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Today's Presenter



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Richard Aufreiter is driving HID's diverse and flexible portfolio of identification technologies across frequencies and applications. With vast expertise in encryption systems, PKI, biometry and mobile security, he brings over 20 years of leading product management and engineering in the IT industry.

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December 3, 2020

How to Implement Smarter Medical Applications with RFID & RTLS

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Powering the trusted identities of the world's people, places & things

RFID for Medical & Healthcare

Richard Aufreiter VP Product Marketing, HID Global

December 3, 2020

ASSA ABLOY

HID













About ASSA ABLOY & HID Global







- The global leader in access solutions
- Operates in 70+ countries
- >49,000 employees
 - >\$10 bn revenue

.

- Top recognized brand for access control worldwide
- Headquarters in Austin, Texas
- >4,000 employees globally
- Billions of RFID products sold
- Identification Technologies (IDT) is a Business Area within HID Global
- Design & manufacturing of Smart Components
- Enabling identification solutions through services



Our Competitive Advantage





Global Supplier

of smart RFID components creating trusted identities across frequencies and use cases, with custom design and high-volume production

Solution Enabler

Sophisticated Software as a Service enables customers to focus on their business cases while we take care of complex calculations* *(RTLS, Condition Monitoring, Authentication, Fueling etc.)

Solutions, Benefits and Return on Investment





Applications for Hospital, Laboratories, Pharma





- Patient **safety** and higher **quality** of care
- Reduction of costs:

Direct (timing, coordination, satisfaction, occupancy) Indirect

(insurance rates, legal expenses, labor)

- Higher efficiency by visibility of assets and Supplier (stock, bed, room, equipment, medicine) Increase patient security and safety

Automate recording and limit errors

Secure specimen and exchange with BioBank

Secure surgical acts

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Cold chain traceability, cooking temp profile, room profile

Optimize equipment flow, utilization, logistics

Improve order / supply chain logistics

Reduce inventory process and optimize re-provisioning

Principal Barriers to Development





Principal Barriers to RFID Development





Application Structure and Use Cases



Application Structure



Tag





Software

Application



User

Terminal & user interface

RFID / NFC / RTLS, Passive or Active RFID, Wifi, GPS, GPRS, infrared, sensors Barcode 1D, 2D

> Powering Trusted Identities

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Infrastructure

WIFI, Bluetooth RFID Reader, NFC Phone Server

Middleware

Application Use Cases



People's identification and tracking

Surgical tools' identification and tracking



Laboratory samples and blood management



Scrubs and garment management



Cooking and cold chain management



Asset's

identification

and tracking

Suppl



Supply chain management



Inventory management



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Surgical tools' identification and tracking

Secure surgical acts

Ensure that the right instrument, cutter, pump are used with the right parameters

 Traceability of surgical instruments, sponges and compresses

Avoid that they are forgotten in the body

 Insure appropriate decontamination, maintenance, replacement







Laboratory samples and blood management



Blood banking

Usually HF label



Specimen

Human specimen – Vial tracking

Piccolino is best size performances ratio for vial integration and support sterilization and comply with FDA **Animal specimen - Straw tracking** EUNIT wound around the straw

Milk vial Clear disc can be used in case of larger vial



Trays identification

Glass Tag, Brick Tag and OM discs are ideal for metallic plates – alternatively SealTag Mini





Scrubs and garment management

- Improve sanitation controls and minimize contamination within critical environments
- Full traceability of assets used supporting KPIs and compliance
- Cost savings through optimized lifecycle management
- Contactless RFID helps reducing contamination risks by:
 - automated sorting without human intervention
 - Unattended dispensing 24h a day of cleaned items (bedsheets, uniforms etc.)











