

When it comes to terminal technology solutions, there are two schools of thought – develop a system in-house or buy off-the-shelf. Paul Page considers the options

Decisions, decisions!

Congestion at Port Botany in Sydney last November, following the failure of a newly installed terminal operating system (TOS), and the failure of an in-house system at the Port of Gothenburg some years ago highlight the dilemma facing terminal operators when selecting terminal IT systems.

Although container operations are principally the same, ports and terminals have specific local needs to be met. Globally, it seems that operators continually struggle with the cost-effectiveness of developing an in-house system compared with buying ready-made, adaptable, off-the-shelf products.

Software companies naturally say that implementing and customising off-the-shelf systems is quicker and cheaper than designing and developing an entire bespoke system.

Michael Schwank, president of Tideworks Technology, sees part of the problem as an inability by those making the final decision to fully analyse the right route. “The bottom line is that software engineering and system integration are not in the scope of terminal operators. Their job is to run efficient terminals,” he explained to *CM*.

At Wave Systems, Hana Pokorna compares the decision to that facing people renovating



Congestion at Port Botany has highlighted terminal operators' dilemma

properties themselves. “Sometimes they do it quite well and succeed. More often, the project turns out to be a lot more difficult than originally expected – it takes longer to complete and costs much more money,” she explains.

Similar parallels can be drawn when developing software, as today’s systems are complex and demanding. “Developing a graphical yard planning and management module requires not only full knowledge of the operational requirements, but also understanding the different software technologies that enable the creation of such a complex system,” Pokorna told *CM*.

However, Allen Thomas, COO at APS Technology, which specialises in providing TOS component add-ons such as optical character recognition

control over wider port operations, including containers, will have a different outlook to that of a container operator who is concerned with only one segment of that business,” continues Thomas.

Specific needs

These thoughts are echoed by John Lund, sales manager for Visy. “It comes down to the specific needs of a port or terminal,” he says. “It is a complex issue, with examples of ports that have succeeded or failed following either route. IT system planning often has a medium- to long-term vision which parallels anticipated changes in operations. By developing modules as needed and spreading the development costs over a

(OCR), sees it differently.

“If we are talking about TOS solutions, then I believe the return on investment (ROI) of building a bespoke system versus off-the-shelf depends on the complexity of the local operation that needs to be supported,” he says.

“A port authority with



Wave says today's systems are complex and demanding



Tideworks has witnessed more operators outsourcing

long period, there could be a business case for at least some in-house development.”

Lund believes that TOS vendors often say, “This is what we have”, requiring operations to be adapted to match their systems. “I question why a customer should buy everything on a system when only needing a small proportion of it,” he says, adding that some small container terminals could operate by simply using Microsoft Excel.

Thomas agrees: “From a container operation perspective, smaller operations are more customised to the local market and have fewer complexities, and may not benefit from all the features and cost associated with an off-the-shelf TOS.”

To overcome this situation, both Thomas and Lund believe that terminal operators need to analyse their unique processes to determine whether to buy an off-the-shelf package as is, customise such a package, or simply build a system internally to suit their needs.

“This process usually happens in parallel with a cost benefit analysis, checking

the worth of spending money to produce exactly what the operator thinks they want, versus changing their requirements and accepting something proven to work in a certain way,” explains Thomas.

From experience, APS has found that Northern European operators spend more time on these detailed upfront requirements, whereas emerging markets seem more open to adapting, and in some cases improving, their operational processes to match what is considered a ‘best practice’ feature already offered by a TOS.

Even global operators



Allen Thomas, APS Technology

struggle between their own facilities with the buy-versus-build question. The trend was for each terminal to make its own decision on whether to build a TOS or to buy one requiring customisation to meet local requirements. However, post-recession, corporate procurement departments are making many more decisions.

Anders Lehmann, head of procurement for APM Terminals, confirmed this recently at the PEMA annual meeting, noting that not just capex, but also total cost of ownership and ROI commitments from suppliers would be key driving factors behind his decision-making this year.

Broader trend

Accepting that every operation is different, Thomas believes that there is a much broader trend happening, with larger TOS providers offering powerful off-the-shelf solutions as opposed to any customisation.

“Nowadays, I think it is a hard sell for an operator to justify building an in-house IT department with software developers for the long term, unless they have a clear focus and a plan that tells them when they’re done,” he states.

“Many global terminal operators have tried and failed to design their own TOS. Trapac and TCB are among a few who seem to have found the right mix of features and ‘best practice’ standardisation within their global deployments.”

That said, there are positive factors that entice operators into developing their own IT

systems: full control of the development process, including terminal-specific features, or where a terminal continuously develops, constantly requiring new enhancements and improvements.

Schwank agrees but warns that availability of skilled IT staff is an issue. While some in-house IT managers wish to expand their role to include software development, he questions the cost.

