EMERGING SENSOR TECHNOLOGIES AND METRICS FOR HARBOUR SECURITY

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Abstract. Since the terrorist attacks of September 11th, extensive security measures have been implemented for improved harbour protection, the most global standard of which has perhaps been the introduction of the International Ship and Port Facility Security (ISPS) code and regulations in July 2004. The absence of appropriate standards and metrics in port and harbour security and uncertainty in customer requirements has in some instances resulted in confusion and misplacement of technologies. This paper discusses standards and sensor metric initiatives underway by HT Consultants Ltd. aimed at facilitating suppliers of security solutions and end users in identifying and implementing emerging technologies with existing systems to improve the safe and economic passage of trade internationally.

Keywords: ISPS Code, standards, metrics, guidelines, biometrics, sensing

1 Introduction

Since the terrorist attacks of September 11th, extensive security measures have been implemented for improved harbour protection, the most global standard of which has perhaps been the introduction of the ISPS code and regulations in July 2004. Nevertheless, sabotage, piracy and smuggling are still a common occurrence, with an increase in reported piracy incidents of 20% between 2002 and 2003, according to the International Chamber of Commerce (ICC) International Maritime Bureau. Numerous challenges in harbour protection exist, including the tracking of cargo from the point of packing to receipt by the end customer and the detection of threats in fog with a resolution high enough to be able to identify a small boat or person, particularly close to the surface of the water.

The demand for new technologies capable of addressing existing deficiencies in the security infrastructure has driven new developments of sensors and systems, particularly in the optics and photonics industry. The solutions offered however are sometimes not as effective as promised, incompatible with end user needs,
incomplete, or too expensive. The absence of appropriate standards and metrics in port and harbour security and uncertainty in end-user requirements has in some instances resulted in confusion and misplacement of technologies. This has been highlighted of late through recent reports by government agencies and port authorities regarding the implementation and associated time frame for the development of biometric systems. The problem of setting appropriate standards and metrics for harbour security that are suited to both the end-user needs and the technology is vast and often considered too complex to resolve. This development of metrics is thus frequently avoided, or the follow-up of implementing the defined standard, including the financial support required by government agencies, is ignored. The inappropriate implementation of a technology or methodology can however lead to disruption and delays, and may reduce rather than improve operational effectiveness. The potential long term consequences include inducing a new security threat.

This paper discusses recent initiatives underway internationally concerning the identification and implementation of standards in homeland security and the issues associated therewith. The future forward steps required by both government and industry in order to improve the economic passage of trade through the implementation of standards and metrics in harbour security will be presented.

2 Security standards – why bother?

There currently exist no internationally approved standards, metrics or guidelines to facilitate the implementation of emerging technologies into the security sector, which may demonstrate significant advantage over existing systems for enhancing security whilst ensuring the economic passage of trade.

Although many studies have been conducted highlighting the importance of standards and the subject is continuously commented on at international maritime and security conferences, the ultimate questions remain:

- Are port and harbour security standards and metrics necessary?
- Who defines the standards?
- Who pays for defining the standards?
- Who is going to take responsibility for the implementation of standards in port and harbour security at both a national and international level?
- How do you introduce a standard which can be implemented to a particular problem when the type of sensors and systems used vary widely between harbour terminals both nationally and internationally?
- How will the implementation of standards and guidelines affect operational effectiveness?
- Who pays for implementing the standards?

Following a recent standards study released in June 2005 by the UK Department of Trade and Industry in conjunction with the British Institute of