RFID Technology in Healthcare Webinar
Agenda

- Introductions – VisionID / GS1
- RFID - Breakdown
- Applications of RFID in a hospital
- Case Studies RFID projects in Ireland
- Future of healthcare
- Key takeaways – Q&A
VisionID was formed in 2000

Currently 35 Employees & growing

Full Team of Certified Engineers

GS1 Platinum Partners

100% Irish Owned Company
Our Technologies

Barcode Technology
• Capture data at the source to improve efficiency.
• Can be used to multiple applications

Enterprise Mobility
• Capture information while on the move.
• Ensuring have accurate information at all times.

RFID
• Increase supply chain accuracy
• Improving stock/asset management.

Mobile Workstations
• Scan, print & apply while on the move.
• Improves process for staff.

Wireless
• Flexible, robust & secure wireless.
• Always having access to data.

Barcode Printing
• Print & apply labels at the point of care.
• Reduce the chance of mislabelling.
Providing innovative technology solutions across the healthcare environment, VisionID empower healthcare professionals to enhance patient safety and care.
Solution Provider Program

VISION iD
Empowering Enterprise Intelligence

GS1 Ireland
Platinum Partner
GS1: An international standards organisation

- Serving over two million companies
- 2,500 people helping us to achieve our vision
- Over 20 sectors
- 112 Member Organisations
- Across 150 countries
- More than 6 billion barcodes read all over the planet every day
How do the GS1 Standards work?

IDENTIFY
- GLN
- GTIN

CAPTURE
- EAN/UPC
- GS1-128

SHARE
- Master Data
- Transactional Data
- Event Data

USE
How do the GS1 Standards work? Continued

**IDENTIFY**

**GS1 Standards for Identification**
- Global Location Number (GLN)
- Product
  - Global Trade Item Number (GTIN)
  - Serialised Global Trade Item Number (SGTIN)
- Logistics and Shipping
  - Serial Shipping Container Code (SSCC)
  - Global Shipment Identification Number (GSIN)
- Global Identification Number for Consignment (GINC)
- Assets
  - Global Individual Asset identifier (GIAI)
  - Global Returnable Asset Identifier (GRAI)
- Services and more
  - Global Service Relationship Number (GSRN)
  - Global Document Type Identifier (GDTI)
  - Global Coupon Number (GCN)

**CAPTURE**

**GS1 Standards for Barcodes EPC/RFID**

**SHARE**

**GS1 Standards for Data Exchange**
- Master Data
  - Global Data Synchronisation Network (GDSN)
- Transactional Data
  - EDI: EANCOM and GS1 XML
    - Event Data
    - EPC Information Services (EPCIS)
Using GS1 Standards to track and trace in the hospital

Track and Trace in the Hospital
Real time visibility of what happened
Right product, right place, right person

GS1 Barcodes
EAN/UPC
GS1-128

GS1 EPC/RFID
Electronic Product Code (EPC) RFID
EPC HF Gen 2
EPC UHF Gen 2

Product
GTIN 1
GTIN 2
GTIN with batch, expiry
Each, Box/Case

Place
GLN
location in the hospital eg: theatre, ward, laboratory

Person
GSRN
Staff or patient

Asset
GIAI

Pallet/Logistic Items
SSCC

Organisation
GLN
Hospital or Supplier

VISION iD
Empowering Enterprise Intelligence

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The Vision for Patient Safety – how the GS1 based barcodes/RFID tags work

• Recall
• Inventory
• Payment

I am a location
I am an asset
I am a syringe
I am a doctor
I am an instrument
I am a patient
Radio Frequency Identification (RFID) is the use of radio waves to read and capture information stored on a tag attached to an object.

- GS1 Unique Identifier encoded in an RFID tag can be automatically read when within range.
• RFID is in use every day.

• The technology offers real opportunities for performance improvements.
Two types of RFID tags

**Passive Tags**
- No internal power source, require an external source to trigger a signal
- Able to send back information stored on the chip.
- Low cost
- Can be located using a reader which will trigger a signal

**Active Tags**
- Fitted with an internal battery and proactively transmit a regular radio frequency signal
- Transmit signals regularly into interval, no reader trigger required
- Costs more
- Ideal for tracking high-value assets
Where can RFID be used in the hospital?

**Pharmacy Department**
- Tracking of medication (GTIN) throughout the hospital with RFID enabled labels.

**Laboratory Department**
- RFID enabled labels printed and placed on specimen samples (SSCC) tracking it to the lab.

**Store/Inventory Department**
- Tracking and locating medical assets (GIAI) in real item throughout the hospital.

**Admissions Department**
- RFID enabled wristbands to track patients (GRSRN) throughout the hospital.
Healthcare Solutions

**Asset Management**
Tracking vital medical equipment throughout your hospital.

**Patient ID & Tracking**
Tracking & identify patients throughout their stay in hospital.

**Supply Chain Management**
Visibility of vital medical stock throughout the supply chain.

**Specimen Tracking**
Track specimen sample from the patient bedside all the way to the laboratory.

**Pharmacy Management**
Track & manage medication to ensure patients receive the right medication.

**Staff Communications**
Keep staff connected to each other & patient information in real time.
Benefits of standards based RFID

- Remove the need for paper-based process.
- Reduce time spent search for missed placed medical assets.
- Reduce instances of loss or misplaced specimen samples.
- Improve patient identification with printed wristbands.
- Standards based track and trace means investment is future proofed and saleable.
- Reporting and analytics at the touch of a button (meaningful use of data)
Case Studies
One Hospital, Three Projects

Precious samples Tracking (SSCC)

MISA – Tracking of vulnerable patients (GRSN)

Tracking of valuable art work (GIAI)

With

ST. JAMES’S HOSPITAL

With

GS1 Ireland

AEROSPACE SOFTWARE DEVELOPMENTS

VISIONid

Empowering Enterprise Intelligence
Traceability based on standards so solution would be future proofed and scalable:

- **Vulnerable patients**
  - High-risk if patient wanders

- **Precious samples** (eg: Biopsy taken in theatre)
  - Paper based traceability
  - Samples can go missing
  - Impacts patient safety
  - Risk for the hospital

- **Valuable art** (test case for tracking assets around the hospital)
  - Wheelchairs, infusion pumps
Precious Samples Project

Pain Point
• Manual collection of data on sample collection – exposed to errors due to handwriting.

