

Software as a Service - revolutionising fleet management

Implementing a software as a service (SaaS) model can allow companies with a modest IT infrastructure to still enjoy the benefits of the latest software applications, without having to make major investments. This can prove particularly useful in an industry like maritime, writes Christa Thoma, MESPAS

Shipping companies running traditional technical fleet management software are often sobered by the high investments and operational costs of running and maintaining the software.

In addition, they are disillusioned by the limited additional benefits the software offers, for instance in terms of reporting functionalities.

Although many shipping companies are thinking about employing a professional technical fleet management software, they often hesitate to introduce such a third party system.

There are several reasons for this: companies are wary of the time and costs involved in evaluating different products and implementing the system, as well as training the users.

In addition, implementing a traditional software system also means shipping companies have to invest heavily in hardware, IT personnel, security, and support, on an ongoing basis.

Yet, in times where affordable bandwidth and increasingly powerful processors are simplifying how we do business, many companies are re-visiting the choices they made with regards to the type of software they use, and how they run it.

Software as a Service (SaaS) is one of the most important recent innovations in terms of deploying and using software, and it has eliminated many of the negative aspects associated with running software systems.

As a consequence, the Software as a Service concept is becoming more and more widespread.

In this regard, this article discusses two things – it explains the pros and cons of SaaS, and takes a snapshot at how the maritime industry can employ SaaS to improve its technical fleet management operations.

What is SaaS?

The concept of Software as a Service has been in use for a number of years.

The acronym SaaS first appeared in February 2001 in an article called *Strategic Backgrounder: Software as a Service*, published by the Software & Information Industry's (SIIA) eBusiness Division.

Simply put, SaaS means delivering software over the internet, which is used to provide, support and run the system.

Not long ago, SaaS was almost exclusively limited to CRM (Customer Relationship Management) applications such as Salesforce. Today, typical SaaS applications include accounting, E-commerce, ERP (Enterprise Resource Planning), database applications, project management, and many other applications.

Previously, such applications were expensive on-premises products that only large companies could afford.

Today, with SaaS, even small companies can access state-of-the-art applications for a reasonable fixed subscription fee. The web-based model allows businesses to maintain a single system, and to make use of applications operated by service providers rather than themselves.

That relieves them of the need to buy, operate and maintain IT infrastructure and application software.

SaaS has become increasingly popular for its ability to simplify deployment. It also permits software providers to support many customers with a single version of a software.

It is far more cost-efficient to develop and support one version of a software centrally – and to offer the application as a web-based service – than to maintain a variety of software versions locally and on a number of servers.

Not only does the SaaS concept allow for more efficient resource utilisation, it also eliminates the high costs of proprietary hardware and applications, and the IT resources to maintain and operate the infrastructure.

With SaaS, a software provider licenses an application to customers as a 'service

on demand'. This approach to application delivery is part of the utility computing model where all of the technology is in the 'cloud' – accessed over the internet as a service.

This is in contrast to the traditional approach where every application is licensed, installed, maintained and supported on every device or computer.

Today, many companies in a variety of industries have adopted SaaS applications. The main aim is to optimise reliability and costs by offloading the burden of hardware maintenance (i.e. server, network) and software maintenance, as well as data backup.

In a 2010 study by 'Computerworld', almost 50 per cent of the respondents mention 'Cloud' and 'SaaS' as belonging to the most important IT issues over the next two years.

SaaS versus on-premises systems

While there are different SaaS models available in the market, a few key characteristics are common to all SaaS models (see table below right).

When comparing the costs of an on-premises solution with a SaaS solution, one has to be aware of the different cash outflows incurred by in-house data centres and server infrastructure:

- The direct costs that go with running a server: server, power, floor space, storage, backups, various licenses, and IT operations to manage these resources.
- The indirect costs of running a server: network and storage infrastructure, IT operations to manage the general infrastructure and data security.
- The overhead costs of owning a server: procurement of server infrastructure, administration and accounting personnel, IT management, depreciation.

