OPPORTUNITY. 機匯

18

DO MORE WITH LESS

veronica

LET'S GO ON THE JOURNEY TOGETHER

AUTOMATION DIGITALISATION PRODUCTIVITY SHARED SERVICE STANDARDISATION

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NEW TECHNOLOGY SUPPORTS FUTURE GROWTH AND SUSTAINABILITY

I wish all our readers a prosperous new year.

As we enter 2024 with renewed energy and optimism, I want to thank each one of you for your unwavering commitment and support of Hutchison Ports. Your dedication and hard work have been instrumental in enabling us to achieve several business expansions, and let's look at them.

Over the past year, a post-COVID period, demand was gradually normalised and supply chain congestion issues eased. The impact of economic headwinds, high interest rates and geopolitical instability, however, exerted extra pressure on consumer spending confidence which affected performance in certain regions.

Despite an uncertain outlook, we continued to expand our footprint to regions with significant potential. We signed new agreements to develop terminal facilities at Sokhna Port and El Dekheila Port in Egypt; in addition we secured a concession agreement to manage and operate a dry port and bonded logistics zone in Saudi Arabia. Our terminals in Lazaro Cardenas and Ensenada in Mexico will be expanded as part of our strategy; and Terminal D in Laem Chabang, Thailand, will set to complete its Phase 2A expansion in early 2024 to meet growing demand. Lastly, our terminals in Australia will boost their handling capability to meet our customers' needs.

Constant technological transformation while maintaining reliable, robust, and flexible operations has always been the centre of our Smart Network Strategy. As the backbone of our operational excellence and to operate in a sustainable manner, we have launched the new proprietary Terminal Operating System – VERONICA, which we are rolling out to business units over the next few years. The new system will enable us to digitally integrate operations across terminals in a smarter way and provide a sustainable operating ecosystem to our network of ports allowing us to 'do more with less.' You may read all about it in this edition of OPPORTUNITY.

This year is the Year of the Dragon, a symbol of courage, strength, and prosperity, I am confident with your support, we will continue to achieve our goals.

Thank you again and wish you all the best in the new year.

Eric Ip
Group Managing Director
Hutchison Ports

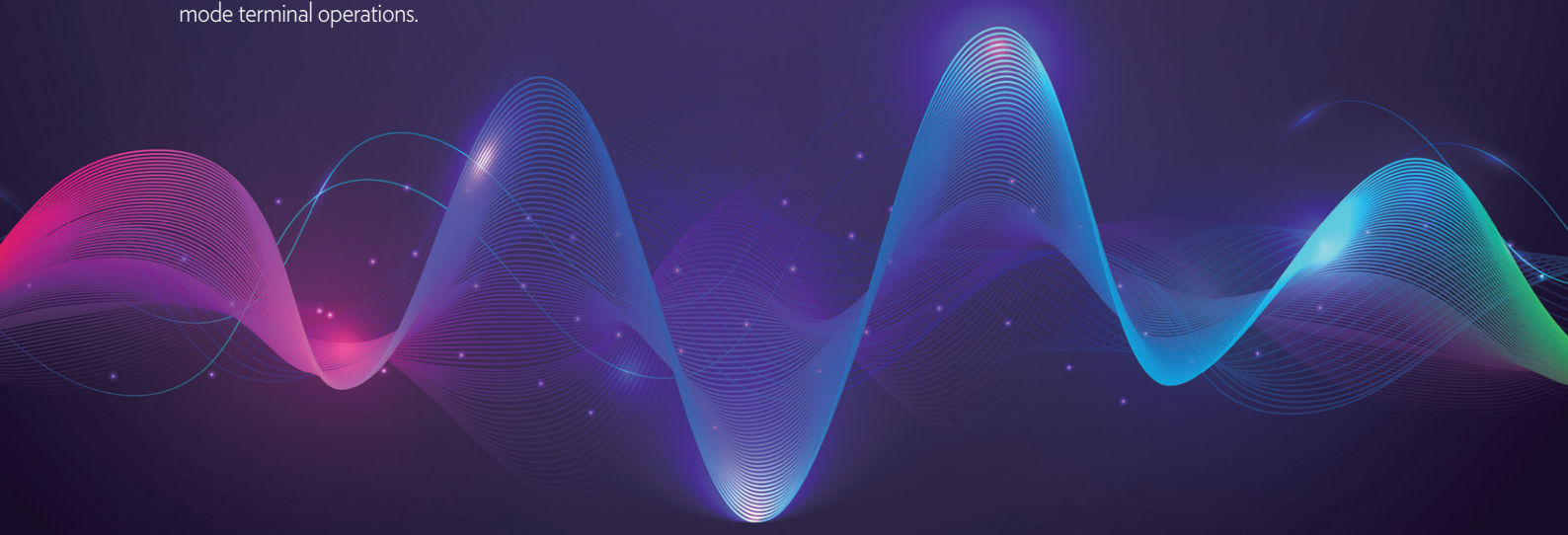
INTRODUCING VERONICA

Constant technological transformation while maintaining reliable and robust operations have been a major part of Hutchison Ports' strategic plan. This has been achieved through investment in innovative technologies over many years.

One of the most significant developments during the last 2 decades has been Hutchison Ports' in-house proprietary terminal operating system (TOS) incorporating increased utilisation of automated equipment, remote-control operation, digitalisation, terminal apps, blockchain technology, cloud computing and AI, as well as the introduction of autonomous trucks in true mixed traffic mode terminal operations.

All these groundbreaking state-of-the-art technological achievements are part of the group's 'Smart Network Strategy' under the four main pillars of standardisation, automation, digitisation and organisations.

Veronica is the 'living' representation of Hutchison Ports strategy and is in the incremental roll-out phase between 2023 and 2030 when the majority of the terminals around the world will be utilising the world-class TOS to adapt to a wide array of modernised terminal operations of the future without interruption to the terminal business.



veronica

RISING TO THE CHALLENGE

Building a new global TOS that can meet the demands of an ever-changing shipping industry is a daunting task. However, Hutchison Ports has the experience and knowledge through its ground-breaking TOS nGen launched in 2003 which has been the backbone that supports the group's operational success across the globe, handling nearly 80 percent of the group's total throughput.

