IDC

Smart Data Capture:
A Technology Strategy to Scale Data Intelligence

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Executive Summary

IDC's research and conversations with customers have shown that organizations that are excellent at effectively scaling their data intelligence have a material advantage over their peers. The challenge is that reaching that level of effectiveness may be too strategically difficult to grasp or even pursue directly.

In fact, organizations often fail at the very first stage of the data intelligence journey: the process of capturing data. Without the ability to effectively collect and aggregate data, further investments in downstream processes or capabilities to use or present data in a meaningful way become moot.

This InfoBrief introduces the concept of smart data capture, a technology strategy to help organizations transform and evolve data capture in an efficient, accurate, repeatable, and scalable way. IDC describes the advantages of this strategy and how it can deliver value across an organization to employees, customers, and business partners.

An Organization's Effective Use of Data is Critical

Organizations that are effective in building data intelligence experience materially different business outcomes.

Organizational Ability to Effectively Scale Data Intelligence
(Customer Metrics)

🟧 Poor 🟩 Excellent

	Revenue growth	Employee retention	Customer experience	Rate of innovation
Poor	19.32%	19.60%	25.85%	23.01%
Excellent	51.43%	47.86%	58.21%	51.79%
DELTA	+32.11%	+28.26%	+32.36%	+28.78%
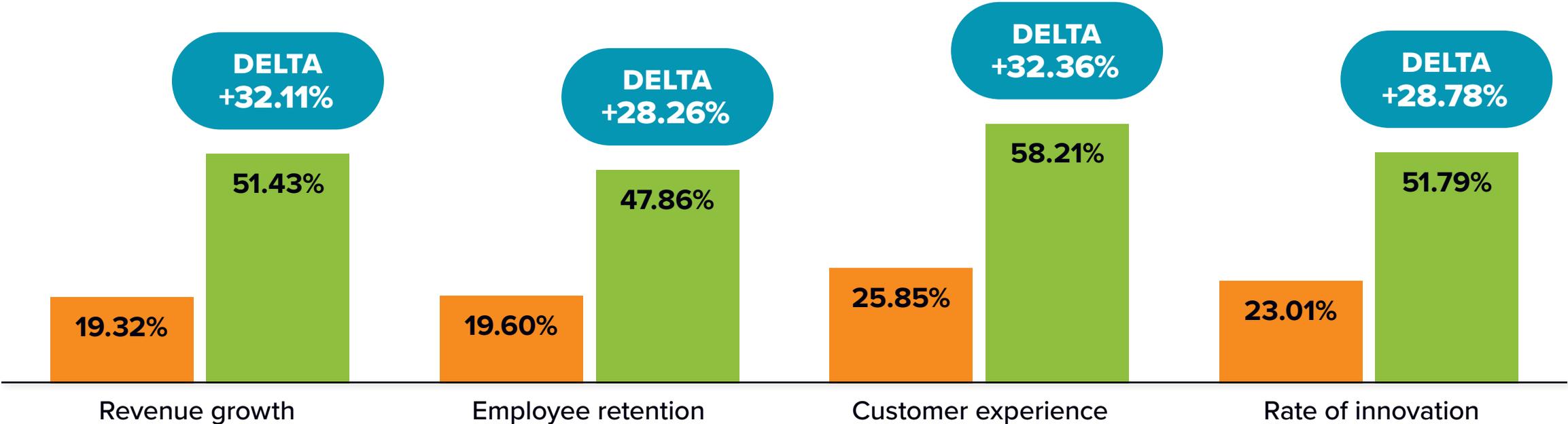
n = 1,170, Source: IDC's *Future of Intelligence Survey*, August 2021

A Strategy for Effective Data Capture and Aggregation

Leading companies understand that excelling at data intelligence is an immense challenge. Not only does the data have to be accurate, relevant, and timely, but it must be made accessible to multiple audiences and users.