Once the infrastructure is put in place, the above costs are incurred regardless of whether the software application is being used or not.

This could be compared to buying versus renting a car. Even if the car owner doesn't like his car anymore, the full purchase price is due for payment, and the ongoing costs such as insurance, maintenance, new tires and so on are incurred. When the car has reached the end of its useful life, one has to buy another car.

By contrast, if a car is rented, the driver is committed to it only as long as he wants to use it. Once the driver paid for that use, there are no further financial obligations.

It's the rental car company's obligation to pay for insurance and other disbursements to keep it in excellent shape. And it's in the rental car business' best interest to keep its cars in good shape, or else the company won't stay in business for long.

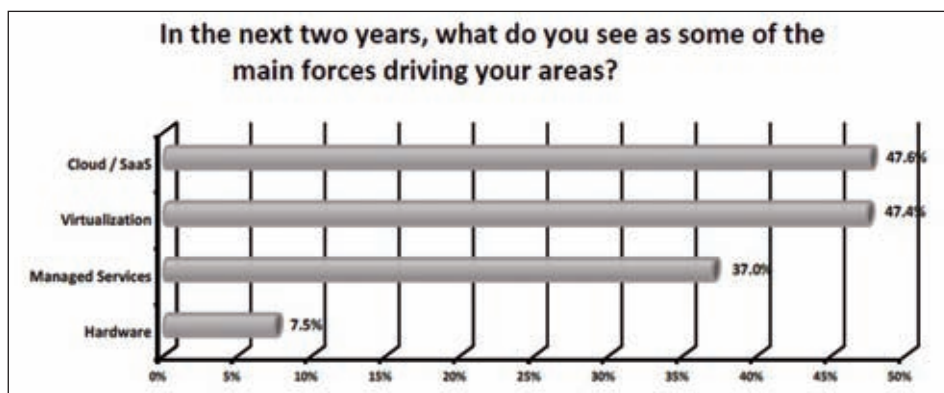
Similar to the above analogy, SaaS presents a low-cost, flexible alternative to the have-your-own-software approach. The software is neither installed nor operated on the company's IT landscape, but is offered as a hosted service.

Employees utilise the application via a web-based frontend, or open an offline software client which regularly synchronises with the central database.

This is particularly important in the maritime industry, i.e. for ships that have no continuous internet connection. No server needs to be hosted at the client's site, nor do clients have to worry about security, backups or installing software updates on users' computers.

So how come SaaS providers can provide software at lower costs?

Traditional applications require a dedicated set of resources to fulfil the needs of just one organisation. This means, with traditional systems, each customer covers



Source: 'Computerworld' August 2010, Top 500 ICT companies in Switzerland. Multiple answers were possible.

On-premises Software

The software is purchased upfront and integrated into the IT landscape of the company

The software is owned by the customer

The software is deployed, managed and supported as well as maintained by dedicated in-house IT personnel

The customer provides the in-house infrastructure to support the software, such as servers, hardware, networks and security measures

It's the customer's decision whether or not to utilise the latest version of the software. If so, additional costs are incurred

SaaS delivery model

SaaS suppliers provide customers access to the software via the internet

Software is not owned by the customer; it's owned by the SaaS provider

The services noted on the left are offered by the SaaS provider as part of the subscription fee

The SaaS provider is responsible for maintenance, upgrades, support and security of the software and infrastructure

The software provider makes available the latest version of the software to all its customers, at no additional costs

On-premises Software

CapEx

- ◆ Costs for hardware, networking equipment, infrastructure and security measures, plus costs for replacements and upgrades of hardware over time
- ◆ Purchase and licensing price of software, plus recurring costs for software upgrades
- ◆ Additional costs for licenses and hardware when the business grows, i.e. when new users are added

OpEx

- ◆ Integration and deployment
- ◆ Managing, supporting, maintaining the software, including deployment of new releases
- ◆ IT Personnel costs and overheads
- ◆ Purchase or renting of floor space for server room

SaaS delivery model

CapEx

- ◆ No capital expenditure incurred if the company already has sufficient internet access

OpEx

- ◆ Subscription fee (e.g. per user, per transaction, per month, per year, per company)

his own server hardware and care for maintenance, upgrades, security, backups and so on.