To push and support the Operations 5.0 vision, the idea of the future TOS philosophy was launched in a team meeting workshop in November 2019, where hundreds of ideas were consolidated to formulate the product strategies and the planning for the roadmap for Project 'Veronica'. Today the global project team consists of 40 talented members situated in 12 business units from 10 different countries.

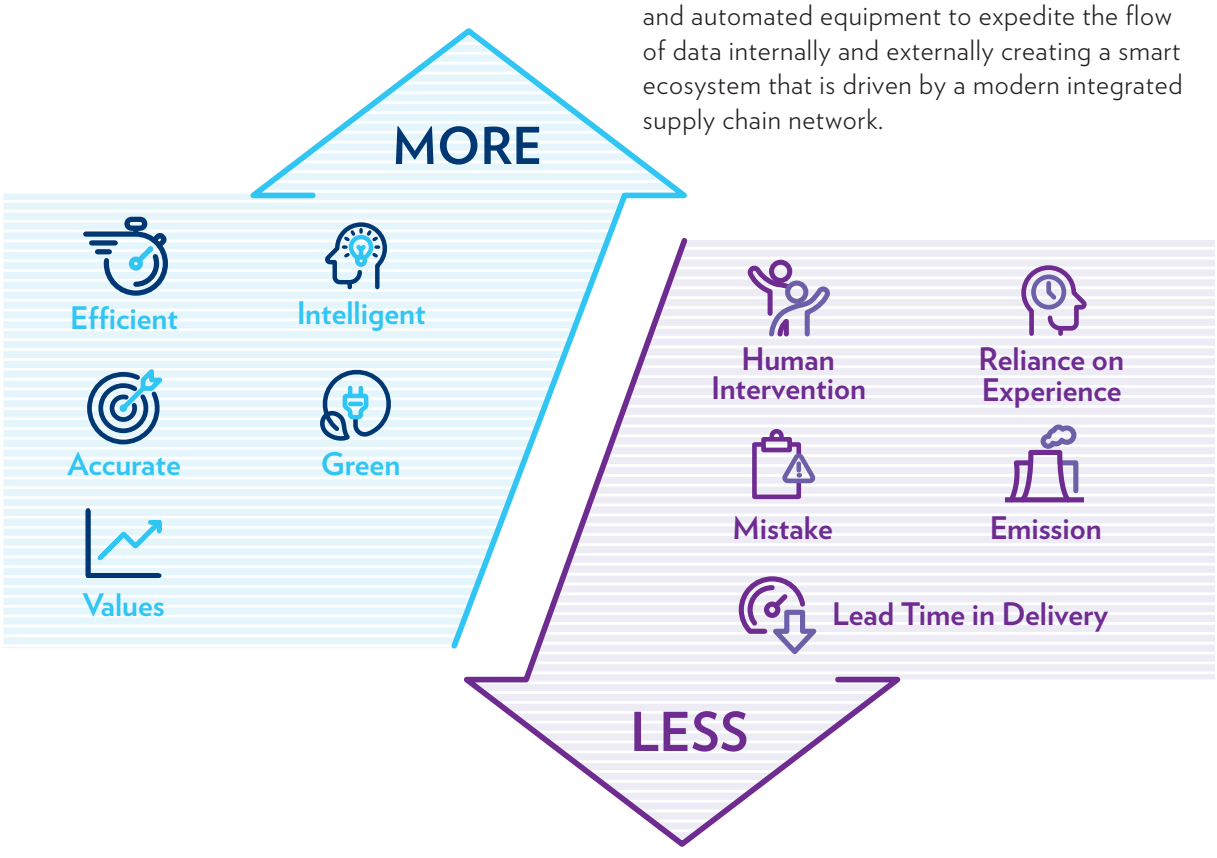
40 Talents

12 Business Units

10 Countries

Veronica will become the transition from nGen into a more modern, cloud-based and high-performance tool to better assist users' decision-making, humanise terminals' process automation and development of shared services across the group's network, satisfying the four main pillars above in one go.

She is poised to transform the landscape of container terminal operations, offering a vast suite of innovative features and capabilities designed to enhance efficiency, sustainability, and competitiveness. The TOS harnesses the power of technology, incorporating cloud computing, blockchain, digitisation, AI, machine learning and automated equipment to expedite the flow of data internally and externally creating a smart ecosystem that is driven by a modern integrated supply chain network.



This visionary system is a result of years of research and development, and it promises to redefine how terminals operate in the 21st century with three key design principles:

1. **Regional Operating Centre (ROC) centric**
2. **50% Full-time Employees (FTE) less to operate**
3. **Accelerated global rollout**

VERONICA WILL GET SMARTER

Today, shippers, logistics companies and carriers are heavily investing in technology that improves integration of the supply chain providing seamless connectivity across a spectrum of activities. For Hutchison Ports, Veronica is all about bringing layers of complicated operational functions and services from different verticals together under one umbrella. She provides solutions that incorporate a range of digital applications, AI and automated processes to harness data both within the port and the wider shipping community.

Rather than provide an overlay of new technology to enhance the nGen legacy system, Hutchison Ports Group Operations and Group IT decided that it is time to deploy a revolutionary innovative platform. Veronica will adapt the powerful AI on top of algorithmic calculation to increase productivity, efficiency, cost-effectiveness and sustainability.

Veronica is a multi-layer solution specifically designed to improve all aspects of operations; at the surface lies an advanced human-machine interface that lets us interact with the system differently with a customised UI and dashboard. Functions like deep learning processes that analyse the mass of data accumulated and collected by terminal operations, shipping schedules and container stowage to improve co-ordination at terminals, container yards and beyond, expanding its predictive capabilities.

Veronica is proactive and provides a holistic view of all operations across the terminals, like alerts to upcoming events, risks and opportunities and recommends best courses of action. New decision engines driven by real-time data provide unmatched flexibility to accommodate changes, ensuring a newfound agility. She also has the ability to self-learn, keeping track of its decisions and outcomes which continues to improve and make smarter decisions over time.

Veronica's superpower is to harness innovation and state-of-the-art technology in order to drastically improve the flow and management of data-linking all terminal operations and supply chain partners, providing a forensic insight into all supply chain processes enabling constant improvements benefiting the whole industry. In other words, to 'do more with less' without comprising service level.

SMART BY DESIGN

In the new era of the TOS modernisation programme, Veronica leverages a suite of innovative smart features and capabilities specifically designed to enhance efficiency, sustainability and competitiveness.