Cooking and cold chain management



BEEKs™ BLE Sensors



- Cooking profile adapted to the dedicated menu.
 RFID tag containing product and patient information is embedded into the tray
- Dedicated menu given to the right patient right cook increase patient satisfaction
- Pharmaceutical cold chain monitoring with sensor tag
- Room temperature or humidity controlling
- Wireless detection of equipment failures e.g. fridges
- Alerting





Asset's identification and tracking



- Optimize hospital equipment utilization (pump inventories and equipment lifecycle)
- Shrinkage and loss prevention
- Optimize patient & bed flow, room occupancy
- Process automation
- Smart Cabinets to automatically track consumables
- Real time inventory management and location





Supply chain management

Traceability of receiving, storage and shipment

Container, bins identification

Medical Waste tracking





Medical & Healthcare

HID Tag Offering

usted Identities



Standard products

- Broad standard platform offering with various technologies, IC features (multi read, Read / Write, security, PW protection etc.) Various form factors and mechanical characteristics
- Location Services and Condition Monitoring
- Customization and services to fulfill perfectly customer applications such as delivery on Kanban, programming, special guarantee and certifications
- Alternatively: Fully custom tag design

HID Advantages for Medical Applications

DBond[™] Direct Bonding Technology, Radiation Resistance

HID Excellent Allows smaller F-Mem chips in **RFID** Tag form printability of ISO factors, since Excellent RF HID tags allow for cards - modules High durability due antenna is Thinner inlays for y-sterilization up performance due welded to a can cause a slight to fewer potential ISO cards to 50 KiloGray to copper wire 0.5x0.5 mm chip deformation on failure points instead of 5x8 antenna without loosing card surface mm module memory content e.g.: impacting print quality Small e-units Small packaged tags Rings

FRAM Technology:

Most RFID tags use chips based on EEPROM, which is fine for normal industrial use, but has 3 main limitations:

- ~100K (10⁶) write cycles
- Slow writing speed
- Memory erased in radiation

FRAM overcomes these limits

- > 1B (10¹⁰) write cycles
- ~30 times faster write speed
- Survives up to 50kGy gamma sterilization

HID Piccolino, Glass Tag, LogiTag[™] and IN Tag[™] are available in FRAM options

| | | Data Size | Strength | Fail Samples | Data after Irradiation | | |
|--|-----------|--------------------|----------|--------------|------------------------|--|--|
| | MB89R118 | FRAM 2K Bytes | 50kGy | 0/99 | No Error | | |
| | ICODE-SLI | EEPROM 128Bytes | 5kGy | 2/2 | Error (Data Changed) | | |
| | | | 10kGy | 2/2 | Error (Data Changed) | | |
| | | | 50kGy | 2/2 | Error (Data Changed) | | |



Medical & Healthcare

Standard reader boards & modules



OMNIKEY[®] 5534 Reader Core MultiTag LF

For 125kHz, 134.2kHz, ISO 11784, ISO 11785, ISO 18000-2 Hitag 1,Hitag 2,Hitag S,Q5,EM4X02,EM4X05 EM4X50,TI HDX 134.2 kHz



OMNIKEY[®] 5553 Reader Multi ISO HF ISO14443A, ISO14443B,

ISO 15693, ISO 18000-3, NFC enabled

Embeddable BLE Module

To integrate in sanitizers or other equipment for location and compliance tracking



OMNIKEY® 5321 CR USB ISO14443A, ISO14443B, ISO 15693, PC/SC drivers, washable – for easy disinfection



Examples of OEM applications using RFID



Adaptative Aerosol Delivery



Surgery cutting blades



Dialyzer equipment



Blood oxygenator



Automatic conveyor system for blood analysis



regrated of stand-alone KFID tag leade

Dentist tools



Cryogenic vials



Skin Care



HF RFID Optimizes Cryogenic Storage

- Two temperature ranges for long-term storage of biomaterial
 - -321°F (-196°C) Liquid Nitrogen(LN2) for live samples like sperm, stem cells, egg cells, genetic reference samples
 - -112°F (-80°C) Fridge for dead samples e.g. tissue probes
- Not all RFID chips work at these low temperatures
- Improper materials may crack
- RFID tags must be tiny and not interfere
- A tray of probes must be read at once and RF must not interfere with other equipment (no UHF)

