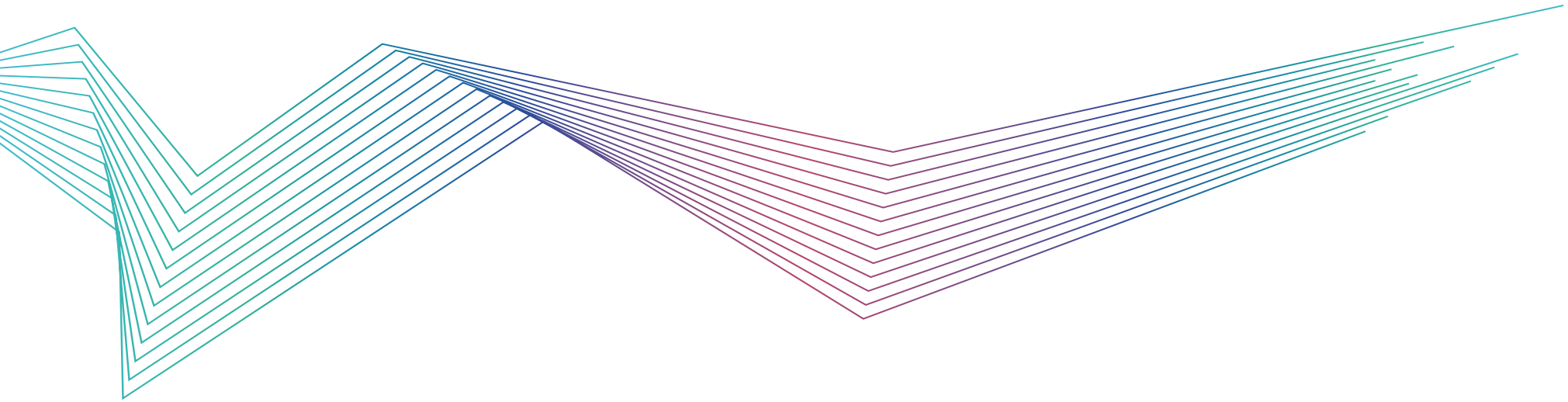
Capture Value, Not Data

9 smart data capture principles to unlock the next level of business efficiency, customer and employee experience



The **Smart Data Capture** Manifesto

SCANDIT

Introduction:
The Data Experience Gap





In our personal lives, we're empowered with data at our fingertips on one device all day, every day. So why hasn't the same access to actionable, real-time information spilled over into all areas of the business world?

The Overlooked Problem of Data Capture

We believe data capture is a significant and overlooked cause of this data experience gap.

Most data in our day-to-day lives is digitized. But almost all companies need to collect, analyze and act on data relating not only to digital but also tangible assets (such as inventory or equipment), and physical operations (such as warehouse and store operations, patient care or last mile delivery).



And the challenge is that data capture – the process of collecting and digitizing information from the physical world – is much harder than harvesting data from digital assets.

A grocery chain, for example, can collect and analyze e-commerce data almost instantly. The same process in brick-and-mortar stores, however, relies on frontline workers scanning millions of individual barcodes.

The problem of data capture holds back improvements to how employees, customers and businesses can collect, access, interpret and utilize data to make timely and informed decisions.

60%

of SKUs are affected by inventory record inaccuracies

Frontline workers:

Store associates, pharmacists, delivery drivers, field service engineers and many more are not empowered with tools enabling data-informed decisions. Data democratization initiatives have not reached the frontline.

Customers:

The interactive, personalized experience consumers are used to in e-commerce is not replicated in brick-and-mortar stores.

Businesses:

Desk-based decision makers often work with data from the frontline that is incomplete, inaccurate or outdated. On average, 60% of SKUs are affected by inventory record inaccuracies.

The Data Capture Challenge is Getting Bigger

Far from decreasing, the requirement for data capture is increasing. There's a heavier burden on businesses to create more real-time visibility into the supply chain, particularly for regulated industries (such as pharma, medical or the food industry).

Even businesses we think of as "digital" have a significant physical footprint. Meta has invested more than $16 billion in data center construction. And the physical footprint of a business such as grocery chain Carrefour is enormous: over 12,000 stores, each stocking tens of thousands of SKUs, and around 320,000 employees with over 85% working in-store.

Despite this, most businesses lack a cohesive data capture strategy. In warehouses, stores, hospitals, delivery vans, factories and airports, the cracks are papered over with multiple, often incompatible solutions each performing a single function, cumbersome paperwork and repetitive manual processes.



Yet these places are also where the rubber meets the road when it comes to customer and employee experience, patient care, legal obligations and operational efficiency. Logistics errors cost the pharma sector alone a staggering $35 billion every year.

We live in an age where customers are impatient and hyper-informed, employee attraction and retention is challenging, and macroeconomic uncertainty forces focus on efficiency, flexibility and resilience. Papering over the cracks is no longer good enough.

$35 bn

lost yearly as a result of logistics errors in the pharma sector

The State of Data Capture Today

Unlike other elements of digital transformation, the need for a modernized data capture strategy is underestimated. Processes and technology are fragmented across different business units with no centralized thinking.

The state of data capture today can be summarized by two key elements:



1

Processes to capture data are outdated and inefficient.

Capturing data from tangible assets and physical operations still relies heavily on manual processes. Even where technology (such as hand-held scanners) has been introduced, it is generally confined to capturing one item at a time and embedded in repetitive manual workflows.

