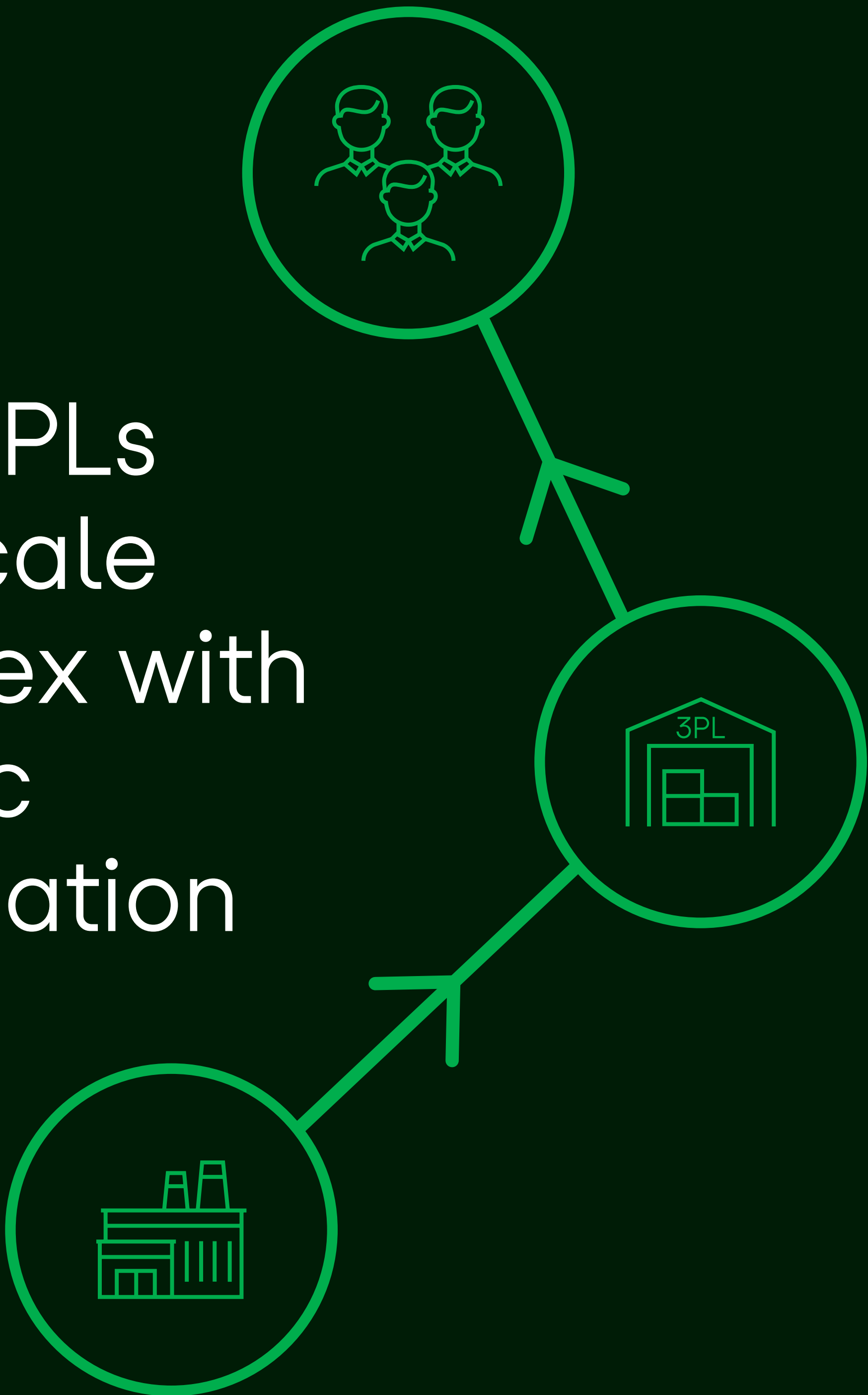
Movu™
robotics

# How 3PLs can scale and flex with robotic automation




Movu Robotics 3PL Whitepaper


No warehouse should be left behind when it comes to automation. Noë van Bergen, CSO Movu Robotics, highlights four key factors for 3PLs to consider when finding a perfect automation and robotics partner.