In the maritime industry, sometimes a server is run for each individual vessel.

With SaaS the magic words are 'Economies of Scale', and the table above highlights some of the advantages in terms of Capital Expenditure (CapEx) and Operational Expenditure (OpEx).

A SaaS platform can satisfy the needs of multiple customers, using the hardware and personnel resources to manage just one single software instance. Customers

access the software on the central server by using their existing computers.

The data remains on the central server; no need for customers to worry about security, backups, implementing software upgrades and other IT related tasks.

This yields tremendous economies of scale, as only one set of hardware resources (central server) is necessary to meet the needs of all users; a relatively small staff can efficiently and securely manage only one stack of software and hardware; and developers can build, support and further develop a single code

base on just one platform, rather than on many.

Benefits of SaaS

The following are what I believe to be the top eight benefits of SaaS.

1) Save Money. No up-front costs: No dedicated on-premises servers needed, and no other expensive infrastructure for their operation. In addition, there's no tied-up capital for hardware or up-front costs for software licenses.

Reduced IT costs: Purchasing software the traditional way results in significant expenditures for installation, maintenance, managing updates and migration of the data. By contrast, system maintenance (backup, updates, patches, security, technical support, etc) is already included in the subscription fee of a SaaS solution.

Predictable, low pricing: The pay-as-you-go model incurs significantly lower costs in comparison with traditional systems, and it includes the costs for maintenance, support, and upgrades.

This means: Instead of investing in hardware and purchasing software licenses, clients pay only for what they actually need, e.g. based on the subscribed applications and number of users.

Apart from the relatively low operations costs of running SaaS applications, clients also benefit from the fact that future software upgrades are included in the fee.

Positive side-effects: no capital is tied up; capital can be used for other projects;

no need to provision for future computing resources.

2) Save Time. Speed of deployment: SaaS solutions are up and running within a very short time span. System implementation, ranging from evaluation to specification, data implementation and deployment and training, usually happens within weeks as opposed to months or years.

This is because many of the issues related to the implementation of proprietary software do not apply, and because the software is already in full operation on the SaaS provider's infrastructure.

Additionally, training needs tend to be minimal as the software must be intuitive and easy-to-use in order to meet the requirements of its broad user-base.

3) Access software from anywhere. SaaS applications are accessible from anywhere with an internet connection. Users aboard ships work with an offline software client.

4) Concentrate on core business and increase productivity. Being relieved of many IT related issues means that companies can redirect human and financial resources to the company's core business.

5) Benefit from a flexible and rapidly scalable system. With SaaS, there are no hardware issues connected with an increase (or decrease) of the number of users. This means the system quickly adapts to changing numbers of users.

This offers a great deal of flexibility, particularly in the shipping industry, where fleet sizes may vary on a regular basis.

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6) High reliability, performance and security. Software applications offered as SaaS are hosted in high-capacity, powerful and secure data centres. No provider can afford to upset its clientele with long reaction times, unavailable services or unsecured system architecture. Redundant server farms ensure continued availability in peak times or in case of a server breakdown.

Infrastructure operated by SaaS providers outclass customer-operated infrastructure simply because of their focus and size: they're run by companies whose core business it is to run complex IT systems.

7) Always current and compatible software. SaaS applications are upgraded on the central server. This happens with little or no involvement by the customer. This ensures that all users of the system automatically work with the latest version, and time consuming updates or problems due to differing software versions are eliminated.

With SaaS, there is centralised backup, recovery and archiving. Crews aboard vessels work with an offline version of the application. Regular synchronisation ensures that both software and data are up-to-date.