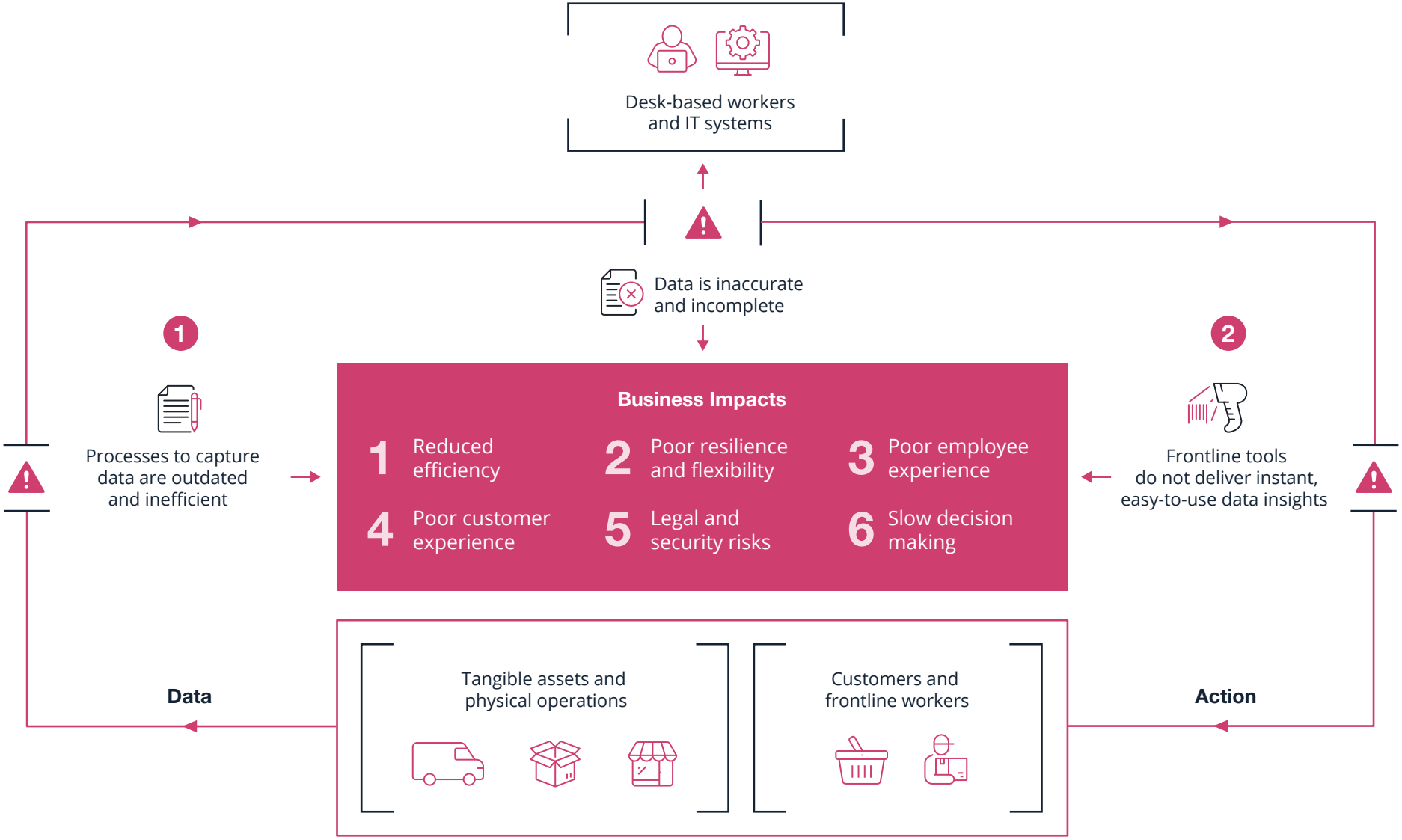


2

Frontline tools do not deliver instant, easy-to-use data insights.

Analytics tools are designed for desk-based workers. Mobile employees or customers in-store have different needs. They lack easy-to-use, mobile tools that can identify real-world objects and connect them with real-time system data.

The 6 Business Impacts of Data Capture Today



We Believe Data Capture Can Be Smarter

We believe the technology is available to transform data capture. And we believe implementing a smart data capture strategy is the key to unlocking the next level of business efficiency and customer and employee experience.

The goal of smart data capture is to efficiently capture, combine and analyze multiple data sources (barcodes, text, IDs, objects) and instantly surface rich, actionable insights.

Capture Value, Not Just Data

A smart data capture strategy is an integrated hardware, software and connectivity strategy that modernizes how employees, customers and IT systems interact with tangible assets and physical operations.

Smart data capture enables real-time decision making, employee and customer engagement and workflow automation at scale. It makes data capture workflows such as scanning barcodes up to 10x faster, improves the quality and completeness of data collected, and provides frontline workers and in-store customers with data-driven tools that enable immediate, distributed decision making.

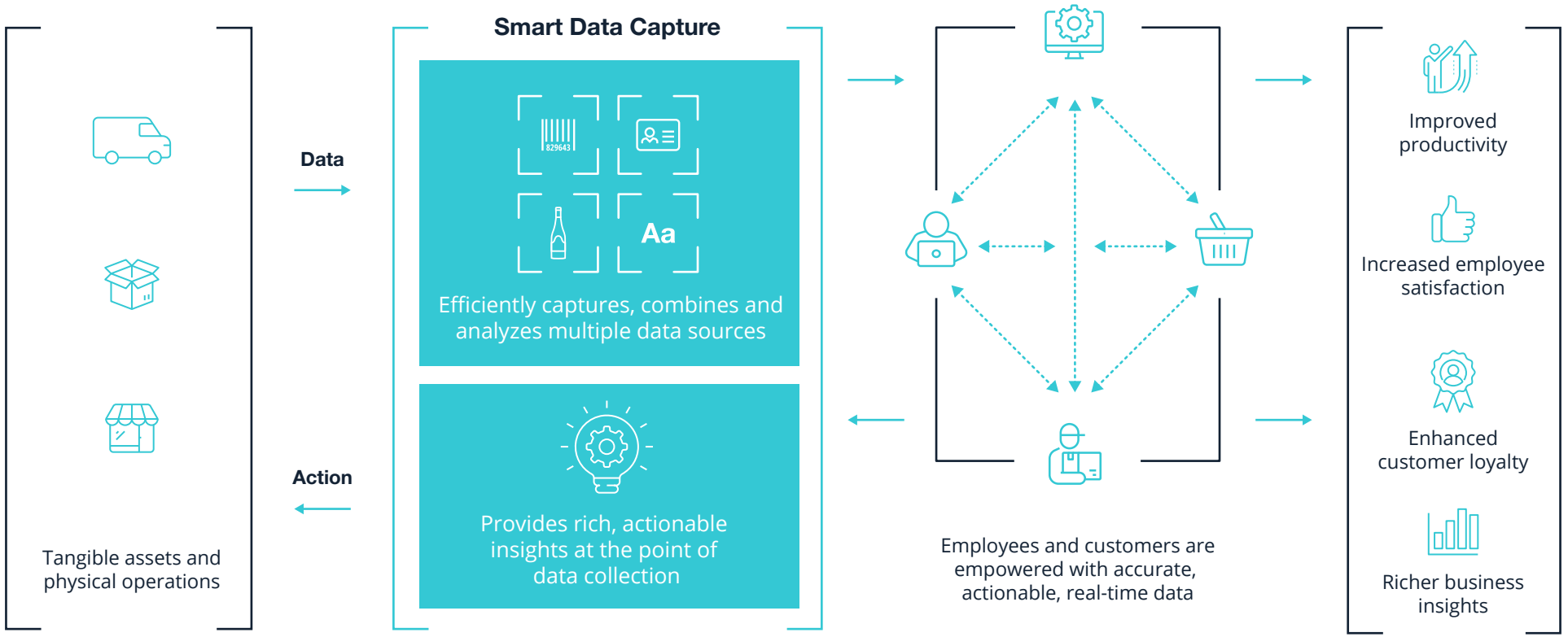


Unlike the old way of data capture, it isn't quantified by a simplistic measure of items captured over time. Instead, it's quantified by exponential productivity gains, richer business insights, increased employee satisfaction, enhanced customer loyalty and ultimately profit and revenue growth.

