Ireland

eProcurement at St James's Hospital, Dublin

In 2013, St James's Hospital (SJH) embarked on a proof-of-concept (POC) project in conjunction with a number of suppliers to automate the end-to-end ordering process. The objective of the POC was to fully standardise and automate the ordering process between the hospital and the supplier. The process replaces paper-based systems and provides direct links between financial and clinical systems. The globally unique GS1 identification keys for products and locations are at the heart of this solution enabling automation and traceability. In September 2014, St James's Hospital went live with their first supplier, Cruinn Diagnostics. SJH now invites all suppliers to join the programme (which is based on the full adoption of GS1 standards).

By Vincent Callan and Pat Bailey

1995	2003	2008	2011	2012	Today	Future
Master Data Management and structured coding	Haemophilia Track and Trace project commenced GS1 Datamatrix SAP Installed (ERP & GUI)	Wireless Kanban for ward stock management	First hospital to pilot the HSE funded surgical instrument track and trace programme using GS1 standards	eProcurement project (standardised coding, and data and messaging) GTIN GLN GS1 XML 3.0	1st Sept 2014 First Supplier to GoLive Cruinn Diagnostics Communications and meetings with Top 50 suppliers	Working towards implementation of eProcurement with all suppliers Target to be first hospital fully compliant to GS1 standards Full Traceability to Electronic Health Record

Background

St James's Hospital has a long history using GS1 standards for identification to enhance patient safety, traceability and accuracy across the healthcare pathway. The success of both the Haemophilia solution to track products from supplier to patient and the National HSE (Health Service Executive) surgical instrument track and trace programme for instrument trays and endoscopes are globally recognised. Both solutions use barcode scanning to remove paper and automate the process.

Challenge

In addition to the patient safety and efficiency drivers, the economic situation in Ireland means there is huge pressure on cost savings. This combined with a change in government policy towards a "money follows the patient" model and the impending regulatory changes for pharmaceuticals and medical devices means that the time was right for St James's Hospital to step forward to address the problem.

Currently Irish public, voluntary and private hospitals have a huge task to manually reconcile paper invoices with paper purchase orders and proof of delivery dockets for the purpose of payment. Using traditional paper based systems results in an enormous paper trail. This is an error prone process which requires resources to check and audit everything to prevent any risks to patients.

The Australian government recognised and addressed this challenge several years ago. They set about establishing a model to address the standardisation of product coding, locations and product data using GS1 standards. The learnings from this standards-based national approach were taken to develop the best practice eProcurement model for Irish healthcare.

Solution

St. James's Hospital, together with its suppliers (Cruinn Diagnostics, Fannin/DCC Vital and Johnson & Johnson), implemented the eProcurement solution by starting with the standardisation of product coding by linking the existing codes to GS1 Global Trade Item Numbers (GTINs). Supplier data is mapped to an agreed minimum dataset (eg: brand name, description, unit of trade etc). This data is then uploaded by the supplier to the National Product Catalogue and is available for SJH to review and import. The second stage of the process is to exchange four electronic procurement messages using Electronic Data Interchange (EDI).
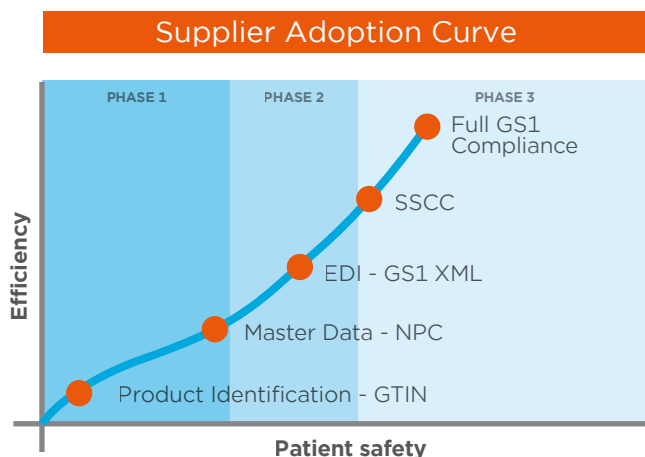
The Vision
The 2012 McKinsey* report recognises the need for healthcare to align to one global standard in order to achieve the benefits, that retail and other sectors have already demonstrated. This approach also evidence-based by the report, is the means to achieving the ultimate best practice that all hospitals aspire to - the ability to electronically and consistently record activity at the point of patient care and to have an audit trail for the purposes of efficient recall and reporting.

