



TERMINALSTAR to run Hamburg's biggest Container Terminal. HHLA's Container Terminal Burchardkai has selected TERMINALSTAR as its Software-Solution to support the doubling of its container capacity.

Case Study

Burchardkai selects TERMINALSTAR software to control 5.2 Million TEU.

The TERMINALSTAR software will be introduced as the new Integrated Terminal Control System/Integriertes Terminal Steuersystem (ITS) at HHLA's biggest Container Terminal Burchardkai (CTB). The solution providers HPC Hamburg Port Consulting and INFORM selected to implement the new terminal operating system (TOS) at CTB, which will control all of the terminal logistics processes.

Double digit growth rates in the past years and forecasts of about almost 15,000,000 TEU in 2015 for Hamburg have convinced Hamburg's biggest terminal operator HHLA of the necessity to provide considerably more terminal capacity.

In this challenging situation the HHLA management decided to extend their biggest facility Container Terminal Burchardkai (CTB). At this time CTB handled a record breaking 2.6 million TEU per year. As additional ground could not be leveraged on the Burchardkai peninsula, other measures had to be taken to increase container capacity. A comprehensive project was initiated that is comprised of various subprojects, which will optimize storage, terminal processes and software. The successful completion of such a challenging undertaking would require the following steps to be implemented over the next few years:

- *construction activities including such as the extension of the existing berths, the relocation of rail tracks and completely new access roads for trucks*
- *regaining area by eliminating warehouses*
- *storage optimization by IT supported stacking policies*
- *transition to an automated RMG yard*
- *integration of software into other newly designed components and existing systems*

The essential change, which needed to be made in order to achieve these ambitious goals, is the implementation of rail mounted gantry cranes on a facility that is traditionally straddle-carrier operated. When all is said and done, the maximum capacity will reach 5.2 million TEU which is twice the capacity available at the time the project started. Particular challenges were:

- *how to control the cargo and traffic flow on the new terminal*
- *how to avoid down times during implementation because the current situation does not allow performance interruptions since CTB operates at its capacity limits*
- *establishment of simulation and test environments to ensure that the new software meets the requirements and communicates seamlessly with other applications*
- *the CTB terminal expansion was designed as a multi discipline project with complex tasks in various areas. Some of which include civil engineering, procurement and implementation of new handling equipment, development of new operations strategies and various tunings of interfaces and processes.*

To meet these requirements a group of experts was summoned to ensure that the migration and integration of new and existing software would be available in a timely fashion. The Project "Integrated Terminal Control System/Integriertes Terminal Steuersystem" (ITS) was born.

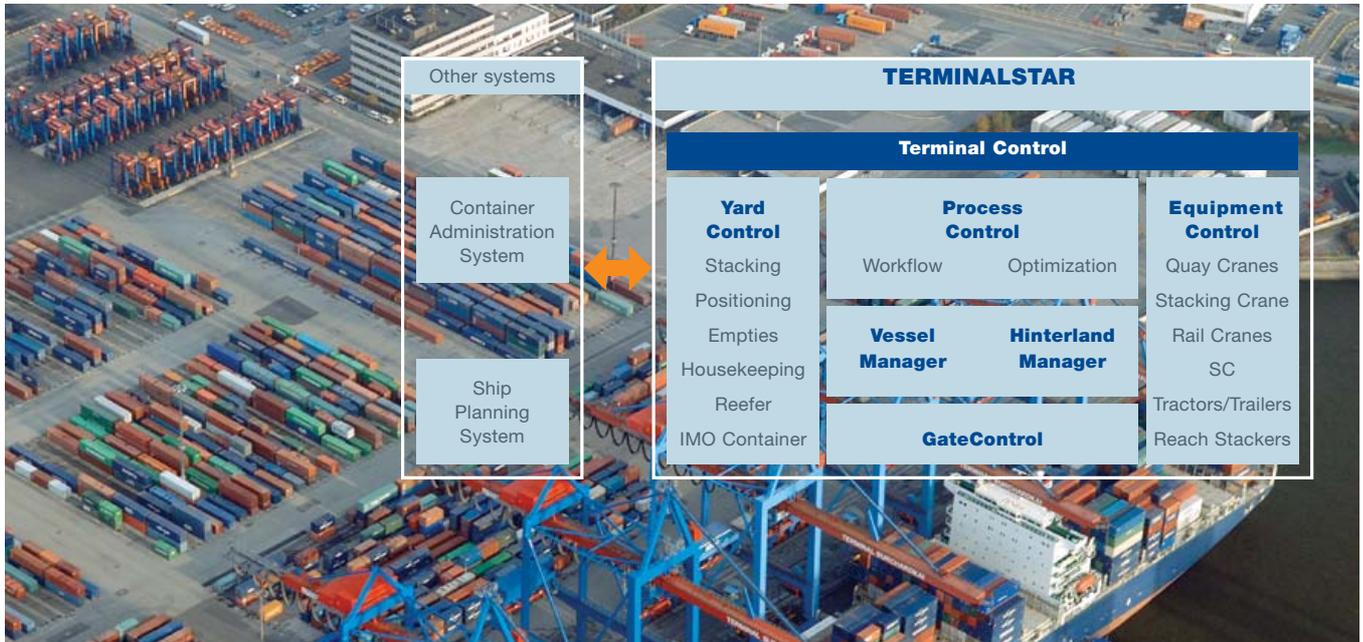
A powerful multi-tier architecture was designed based on the IT strategy already proven at HHLA's modern RMG-operated Container Terminal Altenwerder (CTA). This flexible approach allows old and new systems, business processes and terminal operations to be managed by a single master control station.

