

AUTOMATION AND THE PATH TO SUSTAINABILITY

**“WITH AUTOMATION YOU CAN VASTLY
INCREASE THE ACTUAL DIVERSITY OF THE
TALENT POOL THAT ARE ABLE TO ACCESS
WORK IN A ‘PORT ENVIRONMENT’.”**

MAIN

DP World Antwerp
Gateway





Que Tran,

Regional Chief Information Officer
and Head of IT, DP World Europe

Ports and terminals are the gateways to smarter, more efficient and more secure global supply chains.

In recent times, the perfect storm of pent-up demand and supply chain challenges has put renewed focus on ports and terminals. DP World is hard at work reimagining the future, with step-change terminal handling innovations designed to streamline our global network of ports and keep trade flowing.

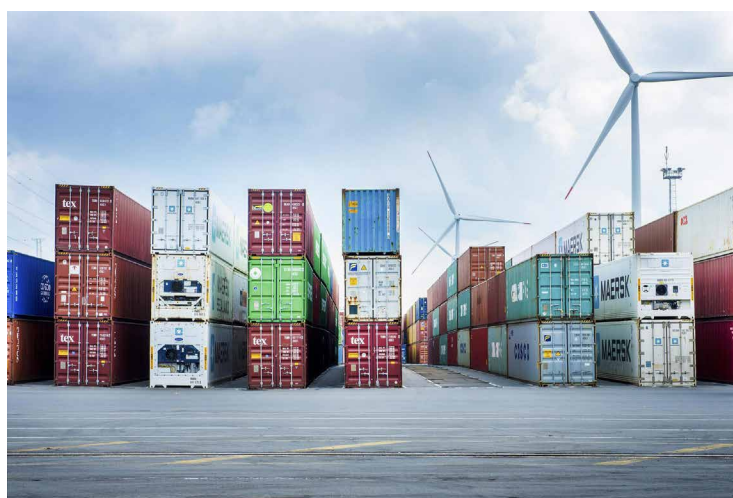
Across Europe, with industry-leading automated terminals in Rotterdam, Antwerp and London Gateway, DP World is well versed in the benefits of automation and its contribution towards sustainability.

During the early implementations of automation in the industry, the commonly envisaged 'technical' and 'operational' benefits of automation included agility, efficiency, safety and scalability. For operations teams following best practice such as Lean, automation has been synonymous with operational and technical efficiency.

There are, however, other benefits that automation enables which are not so commonly trumpeted – this includes sustainability, inclusivity, accessibility and diversity, skills enhancement and increased job satisfaction.

With automation you no longer need to be physically in a cab to operate the equipment. You can operate from a remote office, essentially still within the vicinity of the port and terminal, so extending this beyond the terminal only requires connectivity.

Therefore, with automation you can vastly increase the actual diversity of the talent pool that are able to



access work in a 'port environment'. For the ports and terminal industry, which has traditionally been challenged to attract new talent based on the location, automation brings the opportunity for a more flexible working environment and hours. As an industry we can attract different kinds of workforce who were previously unable to fulfil a location attendance-based type of work, bringing a much greater scope of employability to the industry.

Automation in this case, is serving as a complementing technology, enhancing productivity

and skills, rather than a displacing technology as often portrayed.

AUTOMATION & THE JOURNEY TO NET-ZERO

A key benefit of automation is how it can help to drive the sustainability of our industry and the transition towards net-zero.

According to the Maersk McKinney Moller Center for Zero Carbon Shipping, the global shipping industry accounts for around 3 per cent of global carbon emissions.

“AUTOMATION ENABLES SYNCHROMODALITY TO WORK BETTER AND DELIVER CARGO INLAND, IN THE MOST OPTIMAL AND GREENEST TRANSPORT MODES AVAILABLE.”



As the world moves toward a net-zero future, there is a business imperative for decarbonising the industry in line with the Paris Agreement (COP 26) and the United Nations Sustainable Development Goals (SDG).

In the Netherlands, the fully electric, fully automated Rotterdam World Gateway (RWG) terminal is on the pathway to be the first carbon neutral container terminal in the world. It boasts a number of new and existing green innovations and advanced automation technologies, including 84 electric lift AGVs (Automated Guiding Vehicles) that operate on green electricity and 18 state-of-the-art cranes that capture and regenerate their own energy.