HID HF Vigo[™] Direct Bonding Technology meets all the requirements

See case study:

usted Identi<u>ties</u>

http://www.hidglobal.com/sites/hidglobal.com/files/resource_files/hid-Cryogatt-IDT-cs-en.pdf



Cryogatt RFID reader, reading a tray of vials at LN2 vapor phase temperature



HID Global Vigo[™] Piccolino HF Tag in probe vials

Automated probe handling in Macromolecular Crystallography EMBI

- RFID tags from HID Global embedded in sample holders enable crystal probe handling automation
- The harvesting, cryogenic storage and sample positioning process could be fully automated utilizing robot grippers and specifically designed RFID readers
- This overcomes readability issues due to frosting of traditional data matrix codes, increases throughput and prevents documentation errors
- Sample video: <u>https://www.youtube.com/watch?v=190agq9qzcq</u>
- Case Study: https://hidglobal.showpad.com/share/3zETngae2ETMPyN8SILLh





RFID



Nano-Pulse Stimulation



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- Each station on wheels with small terminal and tethered "gun", which gives the small pulses to the patient.
- Piccolino tag customized embedded in each consumable tip, attached to gun with embedded reader.

Optimize Blood Bank Logistics





- Automate multiple asset tracking via scanner accurately and quickly using SlimFlex and other RFID tags.
- Capture historical and audit data to track asset life cycle management.
- Increase asset monitoring for high value items and location information for regulatory compliance.
- Reduce overall process times for pick/pack and item verification for blood drives.
- Automate the asset preventive maintenance (PM) process.
- Ensure all required assets are in place (loaded) for a location.
- Enable data mining capability for reporting, metrics management and analysis



Sealing Emergency Drugs

- Access to drug safe in emergency vehicles is secured via HID PACS embedded reader board in lock and HID Credential Badges for doctors
- Each drug box is locked with a SealTag edTamper RAIN[®] RFID
- Tag provides a different status when seal is broken
- Storage cabinet has a built-in reader that automatically produces an audit trail of who has used which drug when.







HID Powering Trusted Identities

MediReva – Hospital Asset Tracking



"Rental items are equipped with an HID Seal Tag Mini"



- HID Seal Tag Mini
- HID RAIN UHF Badges
- Aucxis WMS and integration



MediReva revalidatie

- Tracking various medical rental assets with Seal Tags UHF
- All process steps are linked back in real time to the ERP application to immediately alert workers of the order status
- Also, the service material return process is achieved using RFID; they are collected, cleaned and returned to the warehouse using a return order
- Furthermore, all employees are issued a HID RAIN UHF badge to register and identify who processes the order and executes the required action
- See case study <u>MediReva - Aucxis Seal Tag Case Study.pdf</u>



People's identification and tracking



Wristband ID Card Laundry Tag

| Staff and patient localization RTLS, wristband, UHF Laundry Tag | Baby watch wristband to link the baby and his mum, so the baby should only leave the pediatric with his mum | Patient health monitoring with sensors | Staff authentication and signature (doctor, nurse) | Medicine and Healthcare Treatment recording |
|---|--|---|--|--|
| Right medicine / blood provided to the right patient by the approved staff at the right time/place | Medical alert | Self medication support (blind people, seniors) | Homecare providers authentication | Anti-wandering in home with active tag and videos |





HID

RTLS Solution Architecture



Powering Trusted Identities



Location Visibility Example

 Zone based Contact Tracing helps preventing spread of infectious diseases

Fast Location

Save time to locate and fetch mobile assets and key personnel

Reporting

Reports help optimizing workflows and utilization or show compliance





usted Identities

Opening Businesses

As communities and economies begin to open their doors, a resurgence of COVID-19 is seen globally, and some level of social distancing will be needed well into the future.

Organizations are preparing to implement a level of physical distancing programs, contact tracing procedures and hand hygiene automation to maintain a safe working environment and prevent the spread.

How Can HID Help?







