From port to door

by Fitzwilliam Scott

International commerce and port cargo handling have always been major economic contributors, directly through turnover and gross value added to GDP and through more indirect benefits like job creation and infrastructure investments. Intelligent transport systems (ITS) and smart mobility are now playing a central role in developing next-generation logistics, helping ports become more efficient, sustainable, and profitable.

Given the importance of freight, shipping, and logistics to the global supply chains and local economies, it's hardly surprising that five prominent port cities are playing host to the consecutive ITS World Congress: Singapore, Hamburg, Los Angeles, Suzhou, and Dubai. '**Goods Journey from Ports to Customers: Smart and Sustainable Ports of the Future**' was the focus of ERTICO-ITS Europe's webinar in the run-up to October's **ITS World Congress in Hamburg**. "Maritime trade is the bloodstream of the global economy, transporting around 11 billion tonnes of goods every year," underscores Zeljko Jeftic, Deputy Director of Innovation & Deployment at ERTICO-ITS Europe.

A quantum leap in port logistics – literally!

Hamburg's smartPORT initiative promotes sustainable economic growth and optimal efficiency while minimising environmental impacts. "Located in the heart of the city, there are obvious challenges in balancing economics with the social impacts created by port activities," underlines Dr Phanthian Zuesongdham, Head of the Hamburg Port Authority's Division Port Process Solution and smartPORT's Lead Coordinator. She furthers, "We need to organise our infrastructure and traffic capacity, so cargo flows are quick and efficient. This is where ITS technologies and collaborating with partners come into play."

Because of the proximity of so many harbours to urban and residential areas, streamlining how ports and local/regional road networks interface is particularly promising. According to Richard B. Easley, President of E-Squared Engineering, "We should remember that freight and traffic are inseparable: this may seem obvious, but it's not always appreciated." He also says we need to think about integrated solutions that bring highway, roadway, and port operations together, "Separate solutions can mean new problems. We need to be smarter and make sure well-meaning solutions don't have unintended consequences. Linked to that, we need to deal with an 'It's not my job' attitude among different stakeholders when it comes to freight issues."

As such, Hamburg's **Green4transPORT** project provides a strong example of managing traffic flows. Dr Zuesongdham highlights the initiative's particulars, "It's the first vehicle-to-everything (V2X) implementation in a real-world port setting. Working with partners, we equipped traffic lights and 60 trucks with real-time communications." When cargo-laden trucks want to exit the port, traffic lights prioritise the convoy, reducing delays, inefficiencies, and greenhouse gas emissions that would result from braking, idling, and accelerating. "Visitors to the ITS World Congress can see this for themselves – it will be part of our 'Logistics Experience' tour," she invites.

Another Hamburg-led project, MOZART, is the first to use quantum computing for next-generation traffic management and control, finding the optimal configuration for 35 traffic lights that regulate the entry and exit of 20,000 trucks moving through Hamburg's port facilities each day.

Ports and cargo handlers are increasingly developing and trialling future mobility solutions. However, "The commercial demand for sustainable transportation is rising faster than the efficiency gains provided," says Jörg Lützner, Continental's Head of Innovation Management Commercial Vehicles & Services. "The industry needs to step up its efforts to provide those efficiency increases and further reduce CO_2 emissions." His company's focus includes reducing fuel consumption and increasing efficiency through, for example, innovative tyres, tyre pressure monitoring, and the Conti360° Solutions all-round tyre fleet management.

The ITS World Congress will feature several Continental-related activities. For ports, this includes radar-based localisation for the EU-funded AWARD project looking at confined area manoeuvring. "We're also involved in the ENSEMBLE project for platooning," says Lützner and adds, "And in terms of customer delivery, we are working with partners in Singapore to trial last-mile delivery robots in a real-life city environment."

The quest for the future fuel

Having mentioned Singapore, this shipping hub has embarked on an ambitious decarbonisation programme. "There is no silver bullet solution, and the preferred fuel depends on many factors," cautions Yi Han Ng, Director of Maritime and Port Authority of Singapore's Innovation, Technology & Talent Development Division. He continues, "Singapore's maritime decarbonisation efforts focus on two key targets. Beyond ensuring emissions from domestic maritime and port activities meet internal targets in the 2030s and 2050, Singapore supports the International Maritime Organization's initial strategy on the reduction in GHG emissions from ships."

To support the global efforts, Singapore has established an international advisory panel for maritime decarbonisation which recommended four strategies: harmonising standards, implementing new solutions, financing projects, and collaborating with partners. Yi Han Ng says in this regard, "Our Maritime Singapore Decarbonisation Blueprint 2050 will be ready by the end of 2021, and we have set up a fund of 120 million Singaporean



Photo: Canva

dollars to support the establishment of the Maritime Decarbonisation Centre in Singapore."

The nation can take advantage of its status as a major bunkering port to support future marine fuel research and trials. Singapore can do it by leveraging local research expertise and a regulatory sandbox environment to conduct joint industry projects to develop standards and facilitate knowledge sharing. In the view of Yi Han Ng, "The Port of Singapore can be a living lab for maritime decarbonisation. We hope others will join us on our journey towards a low-carbon shipping sector."

Benefits beyond the port gate

The role ports play stretches outside their premises. One of the world's busiest inland ports, Suzhou in China, is one of the more outstanding examples. "Our port economy is very important to the local economy," says Zhiwen Wu, Head of Investment Management from Jiangsu Suzhou Port Group. He furthers, "We contribute to economic development in various ways, for example, through port city integration and coordinated development. Every million tonnes of cargo throughput can create more than 100 million yuan of GDP plus employment opportunities for 2,000 people." Suzhou is a growing port, with a throughput that increased from 330mt in 2010 to 550mt last year. Zhiwen Wu adds, "We are a contributor to strong regional growth in the Yangtze delta region. Experience shows the port is a powerful engine to drive the hinterland economy: indirect output value, employment opportunities, local taxes, and developing local infrastructure."

Christian Kassyda, Volkswagen's Director Transport Policies – Public Affairs, puts the port-city last-mile logistics in the centre of attention, "Recent times have shown the increasing importance of light commercial vehicles to individuals and society in terms of delivering goods and services. We are in the midst of a transformation to local zero-emission mobility and logistics, and the pace of change continues to accelerate in the key areas of electrification, digitisation and automation. This is about making traffic safer, more environmentally friendly, and more efficient."

Jacob Bangsgaard, CEO of ERTICO-ITS Europe, sums up, "Smart sustainable mobility is what we do, and logistics is a priority area for us. We are keen to continue strengthening dialogue in this area, so logistics has naturally become a bigger and more important element of our Congresses. Please join us in Hamburg this October to learn more!" ■