3PL customers rely on outsourced logistics for their expertise in streamlining operations, freeing them to focus on core business tasks. As a result, 3PLs are becoming key players in supply and distribution chains. In the US, **around 80% of warehouse activities are outsourced**, with the UK and Europe following a similar trend.

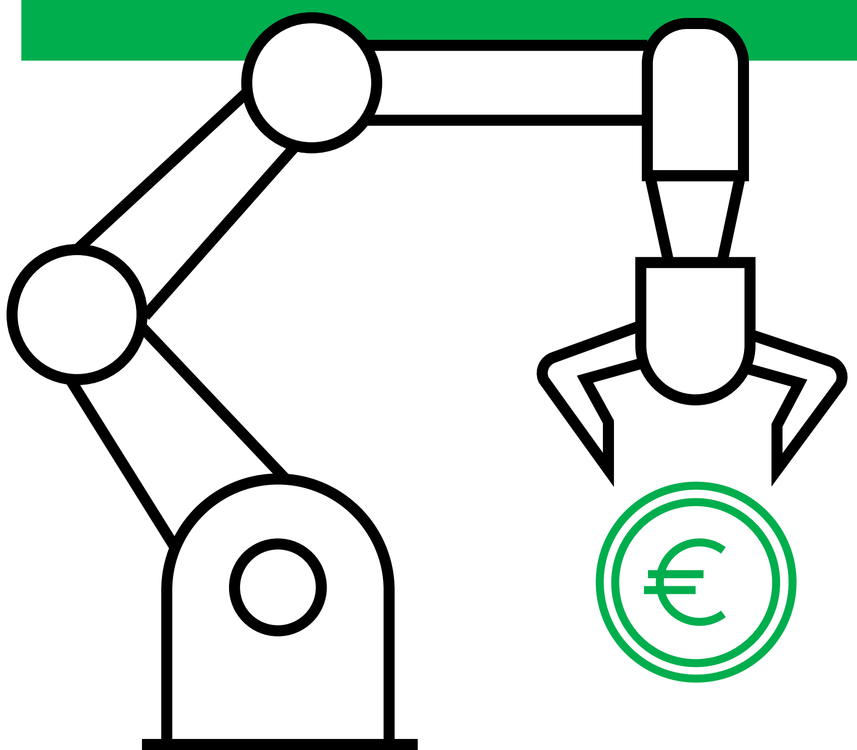
Robotic automation is well-suited for the 3PL sector, but it's still not widely adopted. Many 3PL providers continue to use stacker crane-based systems, which require fixed upfront design and are less adaptable to the sector's constantly changing business requirements.

Today, however, the development of flexible automation, particularly in the form of robotics, provides solutions that can house multiple clients, have the scalability to increase or decrease throughput to meet business needs and, instead of requiring high initial capital expenditure, investment can be split over multiple short term contracts. This finally means 3PLs can now harvest the advantages from automation, which will be crucial in helping operators in the sector face a number of challenges.

# Cost of serving crisis

Outsourcing to a 3PL isn't necessarily about direct cost, but reliability, scalability, flexibility and sustainability – and that poses some challenges for 3PLs because they must be delivered against rising cost pressures.

**A 2023 Statista survey found 66% of 3PL providers worldwide named technology investments as the top challenge facing their companies.** Rising operational costs and maintaining qualified labor ranked second and third. Other studies show that, **at 50% to 70% of budget, labor is typically the highest operating cost in the warehouse, while space is the largest single expense for most 3PLs**. Volatile, but generally rising energy costs, also must be factored in.



