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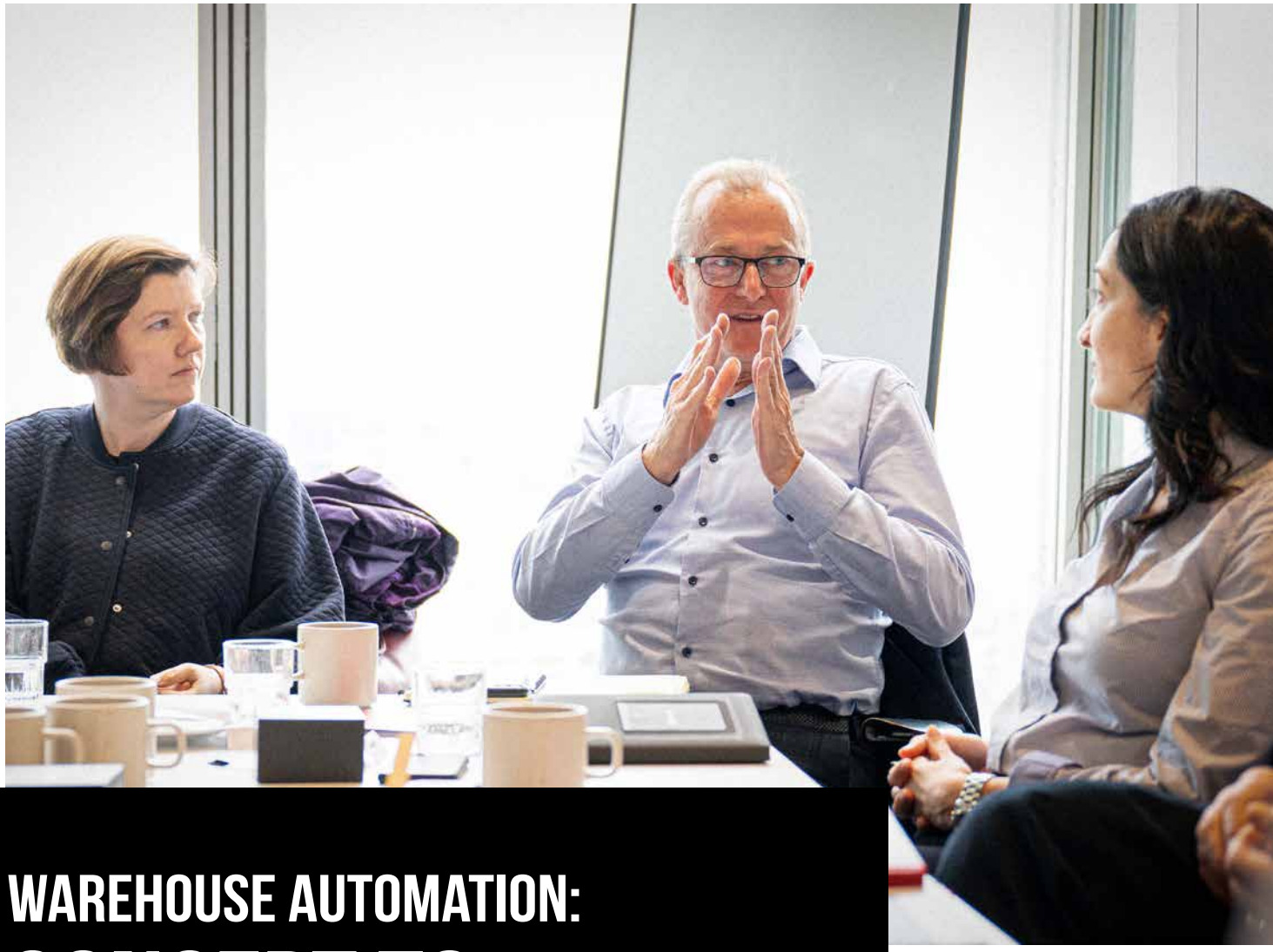

WAREHOUSE AUTOMATION:
CONCEPT TO DECOMMISSION REPORT

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EXECUTIVE SUMMARY

The concept of automation has become more than just a buzzword; it is rapidly reshaping the logistics landscape. ARMS Innovations, a leading asset and resource management solutions provider, invited experts from the UK retail and warehouse sector to discuss this transformative shift at a Research Roundtable.