* Strength in Unity: The promise of global standards in healthcare

Ensuring operational efficiency and patient safety through adoption of GS1 standards

- **Unique Identifier** The Global Trade Item Number (GTIN) for standardised identification of products
- **Product Data** The Global Data Synchronisation Network (GDSN) for standardised sharing of Master Data via the National Product Catalogue (NPC)
- **Unique Location** The Global Location Number (GLN) for standardised identification of locations
- **Electronic Messaging** The GS1 XML messages for standardised exchange of business transactions messages (Purchase Order, Advance Shipping Notice, Receiving Advice and Invoice)


Supplier Adoption Curve

PHASE 1   PHASE 2   PHASE 3

Efficiency

Full GS1 Compliance

SSCC

EDI - GS1 XML

Master Data - NPC

Product Identification - GTIN

Patient safety

Note: the Serialised Shipping Container Code (SSCC) for standardised labelling of pallets or boxes at goods receiving is planned as part of the next phase of the project.

Stage 1: Standardised product coding and master data

The first key requirement for St. James's Hospital is the standardisation of product coding and alignment of product data with their suppliers at product setup stage, in advance of the ordering process. This ensures accuracy of the data between the hospital and the supplier. GS1 Ireland supported both SJH and the suppliers in this process.

What is the National Product Catalogue (NPC)?
The National Product Catalogue is a registry of all products sold in the Irish healthcare sector. The NPC is 'the' single source of item master data for health institutions seeking to purchase medicines, medical devices and other necessary healthcare items. The NPC is hosted by GS1 Ireland on datasync.ie, a GDSN-certified data pool. This platform enables the secure sharing of item master information such as product identifiers and descriptions, units of measure, package contents, product classification, pricing and related healthcare information. Accurate product data is critical not only for supply chain efficiency but also for clinical purposes to support patient safety.
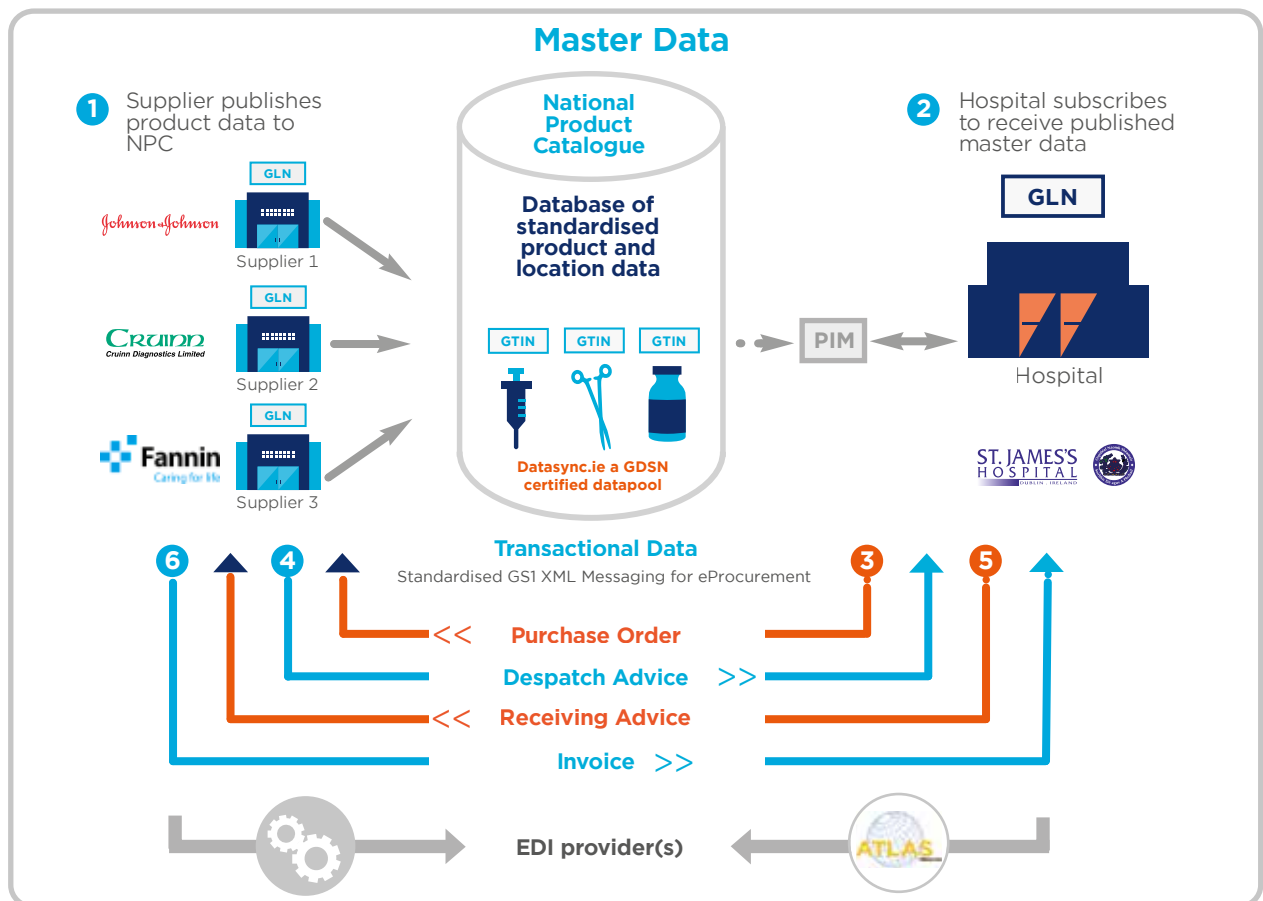
This diagram illustrates the eProcurement model put in place by St. James's Hospital. The step **1** in the process is the publication of master data by suppliers to the National Product Catalogue. This data, such as product ID, quantity or unit of trade, is key to the successful exchange of the electronic procurement messages and full automation of the order to cash cycle. In step **2** the product data is marked and imported by SJH via the PIM (Product Information Manager). Finally in steps **3** to **6**, the transactional data is exchanged via EDI incorporating the purchase order, advanced shipping notice (or despatch advice note), receiving advice note and finally the invoice.

