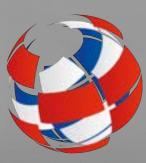


RFID END USER MANDATES

OR HOW TO PICK THE RIGHT RFID APPLICATION

Dr. Vlad Sljapic – GRAPHIMECC GROUP S.R.L









AGENDA

RFID END USER MANDATES LABELEXPO AMERICAS '24

Introduction

- The rise of the RFID why is the demand growing?
- How to sell RFID/traceability benefits to brand owners
- RFID end user mandates
 - How industry sectors use it
 - Who's involved
 - Examples
- Technology and considerations for RFID applications
 - What do the integrated systems look like?
 - Quality expectations Certification vs Inspection
 - Guide to good application What to consider?
- Who can you talk to?

PROGRAM

Global Product Traceability (RFID and QR)

ARE THE CORNERSTONE OF

- Circular economy
- Establishing Sustainability and Supply Chain Transparency
- Managed Carbon Footprint
- Quality Control and Assurance (Consumer Safety)
- Brand Protection and Counterfeit Prevention
- Data Driven Process Optimisation and Risk Management
- Global Trade Facilitation and Collaboration
- Regulatory Compliance



Legislation Drivers

Governments (USA, EU, Australia, Canada, China, India, Japan, South Korea, etc) and specific industries are setting up new policies and projects supporting **Digital Product Passport (DPP)**, Inflation Reduction Act (US), California Transparency in Supply Chains Act, USDA Food Traceability Initiative, etc.

Chemical legislation

- Regulation (EC) No 1907/2006 on the registration, REACH evaluation, authorisation and restriction of chemicals
- POP Regulation (EU) 2019/1021 on persistent organic pollutants
- Regulation (EC) No 1272/2008 on the classification, labelling CLP and packaging of substances and mixtures

Corporate legislation

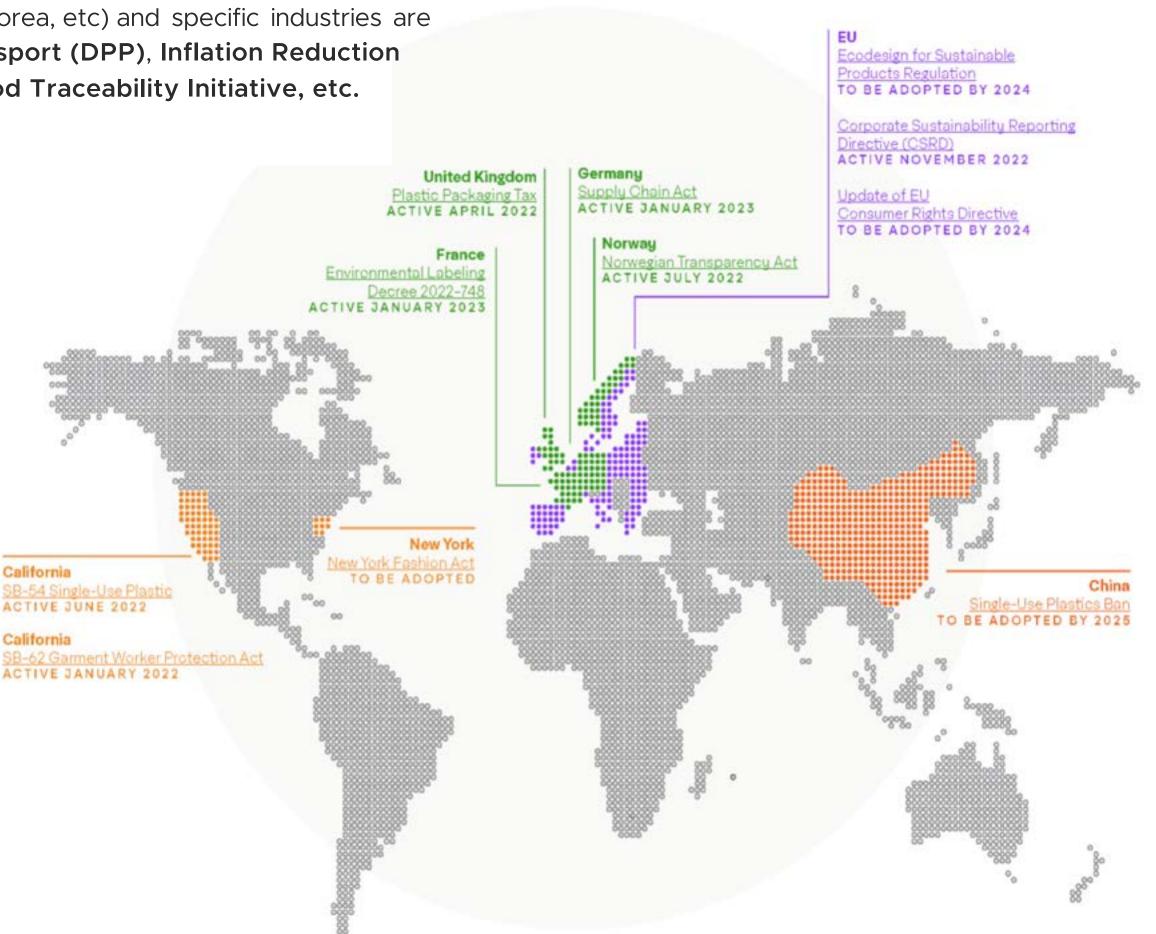
- Proposal for a Directive on Corporate Sustainability CSDD Due Diligence
- Regulation (EU) 2017/821 on supply chain due diligence CMR (Conflict Minerals Regulation)