Utilising the power of cloud computing with Microservices, Process Automation and Data Analytics she has the whole package to help develop a sustainable global port ecosystem.

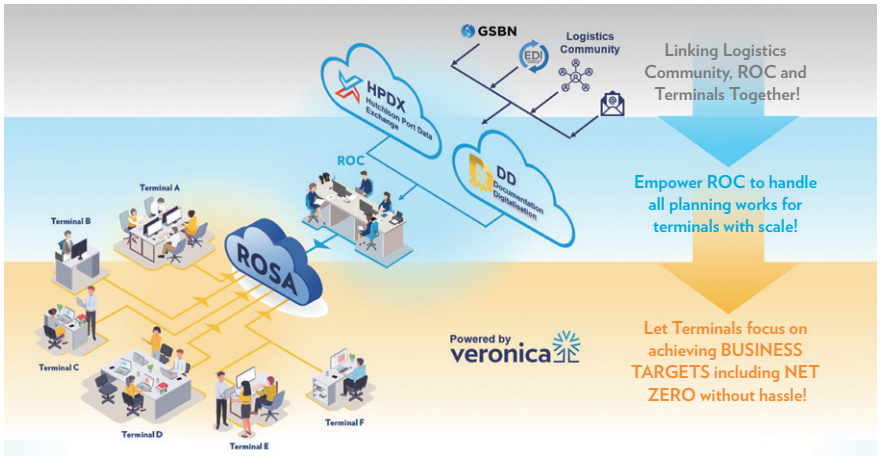
MEET VERONICA'S FAMILY

Looking at the diagram (above) we can identify the different tasks performed by Veronica's family members to each layer of the TOS. Veronica-as-a-Service (VaaS) is a cloud-based Software-as-a Service (SaaS) model which allows the network of ports to further integrate its terminals and foster collaboration. Veronica-as-a-Service can be implemented into any terminal around the world to support its operations and any business unit can be a member with minimum initial investment in the infrastructure.

Upgrades and expanded services can be accessed on demand when needed. She provides flexibility and scalability, supporting the growth of BUs without pre-investment, offering the option to 'Expand-as-U-grow.'

HOW THE FAMILY WORK TOGETHER

The Remote Operations Service Architecture (ROSA), has an important role in Veronica's family, it leverages shared services enabling access to the Regional Operations Centres (ROCs), in order to manage planning tasks for terminals across different regions.



Veronica also relies on its siblings, including ABRAM and AMBROSE, they will perform tasks to decide how to optimise berth-side resources and vessel operations efficiency. ABRAM is an acronym 'Augmented Berth and Resources Allocation Model', and AMBROSE is 'Activity Model Based Reinforcement Operational Stowage Engine'.

Meanwhile the intelligent yard-management systems SOPHIE and ATLAS, will provide directions to cranes and autonomous trucks and command them where to go to achieve the most efficient operational performance. SOPHIE's name derived from 'Strategic Ops Planning by Holistic and Intelligent Engine', while ATLAS from 'Advanced Tactical Location Assignment System'.

The complexity of Veronica and its subordinate smart platforms will continue to expand, refine, upgrade and evolve under the management of Edmund Wong, Operations Development Director of Hutchison Ports.

PLAN ALL
Strategic Plan, Tactical Plan and Last mile Refinement

SEE ALL
Past, Now and Future

KNOW ALL
Proactive Alert, Insight and Recommended Action

Veronica will usher in a new era of improved productivity and efficiency at each terminal as well as better integration of operations with external transportation and logistics operations.

Not only will Veronica enable the fastest loading or unloading of a ship and optimising yard management and placement of containers but will improve productivity and cost-effectiveness of port operations as a whole creating a smarter TOS ecosystem.

Four main goals of Veronica:

Planning Centric
Seeing the Future!

Data-driven Decision
No More Gut Feeling!

Automation & Digitalisation
Getting things done quicker!

Shared Services
Well-managed Anytime, Anywhere!

Veronica will help make real-me decisions beyond the scope of human processing power including variables that impact efficient operations such as weather, oil prices, energy and the location of every inbound truck, ship, container and staff member. These examples are just a sample of the multitude of factors that Veronica is capable of.

Hutchison Ports is bringing a new era of innovation that leverages state-of-the-art technologies to propel container terminal operations into the future benefiting all supply chain partners ultimately saving consumers money and driving productivity improvements across the economy where it operates.

The name Veronica has its roots in ancient Greek, meaning victory and Latin translated as true image. Combined Veronica symbolises both 'success and precision.'

VERONICA BORN OUT OF A SMART NETWORK STRATEGY

Hutchison Ports' Smart Network Strategy incorporating standardisation, automation, digitisation and organisations, has been the bedrock of the group's modern development. The proactive approach to adopt new technology and introduce automated and autonomous equipment demonstrates the commitment to be proactive in improving efficiency and productivity, reducing costs and enhancing sustainable port operations.

Now Veronica and her family are bringing TOS to the futuristic Generation Alpha into Hutchison Ports global network. She will continue to grow and learn to ensure that the group's port operations are delivering world-class services to its customers long into the future.

Pilot
Solid foundation with New Planning approach introduced

2023

Partnering with Early Adopter for the trial

Early Access
Improved features to support end-to-end operations

2024

Open to SELECTIVE BUs for acquiring comments

General Availability
Mature product with all rounded features to elevate operations efficiency

2025

Available to ALL BUs

To learn more about Veronica, please scan the QR code.

SAUDI ARABIA
FROM THE CENTRE OF ANCIENT TRADE TO A REGIONAL LOGISTICS HUB

ANCIENT TRADE IN SPICE AND SILK

The Kingdom of Saudi Arabia was the ancient centre of trade between Asia, the Middle East and Europe, with camel caravans laden with frankincense, myrrh, spices, silk and precious stones crossing ancient Arabia's gruelling terrain.

This trade brought prosperity to the emerging port cities along the Arabian Peninsula's western coast, and these routes fostered the exchange of goods and ideas across continents. Still today, relics and reminders of these important journeys can be seen in Saudi Arabia.

During that time frankincense and myrrh were often more valuable and expensive than gold, both used for religious ceremonies in Asia and the Middle East and serve as medical treatment and a key ingredient in cosmetics. They were collected from waxy excretions of trees that grow only in southern Arabia and northeastern Africa.

