Agenda

1. RAIN RFID Research Scope & Methodology
2. RAIN RFID: Scenario-Based Outlook
3. Leading Commercial & Technical Adoption Drivers
4. RAIN RFID Opportunity by Application
5. About VDC Research
Research Scope and Methodology

- RAIN RFID Research Product Scope:
  - Tags
  - Inlays
  - Tag ICs
  - Readers: Handheld and Fixed Position
  - Reader ICs & Reader Modules
  - Printer/Encoders

- RAIN RFID Research Regional Scope:
  - North America
  - Central/Latin America
  - EMEA
  - Asia-Pacific

- Research Methodology
  - Leverage existing VDC Research AIDC research databases and reports
  - In-depth interviews with RAIN RFID hardware vendors spanning the entire solution value-chain
  - In-depth interviews with RAIN RFID solution providers/system integrators
  - In-depth interviews with RAIN RFID end users and industry associations
  - Collaboration with RAIN RFID Board
  - Research fielded during first half of 2020
Factors Driving RAIN RFID Opportunity

01 Cost Reductions
02 Source Tagging
03 Fixed Reader Growth
04 Use Case Expansion
05 COVID as Catalyst
# Taggable Items by Category – Vast RAIN RFID Opportunity

<table>
<thead>
<tr>
<th>ANNUAL VOLUME &amp; 2019 ATTACH RATES</th>
<th>KEY CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FOOD ITEMS</strong></td>
<td>Focus around supply chain traceability at pallet and tray level</td>
</tr>
<tr>
<td>• 2 Trillion</td>
<td>Emerging use cases in QSR and longer term in convenience stores</td>
</tr>
<tr>
<td>• 0.03% Attach Rate</td>
<td></td>
</tr>
<tr>
<td><strong>PARCELS</strong></td>
<td>E-commerce surge driving parcel volumes to 250B by 2025 amid shifting competitive dynamics</td>
</tr>
<tr>
<td>• 90 Billion</td>
<td>UPU sponsored efforts in Brazil</td>
</tr>
<tr>
<td>• 0.02% Attach Rate</td>
<td></td>
</tr>
<tr>
<td><strong>APPAREL &amp; FOOTWEAR</strong></td>
<td>Leading RAIN RFID use case around inventory control</td>
</tr>
<tr>
<td>• 80 Billion</td>
<td>Use case expansion into loss prevention and POS</td>
</tr>
<tr>
<td>• 16% Attach Rate</td>
<td></td>
</tr>
<tr>
<td><strong>COSMETICS</strong></td>
<td>Expansion category among retailers currently supporting RAIN RFID in apparel/footwear</td>
</tr>
<tr>
<td>• 120 Billion</td>
<td></td>
</tr>
<tr>
<td>• 0.01% Attach Rate</td>
<td></td>
</tr>
<tr>
<td><strong>AIRLINE BAGGAGE</strong></td>
<td>IATA RAIN recommendation driving awareness and demand beyond early adopters</td>
</tr>
<tr>
<td>• 4 Billion</td>
<td>COVID-19 sector impact on technology investment budgets</td>
</tr>
<tr>
<td>• 7% Attach Rate</td>
<td></td>
</tr>
<tr>
<td><strong>AUTOMOTIVE</strong></td>
<td>Build to order dynamics driving shift in automotive production</td>
</tr>
<tr>
<td>• 603 Billion</td>
<td>Diverse use cases for inbound parts, recalls, reverse logistic, chassis tracking, parts verification</td>
</tr>
<tr>
<td>• 0.02% Attach Rate</td>
<td></td>
</tr>
<tr>
<td><strong>LOGISTICS</strong></td>
<td>Shift from closed loop asset tracking to open loop supply chain visibility</td>
</tr>
<tr>
<td>• 10 Billion</td>
<td>Growing opportunity for real time location solutions</td>
</tr>
<tr>
<td>• 15% Attach Rate</td>
<td></td>
</tr>
</tbody>
</table>
Diverse Use Cases Regionally

40% of Demand
- Highly sophisticated use cases
- Developed vendor and solution provider eco-system
- Department stores
- QSR
- Logistics/Transportation

38% of Demand
- Vertically integrated retail sector key catalyst scaling adoption
- Department stores
- Apparel/sportswear retail
- Automotive

20% of Demand
- Mix of established and high growth/emergent sectors
- Evolving solution provider eco-system
- High volume potential emerging in China and India
- Apparel/sportswear retail
- High profile convenience store initiative in Japan

