TEAMS: Designed for performance

Automation of terminal operations holds many promises: cheaper and safer operations, less emissions, and better infrastructure utilization. Most importantly, automation should guarantee an exemplary performance and a stable operation. However, the high complexity of a real-life terminal poses equally high demands on the control of automated equipment. Control software therefore plays a crucial role in meeting the promises of terminal automation, and should guarantee that equipment is used to its full operational potential.

TEAMS (Terminal Equipment Automated Management System) is TBA’s fleet management system and supplies customers with advanced control over their automated equipment, such as Automated Guided Vehicles (AGVs), lift AGVs, automated Straddle Carriers, Automated Stacking Cranes and Ship-to-Shore cranes. It sits between the equipment and the Terminal Operating System (TOS) and translates the equipment orders from the TOS into optimal movement plans.

TEAMS is currently the only proven system worldwide for controlling a complex robotized terminal and has shown to be up to the task over the past 10 years. It has a track record at HHLA’s CTA in Hamburg controlling its AGV fleet, at DPWorld’s Antwerp Gateway Terminal controlling its ASCs and at ECT’s Euromax Terminal in Rotterdam controlling QCs, AGVs, and ASCs. It is to be deployed at several other terminals in the near future. TEAMS has been coupled with Navis SPARCS and N4, but can be configured to work with any other suitable TOS.

Equipment control

TEAMS achieves the following goals:

- Efficient execution of orders
- Fast, deadlock-free routes
- Collision-free routes
- Smooth equipment use, to ensure equipment longevity
- Minimization of down times and breakdowns

To make this happen, TEAMS was designed for the unexpected. While basic movement control is hard enough to achieve for any type of equipment, handling the myriad of events that may happen at any time at a container terminal pose even greater challenges. The developers of TEAMS have 20 years of experience in designing container terminal control software and excel at making the system deal with these events. Great emphasis was put on system flexibility: it can run with a variety of TOS and handling equipment and can easily be customized for any terminal-specific needs.
State-of-the-art interface
TEAMS consists of clever software that takes care of the regular workflow. However, sometimes special situations or disturbances may occur. With TEAMS, skilled operators can monitor the operations in progress and react quickly and adequately on any disturbances. TEAMS provides exact and correct information on what is happening when and where, and presents this information in a way that is easy to work with: any operator can configure the interface in a way that suits his needs. Besides 2D-overviews, 3D animation of the operation is also possible.

Fast and dependable go-live
Automated terminals have a reputation for leading to a variety of start-up issues that take years to weed out; TEAMS proves that this doesn’t have to be the case. Not only have all main system components been thoroughly tested and have shown to work in actual operations, it may also be tested for a specific terminal - even when this terminal is still under construction! Using TBA’s trademark emulation software, the TOS and the TEAMS setup can be tested together on a virtual terminal that functions exactly like a real one. In this way, and in cooperation with the TOS vendor, the entire setup can be guaranteed to function properly before a terminal is live. This means the lead time is shorter, and that start-up problems can be prevented. After the terminal goes live, a 24x7 hotline will make sure that any issues that arise during operations are swiftly dealt with.

Continuous performance improvement
At many conventional terminals, day-to-day issues tend to distract from performance improvement possibilities. At robotized terminals, TEAMS can exploit all the possibilities offered by automated equipment for analyzing operations. It allows for monitoring all kinds of operational KPIs on high-detail as well as more strategic levels. It also provides Business Intelligence functionality, that allows for regression analysis (e.g. occupancy versus performance), intelligent event analysis and long term analysis. Moreover, event capturing functionality allows for complete 3D replay animations of earlier operations. With TEAMS, the entire operation can truly be evaluated and optimized!