Later, the Chinese traded silk and textiles for spices such as cardamom and cinnamon from Southeast Asia, with Jeddah port being the epicentre of this trade.

The trade started more than 4,000 years ago, the Incense Route ran parallel to the Red Sea along Saudi Arabia's west coast. The Nabateans, an ancient civilisation that understood the tricks of crossing the perilous desert, profited handsomely from the passing merchants.

When the ancient Romans conquered southern Arabia in the first century A.D., they named the region Arabia Felix, meaning "Fertile/Happy Arabia," because of the extraordinary wealth accumulated from the trade route. However, the seafaring Romans, lacking local knowledge and rebuffed by the geography of the desert, soon turned their attention to trade by sea.

THE SEA ROUTES OF THE SILK ROAD

Even before the Romans took to these waters, the coastlines of Arabia — both the Red Sea in the west and the Arabian Gulf in the east — saw fleets of merchants moving their precious cargo of spices by boat, docking in ports around the peninsula.

These maritime networks linked up with land-based offshoots from the Silk Road, which travels between China and Europe. Spice shipments from Southeast Asia and India were transferred through ports such as Jeddah, nicknamed "the bride of the Red Sea" and Saudi Arabia's second-largest city after the Kingdom's capital Riyadh.

Jeddah is still a thriving port city today, thanks to seafaring traders. The architecture of Jeddah, especially in the historic Al Balad district, reflects the richness in both physical wealth and new knowledge that maritime trade brought to the city.

Spices from Asia, often used in medicines, were highly prized in Europe during the Middle Ages. This trade network lasted well into the 15th century and tourists can still browse mounds of spices, rugs and pottery in Jeddah's multicultural marketplaces today.

VISION رؤيـــة 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

Saudi Arabia's Vision 2030 is a megaproject supported by initiatives that aim to attract tens of thousands of workers from all over the world to the Kingdom. Described by its creators as the opportunity to live in a "new future" that is already under construction. It offers positions in the fields of industrialisation and innovation, corporate development, health and safety, finance, sports, strategic planning and technology, marine conservation, government engagement and government services and operations.

Located at the crossroads of three continents, the Kingdom leverage its unique position to become a major hub for international trade and forming new partnerships to grow the economy and supporting domestic companies to boost exports.

Following the launch of Vision 2030, the Kingdom of Saudi Arabia has taken decisive steps towards a more sustainable future. The long-term initiative means that Saudi Arabia will focus on improving its non-oil business environment by restructuring the economy of its cities, developing special economic zones and deregulating the energy markets.

The ambitious goal is to increase the country's non-oil exports to 50 percent by 2030, today that figure stands at 23 percent.

With these efforts, Vision 2030 is creating a thriving economy that serves as the foundation for a vibrant society and an ambitious nation.

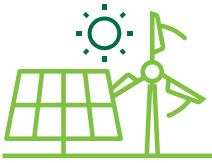
CREATE A GREENER KINGDOM

Inaugurated in 2021, Saudi Green Initiative (SGI) unites environmental protection, energy transition and sustainability programmes with the overarching aims of offsetting and reducing emissions, increasing the Kingdom's use of clean energy and addressing climate change.

Since the programme's inauguration, Saudi Arabia has activated 77 initiatives to help reach the three targets under the SGI which range from afforestation and biodiversity protection to emissions reduction and establishing a new protected area.

SGI supports Saudi Arabia's ambition to reach net zero emissions by 2060 through the Circular Carbon Economy approach and is also accelerating the country's transition to a green economy.

FAST FACTS



700 megawatt (MW) solar/wind energy was connected to the grid in 2022, providing capacity to power over 100,000 homes

17 renewable energy projects underway with a total capacity of 13.76 gigawatt (GW)

18 million trees planted & 60,000 hectares of land rehabilitated in 2022

RENEWABLE ENERGY

Local solar panels and cell manufacturing plants are working to apply new solar energy technology and develop commercial-grade equipment that can withstand extreme heat and sandstorms. The solar energy initiative will enhance the country's clean energy resources and reduce its carbon emissions.

WATER CONSERVATION

The construction of the state-of-the-art Rabigh Desalination Plant, 150 km north of Jeddah, in the western region of the Kingdom, offers a sustainable domestic water supply and leading the fight against water scarcity to the population. It can produce a whopping 5,000 m^3 of desalinated water and 700 kg of salt per day, all while consuming just 3.5 MW of thermal energy and 1.5 MW of electrical energy.

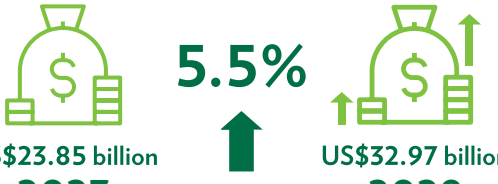
5,000m^3 of desalinated water to capital daily

3.7 tonnes reduction of carbon emissions annually

700KG of crystalised salt per day

CONNECTING THE WORLD

Present Saudi Arabia has a vibrant, growing shipping and logistics sector, valued at US$23.85 billion in 2023 and estimated to increase to US$32.97 billion by 2029. A 5.5 percent during the forecast period (2023-2029), according to US-based market intelligence company Mordor Intelligence.



US$23.85 billion
2023

US$32.97 billion
2029

The ocean-sea and inland waterways sector is the fastest-growing segment by mode of transport in Saudi Arabia as the nation looks to increase its global logistics competitiveness to increase the volume of non-oil exports.

Its domestic segment is the largest segment by destination type, supported by the wholesale and retail trade end-user segment, which held a share of 60 percent in 2022, claimed Mordor Intelligence.

To facilitate the growth of Saudi Arabia's logistics industry, the Kingdom is investing in its digital infrastructure led by the Saudi Arabia's Ministry of Logistics and Transport, the Saudi Ports Authority and the National Industrial Development and Logistics Program.

The focus by the government agencies will be to leverage digital technologies including artificial intelligent (AI) to enhance Saudi ports and logistics centres to operate in full automation.

In 2021, Saudi Arabia launched the National Transport and Logistics Strategy, with an investment of US$147 billion into the Kingdom's transport and logistics infrastructure, with the ambition of transforming the country into a major global aviation hub by 2030.