Correct time

Correct person

Correct format

Employees

Customers

Partners and suppliers

Systems and machines
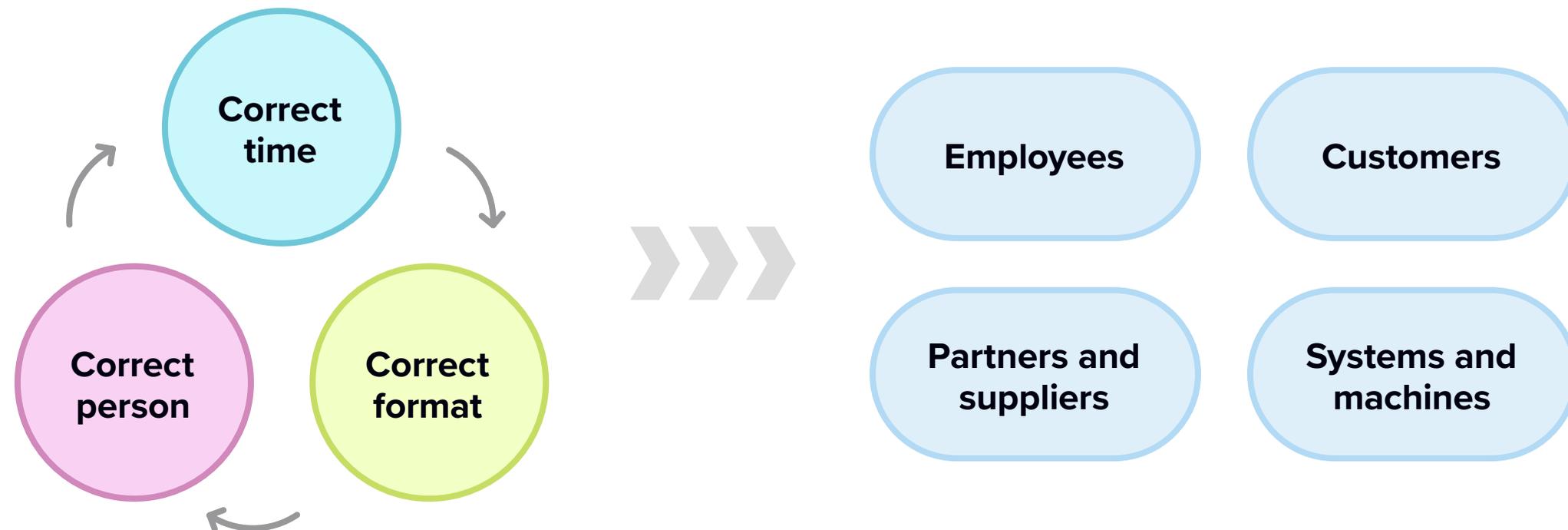
Where Does Smart Data Capture Begin?

Organizations often experience their first failure not at the end of this process (i.e., data analysis, data integration, and data distribution), but at the beginning. They struggle to implement modern processes to capture data that are efficient, accurate, repeatable, and scalable for a given use case.

A Disconnect Between Expectations and Experiences

Customers expect digital, data-driven, real-time, personalized interactions with businesses.

Discovery and awareness	Purchasing and engagement	Retention, experience management, and advocacy

However, our data capture experience as employees and suppliers is very different.

Slow, antiquated systems	Tedious, repetitive, manual-first processes	Information and accessibility challenges

How Businesses Currently Approach Data Capture

Manual data entry
Tedious, error-prone, requires transcription into digital systems

Single-purpose scanning
Costly, time-consuming, and inefficient

Device sharing for data capture
Low effectiveness, difficult to track and trace; users often wait for access

Data integration
Inconsistent connection between data collected and back-end systems limits the value of captured data; data management is a nightmare

Data Capture is Challenging for Industries with Many Frontline Workers

Retail

- Stores
- Warehouses
- Shipping/receiving facilities

Transportation and Logistics

- Distribution facilities
- Shipping and receiving locations
- Last-mile delivery
- Airports
- Public transit

Healthcare

- Hospitals
- Clinics
- Pharmacies
- Lab facilities

Manufacturing

- Warehouses
- Assembly lines
- Distribution centers

Introducing
Smart Data Capture:
A Breakthrough Strategy
# to Modernize Data Capture

IDC defines smart data capture as an **integrated hardware, software, and connectivity strategy** to help organizations enable the capture of data in an efficient, repeatable, scalable, and future-proof way.