Solution
• Specimen samples are placed into an RFID bag in the operating room.
• Sample is collected and tracked; along with identifying who it was collected by

Result
• Reduces lost or misplaced specimen samples.
The Solution: Automatic tracking of Precious Samples using RFID

Hospital tracking system

<table>
<thead>
<tr>
<th>Time</th>
<th>What</th>
<th>Who</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:05</td>
<td>Precious Sample (SSCC)</td>
<td>Theatre Staff (GSRN)</td>
<td>Theatre (GLN)</td>
</tr>
<tr>
<td>10:15</td>
<td>Precious Sample (SSCC)</td>
<td>Hospital Porter (GSRN)</td>
<td>Theatre collection area (GLN)</td>
</tr>
<tr>
<td>10:22</td>
<td>Precious Sample (SSCC)</td>
<td>Hospital Porter (GSRN)</td>
<td>Hospital main entrance (GLN)</td>
</tr>
<tr>
<td>10:31</td>
<td>Precious Sample (SSCC)</td>
<td>Hospital Porter (GSRN)</td>
<td>Central Pathology Laboratory (GLN)</td>
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If sample doesn’t arrive within a set time period an alert is sent for action should a sample be missing.
Pain Point
- Need to ensure the security and safety of their vulnerable patients.

Solution
- Real time location system with active RFID wristband tracking.

Result
- Improved security and safety of vulnerable patients
- Alerts staff when the vulnerable patient is near the exit.
The Solution:
Automatic tracking of Vulnerable Patients using RFID

Hospital tracking system

<table>
<thead>
<tr>
<th>Time</th>
<th>What</th>
<th>Who</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>Bed (GIAI)</td>
<td>Patient (GSRN)</td>
<td>in Ward 1 (GLN)</td>
</tr>
<tr>
<td>14:30</td>
<td>Wheelchair (GIAI)</td>
<td>Patient (GSRN)</td>
<td>Leave Ward 1 (GLN)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arrival Communal area (GLN)</td>
</tr>
<tr>
<td>14:45</td>
<td>Wheelchair (GIAI)</td>
<td>Patient (GSRN)</td>
<td>Leave Communal area (GLN)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arrive Exit Door to vulnerable Patient Unit (GLN)</td>
</tr>
<tr>
<td>14:55</td>
<td>Wheelchair (GIAI)</td>
<td>Patient (GSRN)</td>
<td>Leave Exit door (GLN)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arrival Ward (GLN)</td>
</tr>
</tbody>
</table>
Tracking of Valuable Art Work

**Pain Point**
- Incident of art work being taken off the wall and walking out with them.

**Solution**
- Placing RFID tags on the frame of the art work, when art is removed from the wall security staff will be alerted.

**Result**
- Reducing incident of thefts of art work and allow recovering of art work to be achieved.
St Vincent's National Acute Services Asset Tagging Pilot

**Pilot A-Phase 1**
- Re badging all medical device equipment within the hospital with GS1 GIAI asset label
- Label will incorporate passive Radio Frequency Identification (RFID) technologies.

**Pilot A-Phase 2**
- RFID functionality assessment will determine the best location for the RFID tag on equipment
- This will involve generating an image gallery as guidance for future installations.

**Pilot A-Phase 3**
- Migration of the new asset data. The Universal Medical Device Nomenclature System (UMDNS) has been adopted for the national ECRI-AIMS database
St Vincent's National Acute Services Asset Tagging Pilot - Labels

- Uses blue border to nationally identify medical device equipment.
- Differentiate new asset number
- High performance white polyester face-stock and a low surface energy adhesive
- Contain a Global Individual Asset identifier (GIAI).
St Vincent's National Acute Services Asset Tagging Pilot – Asset Tagging

- Time and Date Stamp of the scan read;
- The general location of where the Medical equipment was tagged;
- Any relevant information/notes deemed relevant to the tagging of a particular asset for the broader HSE project;
- A photo of the tagged item;
- Status information
St Vincent's National Acute Services Asset Tagging Pilot
- Findings

- Asset label used was determined to be appropriate for 93% of medical equipment;
- RFID read rates while testing in live environment were excellent.
- Further testing on devices that will need a smaller tag to commence
- Custom application for the process incorporated barcode scanning and image capture was successful
Future of Healthcare
An Evolving Healthcare Ecosystem

From aging populations and staff shortages to rising costs, hospitals are under pressure to support growing demand with existing resources.

Worldwide, hospitals are increasingly turning to technology and automation to reduce the strain on an already overburdened system.

- Zebra Technologies – The Future of Healthcare: 2022 Hospital Vision Study

Current and future implementations need to be able to interface with existing IT solutions to ensure interoperability which means standardisation is key to future proof investment
Key Takeaways

When thinking about implementing an RFID Solution

- Hardware
- Software
- Standards (identifiers, tags etc)
Key Takeaways

When thinking about implementing an RFID Solution

Hardware

Software

Standards
Thank You