The plan includes the launch of a new international airline, the expansion of airports, the development of a comprehensive train network, and the exploration of new technologies. These plans are part of a greater strategy to diversify the economy of the world's largest crude exporter. Government officials also aim to transform the capital city, Riyadh, into a global business centre to attract more foreign talent and a hundred million tourists annually by 2030.

These investments will cover several projects, including the planned Gulf Cooperation Council (GCC) railway, an initiative which will create a rail network connecting all six GCC member states in Eastern Arabia. The GCC Railway is scheduled to be completed by 2025 planned to span over 2,000 km, with sections in Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE.

The railway network will play an important role and is expected to handle up to 29 million tonnes of the region's 61 million transported goods annually, across all modes of transportation.

KSA JOINS BRICS

Saudi Arabia is to become a full member of the BRICS (an acronym for the combined economic-commercial association formed by Brazil, Russia, India, China, and South Africa) group. Along with Argentina, Egypt, Ethiopia, Iran and the United Arab Emirates, the Kingdom have been invited to join the association.

CLOSER TIES WITH CHINA

At the 10th Arab-China Business Conference Summit held in Riyadh earlier this year, China and Saudi Arabia announced investment deals worth US$10 billion.

Over 30 agreements were signed across multiple sectors, including technology, renewables, agriculture, real estate, mining, tourism, and healthcare, according to *Saudi Press Agency*.

GCC Railway network (For illustration purpose only)

JAZAN THE RISING STAR

Hutchison Ports Jazan, is a greenfield project in Saudi Arabia's south-western deep-water gateway to the industrial cluster with a population of five million people. With the support of the Royal Commission for Jubail and Yanbu to manage and operate the Port of Jazan City for Primary and Downstream Industries (JCPDI Port), in Jazan Economic City, the multipurpose port brings global access closer to local traders and the emerging market in the surrounding region.

Inaugurated in September 2022, the multipurpose port offers marine services and multipurpose cargo handling of bulk, breakbulk, general cargo and containers, including the hubs and port centric logistics services to their customers.

Hutchison Ports Jazan is committed to bringing the latest AI and automated technology into daily operations.

The terminal received the first commercial container vessel *MV. Kota Rahmat* in July 2023, a Pacific International Lines' Intra Red Sea Feeder service connecting ports in the Red Sea region including JCPDI Port, Jeddah Port, Port Sudan, Djibouti Port, Hodeidah Port and Aden Port in Yemen.

Liang Fang (7th from right), Chief Executive Officer of Hutchison Ports Jazan presenting a momento to the Ship Master Zoysa Tirimadura Indika Saminda and Capt. Majed Al Ghamdi, Harbour Master of JCPDI Port along with Customs Department, Coast Guards and business partners.

On 25th September 2023, Hutchison Ports is honoured to welcome H.E Eng. Khalid bin Mohammed Al Salem, The President of the Royal Commission for Jubail & Yanbu and the delegation to visit Hutchison Ports headquarters in Hong Kong. Eric Ip, Group Managing Director of Hutchison Ports and senior executives greeted the President followed by a VIP tour at the Kwai Tsing Port.

Eric Ip (7th from right); H.E Eng. Khalid bin Mohammed Al Salem (8th from right); Andy Tsoi (9th from right) Managing Director, Middle East & Africa (MEA) of Hutchison Ports; Dave Lee (6th from right), Business Development Director-MEA of Hutchison Ports; Liang Fang (3rd from right), Chief Executive Officer of Hutchison Ports Jazan; and delegations at Hutchison Ports Head Quarters.

SPARK AT EASTERN SAUDI ARABIA

spark
مدينة الملك سلمان للطاقة
King Salman Energy Park

Adding another major development to the group's portfolio is the King Salman Energy Park (SPARK), a cutting-edge development in eastern Saudi Arabia, designed to be an industrial hub that connects the world to opportunities in the Saudi energy sector and beyond.

Inaugurated in 2018 by His Royal Highness Prince Mohammed bin Salman bin Abdulaziz, Crown Prince and Prime Minister, SPARK will provide a full range of solutions to support businesses in the Kingdom of Saudi Arabia.

"BUILDING A VIBRANT AND PROSPEROUS PRIVATE SECTOR IS A NATIONAL PRIORITY FOR THE KINGDOM, AND TODAY WE ARE INITIATING A NEW ERA THAT IS MORE POWERFUL IN TERMS OF COOPERATION AND PARTNERSHIP BETWEEN THE PUBLIC AND PRIVATE SECTORS."

His Royal Highness Prince Mohammed bin Salman bin Abdulaziz Crown Prince, Prime Minister, & Chairman of the Council of Economics and Development Affairs

When completed, the city will diversify the Kingdom's revenue streams and promote the adoption of clean energy technologies. The site will include a dedicated logistics zone and dry port, which will help facilitate the efficient movement of goods in and out of the park.

SPARK is committed to clean and sustainable energy production. It is the first and only industrial city in the world to receive a silver Leadership in Energy and Environmental Design certification – a prestigious recognition of its environmentally-friendly practices.

Hutchison Ports recently signed a concession agreement to manage and operate SPARK's dry port and bonded logistics zone. The concession awarded to a newly established joint venture named Energy City Logistics Company ("ECLC"), between SPARK and Colour Path Holdings Limited, a Hutchison Ports company.

Under the concession, ECLC will be an exclusive operator to a US$400 million state-of-the-art logistics facility in SPARK, a 50km^2 global energy hub.

The new facility will provide services for handling containers, breakbulk and project cargo, storage yards, warehousing, customs clearance, bonded and non-bonded logistics solutions tailored to the needs of SPARK energy ecosystem.

The dry port will accelerate the Eastern Province's development as a regional logistics powerhouse with the integration of future GCC rail link, GCC highway and multiple expressways connected to SPARK site.

At full capacity, the dry port is expected to handle up to ten million metric tons of cargo utilising fully automated equipment and state-of-the-art technology to expedite cargo clearance.

Once operational, it will feature the first private and the largest dry port in the Middle East, with on-site customs clearance services and bonded warehouses.

Under the master plan, Saudi Arabia will construct 59 logistics centres with a total area of more than 100 million square metres. Currently, there are 21 centres under development, and are expected to be completed by 2030, according to the *Saudi Press Agency*.

