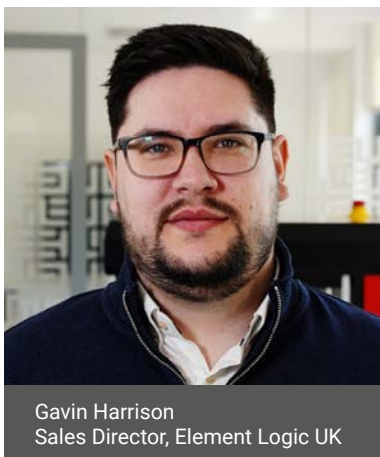
Cognite

The Cognite data platform has successfully made data instantly available for oil and gas customers. Armed with augmented reality and digital twin virtual models that accurately reflect a physical object, on-site workers can be assisted remotely with planning and execution.

“We aim for our software ecosystem to transform the intralogistics industry the same way Cognite revolutionized the oil and gas industry,” Nadarajah says.



How data-driven warehouses work



Gavin Harrison
Sales Director, Element Logic UK

“The future is data-driven. No matter which industry you operate in, the sooner you start collecting and utilizing data to make business decisions, the sooner you’ll win more customers and stay competitive,” Gavin Harrison advises.

Harrison is the Sales Director at Element Logic UK. He has experienced first-hand how new technology and increased customer demands have dramatically changed intralogistics in recent years.

“You cannot ignore what your customers expect. Those who deliver just one bad experience risk losing customers immediately,” he explains.

Data can increase your performance in several ways. When used correctly, it can provide you with actionable insights related to capacity planning, predictive maintenance, transportation planning, and keeping your employees motivated via gamification.

#1 – Capacity planning

When you unleash the power of data, the software can automatically inform warehouse workers what

they should be doing at any given time to ensure that your warehouse always runs optimally. For example, the data may indicate that more assistance is needed at the loading dock. The software can then send a request to warehouse personnel to leave their picking port to assist at the loading dock.

This technology allows you to plan and allocate your resources in the most intelligent way possible. The software can predict your needs regarding employees, goods, and robots in advance, ensuring that you only pay for what you need for continuous operation.

