

# TECHNOLOGY AND AUTOMATION IN A CONTAINER TERMINAL: PERSPECTIVE FROM AN MD



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## BACKGROUND

When considering how technology and automation in a container terminal can influence the effectiveness of that terminal, it is important to first consider the context in which an MD carries out his/her work.

An MD is, to large extent, employed by the owners to maximise the profits of the terminal, to ensure safe operations and to control the company within the applicable laws. He/she must be fully cognisant of and take into account the external and/or internal stakeholders, whether working as an advisor to the board (as an example) or as a decision maker within his/her areas of responsibilities. An MD must assess both the short-term and long-term implications of the decisions taken, whilst having the ability to understand the details of the work and appreciate the bigger picture. Above all, the MD must lead the company to achieve the strategic goals that have been agreed. Always bear in mind that the strategy adopted needs to combine the clarity of direction with a good dose of flexibility. Flexibility itself can be achieved through the introduction of smart technology, whilst it could be that technology can hinder that very need to be flexible (unless the correct culture is developed).

It is with the above in mind that an MD must assess the impact that technology and automation can have upon the terminal.

There are many aspects of running a container terminal where, if managed and implemented well, technology and automation can positively affect the results. Conversely, when an implementation is mismanaged, the outcomes can be costly or unsafe or both. I have chosen three examples (two technological and one of automation), to illustrate how the outcomes can vary depending upon the effectiveness (or otherwise) of the planning/implementation

and the existence of (or lack of) a strong organisational culture. The principles applied to these three relatively simple examples can be applied to most technological implementations.

1. Implementing or changing a Terminal Operating System (TOS).
2. Integrating Customs' procedures into the Terminal operations.
3. Introducing an Automated Gate with a Vehicle Booking System.

## TERMINAL OPERATING SYSTEM

Many container terminals are planning to introduce a TOS or they plan to change from one system to another. In either case, there are three main elements that must be carried out effectively. First, the original business case must be developed within the terminal's overall strategy, the main assumptions of the case must be well understood and the model must be stress tested by carrying out a number of different sensitivity analyses. If these stages are adopted, the chances of the best decisions being made are increased. The second element, (ensuring the technical capability), is linked to the third and that is the training of staff. The 'Go Live' date must be a date when the system is both technically capable (achieved through a close cooperation between the IT Department and the TOS provider) and a date when all the staff are sufficiently trained and motivated to operate it. Particular attention should be made to this date. If implemented too early (for example, when the system is not fully tested technically or staff are not yet comfortable operating the system), the operational performance can deteriorate rapidly, adversely affecting the operational performance. In addition, the staff may lose confidence in the system, and this will take time to regain. On the other hand, if there is a delay to the planned go live date, additional costs, (compared to the original business case results) are likely to materialise.

The final decision as to when to go live will have to take into account each of these elements.

Key to the success of the implementation of a TOS comes down to good planning and communication, effective teamwork between the IT Department and the TOS provider, together with the early involvement of staff to gain their total buy-in.

## INTEGRATING CUSTOMS' PROCEDURES

As an MD and appreciating the big picture, it is worth considering the work carried out by The World Bank in developing countries and The World Customs' Organisation, quoting:

### World Bank Group

The World Bank Group is a leader in connectivity and logistics performance evaluation, and in customs and border control, a key piece of trade facilitation.

### World Customs Organization

#### *Vision*

Bringing Customs together for a safer and more prosperous world. Borders divide, Customs connects.

#### *Mission*

The World Customs Organization develops international standards, fosters co-operation and builds capacity to facilitate legitimate trade, to secure a fair revenue collection and to protect society, providing leadership, guidance and support to Customs administrations.

Having an efficient link with Customs at the terminal is crucial, not only to follow the lead from the World Bank and World Customs Organisation, but also to ensure a seamless flow of cargo from gate to vessel and vessel to gate. It is the latter that improves the service levels to the customers, thereby giving the terminal a competitive advantage or at the very least, it will reduce

the operating unit cost of the terminal, one of the most critical KPIs for any MD.