2% of Demand
- Emerging eco-system with investments in label converters and solution providers
- Department Stores
- Cosmetics
- UPU/Brazil Post Parcel Trial

Key Sectors
- Department stores
- QSR
- Logistics/Transportation
- Apparel/sportswear retail
- Automotive
- Department Stores
- Cosmetics
- UPU/Brazil Post Parcel Trial

Dynamics
- Highly sophisticated use cases
- Developed vendor and solution provider eco-system
- Vertically integrated retail sector key catalyst scaling adoption
- Mix of established and high growth/emergent sectors
- Evolving solution provider eco-system
- Emerging eco-system with investments in label converters and solution providers

© 2020 VDC Research Group, Inc.
www.vdcresearch.com
RAIN RFID Tag Outlook – Global Market Scenarios

Global Unit Shipments: RAIN RFID Tags

- **Base Case**: CAGR: 26.0%
- **Best Case**: CAGR: 35.4%
- **Worst Case**: CAGR: 23.1%

© 2020 VDC Research Group, Inc.
www.vdcresearch.com
RAIN RFID Tag Outlook – Near & Longer Term Scenarios

- Best Case
- Base Case
- Worst Case

2019-2021 CAGR: 0.4%, 18.1%, 26.6%
2021-2024 CAGR: 31.3%, 40.6%, 41.3%
RAIN RFID Reader Outlook – Global Market

Scenarios

Global Unit Shipments: RAIN RFID Readers (Handheld and Fixed)

- Base Case: CAGR: 17.0%
- Best Case: CAGR: 26.7%
- Worst Case: CAGR: 13.8%

© 2020 VDC Research Group, Inc.
www.vdcresearch.com
Global AIDC Market Performance – “Great Recession”

YoY Revenue Growth

- 2007: 12.8%
- 2008: -9.3%
- 2009: -23.2%
- 2010: 18.8%
COVID Impact on Customer Engagement

Transformation of Customer Engagement Models in Response to COVID-19

- **Disagree** - Our customer engagement/business models have remained unchanged: 2%
- **Somewhat agree** - We have made minor changes: 20%
- **Agree** - We have made substantial changes: 48%
- **Strongly agree** - We have Overhauled our customer engagement/business models: 29%

*Source: VDC 2020 AIDC/Mobility Decision Maker Survey; n=250*
COVID Impact on AIDC/Mobility Investments

How has COVID-19 Impacted Organization’s Approach to AIDC/Mobility Technology Investments to Support Operations*

- We have aggressively slowed the pace at which we pursue and roll out new IT/mobile technology projects: 2%
- We have slightly slowed the pace at which we pursue and roll out new AIDC/mobile technology projects: 8%
- The pace at which we pursue and roll out new AIDC/mobile technology projects have remained the same: 9%
- We have slightly accelerated the pace at which we pursue and roll out new AIDC/mobile technology projects: 38%
- We have aggressively accelerated the pace at which we pursue and roll out new AIDC/mobile technology projects: 43%

*Source: VDC 2020 AIDC/Mobility Decision Maker Survey; n=250

“We can already see that the pandemic has caused changes in customer behavior that will accelerate the digitalization of our industry. To meet this future, we will continue adapting the organization and improve our ways of working to become more flexible, fast and efficient. As we are accelerating our digital development, we continue optimizing the store portfolio and integrating the channels.”

H&M CEO Helena Helmersson
What’s Next: Ushering in Next Wave of RAIN RFID Adoption

1. Breaking the mold: application and use case expansion

2. Technology enhancements: performance improvement, higher yields, lower costs

3. Fixed reader infrastructure investment: virtualizing operations

4. Visibility as competitive currency: enabling real time decision making with scale
Who We Are

Founded in 1971, VDC Research provides in-depth insights to technology vendors, end users, and investors across the globe. As a market research and consulting firm, VDC’s coverage of AutoID, Enterprise Mobility, Industrial Automation, and IoT & Embedded technology is among the most advanced in the industry, helping our clients make critical decisions with confidence. Offering syndicated reports and custom consultation, our methodologies consistently provide accurate forecasts and unmatched thought leadership for deeply technical markets. Located in Natick, Massachusetts, VDC prides itself on its close personal relationships with clients, delivering an attention to detail and a unique perspective that is second to none.
Ways to Work With Us

Our market research is the basis for the many other ways that VDC can help you to grow your business. Our clients rely on us to provide actionable insights that support their most important strategic initiatives including corporate development projects, opportunity assessments, and lead generation programs.
679 Worcester Road, Natick, MA
(508) 653-9000
www.vdcresearch.com

Thank You!