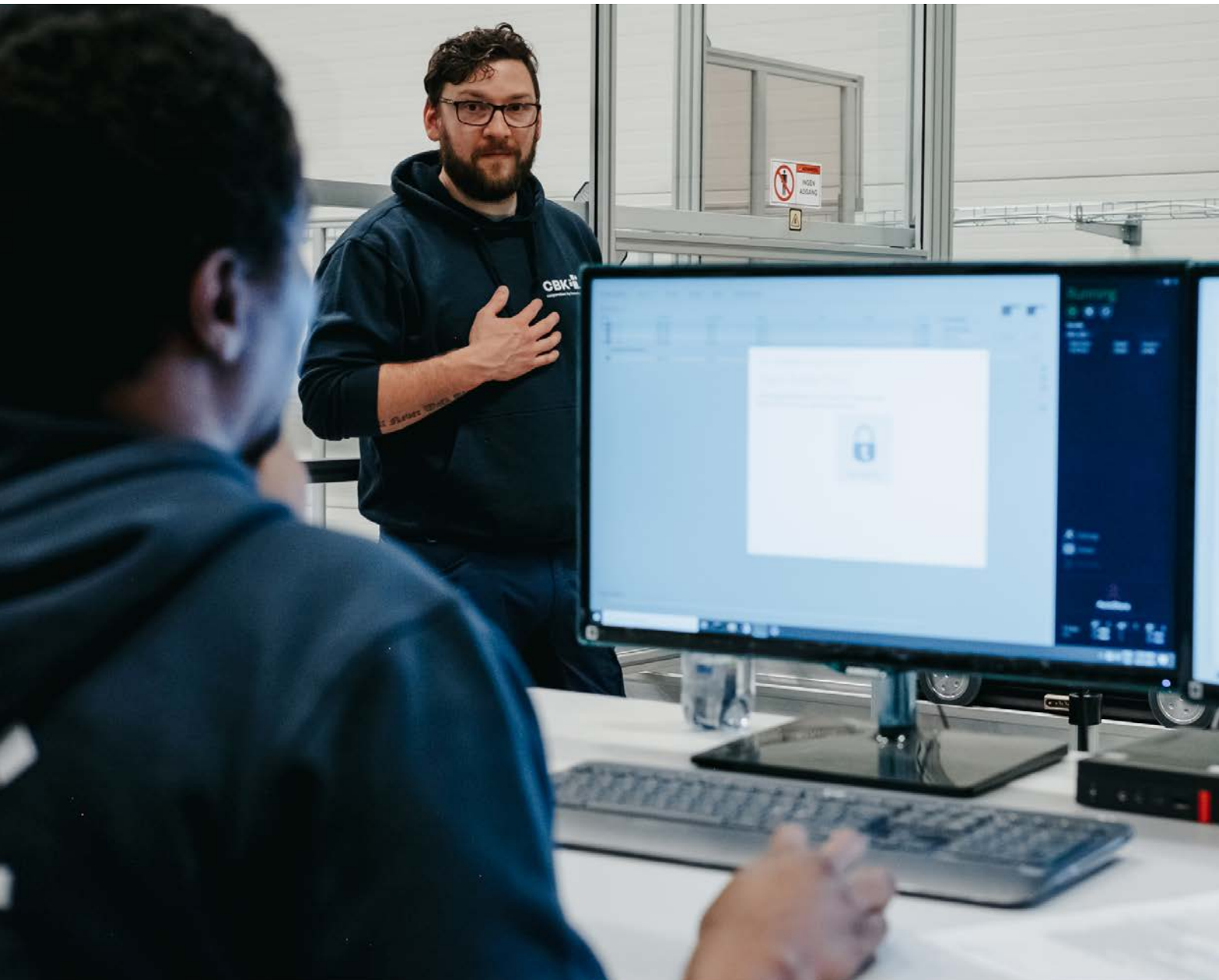
You will also be reminded that seasonal peaks like Black Friday or Christmas are approaching and be given suggestions on temporary extensions to handle the extra pressure.

#2 – Simulations

Make sure your changes to warehouse operations give the desired result by using data-driven software to create digital twins. This way, you can evaluate various scenario simulations before investing in development.

#3 – Predictive maintenance

Predictive maintenance allows you to say goodbye to unwanted surprises caused by





warehouse automation issues. You will be notified in advance when your warehouse automation systems need proactive maintenance before problems arise. This results in a higher degree of up-time for automated equipment and consistently high warehouse through-put.

#4 – Transportation plans

Data-driven software provides intelligent operations also outside your warehouse as a part of the supply chain. The data insights facilitate smart transportation and logistics decisions for goods handling.

#5 – Gamification

If you want to motivate your employees and build a sustainable work culture that people want to be part of. Gamification of tasks could be the way to go.

With data-driven software, you can set up various competitions for your employees to make work more fun. The options are endless, but one example could be “Who can pick the most orders from a port in the whole month of January?”. This kind of friendly competition can boost morale and create a motivating work environment.

Is cloud technology safe?

eLogiq, our data platform that allows our customers to fully utilize the power of combining warehouse data from multiple sources, runs on Microsoft Azure cloud technology.

Microsoft is at the frontline of its industry. Element Logic initiated a partnership with the technology giant to develop data-driven warehouse optimization solutions based on Azure cloud and data processing technology.

Microsoft has the most prominent cloud technology experts in the world. By utilizing Microsoft Azure technology, we thereby gain access to thousands of experts who are continuously monitoring and optimizing the security and technology of our data platform.