1. Implement Social Distancing wherever possible

2. Enable Contact Tracing Procedures

3. Provide proper hand sanitation stations

*https://www.documentcloud.org/documents/6840741-White-House-Guidelines-for-Opening-Up-America.html

*https://www.who.int/ *EU Guidelines





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HID Location Services: Workplace Safety

HID delivers an IoT enterprise enablement platform to meet the newly required policies outlined by governments and health agencies around the world.

Workplace Safety Applications:

- Employee Physical Distancing (Peer to Peer)
- Contact Tracing
- Hand Hygiene Validation (future)



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- based location services and cloud technologies to:
- · Provide a safe working environment for employees, visitors and contractors
- Digitally adhere to regulatory mandates
- Restore productivity and employee confidence
- Empower employees to be safe without compromising privacy
- Measure performance, enable quantifiable accountability and gain real-time insight into the historical trail of interactions through data intelligence and analytics



Use Cases / Value Propositions



HID Powering Trusted Identities

Employee Social Distancing

Help employees and visitors to maintain proper physical distance from others when they are in your facilities.

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Employee Social Distancing Preventative feedback for behavioral Changes





Contact Tracing

Curb the spread if an employee is symptomatic. Quickly locate and notify exposed team members and activate isolation protocols if needed.

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Contact Tracing Initiate, Identify & Isolate



- Delivers real-time analytics and reporting for quick and effective resolutions
- Trace historical movements, quickly locate exposed team members and initiate isolation protocols instantly to mitigate spread of illness
- Automated Contact Tracing provides relevant information on persons identified as exposure risks, names of those within proximity of the infected, location and duration times

HID Implementation

Deploying a Physical Distancing in HID Global HQ Austin,

- >150,000 sq. ft (Manufacturing)
- Total employees : >500
- 45 days and counting

Scope

- BEEKs Duress Fobs (visible and audible alert)
- BEEKs Duress Badges (visible alert only)
- Voluntary participants included managers, supervisors, and front-line workers
- 7 distinct operational areas within one facility. It also included a common breakroom area shared by all employees covered by total 84 BluFi's





Workplace Safety Dashboard



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HID Powering Trusted Identities

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Behavioral Changes

When gathering at the workplace (morning group meeting or training), the device helped raise awareness for everyone:

"We hear, we back up."

Perhaps the best rendering of behavior change evidence is this chart comparing distance violations Week 1 of the pilot with that of Week 3.



Employee Feedback

Personally, do you think the device has made you feel safer, less safe or hasn't it made much difference at work?



What is the one thing that matters most to you in deciding whether you would continue to use the device (voluntarily) and why?

> "my family safety" "For my own safety and others too"

Learnings



It's not about Precision but Proximity and Probabilities

The devices and the technology should in fact improve the odds of safety. [The CDC] is not saying, 'If you're six feet apart then you won't get sick,'. Instead, this and other guidelines <u>are all about improving the odds</u>.

Behaviors changed

The device helped raise awareness for everyone.



Solution Enables Workplace Safety Planning Needs

- Restores productivity while mitigating litigation risk.
- The 24/7 visibility within the facility leads to quantifiable accountability.
- Provides a "digital trail" of contact trace interactions to inform isolation decisions.
- A means to enforce "New Normal" protocols.

Emotional Wellness

Empower Employees to be safe and to feel a sense of control.





Hand Hygiene Validation

Touch free dispensing system to monitor and measure usage

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Hand Hygiene Validation – How it Works



- Embedded Sensor activated when contactless dispenser is used
- BEEKs authenticates dispense and registers event

Trusted Identities

BEEKs will transmit event event via BluFi Gateway to Bluzone Cloud for reporting analytics

Additional Use Cases on same Infrastructure



Contact Details

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Thank You www.hidglobal.com/healthcare

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RFID in Health Care 2021 March 16, 11:00 AM - 1:00 PM

RFID in Aerospace/Defense 2021

Apr. 20, 11:00 AM - 1:00 PM

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