Automation *is the new black*

As **Federica Ragonese** discovers, growing pressure to work more efficiently has resulted in terminal operating software systems becoming more and more integrated with port operations

As the container industry attempts to deal with global economic volatility and weak trade, ports and terminals globally are coming under more and more pressure to be as efficient and productive as possible and to get vessels into and out of berths in the shortest time possible. In this context, automation is gradually becoming the norm rather than the exception, with terminals, port authorities and shipping lines collaborating in an effort to fulfil expectations. In addition to handling equipment, the role of terminal operating systems (TOS) is becoming ever more integrated with terminal processes.

According to Sumitha Sampath, director of product strategy at Navis, it is becoming increasingly important that vessel operations take place in a highly integrated fashion, similar to the way that airport operations adjust to handle larger aircraft. She added that everything has to be geared towards getting the ship in and out of the port as quickly as possible, and this has led to an evolution of the TOS to allow a broader collaboration between the parties involved in the ocean supply chain.

Hugh Gallagher, assistant vice president of product engineering at Tideworks, told ***CM*** that automation and optimisation continue to be the TOS features that are most requested. "Terminal operators are under a lot of pressure to do more with less, and they realise that automating processes and optimising the utilisation of costly assets is typically the best way to attain this," he said. According to Gallagher, in this context, TOS suppliers need to be able to provide automation features as well as effectively integrate their products with third-party automation technologies and other business-critical systems.

Gallagher told ***CM*** that Tideworks was not affected by the weak market conditions in 2015, and completed software implementations at a number of container terminals. It also completed development of a number of feature sets to automate and optimise marine and rail terminal operations, including job prioritisation, work list optimisation and a 3D-view vessel stowage tool. He said: "We see a tremendous amount of synergy between marine and intermodal, with the intermodal side moving to automated stacking operations and the marine

Tideworks recently completed integration and development work at Manzanillo International Terminal

side benefiting from automation and optimisation features that were initially designed to accommodate the complexity of large-scale rail hubs."

Tideworks recently completed integration and development work at Manzanillo International Terminal (MIT) in Panama, the first of its marine terminal implementations to use automatic stacking cranes (ASCs). It is currently completing work at the new, fully automated Tuxpan Port Terminal in Mexico. The company has recently developed a data warehousing and business intelligence (BI) solution to provide key performance indicators (KPIs) and analytics and, according to Gallagher, in 2016 will launch the first iteration of this tool, Tideworks Insight.

Although unaffected by weak economic conditions in 2015, Tideworks has not been immune to the challenges of working in a continually evolving sector. Gallagher said that one of the main challenges the company faced last year was ensuring growth at a sustainable rate. "We must maintain capacity to efficiently react to new demands or regulatory changes while also pursuing our own R&D efforts," he added. "It is a balancing act, and one we are continually working to perfect."

The most recent innovation for Navis was the launch in October 2015 of the 3.1 iteration of its N4 TOS, which features, among other enhancements, extended optimisation for terminals using automated equipment. Sampath stated: "Because of increases in carriers' expectations for more terminal productivity and performance, terminals are modernising their operations by increasing their use of automation." She added that terminals around the world were looking for support from third-party partners like Navis to optimise areas of their operations where inefficiencies in performance may exist.

The company's priority is to work in tandem with terminals choosing to move towards "burgeoning" automation in the industry to help them adapt their operations. Indeed, she added, the main challenge it faced last year was working with the complexities of automated terminal projects. "Navis worked hard in 2015 to help terminals undergoing these projects to achieve their operational goals," she said.

Additionally, Chuck Schneider, vice president and general manager for the Americas at Navis, admitted that even though the company recorded more terminals going live with N4 in 2015 than ever before, the current economic conditions in Latin America have had some impact on its business. He elaborated: "Navis has become the standard operating system in the region, particularly in Brazil and Argentina, and while we are seeing continued success, the economic conditions have led to longer completion timelines for some N4 decisions."

'HOLY GRAIL' FOR TERMINALS

According to Gallagher, the pursuit of the best technology mix will continue to be the "holy grail" for marine and intermodal terminals. "Increasing pressure on the supply chain to work smarter and more efficiently will drive operators to make decisions on technology based on value and to squeeze every drop out of their technology investments," he said. "We feel that the TOS has an ever increasing role in this quest." Additionally, Gallagher predicted that simulation and visualisation tools are set to become more important, particularly in the context of greenfield developments or where terminals are making larger-scale changes in their business.

Sampath told ***CM*** that she sees a change in the user

Top: Anton Bernaerd, business development manager at Camco Technologies

Middle: Hugh Gallagher, assistant vice president of product engineering at Tideworks

Bottom: Sumitha Sampath, director of product strategy at Navis

experience. "We are all used to apps on mobile phones and tablets, and the TOS has not caught up to this in a mainstream fashion," she explained. "We are working to make the user interface more modern and easier to use." What Navis sees in the future, she added, is a system based more on alerts and notifications.

Oscar Pernia Fernandez, senior director of product strategy at Navis, said that the role of the TOS has evolved into a bigger platform that lies at the heart of the terminal's operations. He added: "As this happens, the focus on IT management is really important. We are investing a lot to enhance the way our software product supports business continuity for terminals."

NEW TRENDS IN OCR

Gate automation is becoming a standard solution that almost all ports already have or will have in the near future, according to Anton Bernaerd, business development director at Camco Technologies. "We see, more and more projects popping up in China, so that gives us a good feeling that automation is not only about getting rid of expensive labour but is also about accuracy and efficiency," he told ***CM***. What the company sees as a new trend is that optical character recognition (OCR) accuracy rates are no longer considered the most important KPI – rather, said Bernaerd: "It is all about quality of data and the number of exceptions."

According to Bernaerd, as automation becomes more and more important and terminals become fully automated, OCR systems are increasingly required to do more than just read container numbers. "You have more sophisticated systems which, in addition to reading the numbers, automatically detect door direction and the presence of a seal, and read the classification numbers of dangerous goods," he added.

Camco is currently finalising "the last bits and pieces" of its BoxCatcher crane OCR system, which was released in 2014 and is already in operational use at some terminals. The BoxCatcher, which is a high-accuracy, optimal OCR system, follows containers in movement during the loading and discharging process by using only two cameras. "2015 was very important because it was the year of the system's implementation and we are now in the final negotiation phase to implement it in new terminals," said Bernaerd.

Despite the need for more sophisticated devices, Bernaerd pointed out that many terminals are still happy with OCR systems just reading the container number and checking the door direction, and this has led to the company developing a "very cost-effective" system specific to these needs, called SideCatcher. "We learned over the years that there is no such thing as one solution that fits all cranes," he said. "In addition to the first systems becoming operational in Maasvlakte II in Rotterdam, we should have more contracts signed by the end of Q1 or the start of Q2 2016."

According to Bernaerd, rail OCR is also becoming even more important in 2016, especially in North America. Additionally, Bernaerd told ***CM*** that Camco's new RTLS solution is being implemented already at two major terminals in Northern Europe. This year, the company will be launching a series of third-generation cameras, which will be smaller and will improve speeds. "That is the direction in which we are going, making things smaller, easier to install, easier to maintain and support," he concluded.