“In the cloud we get computing resources when we need it and can thus scale up on an hourly basis if customers need extra capacity in peak periods. We can also onboard new customers fast and deliver new features and fix potential bugs several times a day if needed,” Lukas Bach explains. Lukas is the head of Data Science at Element Logic.



Lukas Bach
Head of Data Science, Element Logic





One step further: A fully self-managed automated warehouse

Combining real-time data from multiple sources and utilizing big data and artificial intelligence will enable you to achieve a fully self-managed automated warehouse, which will maximize and future-proof the efficiency of your warehouse operations.

“Our vision is to enable our customers to have self-managed warehouses by 2030,” Technology Director Nadarajah states.

In a self-managed warehouse, you will have a data platform that can control all your software systems and automated equipment and manage your warehouse processes.

A self-managed warehouse frees up even more time and resources than a standard automated warehouse does today. Instead of having your staff perform «boring»,

repetitive tasks, they can oversee warehouse operations and work with automation technology management. This has proven an increase in job satisfaction due to fewer repetitive and physically demanding tasks.

“Warehouse workers will not need any additional skills to work in a self-managed warehouse. The warehouse will optimize and update itself automatically. In other words, you do not need to be tech-savvy to have a self-managed warehouse. It is smart enough to operate on its own,” Nadarajah adds.

PART IV

Summary





The data-driven future IS NOW

The era of using data mainly for visualization and reporting is over. Intelligent, data-driven applications that proactively optimize your warehouse performance are the future.

Collecting and analyzing data to transform businesses into data-driven powerhouses has been a prominent trend for the last decade. It is even more critical within intralogistics due to the multiple challenges the industry is facing today. You need to know what is next and to react instantly if you want to stay competitive.

One major challenge within intralogistics is the excessive staff turnover numbers and the difficulty many companies face when recruiting new and reliable talent. Another is the constantly increasing customer demands regarding service and delivery time.

Some industry segments, like electronic components, face even greater challenges these days with wars, the pandemic, and climate crises delaying the import of essential materials. This results in longer waiting times and increased prices – something consumers tend not to tolerate anymore.

With data-driven solutions and an analytical operations mindset, you will gain a competitive edge over your competitors, both when attracting new customers and new employees. You will have access to the bigger picture and understand the entire value chain in real-time before making decisions and handling issues.



When investing in a data-driven software solution, it is essential that the solution is easy to use, requires little technical knowledge, and that it is easy to integrate it with your existing WMS and ERP systems. Likewise, the equipment in your automated warehouse also needs to communicate across platforms – from material flow

solutions like conveyor systems, to ASRS systems such as AutoStore.

At Element Logic, we genuinely believe that data-utilization and standard, scalable warehouse software solutions will ensure your competitive edge – today and tomorrow.

Want to learn more about our software solutions and how you can utilize data to stay competitive?

Contact
us today



Since 1985, Element Logic™ has been optimizing warehouse performance.

We are the world's first, and largest AutoStore™ partner. In 2022 Element Logic acquired SDI, making us one of the largest system integrators in the world.

We specialize in storage and retrieval, unit fulfillment systems, and designing and installing tailor-made solutions that streamline our customers' workflow. Our robotic solutions, material handling systems, software and consulting services help improve our customers' value chain become more profitable and meet the end customer's

expectation of fast delivery. We optimize warehouses of all sizes in a wide range of industries including electronic components, parts distribution, consumer electronics, 3PL, pharmaceuticals, apparel, sports equipment, and more.

Element Logic® is headquartered in Norway and owned by employees, with the European Private Equity company Castik Capital as the majority owner.

Together, SDI and Element Logic® operate worldwide with a total revenue of EUR 294 million in 2021 and form a robust integrator with numerous years of experience in diverse technologies. Our combined regional expertise provides customers the most competitive solutions across the globe.

For more information about our automated warehousing solutions and services, go to elementlogic.net and follow us on Facebook, LinkedIn and Youtube.

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