

# Hong Kong Hospital Authority improves procurement process and asset management through EDI and RFID

## ABSTRACT

The Hong Kong Hospital Authority (HA) – a statutory body responsible for managing all Hong Kong public hospitals – continuously seeks to enhance patient safety through increased operational efficiency, data security and traceability. In conjunction with its modernisation plans, the HA enlisted GS1 Hong Kong's EDI platform, ezTRADE, to improve its procurement process and initiated a pilot study on the feasibility of RFID technology to enhance asset management. This article outlines case studies on how the adoption of EDI and RFID technology has improved the HA's procurement process and asset management system.



Article by Hong Kong Hospital Authority



joined the global GS1 Healthcare user group, as a voting member in 2008. Aiming to deliver a win-win-win worldwide environment for consumers, providers and suppliers, it is beyond doubt that the global healthcare supply chains should work closely together to achieve optimal efficiency, increase necessary transparency and build traceability.

With this goal in mind, the HA has set several key targets as part of its modernisation plans for procurement and materials management. These targets include the establishment of an integrated supply chain data and information platform and the enhancement of risk management tools and processes. The vision is to establish a value-for-money seamless supply chain operation with maximum risk management.

## Case 1: Streamlining procurement process for over 160 hospitals and clinics with B2B platform – ezTRADE

## Background

Established in December 1990, the HA is accountable to the Hong Kong Special Administrative Region Government. HA currently manages a portfolio of 41 public hospitals and institutions, 48 specialist outpatient clinics and 74 general outpatient clinics. In total, these operations comprise around 53,000 staff and more than 27,600 hospital beds. Budget-wise, the HA manages an ever-growing public healthcare expenditure, projected to grow from HK\$32.7 billion (or US\$4.2 billion) in 2007/8 to \$78 billion (or US\$10 billion) by 2015 and \$127 billion (or US\$16.4 billion) by 2025.

In keeping with the mission to enhance patient safety through closer collaboration with the global healthcare sector, the HA

To maintain supply continuity and appropriate technology adoption at the frontline, HA has to secure a smooth supply of all the necessary medical consumables through bulk procurement from global suppliers. The procurement processes involve a large network of vendors, including pharmaceutical companies, medical consumables suppliers, as well as third-party equipment maintenance service providers. Managing all these suppliers requires thorough planning, detailed policy formulation, as well as a transparent system of risk and information management at both the head office and cluster/hospital levels. Head office functions include policies and guidelines formulation, standards setting, risk management and system development, while individual hospitals would focus on vendor performance monitoring, inventory control, logistics support, bulk contracting and so on.

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Like all healthcare service providers around the world, soaring healthcare expenditure is a constant pressure area. In the face of this challenge, coupled with issues such as accuracy of information on spending, reported discrepancies in product quality, as well as the constant need to manage change, the HA decided in 2002 to modernise its procurement and supply chain management processes. This strategic move is also found to be consistent with the HA's new initiative of continuous healthcare technology assessment and adoption. The modernisation plan aimed to achieve three goals to improve:

- efficiency by reducing operational costs and procurement lead time while raising product safety
- security, especially with regard to process control, accountability and data security
- traceability with greater information sharing and integrated data management down to the consumption level.

### Enlisting GS1 Hong Kong to implement ezTRADE

Earlier on, in 1996, in a bid to modernise procurement and supplies management through the implementation of an e-procurement system, the HA had enlisted GS1 Hong Kong and adopted GS1 service by implementing ezTRADE – a business to business EDI platform using standard-based interface for automatic identification and communication in the healthcare supply chain. As of December 2009, a total of 48 HA suppliers have joined ezTRADE with over 18,000 EDI Purchase Order transactions throughout the year.



