SHIP MANAGEMENT

# Trends in Maritime Management Systems and Software

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Today's marine transportation companies operate in an era exemplified by advances in technology, automation, and software. For example, a steady stream of new offerings in navigation software and marine electronics may be found throughout the industry. However, when it comes to Maritime Management Systems and their respective software platforms the maritime industry faces comparatively fewer industry offerings in the field and a smaller knowledge base among users. By Maritime Management Systems, I refer to organized information management systems intended for the management

of government compliance, standards (e.g., ISM, RCP, ISO 14001, ISO 9001), emissions monitoring and reporting, maintenance, training, payroll, logistics and other related activities. Although the mariner knowledge base concerning Maritime Management Systems is expanding, due in part to increased regulatory requirements and global customer requirements, user awareness isn't as widespread as other areas in part because compliance programs are not universally adopted. Reasons for this include a perception that compliance is overly burdensome and often not related to the work at hand.

As this article introduces, Maritime Management Systems for compliance and other activities can actually be customer-oriented, user-friendly, and relevant to the daily work of mariners. One way these positive attributes can be obtained is through system organization informed by best industry practices. Best practice approaches are enhanced by harnessing recent trends in technology and software.

On the Maritime Management System organizational front, two trends are worthy of note: a process approach; and management system integration. A process approach to compliance,
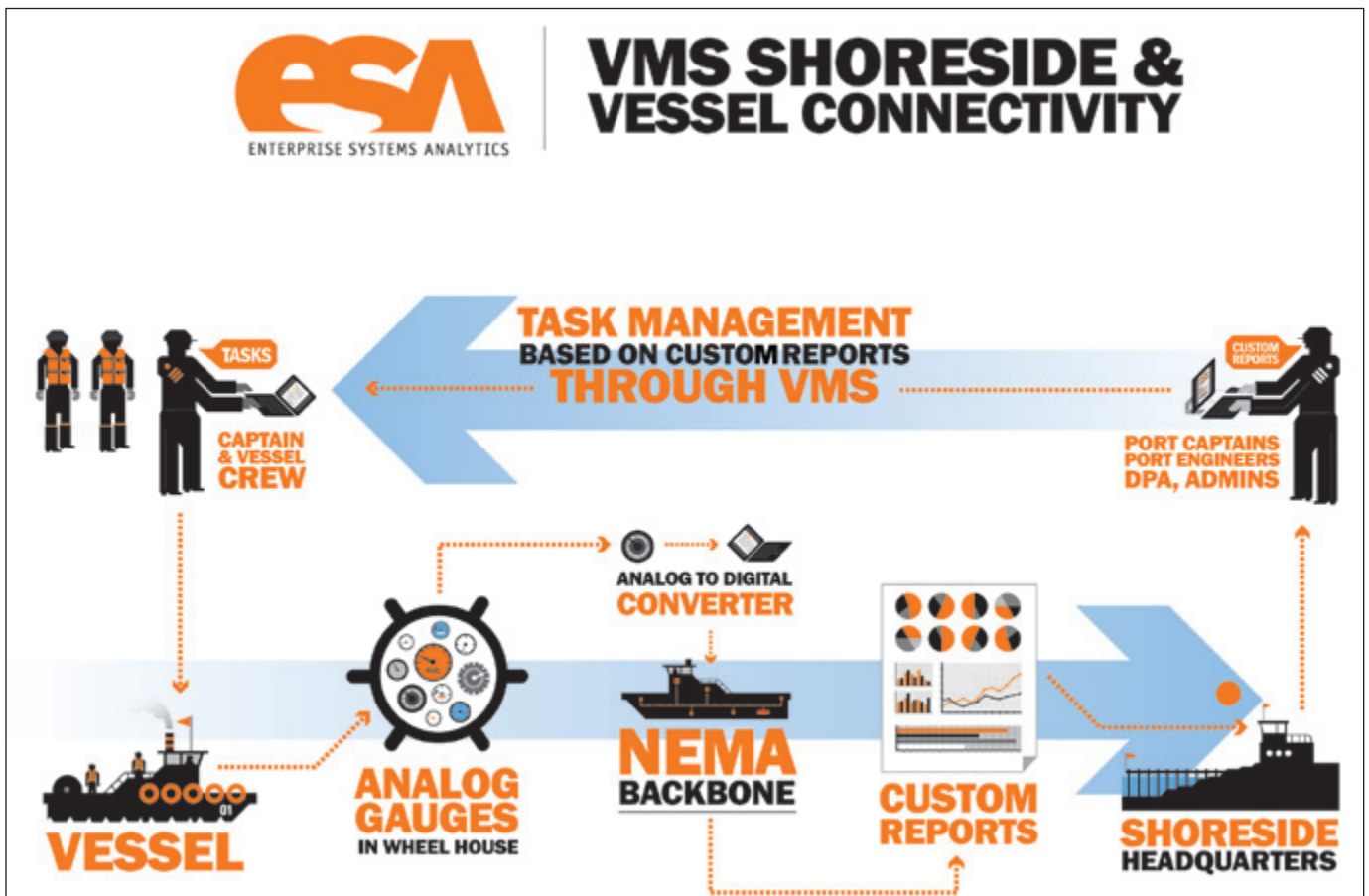
standards, and maintenance is exemplified by process owner-ship and organization of information based on company-defined themes that reference requirements in a matrix. Process ownership (e.g., "manage environmental compliance") is assigned to a specific individual and differentiated from organizational responsibility by department or title. When combined with a process approach, adaptive management system integration allows a single management system structure to handle multiple requirements such as regulatory, standards, maintenance, and training. This eliminates the need for separate systems (e.g., "the safety manual" and "the environmental manual"). This also provides maritime companies with a framework that scales to meet new requirements.

One technology trend with potential to have a maritime industry impact pertains to maintenance management and planning in particular. This trend is exemplified by a National Electrical Manufacturers Association (NEMA) based "black box" that may be utilized to collect engine related data from sensors and send this information to a software management system. In the commercial maritime sector, typical data streams of interest include engine hours, fuel consumption, and emissions data. Concerning engine hour data, human entry error stemming from pen and paper based logs may be reduced by automating the data flow to a software system. Engine hour data may be tied back into the Maritime Management System concerning, for example, ISM compliance, to show auditors and customers reports concerning engine hours in support of that particular section of the ISM Code. The display of these reports may be via the onboard Vessel Management System viewed on a vessel-based desktop, laptop, tablet, or smartphone, or in hardcopy. Engine hour data may also be managed by Port Engineers on a web-based shoreside portal for planned maintenance activities.

Three recent trends in Maritime Management System software may be useful to consider. The first of these is a cloud-based "dual platform" approach. One tier allows a crew aboard a vessel to manage their information, perform compliance, training and maintenance tasks, and communicate with shoreside management. The other tier is the shoreside management system itself.

A second trend in software has been toward long-term partnering with a key software vendor so that the vendor develops a deep knowledge for the organizational culture and needs of the maritime company. Long-term vendor partnering produces cost and quality information that maritime companies can draw upon when deciding whether to use in-house resources or to utilize the key vendor. This approach is predicated on the ability for the vendor to customize the software and therefore

be adaptive in allowing the software to evolve with changing business needs.

Third, maritime transportation companies also need to put themselves in a position whereby their current Maritime Management System software can co-exist through time with the financial packages of the major software entities through system integration. For example, it may be important for a given Maritime Management System software product to send and receive data to and from a global software product.

Future articles in this series will provide case examples and expand on these trends in maritime compliance, technology, and software.

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