

## Executive Brief

# Connecting the Dots: What is Driving Traceability Solutions Investment?

Analyzing Track-and-Trace Opportunities in the Food and Beverage, Pharmaceuticals, and Automotive Industries in the United States

Part of the Strategic Insights 2015 Barcode Solutions  
Research Program: Track 3, Topic 4

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# Inside This Report

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This research analyzes the key strategic issues and market drivers for track-and-trace solutions. Track-and-trace systems are solutions that can enable organizations to locate and determine the current and past locations (and other information) of a unique item or property throughout their supply chain. The track-and-trace solutions explored here include barcode, and radio-frequency identification (RFID) solutions as well as software solutions that enable organizations to gain visibility of items as they move through the supply chain. The report offers market analysis (leading applications, drivers, challenges, and barriers) and opportunities across the following dimensions: technology types, end-user industries, and distribution channels.

## What questions are addressed?

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- ▶ How are track-and-trace systems being used today to support end users' traceability initiatives?
- ▶ What market verticals and applications present the greatest opportunities?
- ▶ What are the key considerations for channel success in this market?
- ▶ What are the key regulations, initiatives, and drivers influencing the adoption of systems today?
- ▶ What are the constraints and challenges to end users' traceability investments?

## Who should read this report?

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This annual research program has been carefully designed for senior decision-makers at track-and-trace technology and solution provider companies, including individuals in the following roles:

- ▶ CEO and other C-level positions
- ▶ Corporate development and M&A
- ▶ Marketing
- ▶ Business development and sales
- ▶ Product development, management, and strategy
- ▶ Channel development, management, and strategy

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## Executive Summary

A string of food-borne illness outbreaks, faulty automotive parts, and damaged pharmaceutical drugs paired with poor recall execution and the inability to track-and-trace products effectively through the supply chain have caused significant long-term damage to many major brands in the Food & Beverage (F&B), Pharmaceuticals, and Automotive industries in the past 18–24 months. Companies from these industries today continually face challenges that include cost containment, anti-counterfeiting, constantly evolving policies, operational inefficiencies, mandatory recalls, and the threat of increased government oversight.

The ability to recall items effectively has become vital to manufacturers in these industries as daily media coverage of defect/error-related crashes, illnesses, injuries, and deaths exacerbates consumers' negative reaction towards these organizations and brands. Recent major recalls in 2016 that have received notable news coverage include Japanese automotive components manufacturer Takata's additional recall of 35–40 million potentially faulty airbags, pharmaceutical giant Pfizer's recall of its popular Lyrica capsules due to manufacturing errors, and the latest mass recall of 400 products from produce supplier CRF Frozen Foods, which sells its products under more than 40 different brand names at major retailers like Costco, Target, Trader Joe's, and Safeway, because of potential listeria contamination.

*The FDA and USDA recalled a total of 2,985 items in 2015, an increase of **25%** from 2014, for reasons ranging from mislabeling to foreign matter contamination.*

Manufacturers surveyed by VDC reported consumer liability (64%), financial costs (55%), and trust (45%) to be the factors most affected by an inability to trace items in the supply chain. Other concerns include harm to brand image and greater government oversight of business through reviews, monitoring, and supervision by government agencies, programs, and policy implementation.

Because of the need to support expanding operations, globalization of supply chains, strict regulatory compliance standards, along with the need to improve recall preparedness and supply chain transparency, VDC expects to see greater investments in traceability solutions across the three industries of focus. Globalization has drastically transformed markets and entire industries, generating greater opportunities while also expanding operations and ultimately creating complex multi-step supply chains.

Policymakers, industry groups, and leading manufacturers have, in recent months, begun pushing the adoption of traceability systems on a national scale to address issues ranging from food safety, to driver safety and patient safety, and to consumers' right to know what is in the product they are purchasing. The latest government regulations paving the way for greater track-and-trace adoption across the industries of focus include the Food Safety Modernization Act (FSMA) for Food & Beverage, the Drug Quality and Security Act (DQSA) for pharmaceuticals, and the Transportation Recall Enhancement, Accountability and Documentation (TREAD) Act

for the automotive industry. Each regulation introduces stringent deadlines, guidelines, and extended powers to regulatory agencies respective to their industries, and companies risk significant delays, penalties, and fines with non-compliance. Traceability (initiatives and technology) is now established as a vital element in the supply chain, without which companies stand to expose themselves to significant risks and liabilities.

As F&B, pharmaceuticals, and automotive manufacturers seek new ways to modernize operations, cut costs, improve profitability, and apply sustainable practices, VDC believes that traceability systems represent an attractive growth opportunity for traceability system vendors to engage. In addition, regulatory mandates surrounding symbologies/tags, the introduction of new technologies, and the development of traceability software will lead more companies to deploy track-and-trace systems and lay down solution specifications to members of the supply chain like suppliers and distributors. This report provides information that will help solution providers understand and assess the opportunities available ahead.