Getting started with master data management

Supplier Action	**Assign GTIN**	The supplier determines if GTINs are available.
	Map GTIN	The supplier maps the GTINs to their product listing.
	Collect Master Data	Master data elements such as product name, description and unit of measure are collected by the supplier in line with the dataset agreed by SJH.
	Upload Data to NPC	The master data is then uploaded to the National Product Catalogue.
SJH Action	**Receive Data**	SJH receives supplier data and any subsequent updates from the NPC.
	Review and Match Data	Using the Product Information Management (PIM) tool, SJH reviews the supplier data and matches this data to the internal hospital data.
	Import Data	SJH then takes the data into their ERP system via a direct download from the PIM.

Product Information Manager (PIM)

The Product Information Manager is a software tool which allows SJH to match, review and import supplier data from the NPC.

Product data from suppliers can be populated in the hospital ERP system via a controlled and automated machine-to-machine process with no rekeying of data.
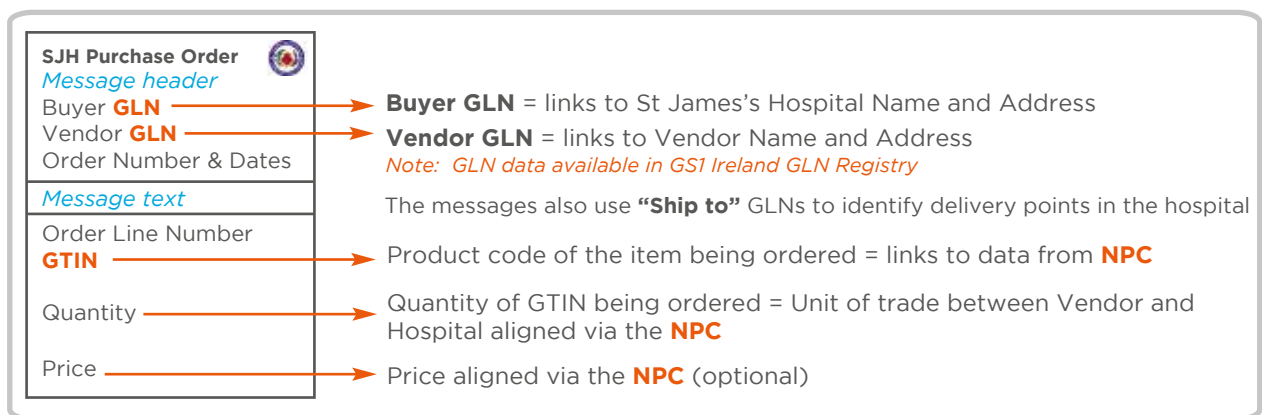
Stage 2: Standardised electronic procurement

For this process SJH engaged an EDI provider, Atlas Products, to facilitate the exchange of four key standardised procurement messages. GS1 Ireland was engaged to undertake the development of the procurement messages.

