



VERS DataProvider for the Pilot's Association Kiel Canal II/ Kiel/ Lübeck/ Flensburg

Increased Traffic Safety with Best-of-Breed IT Solutions from Consist

By Bodo Krause-Traudes

The pilots of the Kiel Canal lead 30,000 ships per year through one of the narrowest and heavily traveled waterways in the world. Advising the ship's captain, pilots rely both on many years of estuary experience and IT components that have been integrated by Consist into a professional, innovative situation overview.

Traditional pilotage

Travel in estuaries such as the Kiel Canal present particular challenges to nautical ship navigation. As the expert for this estuary, the pilot provides the captain with his expertise. Cargo ships of ever larger dimensions must be navigated safely on the canal, often in weather-influenced, dense traffic. Deviation or maneuvering like at sea or in port is impossible due to the restricted water surface and depth.

To give good advice, a Kiel Canal pilot has to know the traffic situation in the canal and on adjacent waterways such as the Inner Kiel Fjord or the Elbe River, for example to be able to make routing recommendations. For immediate advice, the pilot needs a situation

overview that includes all relevant data already when boarding the ship.

The Kiel Canal as an example of an estuary

The Kiel Canal is 98.65 km long, making it one of the most significant artificial waterways in the world. Especially for cargo ships, the canal represents a significant shortcut, since a passage means avoiding the long, time-consuming, and more costly path around Skagen (about 250 nm).

Due to the dynamic increase in shipping traffic and the changes in fleet structure, the narrow curves and tight cross-sections between

Königsförde and Kiel-Holtenau are increasingly a bottleneck for the larger ships on the Kiel Canal. For this reason, measures such as expansion of the eastern segment of the Kiel Canal are on the drawing board. Currently, ships up to 235 m in length, 32.5 m in width, and 9.0 m in depth can navigate the canal. In the future, these maximum ship dimensions will be raised to 280 m, 32.5 m, and 9.5 m respectively.

An IT-based situation overview for the canal uses information such as ship position messages (AIS signals) that are required for ships passing through the Kiel Canal. These signals are subject to the restrictions of shortwave radio, thus do not span the entire length of the

canal and are also hindered in the eastern section due to curves and steep banks. Complete coverage throughout the length of the canal thus requires additional equipment.

Technical equipment

■ AIS antennas

To ensure AIS data transmission (ship data) throughout the Kiel Canal and the western Baltic Sea, an antenna network has been in operation for a few years now. The data obtained from the antennas are collected so that a complete view of all ships and the adjacent waterways is available.

■ VERS

The AIS antenna network provides a valid set of basic data that can be analyzed and further processed based on rules. This functionality is provided by Consist's Vessel Event & Reporting System (VERS). It uses AIS data, combining process-relevant information such as ship positions and movements with the rules defined in VERS itself, for example in order to calculate exact ship arrival times. Based on these times, personnel management of the pilots and other logistics processes are initiated, thus optimizing the maritime value-creation chain.

■ Pilot maps

In estuary navigation, the actual water depths (the expected depth of the Kiel Canal being 11 meters) and expected widths (between 45 and 90 meters) play an important role. The actual values are recorded

for the pilots in special maps. These maps also include a great deal of additional nautical information, such as turning radii, piling lines, and information that provides the basis for better and more comprehensive advice. The maps are displayed using a software package that provides a situation overview for pilots and the ship being advised.

■ PPU

The situation overview software runs on a "Portable Pilot Unit" (PPU), such as a laptop. The International Maritime Organization (IMO) has provided regulations to ensure that PPUs have a connector installed on the ship's bridge to transmit AIS data of the ship itself and other ships in order to populate the situation overview with position and routing information. The history of PPUs extends from

large cases containing AIS receiving units to be installed on board, to laptops that must be connected to the pilot plug on the bridge as soon as the ship is boarded.

Innovation

In addition to the technical equipment already provided, further innovative requirements were formulated for an advisory platform and situation overview for the Pilot's Brotherhood Kiel Canal II/ Kiel/ Lübeck/ Flensburg:

- A user-friendly, intuitively operated display unit.

These requirements are currently best met by Apple technology in the form of iPhones and iPads. Until now, however, connection of these units to the pilot plug has not been an option.



The project team, from right: Wolfgang Bültter, Managing Director, and Stefan Borowski, 1. Ältermann, from the Pilot's Association Kiel Canal II/ Kiel/ Lübeck/ Flensburg, Bodo Krause-Traudes, Account Manager, and Guido Stein, Senior Consultant, from Consist.



Whether summer or winter – pilots are in action at any weather.



photos: Consist

The word 'Lotse' (German for pilot) stems from the Old High German word 'Leytsman'. As early as in the 14th Century, fishermen acted as the first pilots. The "Hamburg Pilotage Rules" of 1656, the oldest German pilotage regulation, stipulated the requirement of a state license for the pilots for the first time. The pilots are joined in associations. They organize constant availability of pilots as part of a self-administrative task.

- Availability immediately after boarding the ship

Connection of a classic PPU to the pilot plug is only possible upon entering the bridge of the ship being advised. Since the pilot handover takes place under way, a situation analysis that can be provided even before boarding the ship can provide significantly more safety. So an alternative technology to the pilot plug was needed that could permit a situation overview to be prepared before boarding.

Best-of-breed

To meet these requirements, Consist combined the best solutions from the following areas:

- Pilot maps for estuary information
- iPhones or iPads with Internet access used as terminals (PPU)
- VERS and the antenna network providing a situation overview for the estuary
- Solutions and services for the integration of individual components from Consist

Via a mobile Internet connection the pilot already receives the situation information on his iPhone or iPad before entering the ship. The additional requirement for multiuser operation and high data quality requires a high-availability server system in the background. This system provides additional functionality, such as the cleanup of position duplicates from ships whose AIS signals are received by multiple antennas.

The multilayer solution uses those terminals currently on the market featuring the best ease of use, such as iPhones and iPads, without being dependent on them. Laptops or intuitively easy-to-use touch screens similar to those of the Apple equipment can still be used, which could then provide additional functionality, such as from VERS and other pilot applications, directly on-site on board the ship.

Summary

The traditional advisory service of pilots is supported by IT solutions that must be continuously

adapted to ever-changing requirements. To this end, in addition to the good ideas and courage of users (in this case, pilots) as the customers, an IT service provider like Consist is also required, who understands the customer's needs and is able to translate their ideas into a sustainable IT architecture.

You can find more on this topic at www.consist.de/sis and www.consist.de/mobil.

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