# New circumstances, new approaches to automation

The old assumption that 3PLs will always have the capacity in terms of space and in staff to cope with demand fluctuations is no longer valid. **A study by Extensive across anglophone nations suggested 87% of warehouses are using more than 80% of their capacity, but a majority also report that once they reach that level of utilisation, their efficiency falls away.**

3PLs will need greater effciency, flexibility and productivity, while overcoming skills shortages to fulfil growing volumes across multiple channels. A further complicating factor will be the challenge of handling more regular, predictable and unpredictable, peaks in demand.

Increased levels of automation must be part of the solution for 3PLs seeking to offer highly productive services to customers – particularly as many clients may be attracted themselves by accessible, lower cost, flexible and scalable automation instead of outsourcing.

As automation races up the agenda we are beginning to see 3PLs building their own automation capabilities and becoming integrators themselves. This trend is likely to involve the bigger operators, but smaller logistics service providers will need to keep pace in terms of capabilities.

This means building a relationship with a manufacturer of automated and robotic systems to integrate the best concepts to meet their needs. Strategically it's important to not only invest in automation but to understand its capabilities. Traditional heavy automation such as conveyor belts, stacker cranes and the rest is far too inflexible and doesn't necessarily cut it, even for the largest 3PLs, and is often unaffordable or just not feasible for smaller or more specialised operators seeking to remain competitive.

So, it makes sense for smaller operators to start partnering with the right automation subsystem providers to make that critical transition from manual to automated systems and, particularly, robotic solutions.

# Finding the perfect robotics and automation partner

Taking the right approach from the outset is important. The choice of technologies to deploy can be bewildering and is changing fast, so 3PLs must review their automation strategy with a reliable and knowledgeable partner for the best chances of success. It is critical for a 3PL to find a partner that has the right technology for its needs, with a comprehensive portfolio that includes racking as well as robotics. The ideal automation and robotics partner should fulfil the following criteria:

1. Have a future-proof portfolio of products and technologies when it comes to automated storage and retrieval options, flexibility, scalability, reliability and sustainability;
2. Is a strong and reliable partner with global reach and local support and offers a one-stop shop for racking and automation, serving customers of any size
3. Offer various financial models that grant maximum levels of flexibility to a 3PL;
4. Provides value-added logistics that enhance the overall value provided to the 3PL and can include activities such as final assembly, kitting, labelling, and repacking

# 1 Future-proof portfolio of products and technologies

Movu solutions base warehouse logistics around easily accessible, simple plug-and-play Automated Storage and Retrieval Systems (AS/RS) served by multiple independent robotic vehicles – called atlas – for pallets movements into, out of and within its own AS/RS racking system. Movu's portfolio also includes escala, which is a 3D robotic shuttle for binned goods and which also can be integrated with the picking arm robot Movu eligo. All enhanced by Movu ifollow, the Autonomous Mobile Robot (AMRs) for pallet or bin transportation that alternatively can operate as 'cobots' alongside manual picking operatives.

It is common for 3PLs to secure one or two customers for a location, creating the business case for building a warehouse, and then sell the remaining space to future customers.

The scalability, versatility and flexibility of the applied technology is key. Reliability is important to ensure high customer service levels – while sustainability is another growing priority.

**Reliability** comes in the form of redundancy: if a shuttle, or an AMR, fails it can be cleared, replaced, and normal operations resumed quickly and with minimal disruption. With conventional automation there are a lot of things to go wrong – rollers, bearings, motors, worn belts, sensors and the like. If a conveyor or a stacker crane, fails, this is likely to shut down operations in at least one aisle, perhaps more, for an indefinite period of time.

**Sustainability** is provided by energy efficient robot shuttles and AMRs. Conventional automation consumes a larger amount of energy with stacker cranes weighing many tonnes. Also, automation projects are increasingly related to existing buildings and brownfield sites, which typically means lower heights than new builds, which is more challenging for stacker cranes. Even with smart controls, many elements of a conveyor are 'live' when they aren't actually doing anything; cranes and counterbalance trucks have to move their own considerable weight in addition to their payloads.

