The purpose of today’s session

Look at both RFID and Data Matrix and understand the issues with adoption within Healthcare
Please welcome today’s panel

- **Grant Courtney (Chair)**
  Manager, Falsified Medicines Directive Project, GSK

- **Pascal Aulagnet**
  Senior Manager, Global Serialisation - EMEA Client Partner, Pfizer

- **Sébastien Langlois-Berthelot**
  Project Manager, Roche

- **Camilo Higuita**
  IT & Innovation Manager, Crystal SAS, Colombia
Agenda

16:00 Introduction and purpose
16:15 Case Studies

- GSK - Grant Courtney
- Roche - Sébastien Langlois-Berthelot
- Crystal SAS - Camilo Higuita
- Pfizer - Pascal Aulagnet

16:55 Questions & Answers
17:10 Summary
17:15 Close
RFID in use in retail
Data Matrix in use in Healthcare
Every country which has selected a data carrier for traceability has opted for Data Matrix.

South Korea also allows RFID.
Grant Courtney
Manager, Falsified Medicines Directive Project, GSK

GSK RFID Pilot
Introduction – Grant Courtney

- Member of GS1 Healthcare Leadership Team
- 23 Years experience in Healthcare - GSK
- 11 Years in Traceability
Scope

- Pilot to compare RFID vs Data Matrix
- Aggregation of US product
  - Bottle – Bundle – Case - Pallet
- Track and Trace from GSK to Wholesaler
  - Use of EPCIS to share traceability data
- Real product over a 6 month period
  - Stopped due to unacceptable ongoing issues
Key learnings

**Reliability**
- RFID labels were scanned and working on the production lines
- 2%-3% failed to scan (broke) at the warehouse – major disruption

**Difficult technology to use**
- Failure modes were difficult to identify and resolve
Key learnings

The need for a secondary back up

• Not all users of the product will have RFID readers and so the information has to be duplicated (at least human readable)
• This requires 2 solutions to be deployed, not just RFID
• Technically challenging to ensure both systems apply the same data

Expertise and knowledge

• There are very few experts available to design, deploy and problem solve RFID following the Healthcare level of validation and procedures

Acceptance by the patient

• There was concern show by users of the product e.g. privacy
Impacts on the supply chain

Manufacturer

Logistics Provider

Wholesaler

Pharmacy

Product

Patient

Ability to apply data in multiple formats

Reliability of RFID Tags

Knowledge and experience to set up and operate RFID technology

Scanning the wrong pack or failure to scan

Cost to implement

How to manage product returns if RFID tag is killed

Privacy issue if the RFID tags are not "killed" on dispensing

Unknown impact on product from scanning

Environmental impact – Millions of tags into landfill
Sébastien Langlois-Berthelot
Project Manager, Roche
RFID vs DataMatrix for Pharma Traceability

Sébastien Langlois-Berthelot
About Roche

A pioneer in Healthcare

- Founded in 1896 by Fritz Hoffmann-La Roche in Basel, Switzerland
- 1897 onwards Roche starts to expand worldwide
- 1968 Roche enters Diagnostics Market

TODAY – ROCHE CREATES INNOVATIVE MEDICINES AND DIAGNOSTIC TEST THAT HELP MILLIONS OF PATIENTS GLOBALLY

- Largest Biotech Company
- Frontrunner in Personalized Healthcare
- Global leader in Cancer Treatments
## Benefits of RFID vs DataMatrix

<table>
<thead>
<tr>
<th>Radio-frequency Identification (RFID)</th>
<th>DataMatrix Barcode</th>
</tr>
</thead>
<tbody>
<tr>
<td>No need to scan each unit</td>
<td>No issues with physical interference with materials with radiofrequency sensitivity</td>
</tr>
<tr>
<td>No data limitation due to barcode size</td>
<td>Low costs compared to RFID implementation</td>
</tr>
<tr>
<td>Less database integration (required data available on the tag)</td>
<td>Wide adoption by customers and regulators around the world</td>
</tr>
<tr>
<td>No need to maintain and share hierarchy between units and logistics units</td>
<td>Small size customers, wholesalers and hospitals more likely to invest in barcode readers and data sharing rather than RFID technology</td>
</tr>
</tbody>
</table>
DataMatrix is the Preferred Data Carrier for 
*Product Identification, Authentication and Traceability at Roche*