With the UK's labour market strained post-Brexit and COVID-19, automation has become critical for maintaining efficiency and controlling rising costs, particularly in industries requiring 24/7 operations. However, adopting automation presents challenges. Ensuring a return on investment and addressing workforce readiness are key hurdles. Thorough planning and the involvement of knowledgeable stakeholders early in the process, is essential. Additionally, developing in-house engineering expertise and quality management processes are critical to maximising the return on automation investments over the long term.

This research paper will look to highlight key findings from each section of the Research Roundtable. The Research Roundtable was run in a semi-structured format and was overseen by a moderator. Participants, who were all at various stages in their automation journeys, were guided by several major topics:

01 WHY AUTOMATE?

02 THE CHALLENGES OF AUTOMATION

03 HOW TO OPTIMISE AUTOMATION

04 HOW LONG WILL AUTOMATION LAST?

RESEARCH ROUNDTABLE GUESTS

JOE MORRIS

CHAIRMAN & MAJOR SHAREHOLDER, ARMS INNOVATIONS

JUSTINE FARRAR

DIRECTOR OF NETWORK & AUTOMATION TRANSFORMATION, SAINSBURY'S

MIKE HILTON

CHIEF COMMERCIAL OFFICER, ARMS INNOVATIONS

MARIA TORRENT-MARCH

MANAGING DIRECTOR OF WAREHOUSING & LOGISTICS FOR EUROPE, IRON MOUNTAIN

MARTIN BRICKELL

DIRECTOR UKI SUPPLY CHAIN FULFILMENT & PHYSICAL LOGISTICS, ACCENTURE

NICK WINDER

GROUP MANAGING DIRECTOR, WIN LOGISTICS

MICHAEL OLIVER

DIRECTOR, KALAPOS BUSINESS SERVICES

ALEX HEWES

FOUNDER & PRACTITIONER, HSCS

SCOTT PRICE

DIRECTOR, KAM PROJECT CONSULTANTS

STUART ROSS

CONSULTANT

CLARE BOTTLE

CEO, UK WAREHOUSING ASSOCIATION

WHAT IS ARMS INNOVATIONS?

ARMS Innovations provides an end-to-end asset and resource management solution for warehouse operations. Our integrated ARMS Software platform digitises and automates maintenance and operational tasks across a company's facilities, equipment and processes. Our approach is designed to extend the lifespan of your equipment, ultimately driving greater return on investment for your business. We practice the power of 1%, and have delivered major capacity improvements in some of the UK's largest distribution centres via our Enterprise Level Software Platform and Quality Management System.

- **5-15% labour savings.**
- **5-10% system availability improvements.**
- **Maximised asset lifespan for extended ROI.**
- **On-site spare parts management.**
- **On-site engineering team provision.**
- **Engineer training and development.**

WHO ARE THE TEAM BEHIND IT?

JOE MORRIS, CHAIRMAN & MAJOR SHAREHOLDER

After spending 20 years in industrial robotics, Joe joined his brother's business Home Bargains in 2000. As Operations Director, Joe helped his brother Tom grow the privately owned business to £3.5 billion annual turnover. Home Bargains was one of the first retailers in the UK to use high levels of automation within its distribution centres.

JONATHAN LANE, CEO & FOUNDER

An engineering expert with a track record in Manufacturing, Automation and Facilities, Jonathan brings a wealth of experience and knowledge in the setup and management of large internal service and support teams and external field-based contractors. He is the creator of the ARMS Software Solutions and ARMS QMS.