Saudi Arabia's logistics sector has been growing in recent years, with current investment volume reaching US$559 million, Arab News reported in April 2023.

Saudi Arabia's Ministry of Transport and Logistics Services has laid out an ambitious strategy to expand the logistics sector's market size to US$15.31 billion by 2030 and position it as a global logistics hub.

FAST FACTS

50 km^2
in project area

100,000 direct & indirect job opportunities by 2035

8 million metric tonnes of freight handled in dry port area annually

US$6 billion
annual contribution to GDP by 2035

DYNAMIC CHANGES DRIVING THE DEVELOPMENT OF THE SMART SUPPLY CHAIN

As customer expectations rise, traditional supply chain processes are no longer sufficient to meet the ever increasing on-time delivery demands driven by online consumer purchases. Industrial supply chains have similar pressures in order to be competitive by driving down costs through lower inventories, improved efficiency in processing, manufacturing and distribution.

Today there is a growing demand for production to be accelerated and the supply chain to be streamlined from the production of raw materials to final delivery. Global shipping has to adapt quickly and adopt progressive new technologies to keep pace with geopolitical changes, transportation disruption, near shoring and a shifting supply chain.

Supply chain planners are at the forefront of factoring in the impact on operations due to environmental laws, labour shortages, the consequences of disruption to shipping schedules and transportation. Now a more agile and resilient supply chain is needed to leverage digitalisation to be more resource-efficient and meet high demands.

In order to have a bigger picture of the supply chain, there needs to be a 'mine to mall' concept to look at how to drive down costs, improve sustainability and visibility.

Now international brands are looking at how smart supply chain solutions can effectively connect mines, processing plants, freight forwarders, logistics companies, bulk and container carriers, trucking companies, warehouse operators and ports.

Apart from improving supply chain efficiency, there is also a focus on sustainability and the environmental impact of operations which can be measured more effectively.

With all of the complexities of modern supply chains which test the resilience of planners, the use of advanced analytics provides support for them to make more informed decisions.

AI and machine learning algorithms, for example, can consolidate data from customers, suppliers and global trends to help businesses make more informed economic decisions.

HOW DOES SMART SUPPLY CHAIN MANAGEMENT HELP BUSINESSES?

Smart supply chain also known as intelligent supply chain, helps businesses achieve greater transparency, reduce errors and save time across all areas. Advanced analytic technologies can also help develop a better understanding of customers and provide a service that serves the needs of both parties.

Digital solutions can lead to greater safety and security for operational staff by reducing the need for heavy lifting, fatigue, distraction and stress which can all put workers at risk. If machines such as robots and drones can perform these tasks, managers have assurances that the task is performed with well to high levels of safety.

There are numerous benefits to smart supply chain solutions at the macro and micro levels. By embracing the digital revolution in logistics and supply chain management, businesses can optimise resources and remain competitive in the modern economy.

AI APPROACHING CRITICAL REASONING

While technological tools available to supply chain planners continue to grow it is worth looking at the next generation of technology and how we will enter a new era of artificial intelligence (AI) that will have critical 'thinking' in order to deliver smarter solutions.

AI is very good at sorting through heaps of structured and unstructured data and creating reasonable summaries and analyses. That's barely the tip of the AI iceberg. The step at which the machine will reason critically is not far off.

Critical thinking technology is a tool that provides potential solutions and alternatives based on historical data with real-time insights.

For example, in ship scheduling AI can 'mine' historical data that will enable shipping line route planners to optimise departure and arrival times taking into account, seasonal congestion at ports, weather conditions, tides, currents and average berthing times at each port.

It would be a critical step for AI to make the decisions on the best course of action to take given the data available.