10x

speed-up in barcode scanning workflows

The Value of
Smart Data Capture



The 9 Principles of a Smart Data Capture Strategy

For over 10 years we have been uncovering smarter ways to capture data. Through this we have developed 9 principles of an effective smart data capture strategy to empower customers, employees and businesses with actionable, real-time data.



People

1. Shift tedious work from people to technology
2. Upskill frontline workers
3. Empower customers everywhere



Process

4. Design for humans
5. Give data instant purpose and value
6. Make data capture versatile and resilient



Technology

7. Integrated, multi-modal platforms
8. Use any smart device, anywhere, any time
9. Reach beyond human limitations

Shift tedious work from people to technology

Use technology to restore bandwidth and rehumanize the employee experience.

Smart data capture does not seek to replace jobs, but to improve them. It reduces the amount of time employees have to spend on tedious, error-prone manual data capture processes.

In manufacturing quality control, for instance, smart data capture reduces the amount of time skilled workers have to spend on repetitive visual inspection tasks. Image recognition can be used to identify recurring defects quickly and consistently. It improves recruitment and retention by making roles more rewarding, reduces error and frees up time to spend on more complex and value-adding tasks such as process improvement and customer engagement.



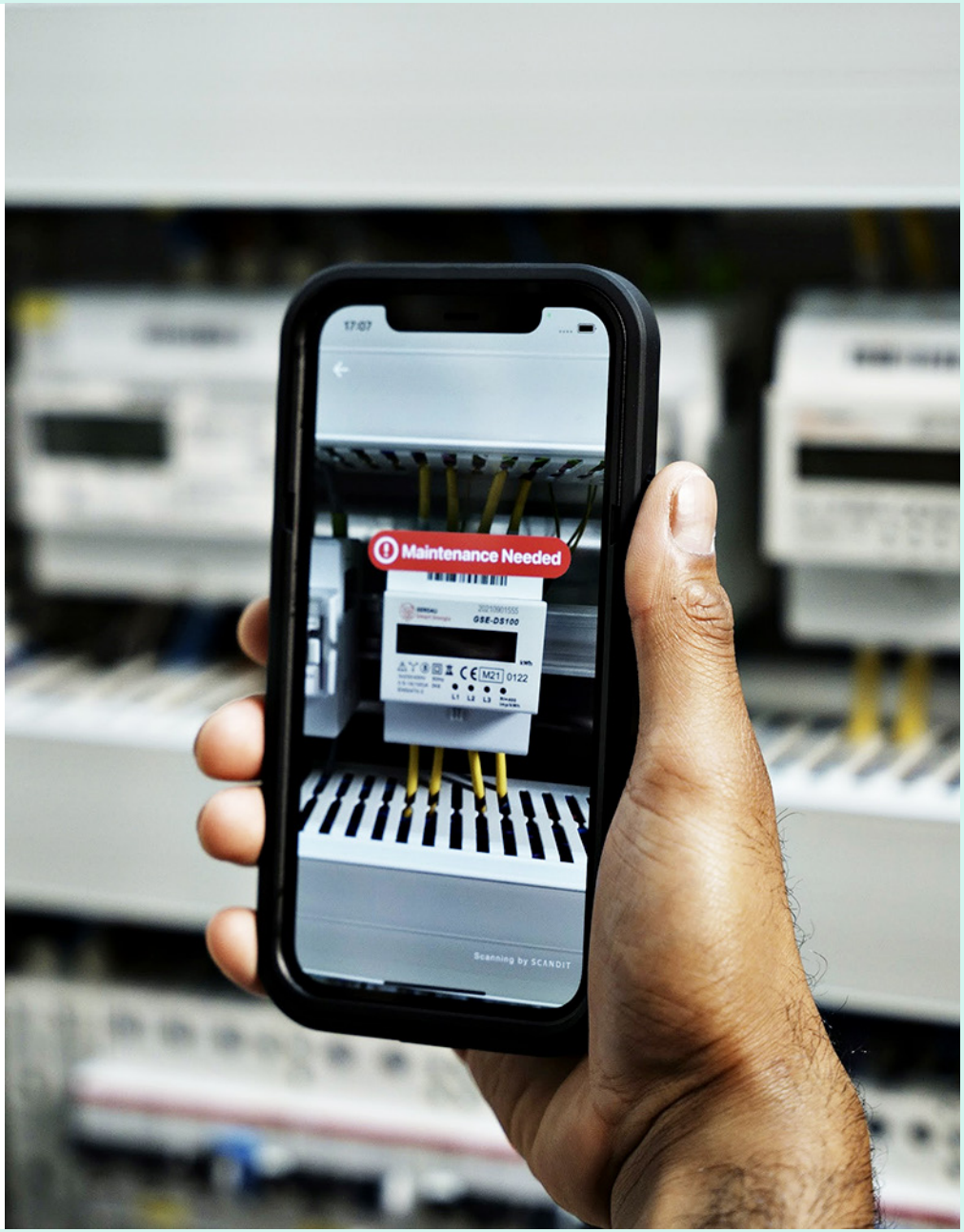


Upskill frontline workers

Empower frontline workers with data-based insights that maximize the unique skills they have that machines can't mimic – such as empathy, judgement and problem-solving.

Mobile computing, machine learning and augmented reality (AR) all create new opportunities to connect the frontline.

In field service, for example, a smart data capture application running on a smartphone or tablet can identify a part or device. It then shows the engineer an AR overlay with live information about equipment, service histories and maintenance schedules. Customer satisfaction is improved by increasing first-time fix rates and on-the-spot upsell opportunities for parts and service are created.