What is Different About a Smart Data Capture Strategy?

Smart data capture seeks to balance the critical elements of people, process, and technology by:

✓ **Maximizing support for an organization's existing technology investments** (i.e., smartphones and robotics). Smart data capture enables organizations to balance today's investments with the flexibility to rapidly deploy emerging technologies to drive future innovation.

✓ **Improving labor-intensive tasks** (i.e., scanning individual barcodes) to reinvent processes and transform outcomes.

✓ **Allowing organizations to deliver data transparency and efficiency** to elevate the impact and effectiveness of workers.

✓ **Building solutions that are both repeatable and scalable.** The value delivered by smart data capture builds and grows exponentially with each new use case.

People

Process
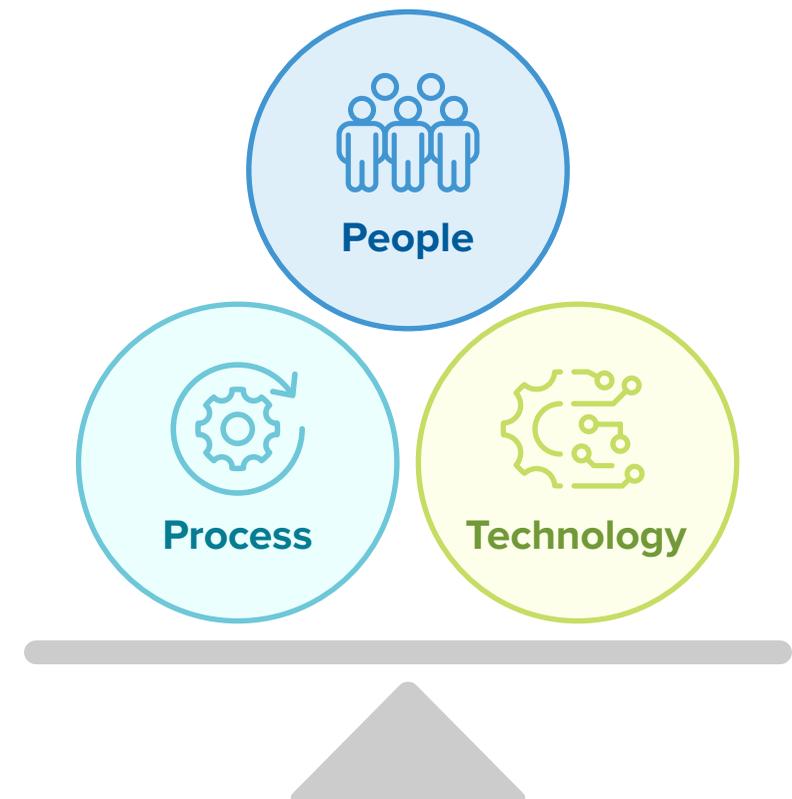
Technology

Combine Existing Infrastructure with Emerging Technology

Opportunities to leverage existing technologies

▷ Utilize employee-owned mobile devices

▷ Leverage an employee's current corporate-owned device

▷ Support deployment in the cloud or on device

▷ Be compatible with existing signage, barcodes, and labels

▷ Repurpose existing hardware (i.e., autonomous floor scrubbers) to capture data

Complementary areas of emerging technology

Smart mobile devices

Internet of Things and robotics

5G and edge

Artificial intelligence

Smart Data Capture Delivers Impacts Across Audience Types

Businesses

- ▶ Improve data decision-making
- ▶ Eliminate data silos
- ▶ Increase agility and productivity
- ▶ Improve employee retention
- ▶ Attract new talent

Employees

- ▶ Upskill capabilities
- ▶ Enable workplace empowerment
- ▶ Increase work effectiveness
- ▶ Reduce or eliminate low-value work
- ▶ Increase customer focus