KEY SERVICES

- **Obsolescence Management & Asset Life Extension**
  Our proactive approach to obsolescence management ensures your automation remains operational long past its expected lifecycle.
- **ARMS Software**
  Our world-class Quality Management System – ARMS QMS – provides you with full visibility and control over your operations.
- **Automation Project Management**
  ARMS Innovations offers expert project management services for highly automated facilities. From concept design to decommissioning, our team ensures your projects are delivered.
- **Resident Training Services**
  In response to the growing demand for skilled automation engineers, ARMS Innovations offers resident training services that build your in-house engineering talent.
- **Material Handling Equipment Solutions**
  We specialise in refurbishing, replacing, and providing state-of-the-art Material Handling Equipment designed to enhance the efficiency and reliability of your operations.
- **IoT & Condition-Based Monitoring (CBM)**
  Our IoT and Condition-Based Monitoring services leverage advanced sensor technology to monitor critical assets in real-time.
- **Manufacturing Performance Management**
  We provide smart automation integration and asset optimisation for advanced manufacturing facilities.

01 CONCEPT TO DECOMMISSION

How long does automation last? This report captures the vibrant exchange of ideas and expert perspectives on UK warehouse automation.

It was agreed amongst participants that the motivations for automation will vary greatly between businesses, and will ultimately depend on the type of problem that each case is attempting to solve. However, there were several recurring themes that emerged when discussing the question of why a business should automate; ultimately, companies are adopting automation to reduce costs, enhance efficiencies and – most significantly – to address labour shortages. But barriers to investment remain in place for small and large businesses alike.

Many warehouse workers left the UK following Brexit which exacerbated existing shortages. One speaker noted that they believed *"around 80% of automation cases since Brexit and Covid are due to a lack of available labour in the industry"*. Finding engineers is also equally challenging. Addressing these shortages is expected to remain a key driver of automation for some time due to concerns regarding an aging workforce and a lack of population growth.

Furthermore, it was agreed that automation has an important part to play in controlling labour costs, as well as wider operational costs. One participant highlighted that the combination of an increased need for 24/7 distribution centres and the 10% minimum wage increase seen in the UK in April 2024 has put upward pressure on labour costs. They stated that *"due to the need for 24/7 facilities, if you can save one head per shift, this actually equates to up to five heads per annum"*, ensuring a significant pay back from the automation.

" IT'S ALL ABOUT SCALABILITY AND GROWTH. EVERYONE WANTS TO KNOW WHAT THEIR COMPETITORS ARE DOING "

Automation's ability to provide safer working conditions for the workforce was also a core motivation for several participants. Some participants highlighted that automation can guarantee safety for the workforce by ensuring correct manual handling, a trend that has so far been more widespread in Europe due to more robust manual handling and safety legislation. *"People can't do manual handling in the way that they used to"*, one participant stated, arguing that this issue is already a *"big driver for automation in Europe, where they have been automating because of manual handling legislation, before the UK."* Aside from automations ability to address labour issues and subsequent rising costs, companies are also automating to enhance efficiencies, provide visibility and reduce errors.

AUTOMATION AND VISIBILITY

One guest discussed an inventory management system they were involved in designing. The solution had two parts; a robot which moved around the warehouse and scanned every pallet in the warehouse, and the digital twin of the warehouse. This solution provided insights and real-time data, ensuring that all pallets were accurately tracked. The result was a saving of over £2m in four years over four sites, compared to a more traditional inventory management model.