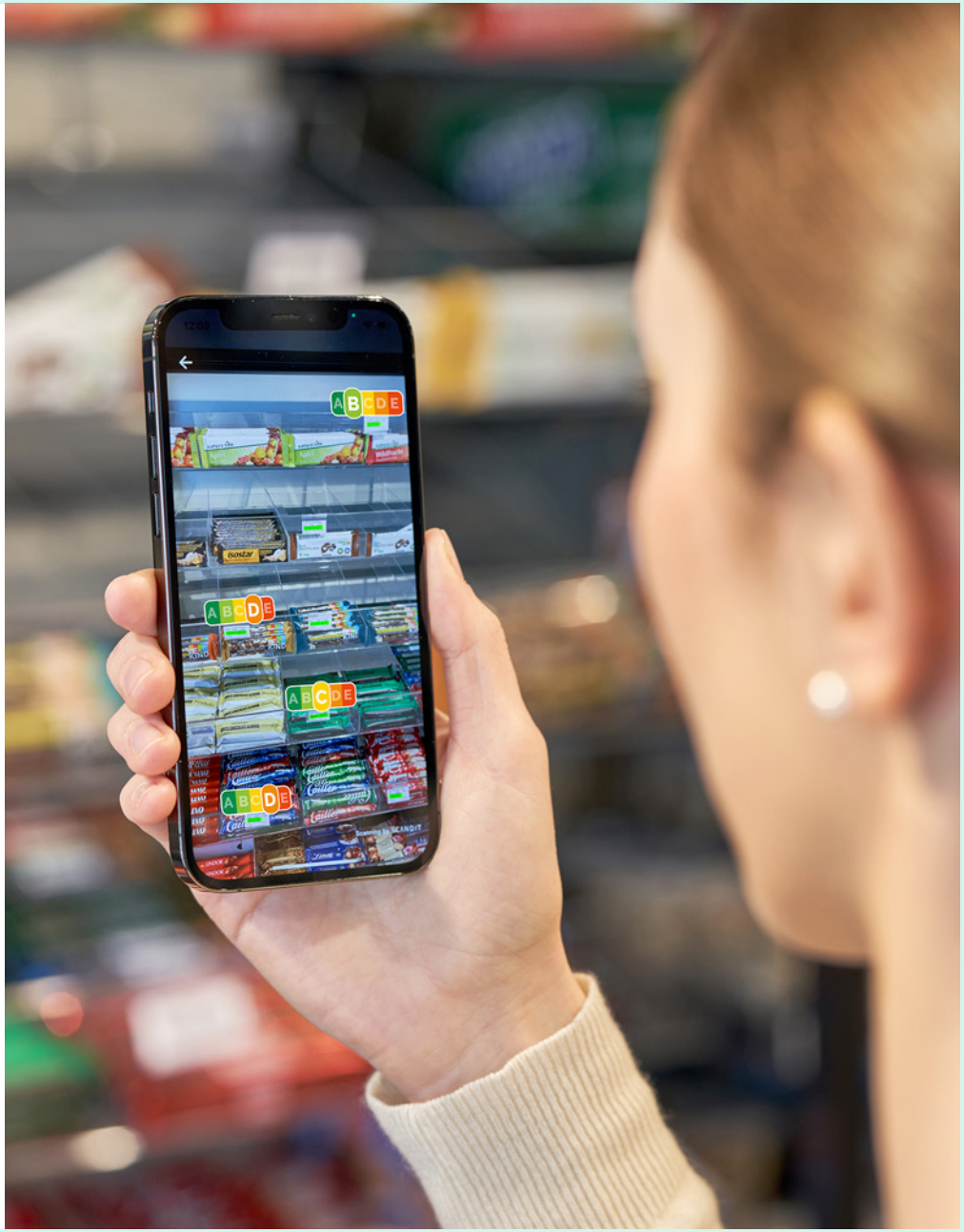


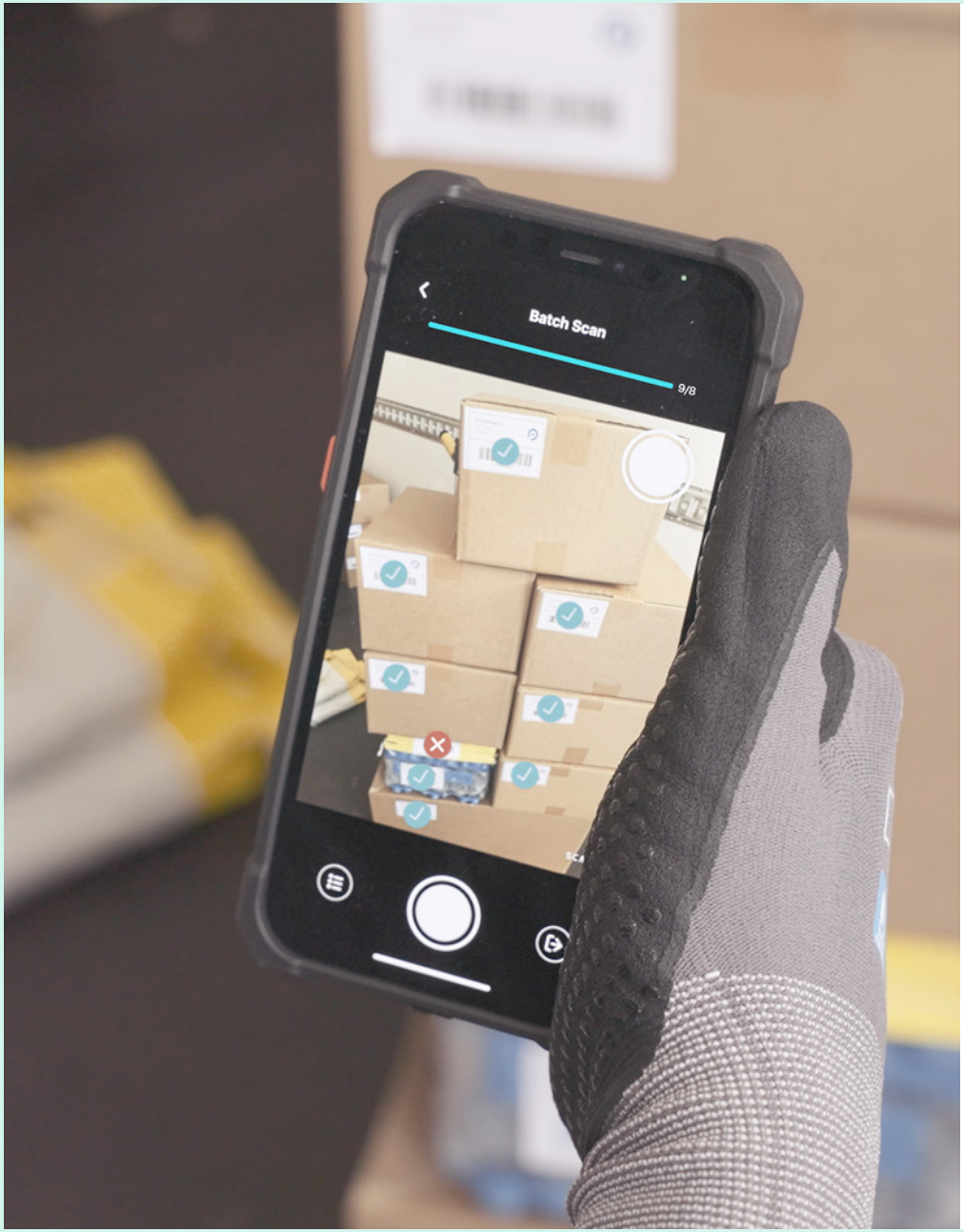
Empower customers everywhere

Make interactive product information, stock levels, promotions and personalized offers as accessible in store as they are online.

