

Web-based solutions for port community systems

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Humans have been at sea for nearly as long as they've been walking on two legs. Archaeologists have found evidence of boats in Crete dating back 130,000 years. Ships are known to have existed since the Neolithic Age. Pilotage goes back at least to ancient Greek and Roman times. So it is not surprising that technology has been applied to seafaring since people first went to sea. The need for tools and aids to make navigation safer and more accurate has been inspiring inventors for millennia.

The progress of technology

Technology is so ubiquitous that we tend to take it for granted. However some of the things we rely on the most have not been around for all that long. Vessel traffic services (VTS) started around 1948. The term GPS or global positioning system was coined in 1973. STDMA data link patent, which is the basis for automatic identification systems (AIS), was published in 1997 and performance standards for AIS were adopted in 1998.

The massive, room-sized mainframes and storage devices that were developed after WWII have evolved into sleek, wireless, wafer-thin tablets and mobile phones that operate in 'the cloud', a term for high availability hosted solutions. The miniaturisation of computing technology, together with advances in communication and navigation technologies means that as ships get bigger and tougher to navigate, and environmental concerns become more pressing, there are more tools available for ports to use.

Developing port community systems

Today ports, pilots and maritime authorities can choose from many mobile, web-based applications with which to run their businesses. Still, some sectors of the maritime industry have not, when compared to other industries, been early adopters of new technology. Many ports still operate with legacy systems and manual processes, yet wish to define themselves as the hub of a modern port community system (PCS). Web-based technologies offer the technical infrastructure to do this. As more ports use technology to connect with their stakeholders, the concept of Port Community Systems becomes appealing and is, in some jurisdictions, being driven by laws or governmental policy. (See the article by Richard Morton in PTI 54).

Benefits and opportunities

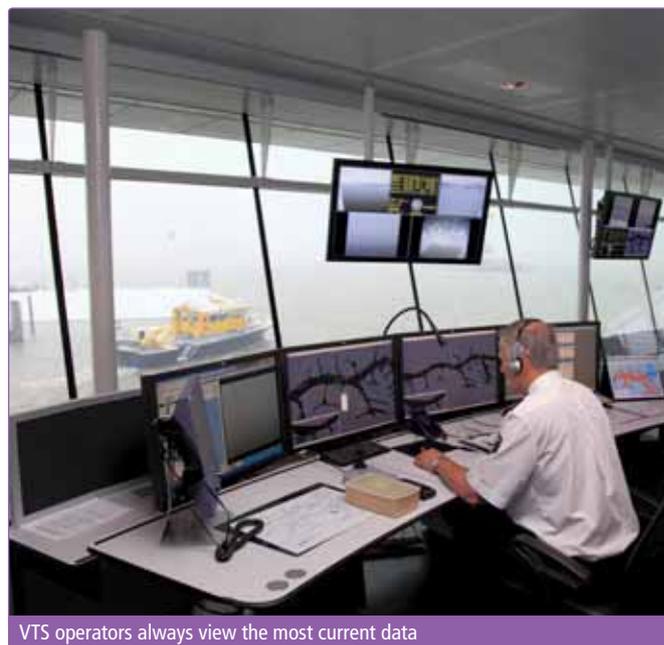
In Europe, PCS is defined around the concept of having a single window for the input and sharing of electronic data, the benefits of which are obvious. Some ports simply use the concept of PCS to describe systems that give stakeholders access to the information they need. The web makes this possible. However, the web is not static. The next generation of internet tools and applications referred to as Web 2.0, may not have one universal definition, but if you've ever blogged, updated a wiki, checked KPIs on your mobile device or tagged a picture, you are already using it. The new web is no longer passive. It encourages active participation and interaction

from users. Ports are making use of this to build more meaningful relationships with their stakeholders. It is no longer uncommon for ports to supplement their traditional communication channels with Twitter or Facebook.