Product legislation

- TEX Regulation (EU) No 1007/2011 on textile fibre names and related labelling and marking of the fibre composition of textile products
- Proposal 2022/0095 (COD) on ecodesign requirements ESPR for sustainable products

Waste legislation

- PPW Directive 94/62/EC on packaging and packaging waste
- WFD Directive 2008/98/EC on waste (Waste Framework Directive)



California





Who needs it within the brand?

IMPACT OF TRACEABILITY ACROSS THE ORGANISATION

For CEO and Executive Management

Action: Make traceability visible, monitor integrity of the supply chain, manage better counterfeit issues, protect IP

For Sustainability / Compliance Team

Action: Ensure long term future of the company, Control Risks, Protect IP, Reduce Processing Costs, establish the universally accepted standard

For Marketing and Sales

Action: Protect current business, build long term engagement between the consumer and the brand, understanding upcoming trends

For Supply Chain and Logistics

Action: manage risk, manage the disturbance in material flow and stock, optimise material flow and stock, minimise inventory, minimise cost

For Quality Team Action: Protect supply chain, Protect customers, enhance brand value, reduce costs and disturbance



MARKET DRIVERS



Traceability

Continuous Tracking of the items



Inventory Management

Control and optimization of the internal processes



Access Control Guarantee of speed and access security







Fight against Counterfeiting

Certification of products authenticity



Customer engagement

Data Sharing between brands and customers

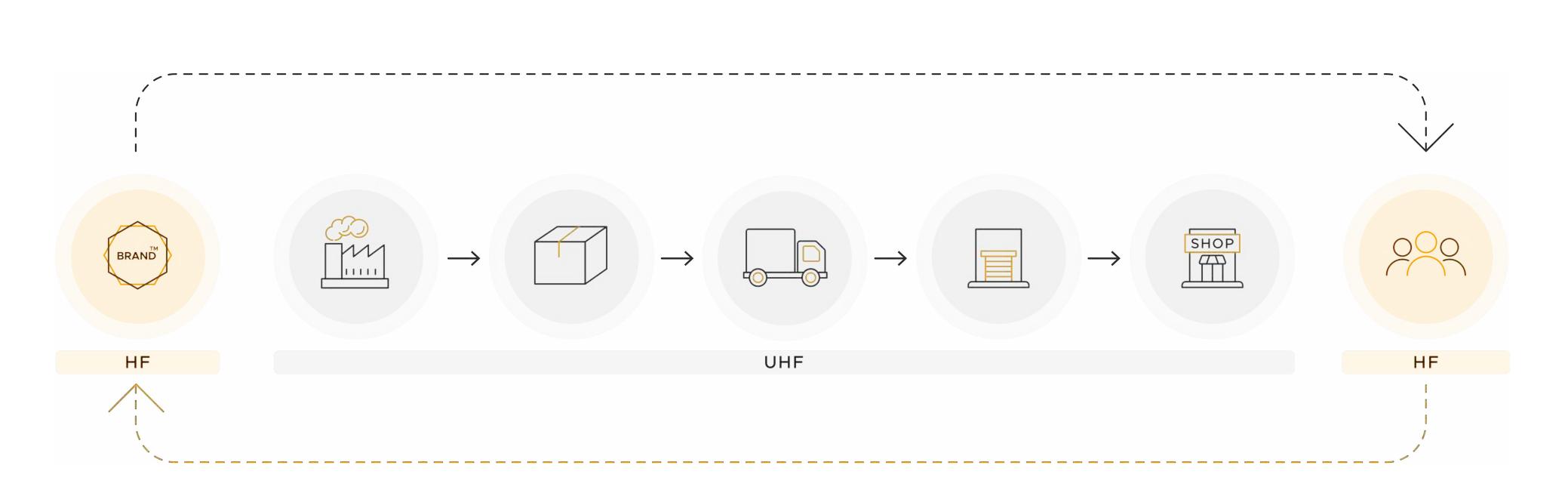


Sustainability

Efficiency in consumptions

TRANSPARENCY AND COMMUNICATION

EXAMPLE: DUAL FREQUENCY TAG (UHF/NFC)



UHF – Supply Chain Management

Systemic communication between stages (cloud driven)

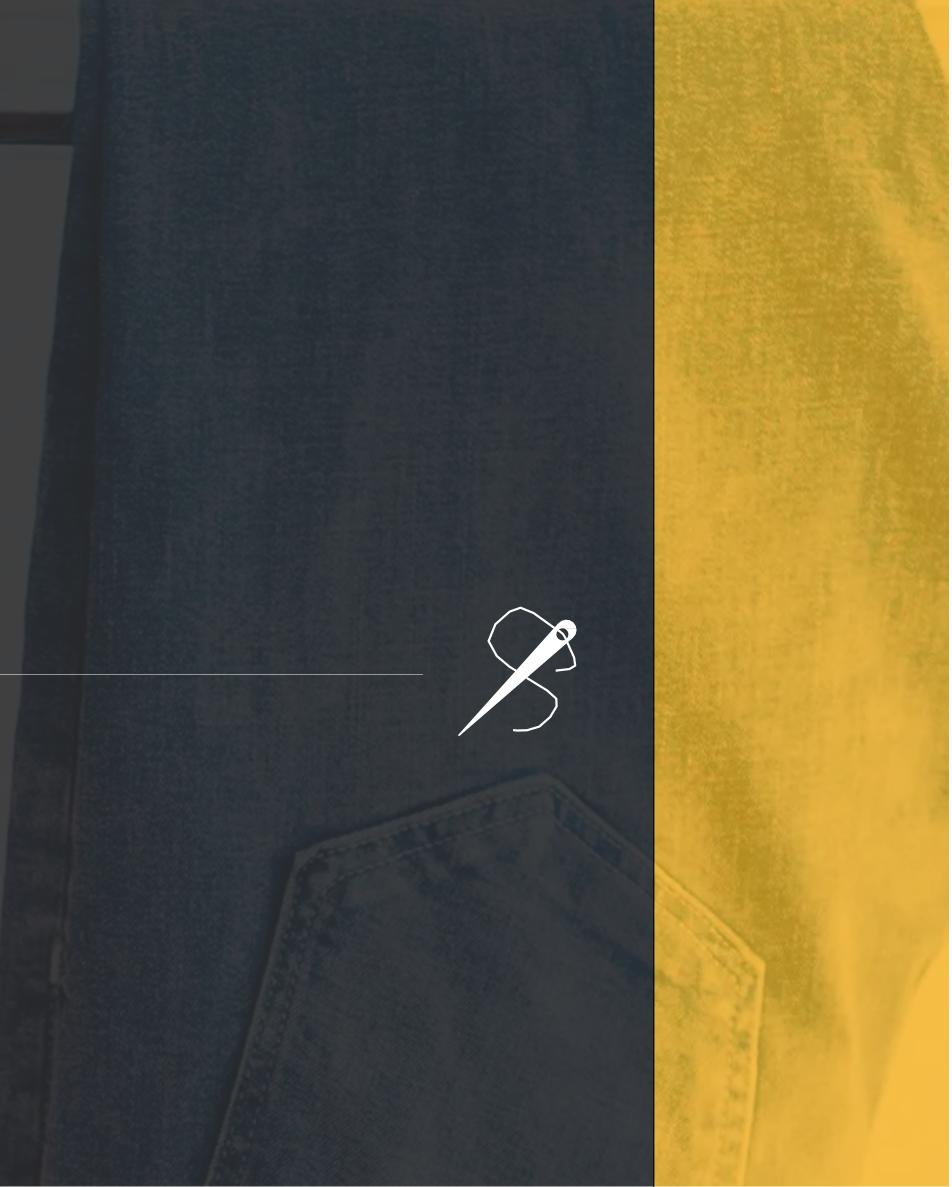




HF (NFC) - Consumer Engagement

Direct contact between the brand and consumer (mobile phone)