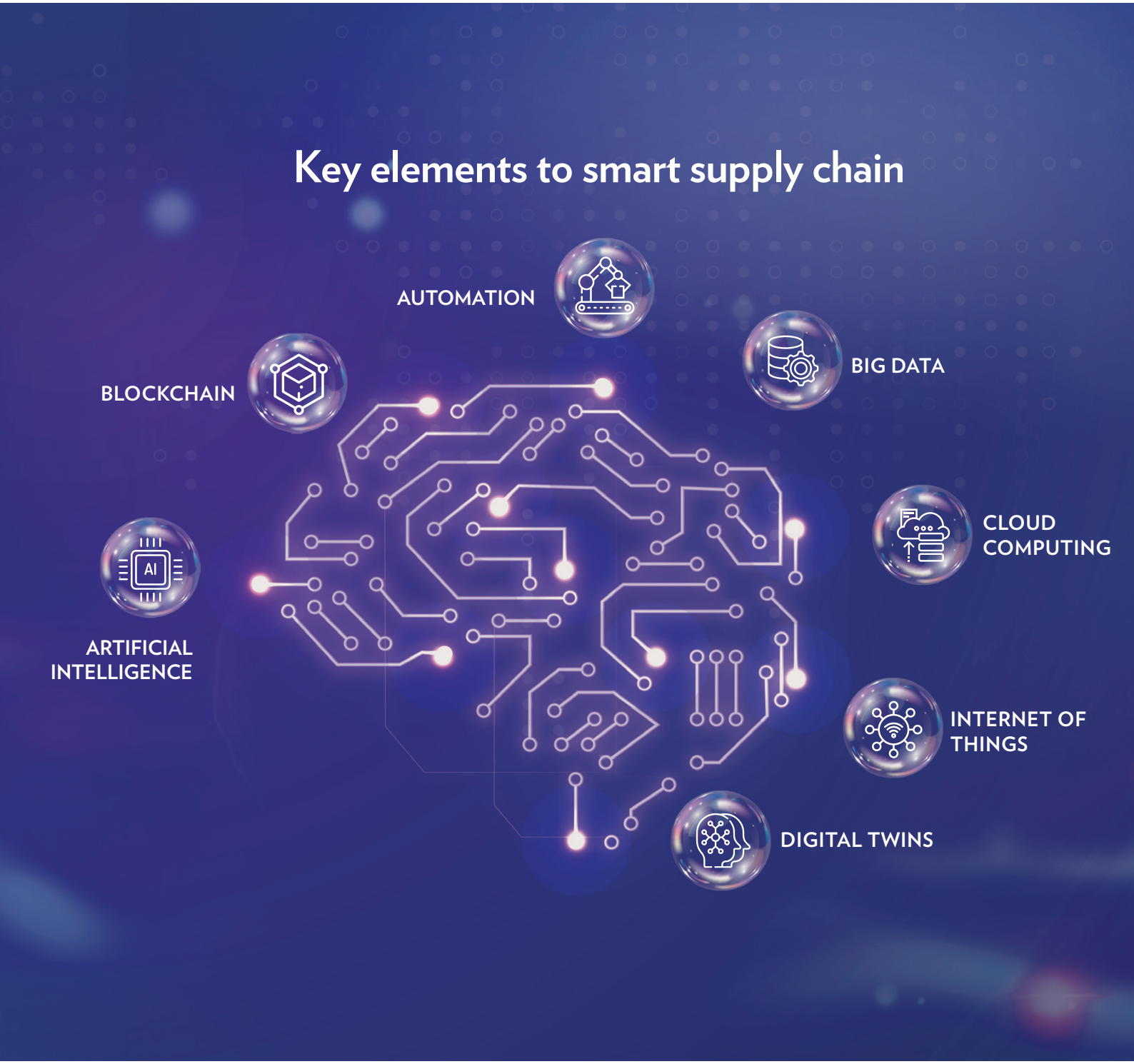
RPA PREVENTING ERRORS

We are now on the edge of a new era to deploy a software robot to prevent errors through deployment of robotic process automation (RPA) software.

The most common implementations of RPA 'bots' in logistics companies are those dealing with digitised documentation containing structured data and text-decoding recognition technologies like optical character recognition (OCR).

Some 3PLs combined RPA with cargo sensor monitoring systems allowing RPA bots to generate 'cargo visibility' notifications to customers and stakeholders.

These incremental improvements to the multiple tasks involved in the supply chain combined will significantly help reduce errors, improve accuracy of data and information are shared in real-time which will reduce the burden on operational staff.


Key elements to smart supply chain
AUTOMATION
BLOCKCHAIN
BIG DATA
AI
ARTIFICIAL INTELLIGENCE
CLOUD COMPUTING
INTERNET OF THINGS
DIGITAL TWINS

WHAT MAKES THE SUPPLY CHAIN SMARTER?

At present, the smart supply chain concept incorporates a number of key technological enhancements to create greater visibility, efficiency, and collaboration across the entire supply chain. Artificial Intelligence (AI), Internet of Things (IoT), Big Data, Automation, Cloud Computing, Digital Twins and Blockchain technology are incorporated into a smart chain ecosystem that connects to customers, suppliers and partners locally, regionally and globally to optimise operations, respond to changes instantly, and deliver products to customers more efficiently and effectively.

SMART PORTS INTEGRAL TO EFFECTIVE SMART SUPPLY CHAIN

The majority of port development nowadays have specific infrastructure design that serves as a blue print to automated and smart port hybrid operation. These smart ports with advanced technology and automated equipment can optimise the flow of goods and services from suppliers to consumers with greater efficiency and flexibility as consumer demands increase.

In today's modern supply chain and the importance of sustainable operation to container terminals, ports have an increasingly important role in helping to build a smart supply chain network to optimise the flow of global trade.

The definition of a Smart Port according to *Port Technology* is a modern and technologically advanced port that leverages innovative technologies and data-driven solutions to enhance its operational efficiency, safety, and sustainability.

Despite the numerous benefits that technology can deliver ports have traditionally lagged behind other industries in embracing technology that can improve safety, security, operational efficiency and productivity.

However, in recent years advanced technology is incrementally being adopted to streamline port operations that have enhanced sustainability and improved efficiency.

Lately, the port industry is playing a leading role in developing digital green corridors with shipping lines to major trade lanes between port pairs. As a result, these data can be unified, shared, analysed and optimised to both carriers and terminal operators.

VESSEL, FLEET AND BOX OPTIMISATION

AI combined with deep learning, predictive analytics and machine learning algorithms are being used to optimise vessel container stowage, fleet operations and container equipment availability.

For vessel stowage optimisation algorithms can reduce planning time from 16 hours to less than an hour and a single port plan can be created in less than 15 minutes. The system can also enable flexible planning and fast re-planning as well as help eliminate over stowing on board the ship to congestion in container yards to ensure the terminal operates efficiently.

Fleet optimisation algorithms can provide more efficient shipping routes that can help ensure schedule integrity allowing ports to plan berth allocation more efficiently, saving time, cost and reducing port congestion. This allows for more accurate tracking of cargo on board the ships, improved demand forecasting, and better coordination of handling and logistics at the port.

AI is currently being trialled on autonomous ships that can navigate, dock, and make decisions en route regarding vessel speed and optimal berthing times at each port.

NO SINGLE SOLUTION

The range of new technology available which helps shippers, logistics companies, carriers and ports become more efficient, improving visibility, reducing costs as well as saving time has just begun. There is still a long way to go as many of the projects are siloed and data sharing and collaboration are still a rarity in this highly competitive industry.