### ezTRADE facilitates information flow and increases operational efficiency

Traditional manual order processing involved a complicated workflow; and this process was compounded by non-value-added tasks such as duplication of efforts on data entry and information dispatch subjected to slow modes of communication i.e. sending orders through fax. Not only was it time consuming and manpower intensive, there was a high risk of human error in the communication process, which in turn incurred hidden administrative and operational costs.

ezTRADE – designed to allow businesses to conduct trading activities with full electronic data interchange (EDI) and extensible markup language (XML) support – provided the ideal standards-based platform for the HA and its suppliers to do business with greater efficiency. With this platform service, all product categories, prices and quantities are itemised in detail on each Purchase Order, allowing the buyers in HA and the suppliers to extract accurate and timely trade information using a common business language in a standardised electronic



format. In short, all data transmission can be conducted over the ezTRADE network in a simple and efficient manner. The system also automated the payment process and could be used to facilitate management of recalls, in the case of a product defect.

ezTRADE assisted us to improve the business transaction flow for medical consumables. The specific benefits included improved effectiveness of operation flow in the communication with suppliers; elimination of duplication of non-value-added work, especially in the administration processes, fewer human data entry errors and improved inventory management.

### Case 2: Harnessing RFID technology to achieve traceability for enhanced patient care

The rapid development of wireless technology (e.g. RFID) in enabling more effective asset management in hospitals is closely associated with the rising concern of enhancing healthcare quality and containing healthcare costs. Overseas pilots and implementation projects have revealed that effective fixed asset management with the help of technology leads to better asset utilisation, thus facilitating frontline medical staff to better focus on patient care.

As equipment for treating patients becomes increasingly sophisticated and expensive, the prevention of equipment loss takes on greater importance. Besides potential economic losses, inefficient asset management in a hospital can lead to other adverse issues, such as disruption of medical services and lost productivity of health professionals. As one overseas study has shown, some hospital staff can spend as much as 30% of their time looking for equipment needed for use.

Recognising all these issues and challenges, the HA decided to conduct a pilot study using RFID technology as a means to facilitate asset tracking and management of medical devices at the point of care, and ultimately, to improve patient safety and service quality.



The study designed three systems for trials using mostly matured RFID technology:

- Passive RFID to further facilitate stocktaking of equipment in operation theatres
- Active RFID to enable real-time tracking of medical devices in wards
- Active RFID to streamline utilisation capturing and reporting of high-value assets in hospitals

Safety measures for protecting sensitive medical devices such as EMI assurance testing were performed; and it was found that there was no interference generated on the active RFID tags. Of the three applications, the use of active RFID technology for real-time asset tracking proved to be most helpful to the frontline nurses by eliminating the time spent in locating or counting the frequently-used devices and also enabling them to better utilise their time for enhancing patient care. In this pilot study, 15 devices were tagged, including blood pressure monitors, electrocardiograms, syringe pumps, infusion pumps and bladder scanners. A nurse would only spend 12 seconds to locate a tagged medical device in the ward, as compared to a much longer duration ranging from half an hour to even several hours and days through searching the paper record system and the manual searching for the equipment. Active RFID was also preferred for its proven user-friendliness and tag capability.

The study provided conclusive proof that RFID asset tracking systems can address many key objectives of asset management, including maximizing the utilization of assets, reducing asset losses and improving asset maintenance.

### RFID asset tracking system to streamline utilisation of high-value equipment

In 2007, the RFID Asset Management Task Force was set up with GS1 Hong Kong to conduct a study involving the Prince of Wales Hospital and North District Hospital.

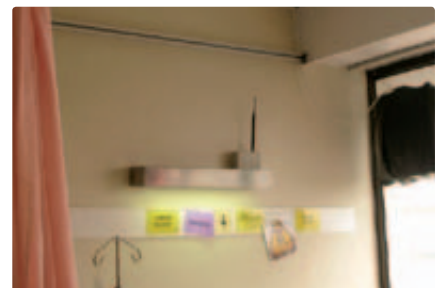
The study was aimed at identifying the best way to streamline stocktaking processes and enable faster stocktaking of assets. In addition, it sought to compare whether the selected technology outperformed the bar code technology currently in use. It was also intended that a business case could be prepared to build a system that would enable real-time location tracking of medical assets and streamline the utilisation data capture process for high-value medical equipment.



Active RFID tag affixed onto a medical device for its location tracking



EMI Assurance Test Setup



Installation of Fixed Readers at the Pilot Ward