## Key Findings

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- ▶ **Supporting recall management is fundamental across all industries:** In 2015, the US experienced a series of major product recalls involving well-known organizations including recalls by major pharmaceuticals giant Pfizer of its Oxecta capsules, automotive manufacturer GM's recall of over 2 million vehicles for faulty ignition switches, as well as Starbucks' recall of products containing E. coli contaminated celery. These incidents highlight the importance of traceability systems and the need to invest in them today. According to VDC's recent survey, 45% of manufacturers that currently support recall management processes with track-and-trace solutions reported carrying out at least one recall in 2015, and 37% of respondents reported recall preparedness as the leading driver for track-and-trace system implementation. It is important to note that while it is unrealistic to eliminate recalls entirely because it is often the identification of an issue after production that results in a product's recall, companies have the ability to limit exposure and consumer liability through a well-designed track-and-trace system to quickly and successfully identify products to recall.
- ▶ **Food & Beverage and Pharmaceuticals segments provide greatest opportunity:** With the recent introduction of new regulations for product traceability such as the FSMA (for F&B) and the DQSA (for pharmaceuticals), VDC believes these two industries present great opportunities, driven by the need for recall preparedness, regulation compliance, and improving supply chain efficiencies. The FDA's new powers and access to company records represent a massive regulatory change under the FSMA and the DQSA, and thus, requirements to improve record keeping and supply chain-wide communication will be extensive, ultimately driving investments in data tracking, management, and control solutions. In the automotive industry, the market for traceability solutions is well established with adoption driven by the much older TREAD Act. However, recalls such as the Takata airbag recall, which is now the largest single recall in US history, are likely to push lawmakers to introduce new laws to encourage manufacturers to upgrade their systems to those that can handle such uncertain recalls and events.
- ▶ **Manufacturers will spend more on traceability solutions going forward:** According to VDC's recently conducted survey, recall management budgets for 2015 averaged \$400,000 with spending levels on hardware

consistently the highest, accounting for 37% of annual budgets on traceability solutions; this was followed by software with 26% and consumables accounting for 24%. Services spending levels regarding maintenance, support, and service-related costs account for an average of only 13% of track-and-trace system expenditures for respondents. Looking ahead, for 2016, 59% of respondents reported having increased budgets for track-and-trace systems, while 25% reported they will remain the same.

- ▶ **There is increasing 2D barcode adoption among end users:** Almost 50% of our survey respondents reported scanning both 1D and 2D barcode symbologies to support track-and-trace initiatives. Manufacturers across our industries of focus are investing in 2D barcode scanning imagers and technologies to improve data collection and communication performances, with 47% of automotive respondents currently evaluating the use of 2D barcodes, while pharmaceutical respondents reported that an average of 67% of their products are marked with 2D barcodes.
- ▶ **Traceability software solutions take center stage:** Working hand in hand with track-and-trace systems, manufacturers heavily rely on traceability software and label-generation software solutions to meet regulatory and standards compliance while improving the performance of logistics processes across the supply chain. Per VDC's research, only 35% of organizations/respondents DO NOT currently share information or a central database with trading partners external to their organization, presenting a major roadblock to true supply chain visibility. With deadlines for provisions of the FSMA and DQSA fast approaching as soon as 2016 and 2017, respectively, demand for manufacturing software that monitors products throughout the entire production process will increase. Software solutions are increasingly being deployed on the cloud to make them more accessible to a broader base of users. In addition, demand for real-time predictive analytics will be critical to providing insight to better anticipate issues. Enterprises today continually have to upgrade, change, and refine their supply chains driven by strict government, industry, and customer regulations and mandates that often impact businesses down to the barcode/RFID tag, and software developers must ensure their products meet the latest industry and federal requirements.
- ▶ **Strategic partner network development will be vital to success:** To succeed, vendors must establish strong vertical-specific partner networks of specialized traceability software vendors, resellers, and systems integrators to engage this growing opportunity. In VDC's recently conducted survey, 80% of respondents reported purchasing their track-and-trace investments via indirect channels. Each segment is unique, and vendors must know what applications and requirements must be met to address clients' needs within specific industries.

# VDC Research

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## About the Author

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**Shahroze Husain** supports a variety of syndicated research and custom consulting engagements for the AutoID & Data Capture practice, analyzing market opportunities, product requirements, solution selection criteria, pricing, and other critical trends. Shahroze brings with him experience in operations, market research, and custom consulting projects to the AIDC practice. His prior experience includes market research and consulting projects for Jansen AG and Boston Scientific. He has lived in several countries, including Bangladesh, India, and the UK, where he studied Law at the University of Exeter. Shahroze graduated magna cum laude from Babson College with a concentration in Entrepreneurship.

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**Richa Gupta** is responsible for VDC's strategic research on the global markets for data capture technologies, including barcode scanners, printers, and machine vision solutions, among others. Data capture hardware vendors and solution providers rely on her expertise in the AIDC market for key market development initiatives, and her highly actionable data and insights help them formulate their long-term business strategies. She undertakes market opportunity sizing and forecasting, competitive landscape analysis, and strategic marketing assistance while also providing valuable thought leadership for this technology market segment. Richa holds a degree in Computer Engineering from the University of Pune and an MBA from NMIMS in India.

**David Krebs** has more than 10 years of experience covering the markets for enterprise and government mobility solutions, wireless data communication technologies, and automatic data-capture research and consulting. David focuses on identifying the key drivers and enablers in the adoption of mobile and wireless solutions among mobile workers in the extended enterprise. David's consulting and strategic advisory experience is far reaching and includes technology and market opportunity assessments, technology penetration and adoption enablers, partner profiling and development, new product development, and M&A due diligence support. David has extensive primary market research management and execution experience to support market sizing and forecasting, total cost of ownership (TCO), comparative product performance evaluation, competitive benchmarking, and end-user requirements analysis. David is a graduate of Boston University (BSBA).

## About VDC Research

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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 and embedded technologies 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 are second to none.

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