CASE STUDY FASHION



RFID in FASHION

Application: Inventory Management and Tracking, Loss Prevention and Theft Reduction, Supply Chain Management, Customer Experience, Product Authentication and Counterfeit Prevention

PROBLEM	SOLUTION
 Inventory management Incorrect inventory Stock not on shelfs (false out of stock) 	 Implement RFID infrastructure Tag on every item Tracking in both store and warehouse
 Shop floor management Imprecise stock location Delayed deliveries Customer satisfaction 	 Shop management digitization RFID enabled checkouts Stock visibility, including physical location
 Stock shrinkage Recorded stock vs actual stock Theft Walmart - \$3bn loss per annum 	 Global traceability platform integration Example: Atma.io Automated product traceability through the supply chain

Examples

Calzedonia Group - https://www.calzedoniagroup.com/mediaObject/images/call-for-ideas/Calzedonia-Group-Call-for-Ideas---RFID/original/Calzedonia+Group+Call+for+Ideas+-+RFID.pdf Zara - https://bitly.ws/ZfKE - https://bitly.ws/ZfKE Fashion and e-commerce - https://bitly.ws/ZfKE RFID revolution - https://www.hprt.com/blog/How-RFID-Technology-is-Revolutionizing-the-Apparel-Industry.html

Sector: fashion



RESULT

\cdot Logistics improvements

- Production
- Logistics
- Inventory

Proof of authenticity

- Genuine products of authentic quality
- Brand reputation

\cdot Increasing revenues

- Maximized revenues
- Dynamic pricing models
- Brand flexibility and access
- Antitheft



CASE STUDY

TEODORES



RFID in RETAIL

Application: logistics, stock management, loss prevention and consumer engagement

Used by Walmart, Target, Macy's, Zara, Kohl's, Best Buy, Gap Inc., H&M, Decathlon, Lululemon, Adidas, Nike, Nordstrom, Burberry, Urban Outfitters, Lowe's, Home Depot, Costco, Sam's Club, Kroger, Publix, CVS, Walgreens, Sephora, Ulta Beauty, IKEA, HomeGoods, etc.

PROBLEM	SOLUTION							
 Complex inventory management Large volume of products Complex supply chain 	 Implement RFID infrastructure Tag on every item Tracking in both store and warehouse 	• Efficier • Inv • Imp • Imp • Inc						
 Shop floor management Imprecise stock location Delayed deliveries Customer satisfaction 	 Shop management digitization RFID checkout counters Stock management Cycle counting (manual RFID) 	• Op • Dir and • Self ch						
• Stock shrinkage • Recorded stock vs actual stock • Walmart - \$3bn loss per annum	 Already in use worldwide in apparel 	• An • Imp						

Examples

Decathlon – https://www.alfacod.it/blog-decathlon-come-utilizzare-tecnologia-rfid

Walmart - https://lowrysolutions.com/blog/the-walmart-rfid-mandate-what-you-need-to-know/ - https://bitly.ws/ZfL4

Amazon - <u>https://www.aboutamazon.com/news/retail/amazon-just-walk-out-rfid-technology</u>

RFID in Retail - https://www.prosegur.us/blog/security/rfid-in-retail-what-it-is-and-how-it-is-used#:~:text=Inventory%20Tracking%20with%20RFID,update%20the%20store's%20inventory%20system.



