Solving a data dilemma

How Manzanillo International Terminal has tackled issues around data integration to improve the efficiency of its TOS

Manzanillo International Terminal (MIT) in Panama handles around 1.8m teu a year and is situated on the Atlantic side of the Panama Canal. In 2012, the terminal developed its own data warehouse and business intelligence (BI) solutions to store operational information from its terminal operating system (TOS). However, it soon faced the challenge of not being able to integrate data from other systems into the database as needed.

The terminal also experienced significant decreases in system performance when attempting to extract data from the TOS in near real time, generating detailed reports or otherwise performing demanding queries against the production system. The team at MIT quickly realised that they needed to find a solution to access data from the TOS without impacting overall system speed and terminal performance.

MIT discovered that many potential solutions lacked adequate levels of customer support, and were not as customisable as it required. Available solutions were also unable to meet the terminal's specialised and precise maritime needs.

"We urgently required the advantages of rapid functionality without a negative impact on system performance," said MIT terminal manager Oscar Caballero. "We needed to be able to draw in data from external sources as native SQL [Structured Query Language] and integrate that with our own data. Ultimately, we needed to position the terminal to meet the evolving needs of our customers, which required a flexible, adaptable solution."

MIT needed a complete, 360-degree view of its operations and the ability to connect external systems beyond the TOS to gain data visibility holistically across the terminal. It also needed a solution to easily access, filter and drill down on enterprise and operational metrics such as truck turn times and automated stacking crane (ASC) productivity to glean critical insights and make decisions based on real-time performance.

Users would ideally be able to utilise this data platform for business intelligence and to organise metrics of key performance indicators (KPIs) into a single, self-service dashboard. The platform also needed to allow users to easily add new metrics without significantly changing existing data models, and to store years of historical information for executive-level analysis and planning.

In light of this, MIT began working with Tideworks Technology, which is owned by Carrix, as is MIT's parent company SSA Marine. Tideworks had developed Tideworks Insight, a real-time and historical data platform that allows organisations to consolidate data into a single location to make quick decisions based on real-time information and create strategic metrics for future planning. MIT and Tideworks partnered on a beta program to fully test the platform with a limited team before full deployment across the enterprise.

During the beta partnership, Tideworks actively monitored performance, data integration and data accuracy for MIT. Additionally, based on feedback from the terminal, the Tideworks team built and tested specific metrics on ASC productivity, with additional metrics continuously being added.

Tideworks also trained business users on the self-service BI capabilities of Tideworks Insight, using Tableau for data visualisation and distribution. For technical staff, advanced training in SQL, which is a way to get information out of a relational database, was provided. This meant that MIT could get the benefits of the new data platform without needing to sacrifice the flexibility it had with its home-grown platform.

The MIT team also evaluated its existing reports, determined their value and created new reports based on the higher level of data that Tideworks Insight was able to provide. This led to the elimination of some duplicative reports and the creation of new reports that were far more relevant and powerful.

As the team became more familiar with the Tideworks platform, it became apparent that even non-technical terminal employees were able to quickly create reports without having to rely on Tideworks or on MIT's IT team, as had been the case previously. According to Tideworks, this led to more efficient workflows and increased productivity.

GOING LIVE

After beta testing of Tideworks Insight, the solution officially went live at MIT in June 2017. "We were thrilled with the initial results," said Caballero. "It seemed too good to be true, especially with the dynamic and visual representation of the data that we were able to access for the first time. Tideworks Insight was also very intuitive for non-technical end users, which made it easy to deploy terminal-wide to our entire team."

Compared with MIT's previous data warehouse and BI solution, Caballero specifically cited improved dashboards, significantly better system performance, increased data accuracy and faster access to valuable performance metrics and reporting as key advantages of the Tideworks platform.

One example, he explained, was "a report that had to be developed manually and took approximately 20 minutes to create. Now with Tideworks Insight, creating those same reports is almost instantaneous. Our team can now focus more time on analysing information and applying it to our business operations – not on creating reports."