8) Low entry and exit barrier. Due to the moderate initial costs and the subscription fee, SaaS has a very low entry barrier. This enables small to medium sized companies to employ professional software applications which previously were too costly and time-consuming to implement for them.

Businesses reduce the risk of being tied down with proprietary, under-performing solutions.

Drivers and reservations

So what might drive companies to adopt an SaaS model? A survey done by Information Week Analytics in 2010 reaffirms several key benefits of SaaS adoption (see table below left).

The table above right, from a January 2011 Australian Government, Department of Finance and Deregulation, Cloud Computing Strategic Direction Paper, also outlines a number of key drivers in the adoption of cloud computing.

However, despite the highlighted advantages of SaaS, some reservations exist.

Driver	Outcome
Value for money	<ul style="list-style-type: none"> Reduced duplication and costs Leveraging economies of scale Increased savings through virtualisation Allow for 'measured' payment (pay as you use) Reduced energy use Ability to reinvest in, and concentrate on, core objectives Adopt, where fit for purpose, modern technologies and practices that improve ICT effectiveness and efficiency
Flexibility	<ul style="list-style-type: none"> Create a flexible services-oriented environment Rapid provisioning and deployment of services as well as on demand scalability and elasticity for services & capabilities
Operational reliability and robustness	<ul style="list-style-type: none"> High resiliency and availability Standard offering

Issues such as security, data sovereignty and inflexibility in terms of customisation of the software tend to be mentioned. When it comes to extremely sensitive data, particular attention must be paid to data security and legal issues.

On the other hand, this applies to any software application, be they traditional or SaaS applications. In terms of data sovereignty, some people may worry about losing physical control over their data.

However, experience shows that security issues tend to be dealt with more professionally at a dedicated SaaS application provider than would be the case with in-house solutions. Cloud providers have a vital interest in safe IT environments – security problems would soon mean the end of a SaaS company.

For SaaS applications to work efficiently, access to the internet is essential. Yet, this is already a given in today's business environment – internet access is usually part of the standard infrastructure.

For use aboard ships, the SaaS application is managed offline, and data transfers as well as software updates are conducted via regular synchronisation.

SaaS checklist

This checklist, below right, may help you evaluate whether a SaaS application is appropriate for your company or your project. Any YES answer points you to the system more appropriate in relation to the question.

While there are many SaaS companies in the market, there are only a small number of specialised SaaS software

providers focusing on the maritime industry. In our view, there are two main reasons for this.

This is firstly due to the conservative thinking in shipping. The industry is not known for taking up new technologies fast, they're more comfortable in the role of followers than in the role of early adopters.

Secondly, at the moment, not many SaaS providers for the maritime industry exist. Most established software solutions are built on software architecture that cannot be used to reliably and securely deliver software applications and data via the cloud.

Typically, a SaaS software provider is a relatively young company, whose solution is based on a multi-tenant architecture (a single version of the application is used for all customers, i.e. 'tenants').

In terms of technical fleet management, there are two distinctive features the software must possess: high quality data management and offline availability.

In terms of data management, the SaaS provider manages – on behalf of all customers – the data and documents that are shared by all users of the application, for instance product specifications, OEM manuals and the like.

Since this is done centrally and for all clients, the costs for this are very low for each client, i.e. definitely much lower than if each customer would have to do this on his own.

In terms of ownership of the data, customer-specific or vessel-specific data belongs to the customer and not to the system provider, and cannot be accessed or viewed by any other user of the system. Customers, on the other hand, can access and download their data in any industry-standard format.

Having offline availability means that office staff can access the central database

in real-time through a secure internet connection – no matter when and where they are located.

Crews aboard the vessels work offline by accessing the database onboard, which is mirrored to the central server's database ashore. Regular synchronisation as part of the standard sync schedule of each vessel ensures that both ship and shore work with the same up-to-date information.