Today, for example, brick-and-mortar grocery customers trying to compare the nutritional value of products usually have to pick them up one by one and decipher tiny text on printed labels.

While they started off as a way to streamline checkout, smart retailers are now building AR overlays into self-scanning smartphone apps to help consumers locate and compare products and promotions. Rounding out the customer experience in this way increases engagement, conversion rate and basket size.





Design for humans

Be user-centered. Solve for the reality of people's daily work and lives, particularly where this involves hybrid digital/physical workflows.

Applying user-centered design to the process of receiving goods into a warehouse is a good example. Instead of focusing on isolated, incremental improvements to the instant of scanning, a smart data capture approach would seek to reimagine the entire workflow.

In a smart data capture solution, the user might press a single button on a smart device. An application locates and decodes multiple barcodes simultaneously, counts them automatically, then provides instant feedback on missing packages.



Give data instant purpose and value

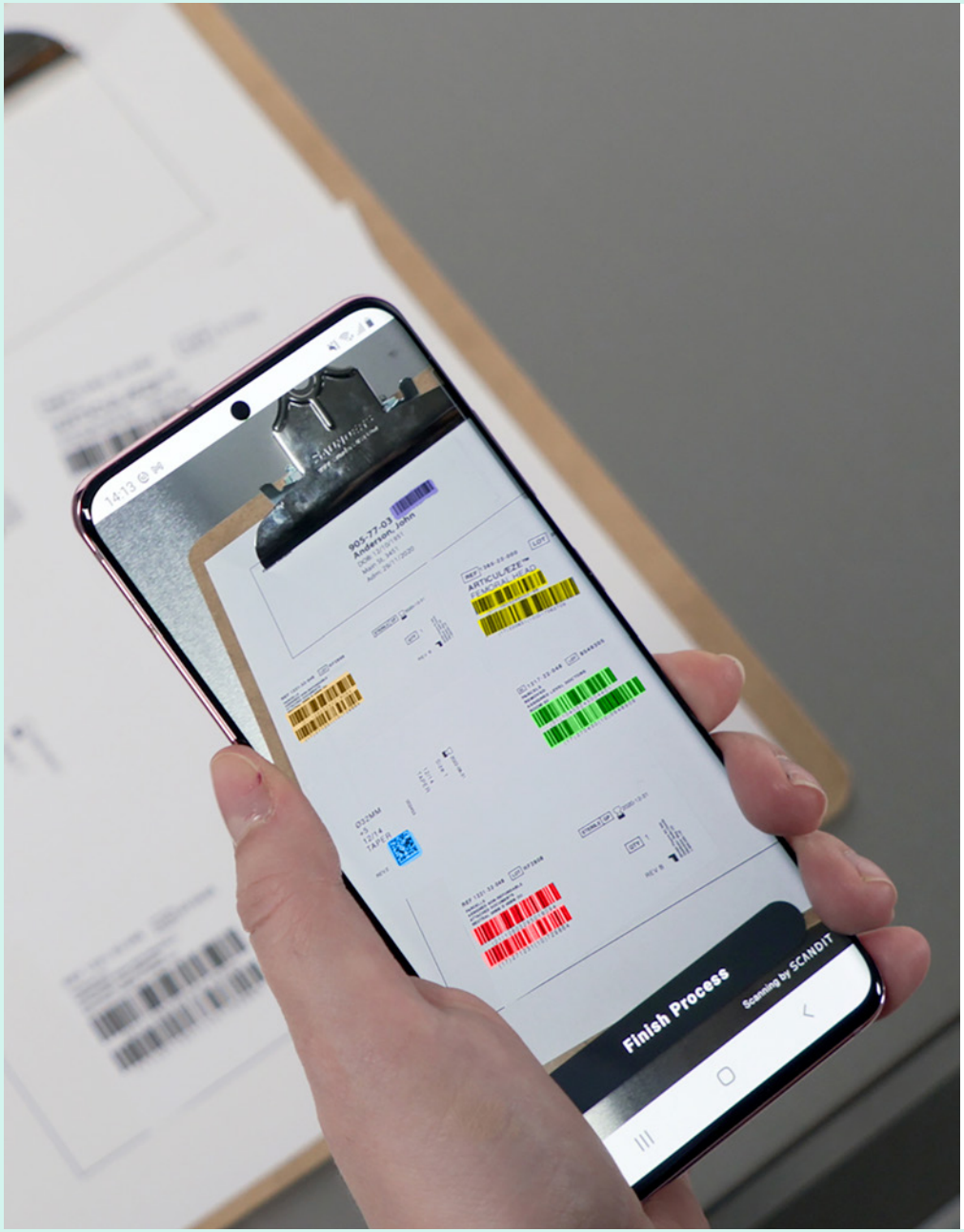
Design solutions that deliver accurate, comprehensive data and insights instantaneously – rather than hours, days or weeks later.

Smart data capture delivers accessible, actionable insights to frontline workers at the moment of data collection. It also enables instant, reliable and more complete reporting back to head office.

For example, a store associate using a smart data capture product markdown solution can scan a shelf of products using a smartphone or tablet and instantly view up-to-date instructions. Real-time reports about what markdowns have been applied are available immediately.

It reduces the risk of sales being missed at the critical point of the markdown cycle. The retailer can also respond much faster to changing conditions.

5



Make data capture versatile and resilient

Design solutions that automatically adapt to different and challenging scenarios, instead of putting the burden on users to adapt.

An example is the common situation where multiple different barcodes are printed on a single sheet, label or price tag. Smart data capture uses contextual, visual cues to identify the right code to scan, rather than the user having to do this.

If the code is damaged, it automatically switches to text recognition and decodes the printed digits instead. The user can work fast and accurately on “autopilot” with confidence that the right code will be scanned.

