

Just-in-time supply and automation at Strasbourg University Hospitals

ABSTRACT

The construction of a new logistics centre at les Hôpitaux Universitaires de Strasbourg (HUS) enabled the hospital to ensure Just-In-Time (JIT) supply and facilitate automation of the internal transportation flow. GS1 Standards support the flow of information from the warehouse to the point-of-care.



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Background

In recent years, French hospitals have conducted a number of projects targeting the traceability of all products delivered to them, with the aim of facilitating their internal tracking. These projects have also been motivated by a new orientation in management methods focused increasingly on the quest for efficiency, cost reduction and the improvement of their financial situation.

In 2009-2010, these projects culminated in, firstly, the launch of logistics platforms designed to manage deliveries of medical systems, medication and hospital room supplies all the way to the treatment departments, and secondly, in Healthcare traceability projects courtesy of the introduction of the unitary identification of surgical instruments. The choice of the GS1 standards was based on the need to ensure interoperability between all of the activities managed by the hospitals, to improve the flow of information useful to the different departments and thus to improve patient safety. These initial achievements are starting points and are set to be rolled out across all of the hospitals' activities.

Indeed, the early ROI indicators demonstrate that these applications, while requiring a certain human and financial investment for launch, become profitable fairly swiftly. For the moment, however, they are still too isolated and need to serve as examples for other establishments.

A major advantage on the French market is the new "Hospital 2012" law, which requires Healthcare establishments to pool their skill centres in order to improve competitiveness and cut operating costs. This law will encourage the grouping together of sterilisation centres and storage facilities, or even the creation of logistics centres serving several establishments within a given region, not to mention plenty of other projects. It will therefore increase the need to be able to exchange information and for products to be circulated between organisations on the basis of shared standards.

About Strasbourg University Hospitals

Strasbourg University Hospitals (SUH) offers a variety of treatment options capable of handling health-related conditions. Where education is concerned, the SUH have forged special links with universities and more specifically with schools of medicine, pharmacy and dentistry. However, the SUH's teaching role is not limited to university studies, as it also applies to the initial or specialist training of nurses, paramedics and other Healthcare providers. In this capacity, the SUH directly operates eight schools and training institutes. Biomedical research is also an integral part of the institution.

Growing steadily over the years, Strasbourg University Hospitals have become a vast group of seven hospital establishments with 2,783 beds, employing over 10,000 staff.





It should also be noted that medication traceability regulations are heading in the same direction as, since 1 January 2011, they have imposed not only the marking of sale units with a GS1 DataMatrix bar code incorporating a 13-character AMM code, a batch number and a use-by date, but also the transmission of information in an electronic shipping note between the different links in the chain.

Some of France's 17 GS1-compliant hospitals are aiming to develop other applications and, with this in mind, GS1 France is supporting hospitals which wish to deploy the standards in all of their activities.

Among the hospital platforms, the Strasbourg University Hospitals (HUS) offer an example of use of the GS1 standards. The HUS logistics centre applies the GS1 recommendations for the hospital environment and has opted for Aldata's solution to manage its platform. The hospital wished to use the GS1 standards to ensure better traceability of medicines and to improve its management of supplies, stocks and orders. They counted on the fact that manufacturers would be marking products and would therefore be in a position to allow them to increase the reliability of their traceability system and to ensure the safety of their patients.

Innovating the hospital supply chain

The construction of the logistics centre fits in with Strasbourg University Hospitals' modernisation plan developed in 1996, which targeted the updating of logistics via a pooling of the principal functions (central store, pharmacy, purchasing sectors, central food production unit, transport, garage) on a single site.

Unveiled in 2009, this logistics centre is designed to supply all of the six HUS sites, based on two logistical principles that are innovative in the hospital field:

- Just-In-Time (JIT) supply
- Automation of the internal transportation flow (use of AGV on one site)

The logistics centre's warehouse consists of two entities:

- The central store, managing office supplies, hospital room supplies, groceries and non-sterile medical equipment.
- The pharmacy, managing medication and sterile and implantable medical equipment.

France's regulations governing hospitals require the separation of information flows about pharmaceuticals, as well as the physical separation of the storage and preparation areas.