Customers

- ▶ Enable self-service
- ▶ Build loyalty
- ▶ Establish trust
- ▶ Improve customer experience
- ▶ Engage each customer uniquely

Partners and suppliers

- ▶ Enable real-time performance reporting
- ▶ Pursue new business development opportunities
- ▶ Improve products
- ▶ Understand how or where products are used

Systems and machines

- ▶ Improve automation opportunities
- ▶ Enable forecasting and digital twins
- ▶ Lead with data
- ▶ Deliver better technology ROI

An Exponential Increase in Impact

Smart data capture is designed to be repeatable and scalable. Its value builds exponentially and helps streamline an organization's transformation and innovation initiatives.
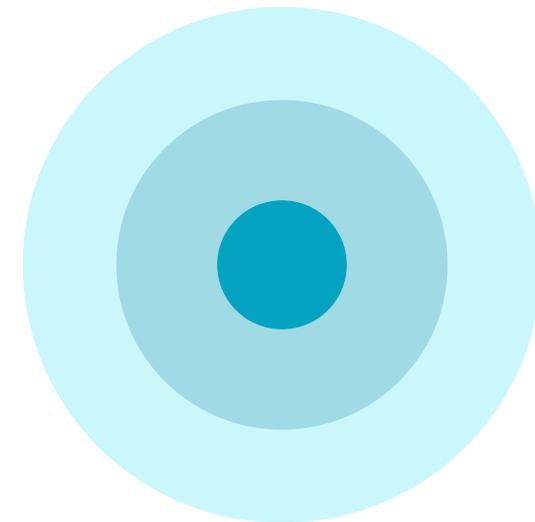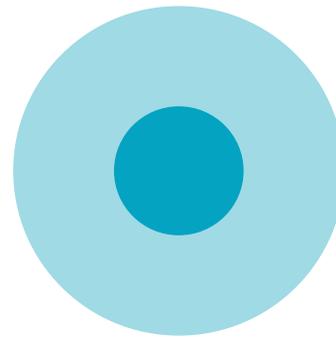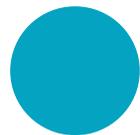
Localized impact   Expanded impact   **Transformational impact**

SMART DATA CAPTURE IN ACTION

Retail

Use case example	Today's approach	Smart data capture approach	Newly unlocked value
Validating product location and pricing	Employees manually count or use a device to scan and verify each shelf item one at a time.	Employees orient their smart device's camera on the shelf or area of interest, and the location and prices of items are automatically calculated and verified using computer vision AI.	▶ Time to complete this task decreases significantly, with immediate feedback on actions needed. ▶ Employees can now focus their efforts on higher-value work. ▶ Organizations can increase this task's frequency to drive increased real-time understanding.
Confirming a product's location	Employees manually scan each product and map it to the store's layout using barcodes or by entering aisle, shelf, and bin location.	Employees orient their smart device's camera on the shelf or area of interest and a computer vision AI model understands the layout of products on the shelf. The employee zooms out to automatically capture the aisle and bin with AI.	▶ Time to complete this task decreases significantly. ▶ Manual data entry errors are eliminated, even when interrupted. ▶ Employees have confidence that information in the systems matches reality.

SMART DATA CAPTURE IN ACTION

Transportation and Logistics

Use case example	Today's approach	Smart data capture approach	Newly unlocked value
Age and identity verification	Employees manually enter the required information from a customer's ID via the business' online data capture form.	The employee orients their device's camera on the customer's ID and scans it. This picture is processed by a computer-vision AI algorithm that verifies the ID as genuine and extracts all required data fields automatically.	▶ The accuracy of the record is much improved. ▶ Employees can check age or ID without reducing efficiency. ▶ Organizations have an easier way to comply with age/identify regulations.
Step-by-step notifications of a shipment's progress	Employees scan a package's barcode on each step of its journey.	An employee orients their smart device's camera or uses a fixed-mount camera to automatically capture all packages at each stage of the journey. The delivery driver takes a picture of the package to confirm delivery.	▶ Organizations can reduce the amount of time needed to scan packages. ▶ Employees can focus their time and effort on higher-value work. ▶ Customers can be sure of the accuracy of the updates and status of their packages.