In neighbouring Belgium, DP World Antwerp has invested in Automated Stacking Cranes (ASCs), wind turbine and a biogas plant, and plans to invest further in building ASCs to help it meet

its ambition to handle 80 per cent of its volume using automatic and electric cranes by 2026. This would increase capacity by 700,000 containers and simultaneously help reduce emissions as the cranes run on locally produced green electricity.

DP World Antwerp was also the first terminal in the world to publish its own sustainability report, which included information on how it has prevented over 10.6 million kilograms of carbon dioxide from being emitted over a four-year period. The terminal's intermodal links to greener rail and barge facilities were found to take more than 90,000 trucks off Belgian roads.

This is significant when considering that road transport accounts for approximately 12 per cent of global carbon emissions. Thus, automation enables synchromodality to work better and deliver cargo inland, in the most optimal and greenest transport modes available.

ABOVE
ASCs operating on
containers at Antwerp
Gateway

From the scale of energy required to make and move goods to the resource intensity of logistics, automation can help us focus on measuring and managing our direct environmental impacts and preventing global climate change.

It is important to note that we are just at the cusp of automation in our industry, and the trend for automation is to continually drive forward the sustainability agenda and enhance it through new digital and innovative technologies.

To date, automation has really just been about rules-based decision making.

CARGOES TOS+, DP World's flagship terminal operating system which can also be hosted in the cloud, is integrated into real-time systems and terminal automation. Through complementary technologies within the CARGOES TOS+ ecosystem such as Machine Learning, AI tools, IoT and digital twin platforms, it provides greater

automation efficiency, and also better visibility and interoperability that facilitates the transparency and collaborative efforts in sustainability.

Automation (through data) can provide this transparency and visibility and better facilitate the journey to net-zero.

In short, it is the 'nexus of forces' in the convergence of automation, digital and technology. All combining to provide optimum automation and accelerating the drive towards net-zero.

A common question is how and when to get started on this journey?

The simple answer is that there is no time better than the present. You do not have to wait for completion of one to start the other, for example the completion of automation projects before starting sustainability initiatives.

Both can go hand in hand, and it is not unusual to find that they are highly complementary. For example, automation can contribute to operational efficiencies which directly positively impacts sustainability, and likewise sustainability initiatives can uncover operational deficiencies which can be improved through automation.

AUTOMATION BEYOND THE PRESENT

Moving forward, with advanced technologies such as commercial quantum computing just over the horizon, this will exponentially increase the amount of capacity for complex AI and automation. What we will start to see more of in the future is the self-maintaining and the self-directing of automated equipment. This will enable optimal reliability, further improve efficiencies and thus contribute towards a more sustainable business.

Already today smart innovations in transformative automation technologies like BOXBAY, DP World's intelligent High Bay Storage (HBS) system, can increase terminal handling speed, energy efficiency and safety, while decreasing operating costs.

“THE DESTINATION SHOULD BE THE SAME - IT IS ABOUT THE COLLECTIVE INTENT AND DRIVE TO SUCCESSFULLY REACH THAT END GOAL DESTINATION OF DECARBONISATION AND NET-ZERO.”



RIGHT
BOXBAY structure

Looking to the future, we have invested in revolutionary technologies such as Hyperloop, an advanced, on-demand, incredibly fast cargo pod system that will give cargo owners synchronised, seamless and intelligent movement of goods – to connect the automated green port to the smart cities of the future.

Across the industry, different regions and countries will be at varying stages of their automation journey and path towards net-zero, however the destination should be the same – it is about the collective intent and drive to successfully reach that end goal destination of decarbonisation and net-zero.

Mark Zuckerberg has a now famous quote: to “move fast and break things”. With the right investment in automation and commitment towards a better future, a more agreeable and sustainable perspective would be to “move smart and fix things”.

ABOUT THE AUTHOR

Que has extensive senior technology and transformation leadership experience, with a focus on cyber, digitalisation and innovation initiatives to help protect, optimise and transform organisations and the industry.

Que is currently leading the Technology function across Europe at DP World and has been named among the top 30 leading business and technology executives in the CIO 100 by CIO UK.

ABOUT THE ORGANISATION

DP World is the leading provider of worldwide smart end-to-end supply chain logistics, enabling the flow of trade across the globe. DP World's comprehensive range of products and services covers every link of the integrated supply chain – from maritime and inland terminals to marine services and technology-driven customer solutions.