Tideworks Insight allows users at MIT to seamlessly access the databases of Tideworks' core TOS products deployed at the terminal, including Mainsail, Spinnaker and Traffic Control. Its key features include proprietary, robust extract, transform, load (ETL) and change data capture (CDC) processes that provide access to cleansed, organised operational data without compromise of the production database.

In addition, the platform enables access to both real-time and historical data for the creation of valuable KPIs and trend analysis; unlocks predictive and preventive analytics capabilities; and provides a powerful data platform that easily interfaces with the customer's BI tool of choice.

With its full deployment of the platform now complete, Tideworks claims that MIT has been able to alleviate troublesome performance impacts on the TOS associated with the previous data warehouse solution.

According to Tideworks, the new system has dramatically improved data accuracy and eliminated needless redundancy and has provided improved ease of use and the means for customisation and flexibility in reporting, among other benefits. Caballero said: "End users now have control, and can create and access reports without taxing others."

MIT now has the advantage of knowing how its equipment and operators are performing and can better manage the overall performance of the terminal. The operations team can focus and prioritise their efforts with automated, accurate and real-time reporting. Having truly accurate data enables the team to confidently share professional reports directly with customers, provide more specific data points and evaluate performance trends – a significant improvement in terms of customer relations.

"Tideworks Insight has really made a difference in our operational efficiency and allows us to do more with our existing resources, which enables us to scale our operations," concluded Caballero. "The major difference between Tideworks Insight and other solutions is that this platform is specific to our industry, and it offers the flexibility to customise as we need. This is a tremendous advantage for logistics professionals at terminals worldwide."

MIT terminal manager Oscar Caballero

Tideworks Insight went live at the terminal in June 2017
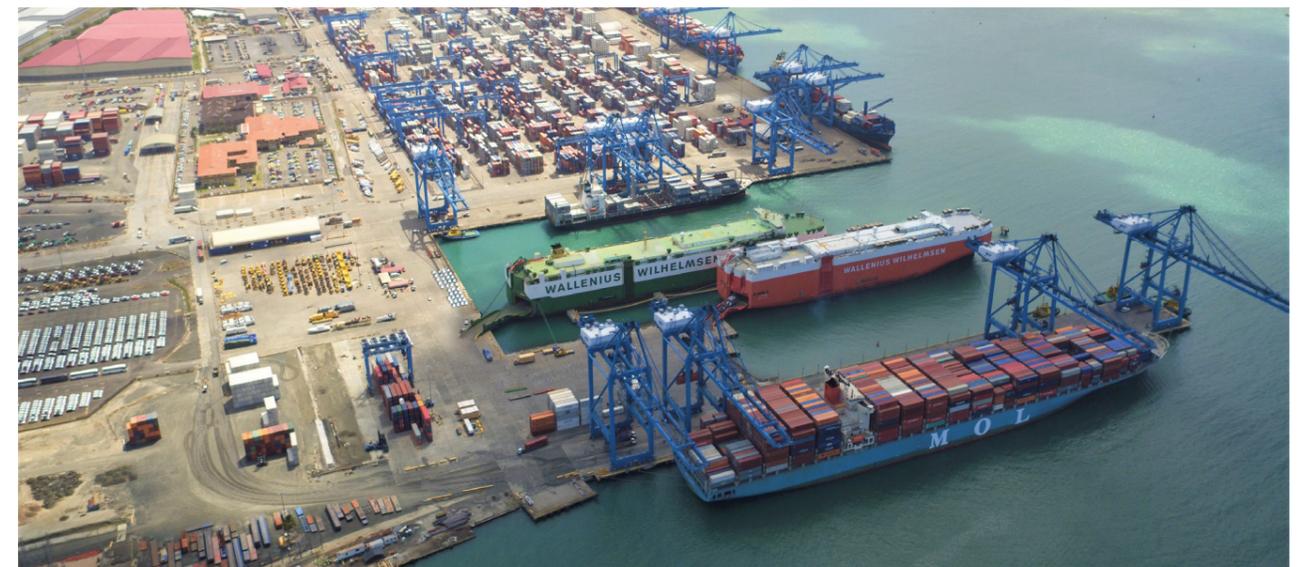
MIT is located on Panama's Atlantic coast