Building Aarhus University Hospital on global traceability standards

Provider Implementation Best Case Study Award GS1

Chicago, October 2017
Applying GS1 standards for highly efficient and safe ways to work and care for patients

Aarhus University Hospital
Global GS1 Healthcare Conference

Henrik Stilling, IT-Architect, Central Denmark Region
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Henrik Stilling

Who am I?

- Central Denmark Region
- Lead architect for item identification and tracking
- Engineer by trade
  - Process management
  - Technology adaption
- Worked within health care industry since 2008
- Part of Danish national initiative on identification and traceability in healthcare
Merging for modern care
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Strategy

Basic drivers for running the hospital and achieving efficiency

- Turning (even more) into digitalization
- Focussing on logistics
- Automatization (where possible)

*Strategy incepted in the period from 2005-2008!*
Foundation for development

**Physical infrastructure**
- The Hospital layout is given
- Supply strategy is designed along with the hospital infrastructure

**Objects**
- Medicine
- Sterile goods
- Single use items
- Reusable items

**Events**
- Major changes in business model
- Gradual changes in individual business processes
Foundation for development

Physical infrastructure

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Scope

• Systems that **automatically** register **location** and **identity** of a **mobile** object at a known **time**

• Systems able to consume the above mentioned informations

• What, Where and When
Context

Applications

Integration System for Tracking and Identification

Technologies

The Global Language of Business
A layered architecture

Layer 5: User Systems
Using tracking data

Layer 4: Integration System for Tracking and Identification
Collecting, enriching, and exposing relevant tracking data

Layer 3: Tracking Systems
Filtering and exposing tracking data

Layer 2: Readers
Physical recording of movement and events

Layer 1: Mobile objects
Physical objects carrying id-tags or sensors

EPCIS Query
EPCIS Capture

http://kortlink.dk/rh9n
Built on standards

Item identification
• GTIN - Global Trade Item Number
• GRAI - Global Returnable Asset Identifier
• GIAI - Global Individual Asset Identifier
• GSIN - Global Shipment Identification Number
• UDI approved enumeration models approved by EU

Traceability (Location)
• GLN - Global Location Number

Time
• UTC

http://www.gs1.org/id-keys
Interoperability

• EPCIS (Electronic Product Code Information Services)
  - Capture
  - Query
  - EPC

• CBV (Core Business Vocabulary)
Benefits

- Quality assurance
- Search time reduction
- Usage and Capacity Management
- Transit time reduction
- Nearest employee handles task

These benefits all contribute to a more efficient hospital with increased patient safety
Applications
Quality assurance

Case: Maintenance

By aggregating items with relevant data of applied maintenance and service, staff members can ensure equipment is “fit” for use and can easily manage maintenance schedules.

By examining item metadata employees can get an overview of the latest maintenance time for a hospital bed and its’ current status.
Search time reduction

Case: Find co-workers
As much as 50 percent of the time used to search for personnel and items can be cut; on average five to six minutes per employee per day.
Usage and capacity management

Case: Utilization

The movement of devices in the hospital and identifying points of use gives an indication of potential use. The hospital decides whether to de- or increase the stock of a given device type or model.

Rooms and areas in the hospital have different use. A bright colour in a storage room or a hallway indicates that the item examined spends most of its time out of use.
Transit time reduction

Case: Finding optimal routes through the hospital

The time used moving from point of origin to destination is automatically calculated with optimal transport routes and risk of congestion identified.

By examining heat maps of transit routes, hospital staff can change routes to avoid congested areas.

Optimal transport routes also includes not passing through areas with contamination risk.
Nearest employee handles task

Case: Find beds that needs cleaning

Categorizing and sorting tasks based on location and type gives staff the possibility to autonomously decide where and when to solve the next task. Unproductive time is reduced when the nearest qualified employee handles a task. Time saved often exceeds 10 minutes per task.

Overview of bed with a given status tells staff where to go and find the next task and plan their work with as little idle time for transit as possible.
Future plans

• Open access to selected data
  - GLN + attributes
  - Organisational data

• Adopting healthcare specific CBV items

• Extending methods to all hospitals in the region
Provider Implementation Best Case Study Award GS1
Congratulations to two very deserving winners!

We trust you find value from hearing their implementation experiences...