Unexpected influences independent of the ITS project also have a big impact on the progress of work and availability of functions and modules. Only a vigilant project management and a thorough modelling of all business processes enable a timely reaction to modifications and deviations which may arise affecting the overall targets. TERMINALSTAR was chosen as the most suitable software to meet all requirements for the processes to be restructured at CTB.

TERMINALSTAR:

- *provides proven modules to manage all types of equipment, such as RMGs, SCs, double-trolley gantry cranes, railway cranes, reachstackers and tractors/trailer units*
- *employs highly sophisticated mathematical algorithms to improve equipment and yard utilization, to reduce reshifters and to eliminate future bottle-necks.*
- *controls the various storage areas for containers and will centrally optimize the utilization of yard capacity.*
- *allows easy to use monitoring and control screens for terminal and yard controllers to manage both ship to shore and hinterland operations.*
- *combines many years of terminal control experience with state-of-the-art software concepts.*

TERMINALSTAR will interact with two other complex software applications. An in-house development named CLOU, which is responsible for administrative container management, EDI and billing, and the HHLA standard ship planning system (SPARCS).



Given the foundation provided by these applications, the project team had to make sure that interfaces between the three systems would be properly defined and tested and that responsibilities are appropriately distributed. Integrating applications, networks and programming languages is the daily business of this project.

As there will be almost no down times for transition, the change from the existing to the new system has to be completed in several steps. In each step more functionality of the new system will replace old ones. This makes it vital for the team of integrators to apply very thorough and exact adaptation procedures for all systems to allow the container terminal to continue operating at full swing during migration.

The comprehensive IT system is designed to control and to optimize resource utilizations and therefore the overall terminal productivity. This new system will build the backbone of the new CTB operations. A team of experts from logistics and IT was formed to analyse new requirements and to develop a concept to describe all elements and to support the development, testing and implementation process.

The following aspects received constant consideration throughout the project:

- Rail Mounted Gantry Cranes
- Stacking policy
- Optimization algorithms
- Crossing borders
- Migration (with almost no downtime)
- Integration of existing systems
- EDI and Messaging
- others

“Implementing ITS at CTB is like an open-heart-surgery”.

If this situation or parts of it sound familiar to you, you might be interested in a more detailed consultation. If you are planning to rebuild your terminal or redefine processes maybe even start building something completely new – we can help, please contact us.

- Visit us at CTB
- Let us visit you, present our project and discuss yours
- Request a feasibility study to discover optimization capabilities at your terminal

Partnership

HPC and INFORM have partnered to combine vast experience and know-how of terminal processes. This knowledge has been gained in various projects worldwide using IT systems for intelligent decision support based on advanced optimization technologies.

INFORM contributes its strength to the TERMINALSTAR software package making use of real mathematical optimization methods combined with a tremendous know-how in solving complex logistical problems in all sectors of the transportation industry.

HPC takes position in the field of project management, EDI, integration services and experience in container terminal management. When the terminal expansion project at CTB is completed, TERMINALSTAR will run one of the biggest and most modern terminals in the world.

Due to its longstanding consulting experience with ports and terminals around the globe, HPC's terminal operating system, as the administrative part of the suite, complies with all requirements of container terminal operations.

INFORM completes the suite with its systems for intelligent decision-making regarding yard productivity and equipment control. Based on advanced optimization technologies including fuzzy logic, INFORMS's components enrich the system with input from various logistics fields such as ports, airports, in-plant, trucking, etc.