SMART DATA CAPTURE IN ACTION

Healthcare

Use case example	Today's approach	Smart data capture approach	Newly unlocked value
Dispensing patient medication	Clinicians consult an electronic order to determine the medication that needs to be dispensed. The clinician administers the medication directly.	The clinician orients their smart device's camera on the selected medication to verify it matches the order and the intended dosage is appropriate. The clinician also verifies a patient's wristband to ensure the correct recipient.	▶ Errors with incorrect or expired medications are eliminated. ▶ Digital records provide proof of administration to the correct patient. ▶ Clinician have peace of mind that procedures and actions are correct.
Patient monitoring	Clinicians perform time-based rounds to check on a patient's condition or rely on direct patient engagement via an alerting or call system.	A fixed-mount camera provides automatic computer vision with AI-enhanced real-time monitoring of a patient. The solution alerts clinicians based on observed changes.	▶ Clinicians can be sure that patients are under constant vigilance, even when they are out of direct sight. ▶ Observable behavior indicative of complications may trigger earlier intervention.

Customer Experience

Use case example	Today's approach	Smart data capture approach	Newly unlocked value
Self-scanning	Customers gather all items in their cart and bring them to the front of the store to be manually scanned at a check-out terminal.	While shopping, a customer uses the camera widget in the retailer's smartphone app to scan items as they are put in the cart. The items are added to a virtual cart that allows them to check out and pay without stopping at the front of the store.	▶ Customers save time by avoiding lines. ▶ Businesses can engage these customers with insights or promotions directly via an app. ▶ Customers see the shopping experience as elevated and innovative.
Real-time engagement and insights	Businesses leverage static mobile application templates, in-aisle signage, check-out coupons, and mailers to engage and inform their customers.	While shopping, a customer uses the camera widget in the retailer's app to scan the item. This brings up an immersive augmented reality experience that provides more product information, such as specifications or provenance, and real-time discounts.	▶ Customers can perform product research in real time. ▶ Businesses can engage and influence customers while they shop. ▶ Brands can develop companion content to aid customers in the sales process.

Essential Guidance

Identify and prioritize potential use cases and business challenges that would benefit from a smart data capture strategy.

Embrace the ecosystem of available technology providers to better understand the maturity of smart data capture capabilities in support of a given use case.

Bring together stakeholders across multiple organizational functions to align on smart data capture use case requirements.

Leverage focused pilots or proofs of concept to better understand the performance and readiness of a potential solution, including key performance indicators.

Engage with existing technology suppliers and partners to understand how their current portfolio aligns with a smart data capture strategy.

Develop a comprehensive life-cycle management approach to monitor and maintain the solution in production and after launch.

About the Analyst

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Matt Arcaro is research director, Computer Vision and AI, and is responsible for IDC's worldwide computer vision (CV) and AI technologies and tools research. He works within IDC's software market research and advisory practice and directly reports to IDC's greater AI/ML-focused team. Matt leads IDC's thought leadership, syndicated research development, client advisory, and media and vendor outreach, focused on all things computer vision and AI. Matt extensively engages with upstream and downstream ecosystem providers and end-users to understand the opportunities and challenges of applying CV tools and technologies to solve business problems. His key research initiatives include better understanding CV platform providers, synthetic data, image and video manipulation techniques, emerging CV vendors and providers, end-user CV solution requirements, CV edge deployment approaches and best practices, and CV vertical applications and use cases.

More about Matt Arcaro

Message from the Sponsor

SCANDIT

Give superpowers to workers, customers, and businesses with Scandit Smart Data Capture.

Businesses in retail, transport and logistics, healthcare, and other sectors use the Scandit Smart Data Capture platform to enable smart devices such as smartphones, drones, digital eyewear, and robots to interact with physical items by capturing data with unmatched speed, accuracy, and intelligence.

Discover how smart data capture is empowering enterprises to capture and access real-time data in new ways, transforming the way employees work, taking customer experiences to new levels, and delivering superior business outcomes.

Learn more.

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