“It’s a naive approach to say ‘Let’s do it ourselves’, unless the operation is of a size that operators can actually create a software company – although it will still be expensive,” he adds.

This view is supported by Pokorna. “Designing software for a single terminal is not worth the cost, which will be significantly higher than buying an off-the-shelf platform,” she says.

She also believes that some terminal operators think that in-house teams are more agile and flexible in meeting challenges. However, there are other factors to consider. “Technology keeps changing, and all major vendors spend time and effort upgrading the skill set of their staff. That is not exactly cheap.”

One previous stumbling block was licensing and implementing a TOS. Today, with the “SaaS” (Software as a Service) licensing option, terminals can have a fully functional and customised system implemented for a fraction of the cost required to develop a bespoke system.

“By signing up, the terminal leverages the risks of implementing a system

which is crucial to its operation without incurring any significant costs, which often happens with systems developed in-house,” concludes Pokorna.

Fundamental

IT is fundamental to all terminals, whatever their size. Tideworks has witnessed more operators outsourcing, with the realisation that it doesn't make sense from a business perspective to reinvent the wheel. This is especially so as cash becomes tighter and customers look for better ROI.

According to Sean Pierce at Tideworks, there are a host of ancillary technologies to be interfaced compared with the early systems of the 1970s and 1980s, which were mainly about data management at the root level and paper reports.

“Today it's totally different. The TOS has to be a highly configurable engine, processing the transactions in the background while the users access information over the web or on handheld PDAs,” he explains. As a result, customer demands have increased; they require flexibility and highly configurable and reactive systems with faster solutions and support service.

“Enough terminal operators have been stung in the past. They are raising the bar with new dynamics, requiring higher standards and guarantees from vendors against costly failures, as they cannot sustain an implosion of their business model,” says Schwank.

The same dilemma is evident in the liner shipping sector. Twenty years ago,



Lars Fischer, Softship Data Processing

owners invested heavily in bespoke software systems to automate core processes, according to Lars Fischer, managing director of Softship Data Processing in Singapore.

“Much time and energy was spent creating software applications, but relatively recent technology advances allow these functions to be carried out by cheaper platforms using off-the-shelf software,” he told *CM*.

Fischer believes that the latter enables more effective, cheaper and more streamlined communications between offices and outstations – a vital requirement for global transportation providers.

“The argument in favour of bespoke software is that ‘one size doesn't fit all’,” he says, with liner operators stating that differences in their operations create competitive advantages. “They believe therefore that to accommodate such peculiarities it is necessary to develop software to individual and exact specifications,” he adds.

Countering this, Fischer explains that good modern packaged software incorporates ‘switching’ – an inbuilt

code that enables users to customise each application, tailoring the software to handle specific requirements of individual companies. With core technology development running in 5–10-year cycles, software languages and hardware platforms date quickly, often becoming obsolete and unsupported.

“It is essential to keep pace with such developments in order to gain the full benefits from technology,” he stresses. “Off-the-shelf software providers upgrade their solutions accordingly, ensuring that users are always working from tried and tested, modern, well-supported platforms.”

Overlooked

An often overlooked advantage of such software is the ability to “try before you buy”, says Fischer. “Engaging a software house to develop a bespoke system inevitably means that the end product is not revealed until delivered. This can lead to the client, together with its customers, being used as a software testbed to iron out any bugs.”

In addition, top software houses will usually offer a guarantee period, during which clients will receive software fixes without additional charge.

Fischer believes that the most compelling argument for any off-the-shelf software is price, which, through economies of scale, can be anything between 10 and 50 times cheaper than developing in-house systems. He points out that such systems are less resource-intensive

and more cost-effective, by delivering long-term solutions that are adaptable to specific requirements.

His comments come with a warning, however. “Accessibility to technology has lowered entry barriers, giving rise to increasing numbers of software developers in the marketplace. This makes selection of a reputable supplier with the longevity to serve future needs essential,” he says.

“In the end, it is the user's reputation that will be tarnished if they fail to meet customers' demands due to a system failure,” Fischer concludes.

From the TOS perspective, Schwank agrees, suggesting that there are two decisions to be made: to go in-house or to outsource, and then which company to use. “When outsourcing, operators should check a company's capability, reliability and financial stability. Will it be around in five or ten years' time? Will products be developed to provide better, more feature-rich software? More importantly, does the system integrate with others?” are the questions to ask.

John Lund has the final word: “One thing is for sure: whether building in-house or buying off-the-shelf, there is still a need for some form of IT department. Once the system decision is made, you are locked in for up to 15 years, so you don't have a lot of choice for change.” ■

As this feature was being prepared, Cargotec announced the acquisition of Navis (see News pages).