An effective way to establish the best link with Customs, is to integrate a single electronic window system (a trade facilitation concept that customs and border agencies use, enabling a single point of entry for information flow, allowing the relevant government bodies to have easy access to that information), with the TOSs.

This requires a terminal to work hand-in-hand with Customs at all levels (national, regional and at the terminal itself), not only from a technical point of view, but also from the need for effective communication and coordination.

The classic analogy of an MD as the conductor of the orchestra is one way to describe the role of an MD when integrating Customs' Procedures with the operations at the terminal.

The MD monitors the development of the integration with all stakeholders, Ministry of Customs (Finance), Regional Head of Customs, Terminal Commercial Team, Terminal Operations' Team, Terminal IT Team, impact upon customers, impact upon staff, intervening where appropriate.

Since Customs' regulations are a national requirement, it can also be of benefit to work with the competition, particularly when working at ministerial level.

### **INTRODUCING AN AUTOMATED GATE WITH A VEHICLE BOOKING SYSTEM**

In a similar way to the implementation of a TOS, it is critical to establish a robust business case before deciding to go ahead with introducing an automated gate.

As with any introduction of an automated system, there are several important factors to consider within the Business Case. Assessing these factors help to gauge the effects on performance, costs and safety.

Some of the most obvious factors to consider are:

- What type and size of the terminal (transshipment/gateway)?
- What is the volume throughput now and projected to be in the future?
- Is the throughput steady or does it fluctuate?
- Is the terminal growing, stagnant or declining ?
- What is the utilisation percentage of the capacity?
- What does the Safety Risk Assessment conclude?
- What is the supply of labour in the area?
- What is the impact upon the labour/unions?
- What is the cost benefit (if any) capital costs/labour operating costs?
- What is the culture of the terminal (for example state run organisation vs modern efficient)?
- What is the culture of the Trucking Community and the degree of acceptance of change?
- What is the effect on flexibility?

Key to deciding upon whether to implement an automated gate with a vehicle booking system must consider these factors, debating them with all relevant internal and external stakeholders.

### **CONCLUSIONS**

Whether introducing a new technology or an automated operation, there are some fundamental factors that must be followed and evaluated.

1. Whatever decision is taken, it must link to the strategic direction of the terminal.
2. It is critical to ensure that the risks associated with the assumptions made in the Business Case are fully understood (focus on the 'what

- if/sensitivity analyses).
3. Particular attention to be made on the possible effects of flexibility (gains and losses).
4. Traditional cost/benefit analysis should be carried out, specifically looking at:
  - a. Capital cost/operating costs
  - b. Performance before/after implementation
  - c. Terminal capacity before/after
  - d. Safety implications before/after
  - e. Social implications before/after (labour force, unions)
5. Once it has been decided that a particular course of action will go ahead (for example, implement the TOS, integrate with Customs, automate the gate), make sure:
  - a. The planning is of the highest standard
  - b. All internal and external stakeholders are involved at the earliest opportunity
  - c. All internal and external stakeholders achieve buy-in as soon as possible
  - d. Implementation follows the plan

### **ABOUT THE AUTHOR**

Combining over thirty years of Container Terminal experience and five years serving as a Captain within the UK Armed Forces, Robert has worked across six different countries (UK, Malta, Egypt, Vietnam, Turkey and Saudi Arabia) for six different Terminal Operators (APM Terminals, Hutchison, ABP, Gulfainer, Port of Marsaxlokk, Port of Tilbury), and he is currently the Managing Director of Gulfainer in KSA.

### **ABOUT THE ORGANISATION**

Gulf Stevedoring and Contracting Co. Ltd. (GSCCO) is a subsidiary of Gulfainer Company Limited. GSCCO operates the Container Terminal and General Cargo at Jubail Commercial Port in addition to the operations at King Fahd Industrial Ports at Jubail and Yanbu.