

HIPS

Coordinating and optimizing hospitals' patient, medical supply and information flows

Hospitals' daily operations heavily rely on processes that align patient streams with hospital resources (infrastructure, medical supplies, staff) and related information flows. But a hospital is a complex environment in which operations prove to be a great optimization target. One particular area for improvement includes hospitals' supporting processes, which are meant to ensure that the right (and sufficient) resources end up timely at the right location.

Within this context, HIPS designed a methodology to effectively scope, list, model and evaluate supporting workflows. As a second step, that knowledge was used to design an innovative 'to-be' process supported by an open, scalable and standards-based platform that combines workflows with RFID technologies, and translating in supply chain savings of up to 30%.

"HIPS brought together a complementary group of industry partners who saw an important opportunity in offering operational optimization solutions for hospitals," says Jan Van Ooteghem, HIPS' scientific research lead.

H.Essers specializes in supply chain management; Amaron focuses on workflow automation and IT integration in healthcare; and Aucxis provides automation and IT integration solutions based on track-and-trace radio-frequency identification (RFID) technology.

"We took hip replacement surgery as a use case, since the underlying (medical) procedures have been standardized. That provided us with a head start to get a better grip on all related pre- and post-surgical processes. After all, that was a prerequisite in order to find correlations between those processes and introduce the methodologies and

technologies to optimize supporting workflows – in line with a hospital's KPIs and in function of its patients," Ben Devis, HIPS' project lead, adds.

THE OUTCOMES

1. A methodology to align hospitals' supporting workflows, and assess potential optimization opportunities

When planning surgical interventions, current workflows simply rely on surplus planning of resources (ranging from nurses to medical supplies) to adequately deal with complex and last-minute changes.

To get a detailed grip on the specific processes related to the use and replenishment of medical supplies, staff and equipment, the HIPS consortium set up a large number of interviews. As such, the project partners found for instance that the flow of medical supplies towards the operating rooms in a single hospital can be subject to more than 10 different supply chain processes – which is research that had never been done before in that much detail.

Based on these findings, the HIPS team came to the conclusion that hospitals' operational efficiency can indeed be significantly improved, e.g. by focusing on replenishment of inventories based on product consumption (and independent of the level of product variability).

2. Developing the building blocks of a platform that can help hospitals realize supply chain savings of up to 30%

Nowadays, the inventory of hospitals' medical supplies and devices at a departmental level is mainly tracked by



counting manually and Kan-Ban procedures. Knowing that a lot of potential savings could be realized by tagging supplies and devices and by tracking their consumption (semi-)automatically, the HIPS team developed a platform that uses a mix of technologies to get to a 100% count of used supplies – an approach that is totally new for the hospital sector.

The HIPS approach combines RFID and visual scanning to track devices and list the consumption of medical supplies in a semi-automatic way. It also suggests the use of a logistical partner's economy of scale to realize an even higher degree of operational optimization.

As opposed to proprietary technologies that are often considered not to be future-proof, the HIPS approach makes use of open standards. Moreover, it is perfectly scalable, not restricted to the OR floor or a medical supplies context, and provides interoperability with third parties (suppliers, government, etc.).

"Simulations based on actual consumption data have shown that the investment in the HIPS approach is recouped simply by getting rid of the manual procedures," says Ben Devis. "In other words: the more you can tag, the higher the traceability of your medical supplies and the more optimized your operations will be. That can translate in supply chain savings of up to 30%."

NEXT STEPS

While the original objective of the HIPS project was to come up with a methodology to align and optimize hospitals' processes and workflows – and to verify the methodology's impact – the consortium also laid the foundation of what could become a working platform based on a combination of actual products. Those technologies have been combined in the HIPS demonstrator.

HIPS' consortium partners are currently investigating how the project's methodologies, insights and technologies could potentially be embedded in their respective product offering. One example includes H.Essers' Healthcare Logistics Platform.

Also, the HIPS project has already led to a firm partnership between Amaron and Aucxis, combining their respective products Workflower and R-Connect in the 'Generic Process Empowerment Platform for Hospitals', currently being commercialized by both companies. A first agreement was struck with the Ghent University Hospital for a proof-of-concept to trace the use of blood products and administration in an emergency room.

FACTS

NAME	HIPS
OBJECTIVE	Coordinating and optimizing hospitals' patient, medical supply and information flows
TECHNOLOGIES USED	RFID, BPMN, EPCIS
TYPE	ICON project
DURATION	01/03/2014 - 29/02/2016
PROJECT LEAD	Ben Devis, H.Essers
RESEARCH LEAD	Jan Van Ooteghem, iMinds - IBCN - UGent
BUDGET	1,642,000 euro
PROJECT PARTNERS	AZ Maria Middelares, Amaron, Aucxis, AZ Nikolaas, H.Essers
RESEARCH PARTNER	Center for Service Intelligence (CSI) - UGent
IMINDS	IBCN - UGent
RESEARCH GROUPS	SMIT - VUB
WEBSITE	www.iminds.be/hips



WHAT IS AN ICON PROJECT?

iMinds is the digital research center and business incubator for Flanders, Belgium. Its ICON research projects are agile and demand-driven, combining academia and industry partners. ICON projects typically have a duration of two years, yet quickly adapt to the rapidly-evolving digital landscape. ICON partners intend to use the project results in their products or services.

HIPS project partners:



AZ Nikolaas



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