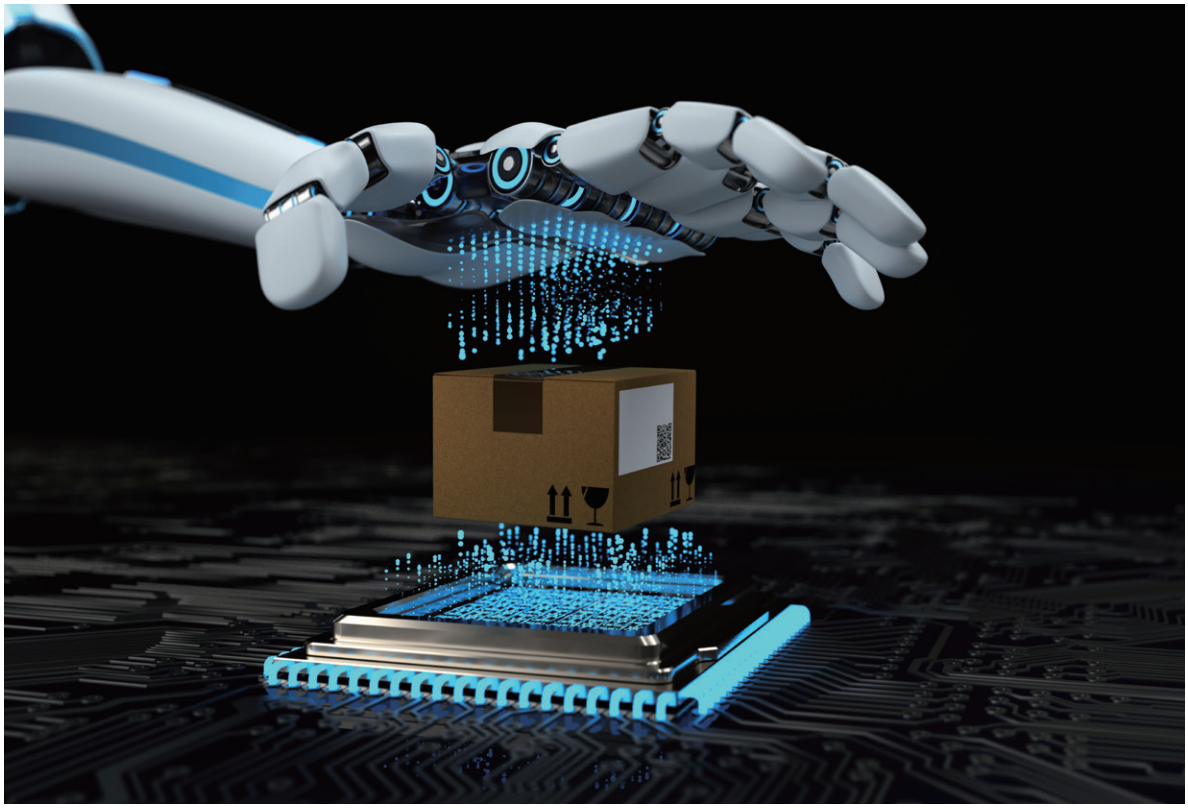
With the ability to gather and analyse big data in real-time, logistics companies and ports will be able to gain valuable insights into customers behaviour, market trends, and industry developments. Businesses will be able to make more informed decisions and can tailor-make business strategies to accommodate the demands of customers to gain market share and consumer satisfaction.

The main challenge to the development of smart supply chains are the supply of sustainable and affordable energy to power data centres, ports and smart technology and also 5G access.

Cybercrime also poses the biggest threat to the supply chain, as criminals take advantage of fragmented supply chains to access valuable data resulting in costly ransomware attacks and disruption.

There are many more areas to discuss regarding smart supply chain development, to conclude, once the benefits of data sharing are realised and the reliance on AI began to mature the whole industry will see the benefits that accrue to the bottom line of their spreadsheets and also benefit the environment.

Special thanks to Kris Kosmala, Chief Digital Officer, YILPORT Holding Inc. for his contribution to this article.



Hutchison Ports GO GREEN

PROGRAMME ACHIEVES NEW RECORD

In 2023, Hutchison Ports' flagship global campaigns 'Dock School' and 'Go Green' has reached a record number of participants connecting with nearly 3,000 students, conducted over 100 activities and planted over 10,000 trees.

3,000 STUDENTS

100 ACTIVITIES

10,000 TREES

The flagship Dock School programme helps and support students to develop in a safe and healthy learning environment since its introduction in 1992.

Next year the Go Green campaign, focusing on environmental protection, will be celebrating its 10th Anniversary.

Let's Go Greener

As a leading global terminal operator, Hutchison Ports has committed to setting both near term and net-zero targets in line with the Science Based Targets initiative's (SBTi) net-zero standard in 2023.

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

With the concerted effort of business partners, customers and suppliers, the group is confident to reach the targets set in accordance with the SBTi net-zero standard to reduce the impact of climate change by 2050.

Meanwhile, Hutchison Ports continued to conduct its global environmental initiative 'Go Green' with a series of decarbonisation activities and climate change educational programmes for staff, Dock School students and members of the communities within the network of ports.

What's more, Hutchison Ports utilises the fun-filled, lively and interactive Climate Fresk online game to raise awareness of the impact of climate change, which has

Attracted 155 staff from 45 ports in 20 countries

to join the cross region online game from different time zones.

The Climate Fresk online game allows colleagues to explore, learn and share knowledge acquired among friends and family members; and via Dock School activities to students and teachers, which has successfully 'turns plans into action.'

These community programmes helped the group to achieve Sustainable Development Goals (SDGs) 4 'Quality Education', 13 'Climate Action' and 15 'Life on Land.'

New targets set for 2024

In 2024, both Go Green and Dock School programmes will continue to flourish with the support of our business units globally to emphasise the importance of education and the impact of climate change on our planet to our next generation.

The new focus for Go Green is to draw attention to the sea life ecosystem with the theme 'Our Oceans.' The campaign will first start with the preservation of 'corals', the diversity of life found in the habitats created by coral reefs are often called the "rainforests of the sea." About 25 percent of the ocean's fish depend on healthy coral reefs and it also protect the coastlines from storms and erosion.

25%

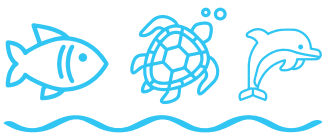
Fishes and other organisms shelter, find food, reproduce, and rear their young in the many nooks and crannies formed by corals.

In partnership with the World Wide Fund for Nature (WWF), business units from around the world will co-ordinate activities and invite business partners, NGOs, local government, schools and the community to participate and contribute to help improve balance in the sea-life ecosystem.

These corals shelter supports more than

7,000 species of fishes,

invertebrates, plants, sea turtles, birds, and marine mammals



'Our Ocean' project will add a new Sustainable Development Goal 14 'Life Below Water' to the group's community programme achievement.

A preview of 2024 activities and events

- **Global Connect**

  (Hutchison Ports and WWF in collaboration to hold online in-house learning summit)
- **Coral restoration programme and activities**
- **Support Universities' coral conservation research programmes**
- **Outplant coral fragments**
- **Organise workshops and seminars to raise awareness and importance of coral to the sea life ecosystem**

The Group will continue to support communities and schools in need and will proactively seek partnerships with local educational, civil and charitable organisations to conduct student development and environmental projects where and when appropriate.

As one of the key pillars to the Group sustainability framework, both Dock School and Go Green will continue to stretch across countries and continents with the goal of creating a sustainable future for 'Our People, Our Environment and Our Future.'

DOCK School

GO Green

HUTCHISONPORTS

2024 GO GREEN INITIATIVE

OUR OCEANS

Life below water