**Flexibility** provided by robotic systems comes from the ability of individual shuttles and AMRs to be reprogrammed offline and added or removed to accommodate operational requirements, giving easy automation with 'plug-and-play' not just for the initial installation but for continuing once a system is installed. With conveyors or cranes, the operator is stuck with the geometry and to a large extent with the operating procedures these systems have been designed to support, such as different pick routines. Reconfiguring a conveyor run is a significant engineering task involving closure of part or all of the warehouse.

Modular shuttle systems also provide design flexibility that can easily adapt and optimize space within a warehouse with different roof heights and a footprint that is not a straightforward rectangle or square

Given that 3PL providers often manage multiple clients within a single warehouse, the ability to adapt to changing needs is crucial. Automation solutions, such as Autonomous Mobile Robots (AMRs), offer a unique advantage by being easily relocatable between different warehouse locations. This means that equipment can be quickly redeployed to serve various customer sites, ensuring that 3PL providers can efficiently scale and optimize their operations across multiple clients and locations

**Scaleability** of robotic solutions comes from their ability to work as fleets of discrete and independent units. For peak time management, additional shuttles or AMRs can be added to or removed from the system immediately, with changes and expansions accommodated in the software, not through engineering work on the floor. With a lot of conventional automation, the whole system has to be installed in one go, even if it is considerably over-specified for current operations: you can't really install half a belt run, or the first three levels of a stacker crane. Effectively, you have to pay for future growth long before you see it, which is not affordable, especially for smaller concerns.

Layout flexibility and scalability are a particular requirement in a multi-client 3PL warehouse as it gets more customers. It can ramp up storage capacity, and therefore revenue, by adding racking positions and ramp up throughput with additional shuttles. Having a shuttle traffic control system that can pick different customer inventories in one racking silo will allow a single installation to hold inventories from multiple customers.

Sequencing and pre-staging can take place in the racks for expedition buffer applications, which is an important for 3PL operations.

# 2 A strong and reliable partner with global power and local support

Installing automated systems that will play a vital role in their operations means 3PLs need assurance that their partner is powerful, solid and reliable.

A strong automation partner will be able to provide the right implementation of the automated solution, delivered by a skilled and professional team. In addition to selling the solution it will be able to see the project through to commissioning, with the ability to provide seamless integration. The partner's capabilities should also include the service and technical support that is crucial for maintaining and supporting the technology.

Movu Robotics is part of the renowned stow Group, which has been producing and installing warehouse solutions for leading companies globally for 45 years.

Unlike many automation companies that have a single product, Movu is a full service OEM with a range of key technologies that work for 3PLs. As a global company it can help 3PLs seeking to expand their footprint or replicate solutions in other territories. The company sits alongside stow Racking in the stow Group, which is a highly successful company with over 40 years' experience as a supplier of logistics and materials handling solutions. Customers gain the key advantage of seamless integrated racking and robotics solutions. They talk to a single face representing a single partner with same standards, providing efficient project management and reliable lead times.

Headquartered in Belgium, in the heart of the EU, Movu's global scope enables the automation supplier to be close to its customers, speak their language and have a clear and insightful understanding of local markets as well as the needs of the 3PL.

For projects in the main vertical markets, especially in e-commerce, FMCG and cold storage in Europe and North America, Movu will deliver simple, standardised plug-and-play solutions that require less engineering and grant short lead times for execution, allowing customers to keep their operations running.

In addition to suiting a global 3PL, Movu is also the right partner for smaller, local 3PLs. The company's philosophy of no warehouse left behind is underwritten by its capability to provide solutions for storing as few as a hundred pallets, such as in a buffer system. This low entry point for automation however also provides reliability, accuracy, local understanding of the market, cyber security and aftersales customer service that is not possible for low cost, far shore providers or large scale automation integrators. In this way, Movu seeks to democratise materials handling through bringing the opportunities of easier automation and robotics to warehouses that would otherwise find them hard to attain.