Integrated, multi-modal platforms

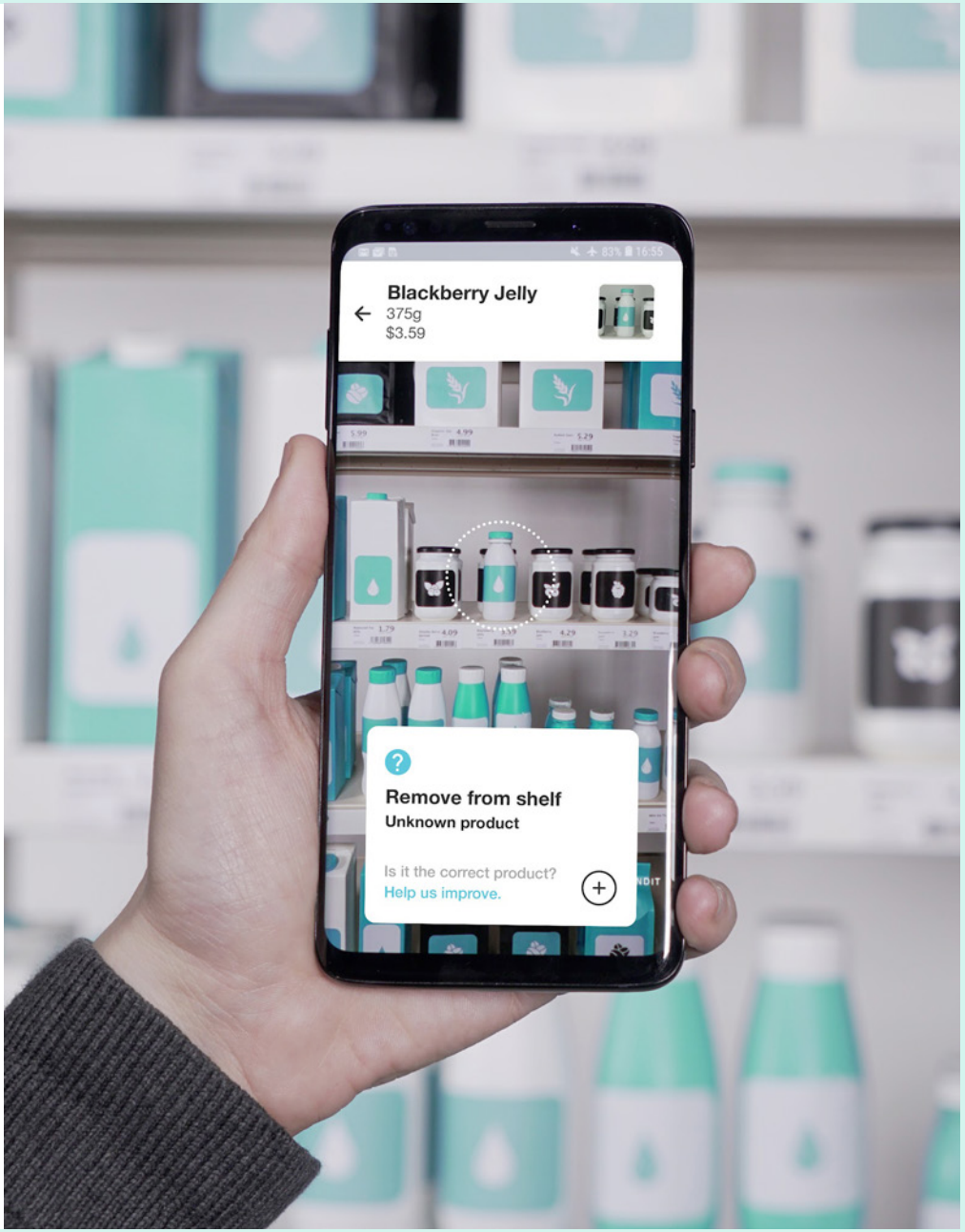
Develop or use platforms that analyze multiple data sources (e.g. barcodes, text, IDs, objects), integrate these with analytics and can evolve and scale.

The real world is unstructured and variable. There's no single "magic bullet" data capture technology that can solve for every scenario and use case. Flexible, multi-modal approaches are key to capturing data in a more accurate, precise and useful way.

An example is smart data capture shelf management software. Data is constantly captured via associates' mobile devices or autonomous floor scrubbers. AI-based retail shelf analytics then compare multiple data sources (price labels, barcodes, objects) to system data to detect gaps, low stocks, or prices and promotions to update.

By speeding up the process and reducing reliance on store associates, it makes inventory more accurate, replenishment more efficient and in-store order picking more streamlined.





Use any smart device, anywhere, any time

Be device-agnostic. Smart data capture software is powerful, and can utlilize any smart device with a camera as an advanced data capture tool.

This includes smartphones, tablets, drones, fixed cameras, robots and wearables as well as dedicated data capture devices such as barcode scanners.

Last mile delivery companies often reduce costs by supplying only a smart data capture enabled app. Drivers run this on their own devices (a bring-your-own-device strategy).

Some retailers choose to supply frontline employees with a smartphone they can also use as a personal device, and use this as a recruitment and retention incentive.