However, even within a port community, there are different considerations that drive whether web-based solutions are appropriate. In the logistics sphere, the applicability of web-based solutions is clear. Consider a port community comprised of a port authority, agents, pilots and other service providers, terminal operators, customs, police, and the general public. The port provides web access to its various stakeholders, based on agreed business processes and user rights and privileges. For example, an agent can complete or update berth applications and service requests online and receive confirmation or questions from the harbourmaster the same way. The port police can see schedules and cargo manifests with their web view. The general public can check on ships in port and cruise line schedules from their mobile devices. Direct interface to customs can be deployed.

Considerations and challenges

There are few technological issues in enabling these solutions, even in situations where disparate systems need to interface to one another. The bigger challenge can be getting agreement between stakeholders on business rules and processes, particularly when the implementation of web-based solutions is part of an overall automation strategy. It would be unwise to underestimate the inevitable change management issues that will occur when the old way of doing something goes out the window. Human beings can be naturally conservative, particular when someone higher up tries to change how they do their jobs. Early



VTS operators always view the most current data



Port Community Stakeholders include service providers and customers

engagement of the people whose daily work lives will be affected by the application of technology is a critical success factor for any implementation.

Web solutions have their own challenges. If you have ever streamed a live TV show or downloaded a movie, you may have experienced lags or disruptions in the data stream. This is inherent in web-based systems where the source of information and its consumption are distributed around the globe. Multiple users can make simultaneous requests for the same information. The more users, the more work there is for server and the higher the possibility of delays in response.

Embracing efficient systems

When it comes to the domain of e-navigation such as VTS systems, these must ensure that the latency between information gathering and information display is minimal. Users need to know that they are always viewing the most current data. Every second lost between information gathering and information display could result in a multi-second delay when you factor in human response time. Three seconds may not sound like a lot, but if you are responsible for the safety of traffic in a busy marine area, it could mean the difference between a close call and having to fill in an incident report. VTS has to deal with real-time information. The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) specifies the format for the exchange of data between VTS systems known as the Inter-VTS Exchange Format (IVEF) service to ensure protocol efficiency and minimal response times. Nevertheless, there are commercial web services that let subscribers view live AIS and traffic data. Ports can also offer such services with the additional advantage of showing filtered, validated AIS and radar data via the web. Web-based solutions allow accessibility wherever an internet connection exists, allowing ports to reach customers all over the world.

Technology as an enabler for improvements

Technology providers are constantly looking for ways to integrate

disparate maritime technologies. Today what the VTS officer sees on his or her traffic board is not limited to just the radar and AIS information of a vessel. With the click of a mouse, an automatic link to the port's web-based community system places information about the ship, the cargo and the voyage on the VTS officer's screen. As the broader concept of PCS continues to evolve, we can expect to see web-based integration that will enable better sharing of information between ship and shore to improve situational awareness; access to dynamic under keel clearance (DUKC) system, fatigue and tidal window information for both planning and real-time operations and real-time sharing of information about violations, accidents and defects.

Whether your port is considering a comprehensive PCS with a single window, or a more modest approach that will allow stakeholders to have web-based access to relevant information, the technology exists to make it happen. Just keep in mind that technology is merely an enabler. The real pay-off comes from the conversations with the members of your port's community about how to drive quantifiable improvements in your collective business processes.

ABOUT THE AUTHOR



Christene Best has over 20 years of experience in sales, marketing and customer service in the technology field, with expertise in enterprise software and services, quality and business process improvement. She is vice-president, sales and marketing for Klein Systems Group Ltd and is based in Vancouver, Canada.

ABOUT THE COMPANY

Klein Systems Group Ltd, an international provider of maritime software solutions, is part of the HITT group of companies providing solutions for VTS, maritime community systems, navigation and hydrography. HITT is one of the creators of IVEF and recently joined the Saab group of companies, which has offices in 140 locations worldwide.

ENQUIRIES

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