- **Product Identification**
  - GS1 DataMatrix used on **primary and secondary** packaging to identify product (GTIN), batch and expiry date

- **Product Authentication**
  - GS1 DataMatrix used on secondary packaging to **authenticate/verify sales pack** (GTIN+Serial Number) through database (EU, Argentina, Turkey)

- **Product Traceability**
  - Roche has invested in the last 10 years to allow **full aggregation based on GS1 DataMatrix** in all our facilities and CMOs in order to enable traceability

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Roche is manufacturing pharmaceuticals as well as medical devices. Therefore, a cross-divisional adoption of GS1 DataMatrix barcode as a standard data carrier made sense for Roche from the beginning, given that DataMatrix barcodes are also mandated by **UDI regulations** around the world.
Traceability Model at Roche

*Aggregation and Internal Traceability as a Standard*

We use consistently following GS1 standards to manage traceability:

- GS1 DataMatrix as standard data carrier
- EPCIS as traceability data carrier

When mandated by regulations or as voluntary project in selected countries.
Take Home Messages

- DataMatrix barcodes have been widely adopted by many regulatory authorities around the world, while RFID remains marginal.
- DataMatrix barcodes require little investment to be scanned and their acceptance by customers is increasing.
- The global healthcare industry is ready for 2D DataMatrix barcodes.
- Data Sharing and Integration are key to leverage benefits of barcodes.
- Avoid introduction of two technologies in parallel (high workload for maintenance, high costs).
Doing now what patients need next
Camilo Higuita
IT & Innovation Manager, Crystal SAS, Colombia
Quienes somos?

NEGOCIO

- Paquete completo
- Comercialización de marcas propias

Canales
- Retail propio
- Franquicias
- Grandes superficies
- Medianas cadenas
- Multimarcas
- E- Commerce

PRESENCIA

Republica
Guatemala
Costa Rica
Colombia

MARCAS

VENTAS

$700.000 Millones año
### Tiendas

- **200 tiendas**
- **10 colecciones año**
- **Reposición diaria**
- **Traslados**
- **Devoluciones**

#### REDES QR y RFID

<table>
<thead>
<tr>
<th></th>
<th>QR</th>
<th>RFID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recepción</td>
<td>20 min</td>
<td>5 min</td>
</tr>
<tr>
<td>Reabastecimiento</td>
<td>2 horas</td>
<td>1 hora</td>
</tr>
<tr>
<td>Inventarios</td>
<td>2 horas</td>
<td>40 minutos</td>
</tr>
<tr>
<td>Búsqueda de inventario venta</td>
<td>1 hora</td>
<td>5 minutos</td>
</tr>
<tr>
<td>Pago y devoluciones.</td>
<td>3 minutos</td>
<td>2 minutos + Seguridad</td>
</tr>
</tbody>
</table>

- Aumento en la precisión del inventario 98%
- Aumento de la disponibilidad del producto
- Menos tiempo de reabastecimiento
- Menos tiempo de búsqueda
- Eficiencia operativa

- Precisión del inventario (IPI) 94%
- Inventario completo cada año
Producción

- 50.000 SKU
- 25% cambios de referencia diarios

Materia prima
Tejido manufactura
Calidad y empaque
Remisión

QR
7 días
1 lectura diaria
5 días
1 lectura diaria

RFID
3 días
Tiempo Real
3 días
Tiempo Real

• WIP (Work in Process) : 7 días

4% Eficiencia Operativa
57% Wip 3 días
Precisión del inventario 92%
Inventario completo cada 2 años

Precisión del inventario 92%
Disminución del tiempo
Entrega confiable
Lecciones aprendidas