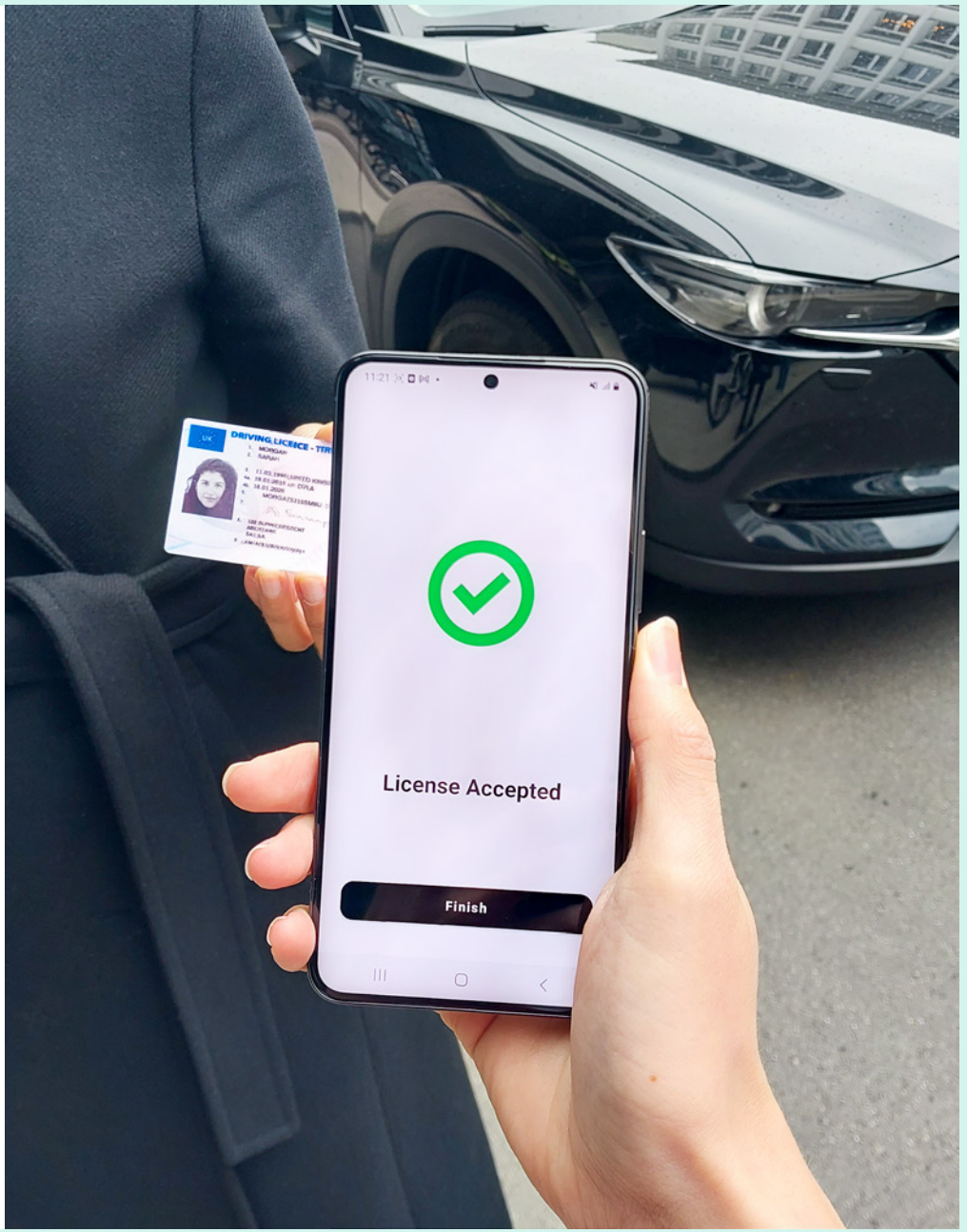


Reach beyond human limitations

Go beyond what unaided humans are capable of, even in optimum conditions and with all the time in the world.

For example, it's not always possible for a driver delivering age-restricted goods to identify a fake ID just by examining it. However, if you scan the ID and apply machine learning algorithms, this can detect anomalies invisible to the naked eye and highlight a likely fake. It prevents fraud, bakes regulatory compliance into workflows and creates a clear audit trail.





Capturing Value, Not Just Data
Real-World Results

Customers

20%
reduction in customer complaints related to errors in product picking

80%
conversion between voucher issued to redemption on smart data capture B2C app

4.9 / 5
Apple App Store rating for smart data capture B2C app

Employees

80%
of frontline workers think stores that leverage technology and mobile devices attract and retain more employees

79%
of frontline workers think being enabled with the latest technology will help provide better customer experience

5 minutes
training time for B2E smart data capture app

Businesses

50%
reduction in time for product markdown process

66%
decrease in installation time for solar equipment

60%
reduction in picking time per item

Sources: Rappi case study, Weeshop case study, Jisp/Nisa case study, The Warehouse case study, DCK Group case study, Sunpower case study, OK Corporation case study, Zebra Shopper Vision Study 2023

What Analysts Say About Smart Data Capture

"In an IDC Infobrief, sponsored by Scandit, IDC states that organizations which are effective in building data intelligence experience materially different business outcomes, with improvements in employee retention, customer experience and up to a 32% increase in revenue growth."[1]

IDC

"The ability to accurately capture real-time product information is a transformative force for both customers and organizations.

This capability revolutionizes customer-facing applications and enables flawless accuracy in self-scanning functionality, with augmented reality offering enhanced insights such as product reviews or allergen information.

Additionally, supply chain applications will greatly benefit from enhanced insights into trailer, cube, and weight utilization rates, leading to optimized trailer loads and improved delivery efficiency. Smart data capture is a technology whose time has arrived."

Jeff Roster, Expert Advisor – Retail, Third Eye Advisory

"Enterprises have accelerated their digital transformation efforts over the last few years, but one key area is lagging, namely the capture of data in the physical world. Smart data capture is a compelling solution to overcome this challenge at scale while leveraging the devices we all carry in our pockets."

Steven Dickens, VP and Practice Leader, Futurum Group

"PAC recognizes that so many interactions with the physical world continue to increase complexity and friction leading to a data experience gap. The key to addressing this is transforming how people interact with tangible assets to collect actionable data. Smart data capture can enrich existing experiences across complex workflows, like supply chains, in a seamless and digitally led manner."

Spencer Izard, PAC's Research Director

"Networks have evolved to now offer gigabit connectivity, devices have evolved to now give us mixed reality, driverless vehicles and drones are becoming feasible, and consumers' insatiable appetite to do more digitally will continue to see exponential growth; it is about time the capture of data evolves too.

Every vertical should be thinking about smart data capture as traditional ways can no longer support the growing demands of today's workforce. All businesses today should not solely be focussed on cost reductions, but instead use technology to drive revenue and empower the workforce in tandem as part of a two-fold approach for workplace transformation."

Paolo Pescatore, Founder, TMT Analyst at PP Foresight

[1]IDC InfoBrief, sponsored by Scandit, Smart Data Capture: A Technology Strategy to Scale Data Intelligence, doc #US49858322, January 2023

What Businesses Say About Smart Data Capture

"SAP believes the best user experience is the simplest. By incorporating smart data capture into our business processes we are able to transform user experiences down to just a few simple user interactions."

Florian Heretsch, Vice President, Head of Mobile Experience Engineering at SAP

"Store associates are a retailer's most significant ongoing investment. By empowering them with smarter data, we can improve employee experience, productivity and efficiency in a single stroke."

Andrea Comi, Digital and Technology DTC Global Director, VF Corporation

"In order for REI's store employees to deliver best-in-class expertise and service with ease and confidence, our tools must give them the data and insights they need, in the moments they need them."

Jeffrey Inscho, Senior Product Manager, REI

"Mobile computing, machine learning and smarter data capture are creating new opportunities to connect the frontline."

Bill Engel, Director Operational Applications, McLane Company

"The tone of visits is dramatically different. Now it is amazing – everything is quick, the prices are correct and we can communicate with everyone individually. Fundamentally, the quality of life for our store associates has improved dramatically."