All of this is supported by a global network in customer service. 3PLs typically bid on contracts from an end customer who will also need to be happy with the solution. Being able to provide an Experience Centre that allows 3PLs to show their customer how technology can work for them offers a significant advantage.

# 3 Flexible financial models for enhanced 3PL competitiveness

Flexible financing models play a decisive role in gaining a competitive edge in the tendering process. In particular, rental, lease financing or robot-as-a-service models are increasingly in demand due to the lower capital investment required on the customer and 3PL side. Based on its financial strength, Movu and its financial partners offers various financing options for projects

Movu does not lease its solutions itself, being focused on offering a full, low capex model. However, it does have established financial partners that can offer very flexible financing models to end customers including 3PLs. Movu will also offer short term rental of robots allowing 3PLs to rent a robot for a certain period of time, such as during peak.

# 4 Provides the 3PL with value added logistics opportunities

Solutions for 3PLs need to be well oriented towards value added logistics. The nature and amount of any ancillary processes that the 3PL is required to carry out is changing, with value added services being offered such as final assembly, kitting, labelling, repacking. It has become important that warehouse automation can successfully integrate pallet-level operations with case-picking.

Movu's atlas, for example, is not just about putting pallets in and pulling them out. Case picking can be integrated on a mezzanine or picking tunnel outside of the racking silo. During low activity times, pallets in deep storage lanes of the silo can be brought forward allowing pre-staging for picking in the morning.

**Movu atlas meets 3PL needs**

Movu is a pioneer and leading provider of shuttles for multi-deep pallet lanes. The Movu atlas pallet shuttle system offers low capex high density, multi-pallet position deep Automated Storage and Retrieval System (AS/RS). It reduces time-consuming errors by eliminating the need for manual handling, allowing streamlined processes to speed operations and improve accuracy in a warehouse. Scalable, efficient and quick to set up, the plug and play Movu atlas fits all warehouses to ensure no warehouse is left behind.

At the system's heart is the Movu atlas shuttle, which is a self-powered pallet carrier, ingeniously designed to move and organise pallets in the racking structure, specially designed for this purpose based on stow racking. Shuttles, which attain a speed of 4.6 ft/s in both directions, can handle 1200 x 800 mm or 1200 x 1000 mm pallets with a 3.3 lb maximum load.

Managed by intelligent software, self-powered atlas robot carriers transport pallets of up to 3307 lb on rails within the deep storage lanes of a multi-level stow Racking silo. Storage volumes are maximized by minimising the number and width of driving aisles as well as by making effective use of height by enabling taller facilities to be constructed on a relatively small footprint.

While automated stacker cranes need even surfaces and long runs of straight aisles, a shuttle system can be built on irregular sites. The shuttles themselves, being much lighter than stacker cranes, offer more energy efficient pallet handling.

In addition to offering high density for efficient cold storage temperatures as low as -13°F, the Movu atlas pallet shuttle system offers the key advantage of low maintenance and an impressive redundancy factor. Even if a shuttle goes down or requires maintenance, it can be easily removed and replaced with a new shuttle within a day, with the WMS directing goods to one of the other silo levels for storage while the shuttle is being replaced. Such quick replacement is not possible for a stacker crane alternative weighing 20-40 tons.

The scalability of Movu atlas allows the addition of shuttles to increase throughput and store greater quantities. For example, performance can be scaled up by having two shuttles operating on same level.

# Movu solutions in practice


Movu has supplied atlas systems to 3PLs such as Dematra, Kris de Leeneer (KDL) and others, which demonstrate the maturity of the solution and its appropriateness for 3PLs. The atlas pallet shuttle ASRS for KDL's new 107,640 sq ft Distribution Centre in Lokeren, Belgium. The DC serves 11 customers, primarily in the chocolate industry, carrying up to 1000 SKUs from raw ingredients to finished goods.