Sector: retail

RESULT

ent inventory management

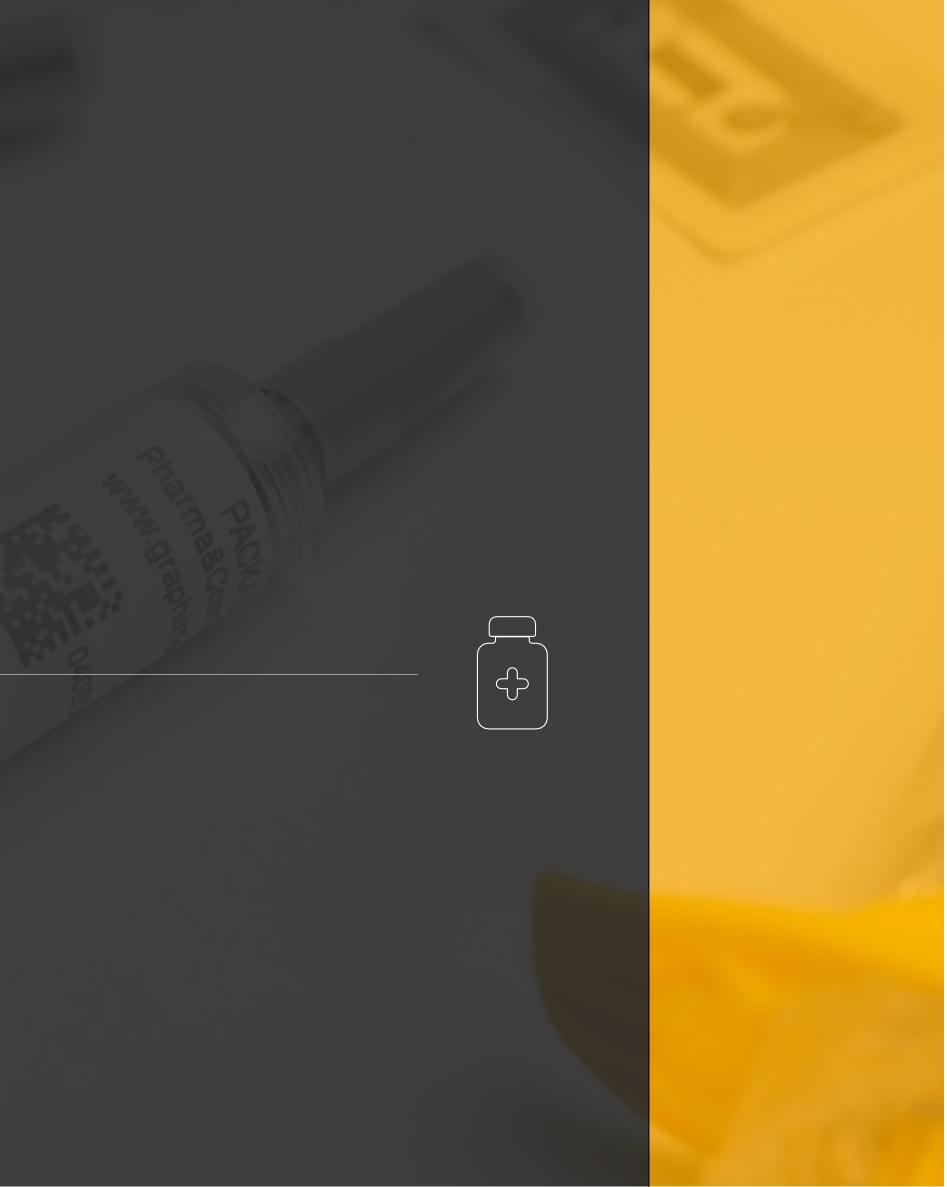
nventory error removal mproved supply chain visibility ncrease in revenue (Decathlon up 11%) Optimized customer experience Direct Connection between consumer nd the brand

check out stores

Amazon, Decathlon, etc mproved supply chain visibility



CASE STUDY PHARMA



CASE **RFID in PHARMA**

Application: supply chain visibility, application control, product authentication, patient care

Adopted by Merck, Pfizer, GlaxoSmithKline (GSK), Novartis, Johnson & Johnson, Roche, AstraZeneca, Sanofi, Bayer

PROBLEM	SOLUTION
 Improper administration Wrong medication Nonadherence to therapy 	 Implement RFID infrastructure Tag on every item Tracking in both store and warehouse
 FIFO and stock rotation management Recalls Stock out of date Therapy verification by human 	 Use of dual frequency tags (UHF/NFC) Connection with the end user Combination of logistics and patient communication
 Inventory Human driven stock management High value product Risks related to contamination 	 Intelligent pharma cabinets RFID readers built into the storage Automatic stock management
 Brand protection Fake product Products mistreated in handling Brand reputation impact 	 Patient bedside RFID readers Trays of medicines with handheld readers Ensures no wrong, recalled or out of date medicines by the patient