Ultimately, investing in automation is a forward-looking task which, when done correctly, can allow businesses to remain competitive and control costs. One speaker summed up the benefits of automation best: *"It's all about scalability and growth. Everyone needs to know what their competitors are doing, and are trying to get their unit costs down".*

THE CHALLENGES OF AUTOMATION

A core challenge when it comes to adopting automation is the difficulties in convincing senior management to consider investing. One participant noted that they had found it challenging to convince a senior management board to adopt automation, due in part to negative perceptions of it,

" HOW DO YOU THEN GET YOUR CEO TO REALLY GET BEHIND THE IDEA OF AUTOMATION? "

02

“ THERE’S A HUGE LIST OF THINGS YOU NEED TO UNDERSTAND BEFORE YOU EVEN SAY THE WORD AUTOMATION ”

and were told by an investor relations team that *“the market hates the word automation.”* The participant also noted that their company would not invest in automation during times of economic downturn. They added that there was some resistance from the company’s older workforce. However, the participant also emphasised that the connotations in regards to automation were starting to change, particularly following the pandemic and related labour issues.

Participants emphasised the importance of ensuring that automation will provide a Return on Investment (ROI) in order to convince boards that automation will increase shareholder value. According to one participant, *“you have to really sell [to the board] that automation is going to land and will start producing savings”*.

The need to maintain automation, as well as finding the skilled labour force for this maintenance, emerged as another significant challenge. One speaker noted that those looking to automate often won’t consider whether their current workforce has any knowledge or skills when it comes to automation. To tackle this issue, one guest looked to promote from within - *“we look for talent on the warehouse floor. Find out who might be interested in doing an NVQ 1, and give them automation tasks which can be done safely.”*

Overrun costs and project delays can also cause concern when it comes to automating. One speaker discussed a project for a retailer where the vendor delivered the automation project a year late and subsequently negated the original business case calculations which had been based on an on-time delivery. Another guest was keen to highlight that vendors don’t often realise that they are also *“part of the bargain”* and are responsible for the success of the commercial case made for the investment.

03

OPTIMISING AUTOMATION

As has already been discussed, although there are challenges there are also many benefits to automation. However, how can you then guarantee that you're maximising the efficiency of your automation and harnessing its full potential? Many speakers agreed that in order to ensure your automation is as optimised as possible, much of this work must be done upfront prior to purchase, rather than after. *"There's a huge list of things you need to understand before you even say the word automation",* said one guest. Questions to ask before embarking on an automation journey might include *"What are our channels to market? What are the things we are trying to solve? What are our efficiencies now?"*. Other considerations may include how will the automation integrate into existing systems?

Several guests indicated that there is a responsibility on the end-user to understand why automation might be a consideration and to purchase automation that makes sense for the business. This is a particular challenge for 3PLs, according to one guest, who noted that 3PLs must take careful consideration when automating off the back of a contract with a client, and must look to ensure that the contract has a high potential of renewal. 3PLs must ensure that their automation plans are a long-term investment, and should first ask themselves *"where do I want to get the maximum benefit with this investment money?"*

"For an optimum start to an automation project, sufficient time should be planned for a scoping stage before you engage with a property developer. With a brief in place, this means the project is on the front foot from the outset in terms of considering options for integrating a customer's requirements into the developer's base build specification and programme," advised one guest.

Ensuring there is a diverse number of people involved in these preliminary discussions is also imperative in understanding any particular logistics issue, and how automation may be able to solve it. Guests noted the importance of having knowledgeable people such as engineers or those with logistics backgrounds involved in these conversations from the get go. This is particularly important as some smaller companies may not have the required automation knowledge in-house, nor will they realise that they need to invest in the upfront knowledge and expertise. Ultimately, speakers agreed that thorough upfront planning, requirement gathering and a consideration of all scenarios before implementation is imperative in ensuring that automation is optimised to its full potential.

Several speakers suggested that optimising automation can be a particular challenge for retailers that are partnered with a 3PL, as 3PLs may not always prioritise innovation. One speaker argued that because many 3PLs operate on a cost-plus basis, there is little incentive to introduce automation and cut costs. Speakers emphasised the importance of strengthening these relationships by bringing 3PLs into the fold when it comes to conversations regarding innovation, and treating 3PLs as strategic partners.