Kris de Leeneer wanted to exploit height to minimise footprint. The 10-level AS/RS rack reaches 92 ft in height and offers 45,000 pallet locations on a 200 x 330 ft footprint. The rack is served by 22 atlas pallet shuttles, which use four vertical lifts to access all levels and managed by GLA Warehouse Control Software (WCS), which is integrated with KDL's WMS. Movu tower, part of Movu's warehouse execution system (WES), checks the available resources, selects the most suitable shuttle or AMR, and then sends the order to Movu pilot.

This installation serves the dispatch area and three mezzanines, each of 21,530 sq ft, used for operations such as packaging, labelling and assembling, and accessed by elevators. Palletised goods are put away and reissued at a rate of 150 an hour in each direction.

Among the advantages over the stacker crane alternative, the system can readily be reconfigured to meet changing requirements. For example, if needs be the facility could be increased in size by removing the rear wall and extending the racking, achievable with minimal disruption to operations. Shuttles can readily be transferred between levels as activity moves, added or removed, according to demand.

This flexibility and scalability joins the benefits of reliability and sustainability to exemplify Movu's modular approach, which offers easier and future-proofed automation to any warehouse.

A groundbreaking project for Dematra showcases the pinnacle of automated technology in warehousing: the awe-inspiring 150 ft-tall stow Silo boasts the capacity to house nearly 80,000 pallets effortlessly and is equipped to handle 12,000 pallet movements within a 24-hour timeframe – an international first.

Dematra specialises in the fast and accurate distribution of various goods within Benelux in addition to operating several modern warehouses, where it manages the entire logistics chain of its customers. For its new fully automatic high-bay warehouse on the De Prijkels industrial estate in Nazareth, Belgium, the 3PL decided to work with shuttles instead of cranes.

At the heart of this impressive warehouse is an atlas pallet shuttle system comprising a number of Atlas shuttles, the specially designed Movu shuttle-rack system and the local controlling system (STC).

The unparalleled flexibility offered by the Movu atlas shuttles is one of the unique selling points (USPs) of this astounding facility. The dynamic capabilities of the shuttle system means the client can swiftly adapt to the ever-changing logistics requirements of its valued customers, ensuring their goods are efficiently stored and easily accessible.

The pioneering ability that developed these solution demonstrates Movu's abilities as a strong partner for 3PLs seeking to automate their warehousing.

# Pull Quotes and stats:

- 3PLs play an increasingly dominant role in industrial and consumer supply and distribution chains. In the US one survey suggests that companies are **outsourcing some 80% of warehouse activity**, and the UK and Europe are trending in the same direction.
- In a 2023 Statista survey of top challenges faced by 3PL providers worldwide 2023, **66% of respondents named technology investments as the top challenge facing their companies.** Rising operational costs were also named as a major challenge facing companies in 2023 with maintaining qualified labor ranking third highest in the list.
- Studies show that, at **50% to 70% of budget, labor is typically the highest operating cost** in the warehouse, while space is the largest single expense for most 3PLs.
- Warehouse space is at a premium as the trend moves towards ever larger facilities. In the US, warehouses now average 181,370 sq ft, a figure which is rising every year.
- A study by Extensive across Anglophone nations suggested **87% of warehouses are using more than 80% of their capacity**, but a majority also report that once they reach that level of utilisation, their efficiency falls away.
- Outsourcing to a 3PL isn't necessarily about direct cost, but reliability, scalability, flexibility and sustainability – and that poses some challenges for 3PLs because they must be delivered against rising cost pressures.
- 3**PLs must review their automation strategy** with a reliable and knowledgeable partner for the best chances of success. The key is to find an automation and robotics partner.
- It makes sense for smaller operators to start partnering with the right automation subsystem providers to make that critical **transition from manual to automated systems** and, particularly, robotic solutions.

No warehouse
left behind.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