Examples

Intelligent Cabinet - https://rfid.averydennison.com/content/dam/rfid/en/news-and-insights/insights/case-studies/Identify-RFID-Case-Study.pdf The future of smart labelling - https://www.pharmaceutical-technology.com/features/is-rfid-the-future-of-smart-labelling/?cf-view_ Modern Pharmacy Management - <u>https://www.pharmacytimes.com/view/rfid-technology-s-pivotal-role-in-modern-pharmacy-management</u>

Sector: pharma



RESULT

• Logistics improvements

- Production
- Logistics
- Inventory

· Patient safety

Proof of authenticity

Fake drugs are dangerous

Transparency

- Unborken chain of custody over medications
- Patient confidence
- Some drugs are sensitive to environment during transport (cold chain delivery)



CASE STUDY WINE & SPIRITS



RFID in WINE & SPIRITS

Applications: Inventory Management and Tracking, Loss Prevention and Theft Reduction, Supply Chain Management, Customer Experience, Product Authentication and Counterfeit Prevention

Adopted by Constellation Brands, Treasury Wine Estates, Diageo, E.&J. Gallo Winery, Jackson Family Wines, etc.

PROBLEM	SOLUTION								
 Complex inventory management Global traceability of high value products Complex supply chain 	 Implement RFID infrastructure Tag on every item Tracking in both store and warehouse 								
 Shop floor management Imprecise stock location Delayed deliveries Age verification Customer satisfaction 	 Shop management digitization Dynamic pricing Ability to vary the pricing and discounting per region or time 								
 Authenticity proof Fake product Products mistreated in handling Brand reputation impact 									

Examples

Tenuta Ornellaia - <u>https://www.rfidglobal.it/logistica-tracciabilita-alimentare-con-rfid-tenuta-ornellaia/</u> Amarone di Dal Forno Romano - <u>https://www.rfidglobal.it/rfid-per-la-tracciabilita-del-vino-amarone-di-dal-forno-romano/</u> Tracking bottles with RFID - <u>https://www.packagingdigest.com/beer-wine-spirits/tracking-wine-bottles-through-rfid</u> RFID in wine retailers industry - <u>https://gaorfid.com/rfid-ble-iot-drones-for-beer-wine-and-liquor-retailers-industry/</u> Sector: wine & spirits



RESULT

\cdot Logistics improvements

- Production
- Logistics
- Inventory

\cdot Consolidation of stock

- Physical vs accounting
- Unified processes (one source of truth)
- Distribution supply chain visibility

Proof of authenticity

- Product providence
- Age verification
- Chain of custody
- Visibility of journey to customer



CASE STUDY COSMETIC

Крем С жемчужным Эффектом

Illuminating face cream

30 aut/ml



CASE

Application: logistics, brand protection, parallel trading

PROBLEM	SOLUTION							
 Complex inventory management Large volume of products Complex supply chain 	 Implement RFID infrastructure Tag on every item Tracking in both store and warehouse 							
 Brand protection Fake product Products mistreated in handling Brand reputation impact 	 Global traceability platform integration Example: Atma.io Automated product traceability through the supply chain 							
 Parallel trading Differential pricing between areas Product intended for India re- directed to USA 								

Examples

Grupo Boticário - https://www.elision.com/en/home/news-insights/case-studies/rfid-case-study-beauty-boticario.html
Acqua di Parma - https://www.elision.com/case-study/la-tracciabilita-nel-settore-profumi-acqua-di-parma-e-la-lotta-al-grey-market-3/
Sephora - https://www.rfidlabel.com/sephora-utilizes-rfid-technology/?srsltid=AfmBOorvFBHsfucGpSVsMWVeetIOnGEABznzLgQnyOHstM9ljruyz29
Mixer and Pack - <a href="https://www.cosmeticsdesign-europe.com/Article/2023/08/01/demand-for-rfid-technology-is-increasing-every-day.-behind-mixer-pack-s-integrated-tunnel-innovation#Packaging Pooling - https://wiot-group.com/think/en/articles/startup-develops-first-rfid-pooling-system-for-cosmetics/