There is also an added benefit of freeing up resources for other projects. Working with traditional procurement and fleet management applications involves many time-consuming and costly issues that aren't part of the core competencies of a typical player in the shipping industry, mainly in the area of Information Technology (IT).

Not so with SaaS. SaaS allows applications to be centrally provided and maintained. All clients use the same technology and benefit from continual software improvements at no additional costs.

The software is not installed on-site, but accessed via the internet, meaning the software solution is available anytime and anywhere.

Outlook

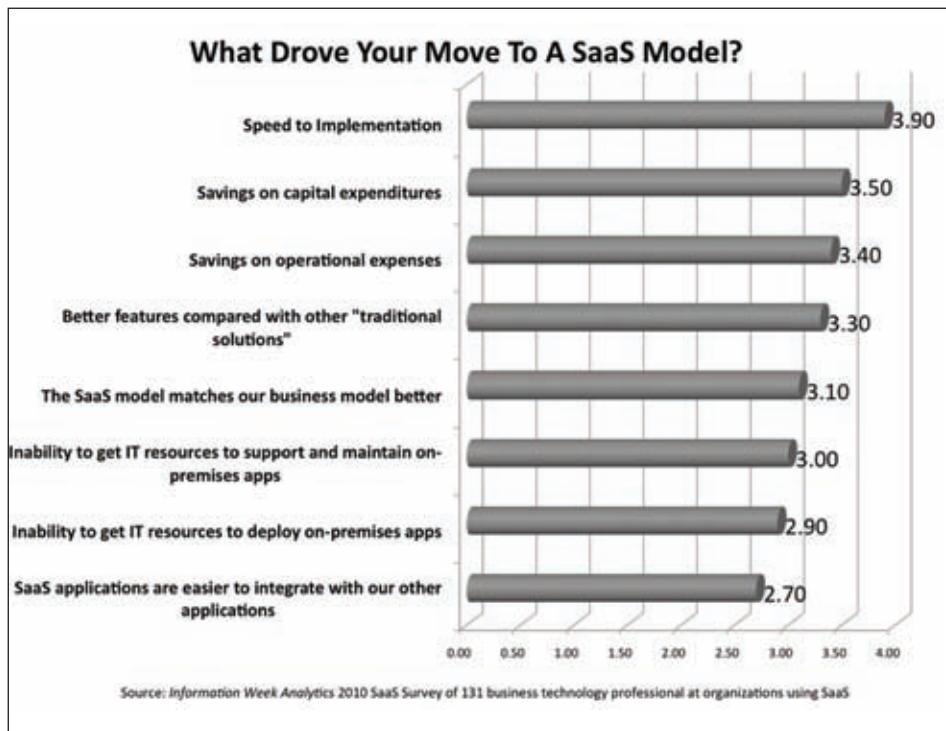
Cloud computing services and SaaS applications will play an increasingly important role in the shipping industry in the future.

It is predicted that more and more businesses will outsource complexity (IT and hardware concepts) to external service providers and data centres. With SaaS, these companies will benefit from professional software applications without having to worry about all of the hardware resources.

Regardless of whether financial considerations or outsourcing complexity are the drivers behind employing SaaS, the main priority remains unchanged – the application must be easy-to-use, safe and work flawlessly. DS

About the author

This article has been adapted from the white paper Revolutionizing Technical Fleet Management in the Maritime Industry - How to improve efficiency and reduce costs by introducing Software as a Service (SaaS) by Christa Thoma. Ms Thoma is head of corporate communications with software company MESPAS AG, of Zurich, Switzerland. www.mespas.com.



	SaaS	Traditional or inhouse
High initial costs unacceptable?	X	
Costs are no deciding factor?		X
Any time pressure for the implementation?	X	
Multiple locations involved?	X	
Requirements that cannot be met with standard solutions?		X
Want to employ additional IT personnel?		X
Application to be accessible from any location?	X	
Regular upgrades of the software to be managed?	X	
Low or large number of users involved?	Low / rather low	High/rather high