• Tener un líder del proyecto
• Alto compromiso de la partes involucradas en los procesos.
• Capacitación de alta calidad al personal.
• Cumplimiento con los estándares recomendados por GS1.
• Incorporar la tecnología y escoger a los aliados estratégicos.
• Selección de la tecnología adecuada de acuerdo a las necesidades del negocio.
• Tener en cuenta el área de trabajo (apantallamiento).
• RFID inmerso en los software del negocio.
• Evitar etiquetar en la tienda.
• Usar la tecnología de RFID en la inteligencia del negocio.
Pascal Aulagnet
Senior Manager, Global Serialisation - EMEA Client Partner, Pfizer
RFID Pilot feedback
RFID vs data matrix for pharma traceability

Pfizer Global Serialization Program

GS1 Global Healthcare Conference - Bogota

Pascal Aulagnet, Senior Manager Business Technology, Pfizer Inc
11th of April 2018 – Bogota
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Pfizer Serialization History

- Compliance – China, India, Korea, US, Saudi Arabia, Australia NBA (Turkey, Argentina)
- Active – China, Korea, Saudi Arabia, US, EU FMD, Brazil, Russia, …
- Monitoring – 28+ mandates …. and counting

- 450+ active projects; 36 sites, 108 CMOs, 14 PC1 customers, 33 logistics facilities, 467 pkg lines and over 13,000 SKUs

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In a 2004 joint press release with the FDA, Pfizer committed to piloting RFID (radio frequency identification) based serialization to better understand what is required to implement serialization across supply chain partners.

In 2005, Viagra became the first pharmaceutical product distributed in the U.S. with serialization of every unit, case, and pallet.

In 2007, Pfizer implemented serialization at the case and pallet level on Celebrex to demonstrate to industry the effectiveness of case level serialization supportive of risk-based model.
Scope and Implementation

Unique identification
- Serialization EPC numerology
- Unit / Case / Pallet aggregation
- Pedigree file per lot sent to logistic centers

RFID Pilot line
- HF Tags for units (> 7 millions bottles tagged during the pilot)
- UHF Tags for cases and pallets
**Implementation**

- **Data Carrier Technology**
  - 2D Data Matrix as global primary choice, and as secondary data carrier together with RFID where viable (U.S.)

  - **Chip:** Holds information about the object identity
  - **Antenna:** Transmits info to a reader using radio waves

  - **RFID Tag:**
    1. The reader emits a radio signal and ‘turns the tag on’
    2. Tag transmits info stored in the chip to reader

  - **Objects are labeled with RFID tags and/or 2D Matrix for automatic identification & tracking**

  - **Data Matrix:** (two-dimensional / ‘2D’)

  - **Source:** SupplyScape

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Line Architecture

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Lesson Learned: Impact on the line

**Units Rejection Causes**

- Rejected units
- HF Causes (Tag no read + Tag not locked)
- Datamatrix no read

**Cases Rejection Causes**

- Rejected cases Case Tag causes (tag no read, no match, duplicate)
- Barcode no read

* Line breakdown study from 2005 and 2008
7,8MM bottles and 200k+ cases inspected
DataMatrix
• Leverage existing labelling processes known and used since years by the industry
• No extra equipment for the supply chain and Healthcare Providers
• Insignificant COGs increase

RFID
• New and Complex processes and SOP to put in place (with associated expertize)
• Extra Equipment and Software to install
• Increase COGs
• Ecological footprint

In Summary

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thank you!
Questions & Answers
Networking Dinner on Wednesday, 7:00 pm

ANDRÉS D.C.
Calle 82 #12-21 Dentro del centro comercial
El Retiro, Bogotá

Meet in the main lobby for shuttle bus departure:
6:30 pm

**Bus departure:** in the main lobby at 6:30 pm
**Bus return:** beginning at 9:30 pm until 12:00 am, running on a loop
**Dress code:** business casual.

**PLEASE WEAR YOUR EVENT BADGE 😊**