Sector: Cosmetic



RESULT

Logistics improvements

- Production
- Logistics
- Inventory

Proof of authenticity

- Genuine products of authentic quality
- Brand reputation

Increasing revenues

- Maximized revenues
- Dynamic pricing models
- Brand flexibility and access



Bioglow

My way use less makeup

Крем с жемчужным эффектом

Automating

N mayori

CASE STUDY INDUSTRIAL / AUTOMOTIVE



CASE **RFID in INDUSTRIAL / AUTOMOTIVE**

Application: RFID Vehicle Tracking System, Parts Verification, Tool Tracking, Proactive Maintenance and Repair, Access Control, Material tracking, Waste Management

PROBLEM	SOLUTION								
 Logistics of parts in manufacturing JIT delivery risks/exposure Opaque supply chain management 	 Implement RFID infrastructure RFID Tags on key items RFID enabled manufacturing process 								
 Traceability for Prototype testing Customization of options Tyres (sustainability) Civil engineering traceability High value big parts Logistically difficult Long construction periods 	 • RFID traceability with long distance reading • Potential drone use for large sites • Building site materials management integrated process 								

Examples

Changing gears with RFID – <u>https://www.labelsandlabeling.com/features/interactive-technology/changing-gears-rfid</u> Suar group - https://rfid.averydennison.com/en/home/news-insights/case-studies/rfid-case-study-logistics-suar-group-indonesia.html RFID in Automotive - <u>https://lowrysolutions.com/blog/rfid-automotive-industry/</u> RFID in Auto manufacturing - https://radiantrfid.com/blog/rfid-in-automotive-manufacturing/ RFID in Construction Industry- https://cybra.com/rfid-in-the-construction-industry/



Sector: Automotive



RESULT

• Logistics improvements

- Production
- Logistics
- Inventory

Enhanced processes

- Porsche prototype testing logs
- Audi assembly line, storage and shipping
- Audi seatbelt coupling
- Volvo custom manufacturing

Managed losses and lost/misused inventory



case study FOOD



RFID in FOOD

Application: providence tracking, recycle, catering, reuse, waste reduction, safety

Adopted by Walmart, Kroger, Tyson Foods, Nestlé, PepsiCo, Coca-Cola, Kraft Heinz, Danone, General Mills, Mars, Kellogg's, JBS, Cargill, etc.

PROBLEM	SOLUTION
 Single use packaging tax Upcoming legislation Significant environmental impact \$3bn waste in UK alone 	 • RFID tagged reusable packaging • Seamless tracking of use via portals • Accurate usage instance count • Stock management • Stock reorder
 Inventory management Managing reuse Refill management Customer satisfaction 	 Integration with the tracking software platform Automatic replacement
 Authenticity proof Fake products Products mistreated in handling Brand reputation impact 	Automatic reorder

Examples

Prosciutto San Daniele – https://www.rfidglobal.it/case-history-consorzio-prosciutto-san-daniele/ Reynolds catering supplies - https://rfid.averydennison.com/content/dam/rfid/en/news-and-insights/insights/case-studies/RFID-Reynolds-Case-Study.pdf RFID on food packaging - https://www.packagingdive.com/news/rfid-traceability-walmart-fda-packaging-supply-chain/692869/ Where to find RFID on our food - https://www.trace-id.com/en/rfid-in-food/

Sector: food packaging

RESULT

Efficient inventory management

Inventory error removal

\cdot Enabling the reuse safely

- Environmental impact reduction
- Changing the business model
- Trend setting and visible effort