Paul Cooper, Head of Technology at River Island

"Oh my goodness! In my 19 years of working for DCK I've never been so excited about something until now! It's amazing! I'm really, really impressed! This is a game changer!"

DCK Group field worker in the first week of a smart data capture deployment

A 4-Step Strategic Roadmap for Smart Data Capture

We have worked with thousands of companies in making their data capture smarter. While this strategic roadmap naturally draws on our experiences with companies integrating the Scandit platform, it is applicable to any smart data capture project.

1 **Identify a single smart data capture use case**

2 **Evaluate smart data capture solutions**

3 **Integrate and roll out**

4 **Evaluate and expand**

Build Your Smart Data Capture Strategy

1

Identify a single smart data capture use case

A smart data capture strategy is iterative. Use best practices from other companies and authentic user insights to identify a high-value use case to begin with.

2

Evaluate smart data capture solutions

Software

Evaluate core data capture performance, multi-modal and analytics capabilities and integration effort.

Hardware

Think outside the box. You may not need to invest in hardware at all, or can use consumer devices.

Support

Smart data capture is specialized. Consider what expert support will be available to you.

3

Integrate and roll out

De-risk integration and rollout by paying attention to user experience and onboarding.

4

Evaluate and expand

Once you've implemented your first solution and measured ROI, use what you've learned to expand to transformational impact.

- Build in additional modalities.
- Expand to other business functions.
- Build in additional analytics.



Identify a single smart data capture use case

A smart data capture strategy is iterative and often starts with a single use case.

In many ways, smart data capture is a greenfield opportunity. Even simple changes, rolled out in a matter of weeks, can result in dramatic productivity improvements.

Authentic user insights and attention to hybrid digital/ physical workflows are key to identifying high-value use cases.

Best practices from similar companies who have implemented smart data capture solutions and methods such as work diaries, field visits and interviews are a good place to start. These can all reveal opportunities to improve productivity, improve data quality or better connect frontline workers and customers.

Define what success would look like and set your KPIs.

2

Evaluate smart data capture solutions

Once you've identified your first use case, evaluate hardware/software solutions.



Software

- **Core data capture performance:** Don't neglect the basics. Smart data capture fundamentally depends on accurate capturing of data, so you need to make sure the solution you choose performs with speed and accuracy in real conditions. Make sure to test solutions at an early stage in your own environment with your own data and workflows.
- **Multi-modal data capture and analytics capabilities:** Select software platforms with multi-modal data capture and analytics capabilities, rather than single-use applications. This will allow you to adapt and scale in the future.
- **Integration effort:** Consider your in-house IT resources and select platforms with flexible integration paths. Pre-built user interface elements, ready-to-go enterprise integrations, no-code smart data capture apps and fully customizable options are all available depending on your internal resources, expertise and timelines.

Hardware selection

Think outside the box for hardware: You may not need to invest in hardware at all. If you do, today's consumer smartphones and tablets are often more than sufficient for smart data capture.

Support

Smart data capture is specialized: Consider what expert support will be available to you from ideation and solution design to implementation and beyond.



3

Integrate and roll out

De-risk integration and rollout by paying attention to user experience and onboarding.

User Experience

Smart data capture connects the physical and digital worlds. This means that situational and environmental factors affect the way a user interacts. For example, lighting, angles and distances all impact the way a person scans a barcode.

You can't envisage smart data capture interaction patterns while sitting at a development screen. Make sure you plan on-the-ground user testing into your integration. Pre-built user interface elements or specialist support from smart data capture UX experts can also accelerate the design process and reduce risk.

Onboarding

We've found that while frontline workers are often sceptical of new solutions, once they see the impact of smart data capture on their day-to-day, they very quickly come round. Focus on making the onboarding process intuitive and easy to get them to this "aha!" moment as quickly as possible.



4

Expand to transformational impact

Once you've implemented your first smart data capture solution and measured success and ROI, look for ways to expand. For example:

Add additional modalities:

Enrich your smart data capture application with additional modalities – for example, combining barcode, text and object recognition for retail shelf monitoring and localized inventory, or adding ID scanning as well as barcode scanning to last mile delivery.

Expand to other business functions:

Port the smart data capture strategies you've developed to different business functions. A retailer, for example, might start by adding smart data capture to a B2C app, then expand into an employee-facing app for store operations.

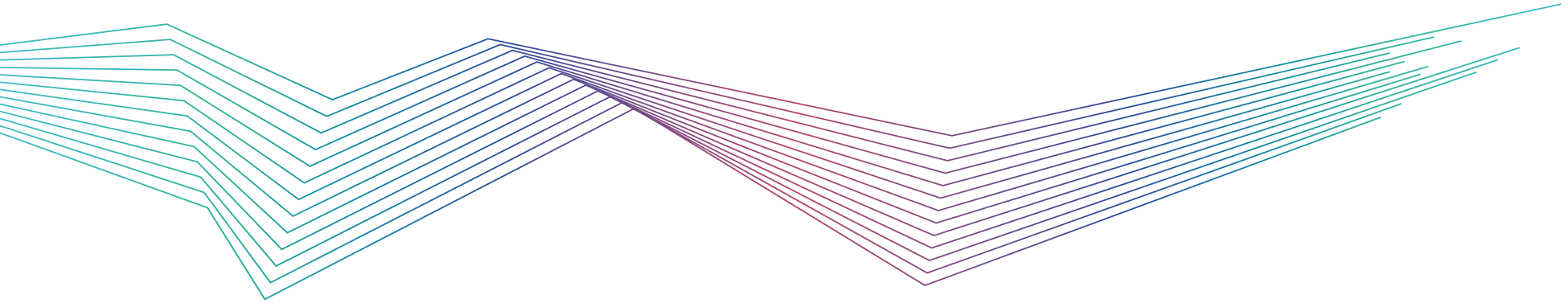
Build out richer analytics:

Deliver richer insights to employees and customers – for example, not only scanning and tracking medical device consumption before surgery but adding analytics that verify products are in-date for patient use.

The Scandit Smart Data Capture Platform

Scandit is one of the world's leading smart data capture companies. It was founded to capitalize on advances in smart device technology, enabling collection of data from tangible assets and physical operations to happen in a fundamentally different manner to existing data capture methods.

The Scandit Smart Data Capture Platform is a flexible software-based platform that benefits from continuous innovation to adapt and evolve in changing business environments. It automates scanning of barcodes, text, IDs and objects and supports more than 20,000 models of smart devices.



Scandit Smart Data Capture on smart devices provides actionable insights and automates end-to-end processes by capturing data from barcodes, text, IDs and objects.

EXPLORE PLATFORM

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