This new hub needed to consider the grouping together on the same site of very different products which, before the platform's creation, were managed in separate stores. These products present a high degree of variability in terms of storage constraints (positive and negative temperature control) and different requirements in terms of materials traceability (a use-by date for food products, an expiry date for health products, a batch number and/or serial number depending on their level of risk).

The computerisation of all of these characteristics of hospital logistics required the implementation of significant change management among the teams running this logistics centre.

Managing supply chain data from the warehouse to the point-of-care

The G.O.L.D. Stock and VDW (PDA Vocal) solutions were deployed for the management of the site as a whole. Flows are managed in real time via the use of mobile equipment (PDA, Tablet PC, on-board terminals), a warehouse WiFi network and the integration of RFID technology for the management of shipments.

The majority of the hospitals' receipts take place in two stages:

A first-level receipt concerning all of the warehouse's flows: The WMS – warehouse management system – then ensures the distinction between the pharmaceutical flow and the non-pharmaceutical flow, required for the completion of the subsequent stages.

A second-level receipt for storage and the preparation of internal deliveries: The information system then ensures the reconciliation of the flows at the shipping stage level. Placing in stock is carried out using forklift trucks with retractable forks. The drivers are supervised via on-board terminals.

Order preparation takes place in multimodal mode, including voice (mono-client / multi-clients, full packages / individually prepared packages):

- The central store carries out preparation in post-package mode.
- The pharmacy carries out the preparation in pre-package mode with the use of a mechanised chain.

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The combination of voice-mode preparation with “ring”-type bar code scanners and the use of linear bar code or 2D (DataMatrix) bar code technologies enables safe preparation by means of cross-referenced entry (product location and code) and the reliable detection of the material’s traceability indicators (batch number, expiry date, serial number).

All preparations are grouped together on trolleys for delivery to one or more treatment departments. Also identified by means of the GS1 standards, these trolleys are equipped with two associated technologies permitting full shipment traceability: bar codes and radio frequency identification. The operator will therefore scan each trolley and each package it contains in order to ensure the traceability of these packages and of the prepared batches. An RFID tag will be read when the trolley enters the delivery lorry, with the trolley’s destination then defining the destination of the lorry. Installation of RFID on the shipping bay doors enables full traceability of the trolleys (incoming and outgoing).

Upon arrival at sites equipped with security gates, this same RFID tag will be read, thereby providing confirmation of the date and time of actual delivery to the treatment unit. For other sites not yet equipped with such gates, control will take place by manually scanning the bar code on the trolley.

The system thus provides the basis for traceability by managing the products and quantities delivered together with their batch numbers and expiry dates.

The project was implemented in compliance with the new AFSSAPS regulations for the coding of medicines (development of the GS1 identification and marking standards and integration of DESADV-type electronic messages). Sent by the manufacturer at the time of “sealing of the lorry”, this message contains the details of the delivery and facilitates the receipt of packages identified by a unique code, the SSCC. Upon receipt, the information system makes the link with the shipping note data, thereby facilitating the validation stages and permitting the tracing of all products redistributed within the treatment units.

Hospitals receive all types of products (health, food, textile, etc.), so they will use the general profile of the GS1 EANCOM® (version D96A or D01B) shipping note while integrating the particularities of the sector. Before long, they will be asking manufacturers to identify and mark their packages with an SSCC and to transmit the corresponding shipping note. By doing so, they aim to meet their constraints in terms of traceability and Healthcare safety and to optimise their internal and external logistics circuit.



G.O.L.D. Stock and VDW allow the optimisation of the warehouse from receipt to shipping with the capture of various traceability indicators right along the chain. This may take place manually (scanning, voice, etc.), or automatically via RFID. The dual-phase receipt offers clear visibility of the path of products within the warehouse (pharmacy, general goods) and the control of the constraints on the different segments of that course. Storage is optimised and all traceability indicators are managed for improved use of stock and positioning.

All operators are supervised using the G.O.L.D. solution, thus maximising the productivity of the different jobs, particularly the forklift truck operators (optimisation of paths and roles) and preparers (maximum productivity and quality, courtesy of voice technology).

ABOUT THE AUTHORS

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