Proof of authenticity

- Product providence
- Chain of custody
- Visibility of journey to customer



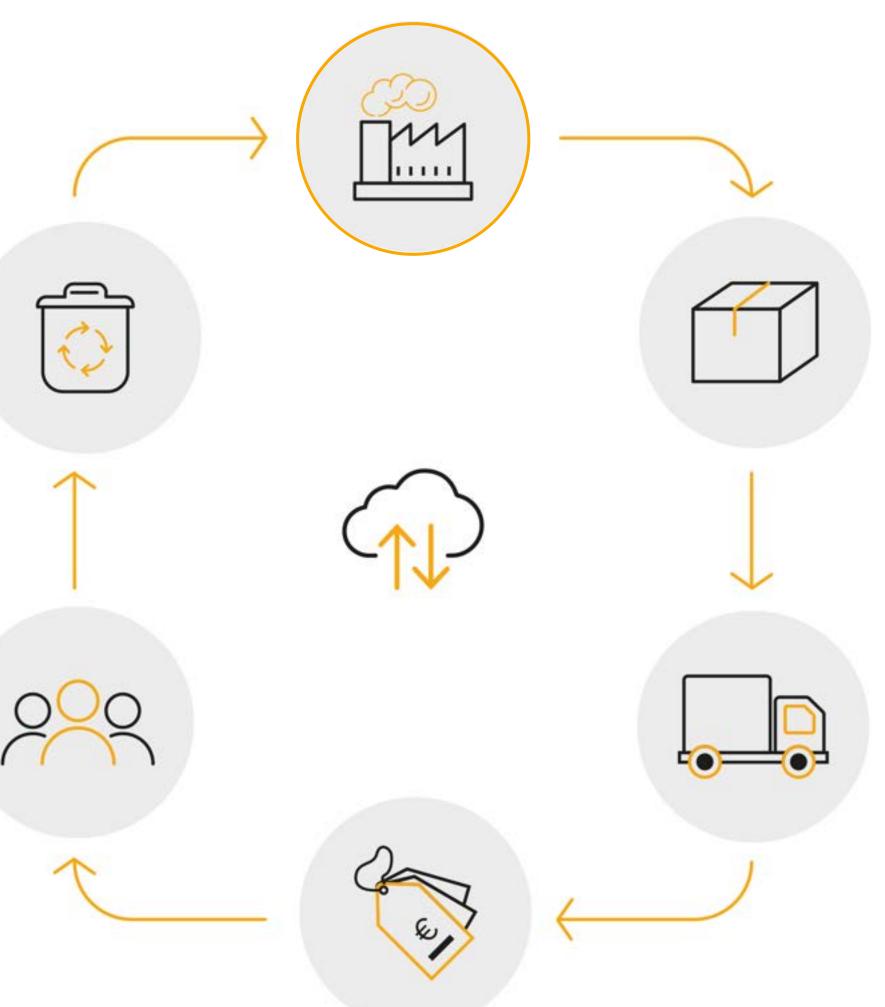
RFID Traceability as a SERVICE OFFERING

Product Traceability by Brands will require:

- Management of Data and ERP system coordination
- Producing and managing (more) Complex L&P
- Shipping and Logistics Complexity
- Compliance Assurance

Label Converters already have Competencies in:

- Short Run
- Product Complexity and Customization
- Variable Data Management and Capture
- Security and Brand Protection





Examples of RFID applications



HARD TAG



SMART LABELS

SMART TICKET/HANG TAG

SMART WOVEN/JACQUARD



SMART FLAT PACKAGE

SMART CARD



SMART FLEXIBLE PACKAGE

HOW TO IMPLEMENT

FROM UNIQUE CODE TO UNIQUE LABEL

Data / Cloud

Customized connections

<u>...has to be...</u>

Fully Automatic

Unique ID Labels, Packaging, Tags

Certificate of no errors in the final production output

ZERO error guarantee

...WITH HIGHEST LEVELS OF AUTOMATION...

Human Supported

Operator as a part of the process is OK, but must be controlled

Fully automatic

No Operator at all (replenishes the raw material)

...AND ZERO ERRORS GUARANTEED!



System Driven Production Certification

Ability to certify the traceability production output, for every roll, batch or SKU



HOW TO IMPLEMENT

GUIDE TO GOOD APPLICATION:

- Flexible system that will not slow down under demanding production load
- Fully integrated with cloud traceability solutions (two-way data transfer and reporting, secure data transfer, security protocols, etc.)
- Machines with RFID converting sensitivity Mechanical Stress Free (MSF) and Electrostatic Charge Free (ECF) certification
- Output certification guaranteeing error management down to ZERO and having an acceptable performance at that level (automated error management - certification vs inspection)
- True customisation capturing and maximizing the customer value in an automated process design, with full CE and GMP certification as standard



WANT TO KNOW MORE? We love questions...

Custom designed converting and serialization machines used for pharma, tax stamps, traceability and brand protection applications

Graphimecc Stand 5212 Outside RFID Experience Area

graphimecc.it

Dr. Vlad Sljapic

v.sljapic@graphimeccgroup.it +44 7541351491 Thank You!