What is Electronic Data Interchange (EDI)?

Electronic Data Interchange is the electronic exchange of business information using a standardised format; a process which allows one company to send business messages such as purchase orders and invoices to another company electronically rather than with paper. EDI, based on global standards, allows the messages to be exchanged quickly, efficiently and accurately between trading partners. This second requirement eliminates the paper based processes through automated electronic communication of the transactional data between the hospital and supplier. All messages are exchanged via the EDI partners in GS1 XML Standard format.

Example of an electronic message

SJH Purchase Order
Message header
Buyer **GLN**
Vendor **GLN**
Order Number & Dates

Message text
Order Line Number
GTIN

Quantity

Price

Buyer GLN = links to St James's Hospital Name and Address

Vendor GLN = links to Vendor Name and Address
Note: GLN data available in GS1 Ireland GLN Registry

The messages also use **"Ship to"** GLNs to identify delivery points in the hospital

Product code of the item being ordered = links to data from **NPC**

Quantity of GTIN being ordered = Unit of trade between Vendor and Hospital aligned via the **NPC**

Price aligned via the **NPC** (optional)

Getting started with order-to-invoice

Identifiers	Confirm the supplier can process the electronic procurement messages based on GTIN & GLN.
Choose EDI Provider	Typically an EDI partner is chosen to manage the translation and transmission of the electronic messages based on GS1 XML 3.0 format.
PO	SJH generates the EDI Purchase Order (PO) that is transmitted following translation by their EDI provider to the supplier. The translation to the common format is applied to each subsequent message.
ASN	Upon receipt of the order the Supplier prepares the order for shipment and responds with an EDI Advance Shipping Notice (ASN) which includes the details of the goods to be shipped to SJH.
RAN	On receipt of the goods, SJH warehouse staff compare the delivery to the information in the ASN. By confirming the receipt of goods an EDI Receiving Advice Notice (RAN) is sent to the supplier.
Invoice	The supplier generates an EDI invoice based on the information in the RAN to settle the payment process.

"The order was placed first thing this morning, the goods arrived mid-morning and the invoice was on the payment run in the afternoon with no manual intervention. The speed and accuracy of the whole process was incredible, a first for Irish healthcare."

Pat Bailey, *SAP Programme Office, SJH*

Costs

The set-up costs for the implementation of this model mainly involved (i) SJH system modifications, (ii) the engagement of an EDI service provider and (iii) participation in the product catalogue. Ongoing systems costs are expected to be no greater than current system running costs and further savings are likely to be achieved as the system is extended.

Benefits

St James's Hospital embarked on this exercise based on its belief that the best approach to delivering patient safety required end-to-end process design and adherence to international standards. The benefits were known to be considerable and included:

- Improved patient safety with consequential reduction in duplicate patient procedures
- Increased ability for accurate traceability and recall
- Standardisation and increased accuracy of product information
- Elimination of inefficient paperwork and duplication of data input
- Reductions in stock holdings and level of waste stocks
- Reduction in number of credit notes generated
- Automatic invoice matching
- More efficient utilisation of supply chain management and finance resources.

"The adoption of GS1 standards and the development of a shared product catalogue enables end-to-end traceability and full automation for healthcare supply chains. In addition, it provides the means to converge clinical and business systems which supports the 'money follows the patient' model."

Vincent Callan, *Director of Facilities Management, SJH*

Conclusion and next steps

The learnings established during the project were used to develop the final dataset and business rules which resulted in the first supplier achieving Go-Live with St James's Hospital in September 2014. Please also see the Whitepaper which has been published by St James's Hospital. The requirement for compliance to GS1 standards (see diagram) is now included in tenders and SJH is working to engage their key suppliers in this programme.

About the Authors

Vincent Callan *has 18 years Healthcare experience and is currently the Director of Facilities Management at St James's Hospital and has held previous management positions in Materials Management. The Facilities Management Directorate provides a full range of non-clinical services in an integrated manner that supports the treatment of patients. Vincent has been the key sponsor for the eProcurement Project.*

Pat Bailey *is one of the leads in the SAP Programme Office at St James's Hospital. Pat has an extensive knowledge of Materials Management and business system implementation within SJH. He has played a key role in the eProcurement Project.*

About SJH

St. James's Hospital is the largest acute academic teaching hospital in the Republic of Ireland with 1,000 beds and provides a comprehensive range of diagnostic and treatment hospital services to a population in excess of 300,000 at local, regional and national level. There is a strong academic commitment with Trinity College Dublin and the Trinity Health Sciences Centre is located on site.