Finally, speakers discussed the idea that one of the best ways to capitalise on an automation investment is to utilise the data that it provides to give a more granular view of activity in the warehouse. Access to data and insights that enable continuous improvement and predictive maintenance became a key talking point for guests. One guest argued that Automation providers often don't give enough visibility into system data that end users need to optimise processes and that optimised automation can only be achieved through full access to data about its performance.

OPTIMISE YOUR AUTOMATION WITH ARMS INNOVATIONS

One guest – who has used the ARMS solution – noted that because the solution takes PLC level data feeds, it can provide more granular information than just the failure of a single component: "It's not the typical OEM three month service. You're actually calculating how many cycle times there's been, everything is done at runtime. Then unnecessary maintenance just drops away"

04

“ WE DON’T KNOW WHAT THE NEXT 10 YEARS ARE GOING TO HOLD ”

The speaker added that predictive maintenance using data analytics and statistics can help identify potential issues before they become major problems, reducing downtime. Several guests agreed that developing a data-driven culture, with a team which values the importance of collecting and analysing data from automated systems, will lead to new insights and can optimise the total supply chain. One guest pointed out, *“Once you start with your automation, surely the best way to capitalise on the investment is to grasp every bit of data.”*

HOW LONG WILL AUTOMATION LAST?

Speakers discussed the longevity of automation systems, with some guests questioning whether there was any reason why automation could not theoretically last as long as you wanted as long as it was maximised and maintained correctly. Other guests argued that automation was considered no longer useful when spare part availability declines, reliability issues increase, the site no longer fits business needs and when the software platform cannot support modern upgrades.

Some speakers reported that at some point, fixed automation may become more costly to maintain than to replace: *“Once you get to the end of the ROI, and the asset has depreciated, it is a different set of decisions. Realistically how much life do you have left on that asset? Is it going to be more costly to keep repairs and spares?”*

One guest suggested that regular obsolescence audits needed to be carried out to ensure obsolescence surprises don’t suddenly appear, leaving insufficient time to find a solution. *“Parts can become obsolete after 5-10 years, not just after 20 years. If obsolescence is reviewed regularly, you can plan to avoid it.”*

Others noted that automation may come to the end of its life cycle as new technology and new innovation takes its place, meaning that the current automation may not be able to keep up with shifting business needs. *“We don’t know what the next 10 years are going to hold”,* one guest said, *“I guess it depends on the technology and how you can develop that and enhance it as demand changes.”*

One guest noted that the typical lifespan of an automated distribution centre is 15-20 years. Extending this by an additional 5-10 years can result in a 30-50% increase in return on investment. Some guests agreed that having an effective asset and resource management solution is crucial for maximising system availability, extending asset life and optimising spare parts management. One speaker said that they were most worried that WCS' built on older platforms cannot be easily updated like modern software, making them obsolete sooner.

Few retailers tend to purchase their own warehouses due to the flexibility of leasing in regard to business needs. As a result, the length of the warehouse lease will play a large role in the lifespan of automation and the decisions around upgrading automation systems. One speaker suggested 3D printing can reduce costs by making custom parts in-house to replace obsolete parts, rather than relying on the OEM, extending the life of automation in the process.

CONCLUSION

In summary, the motivation behind automation in businesses stems from the need to address labour shortages, contain rising costs, and ensure competitiveness in dynamic markets. Challenges like convincing senior management, managing project delays, and optimising automation systems persist.

Looking forward, the lifespan of automation systems is uncertain, influenced by factors like technological advancements and regulatory changes. However, proactive measures such as leveraging data insights and predictive maintenance offer pathways to optimise automation investments and navigate future uncertainties effectively. With effective life-cycle management processes in place, automation can last – as one guest argues – at least five more years. Ultimately, it seems that successful automation – from concept to decommission – requires workforce readiness, long-term thinking and data visibility.