SCANDIT

Advancing Healthcare One Mobile Scan at a Time

How to automate and innovate using computer vision and augmented reality (AR)

#ScanditLovedit

Faster and more cost-effective medical deliveries

ERS Medical now complete critical medical deliveries significantly faster using a Scandit-powered app on everyday smartphones. With double the scanning speed, drivers complete pick-up and drop-off schedules more quickly. And replacing legacy hardware with mobile devices cut costs by 90%.

Scan4Safety saved 95% in inventory management time and cost

The Leeds Teaching Hospitals NHS Trust introduced a Scandit enabled app to improve performance and deliver real-time patient tracking. Scan4Safety enabled busy nurses to streamline their patient care routine and the hospital to increase the effectiveness of their product recall process.

Healthcare's perfect storm

The world's older population is set to double by 2050, while health and environmental challenges continue to emerge. Sustainable healthcare is now a global priority. Add demanding regulation and the increasing need for medical supply traceability, and it's not surprising that the industry is exploring ways to do healthcare better and cheaper.

Healthcare costs as a percentage of GDP for OECD countries range between 10% (UK) and 17% (US). Despite the discrepancy, member states agree that healthcare costs have doubled in the past 40 years. And regardless of differing healthcare infrastructures, the pain points are the same: too much paperwork, too many errors, and staff working in silos.

There's a growing consensus that data is key – the ability to collect and share accurate, situational, and verifiable data to satisfy the medical sector's duty of care around patient safety, to meet increasing global regulatory standards and to dramatically improve overall efficiency and cost control. Capturing and connecting data to digital systems to provide tracking and traceability goes someway to meeting the challenges faced by healthcare professionals today.

Data management for patient-centric care

The digitalization of healthcare systems will help enormously to achieve economies of scale, increase compliance around patient safety and improve operational efficiency. For example, using smartphones with built-in scanning capability can deliver automated, cheaper and safer patient interactions. Something as easy as scanning a barcode on a patient's wristband can provide instant access to information such as a patient's identity, treatment and medication history. Such simplicity, flexibility and the low cost of smart device scanning is a great example of how to automate care procedures and, make healthcare more patient-centric and home-based. The sector is shifting from an expensive volume model, which funds medical treatment as a series of isolated cases, to a more cost-effective value model, based on the quality and outcomes of medical interventions at the point of care. Mobile scanning supports this approach by capturing situational data to create a joined-up, shared view of a patient's journey through the system.

Situational data for compliance and patient safety

High-performance mobile scanning is transforming healthcare in another direction too, by enabling compliance and making supply chains safer. Regulatory bodies like the EU and FDA demand traceability of drugs and medical equipment, and healthcare professionals are seeking cheaper and more effective means than dedicated scanners to capture and validate product data. Mobile smartphone scanning provides the answer.

Healthcare systems are typically highly centralized, mammoth organizations – and getting bigger and more complex. But, there's an upside to the new scale and reach. Professionals and agencies working together in one network can share the economies yielded by disease prevention and avoidance of hospitalization. Healthcare workers, patients and supply chains, all connected with mobile scanning, can share the same information, in real-time, to work together with transparency and traceability. More scans in more places helps not only with future commissioning models but directly supports the traceability of patients, specimen and medicine records and medical supply inventories.

Mobile computer vision across healthcare and pharma distribution

At Scandit, we think our healthcare solutions can play a critical part in realizing the World Health Organization's aspiration to deliver the desired "continuum of affordable, accessible, high-quality and age-friendly health and social services", one scan at a time.

This paper explores how mobile scanning, powered by computer vision and augmented reality (AR) will become an essential 21st century digital healthcare tool for hospitals, pharma distribution and social care.

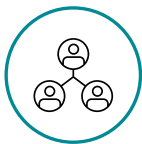**Samuel Mueller**
CEO and Co-founder, Scandit

Contents

Trends Shaping Global Healthcare

Patient-centric supersedes professional-centric care

Paperwork and administrative overload is a burden on clinicians and health workers everywhere and takes away valuable time that could otherwise be spent with patients.

Expanding and ageing populations with chronic health needs

Ageing populations, more prone to chronic disease, are placing a huge burden on overloaded healthcare systems. Coordinating ancillary, primary and hospital care, by sharing patient information in real-time on mobile technology, like wearables and smartphones, is necessary to deliver a continuum of care.

Healthcare moves towards value-based and per-capita models

Keeping people healthy and out of hospital is a challenge globally, as healthcare providers try to reduce costs by moving from volume to value models. Achieving cost and experience benefits, by sharing risks and costs across health economies, depends on access to accurate, real-time data.

Healthcare moves out of the hospital into the home

Treating patients in their own homes is cheaper, more convenient and more effective than going to hospital, but regulatory adherence must be assured.

Hospitals will become smart machines

Hospitals will transform into real-time health systems that use operational intelligence to chart and improve patient care. Key to this is the capture of situational care data that enables hospitals to adapt, continuously improve and, eventually, become more autonomous as data learns from itself.

Modernized supply chains for rigorous efficiency

Streamlining supply chains by creating greater shared visibility of inventories across manufacturers, service providers, distributors and pharmacies will significantly improve traceability, compliance and reduce costs across healthcare systems.

Pharma distribution order entry system is faster, easier and cheaper

Cardinal Health reduced errors in their order entry system by increasing scan accuracy rates from 70% to 95% using a Scandit-powered app. And the move from dedicated barcode scanners to software scanning on mobile devices delivered cost savings.

CardinalHealth

£800m

The cost to the UK NHS of people not taking their medicines properly and not getting the full benefits to their health is estimated at more than £500 million a year, with a further cost of £300 million on wasted medication.

Pharmacy Magazine, 2017

The Digital Opportunity

Scandit Technology

Scandit's computer vision and augmented reality (AR) technology turns standard smart devices into powerful enterprise-grade scanners and information display tools. The ability to process barcodes and physical text-based identifiers in real-time means patients and physical items of stock can be tracked and verified. Additionally, relevant information about patient care or compliance procedures, for example, can be overlaid on the healthcare worker's device screen.

Our patented software can be integrated into any app running on any smart device to provide market-leading scan speeds and accuracy, and is designed for large-scale enterprise implementation.

Ease of integration and support

Scandit software is easy to add to native mobile apps or web apps, with or without the need for integration. Our software works on a variety of operating systems, frameworks and third-party systems, and developers tell us how simple it is to work with our SDKs (Software Development Kits).

We work closely with clients to introduce the scanning software safely and securely into existing infrastructure with minimal disruption and without the need for a hefty investment in new technology or training. Post-live, there's a choice of support options and analytics packages.

> **>**

We use mobile computer vision to integrate barcode scanning and text recognition (OCR) with augmented reality (AR) to deliver a cost-effective, versatile and feature-rich alternative to dedicated scanning hardware.

Safety: Record patient interventions and product transactions instantly and accurately with Scandit's high-performance scanning.

Compliance: Scan a drug or medical device and record it for traceability purposes, ensuring cost-effective compliance with international regulations.

Affordability: Replace costly scanning hardware with a software-based solution on smart devices, and lower the total cost of ownership (TCO) typically by two-thirds.

Accuracy: Scan barcodes easily, including Datamatrix, Code 128 and EAN-13/UPC, even in bad light and on pliable patient wristbands.

Customization: Select from a choice of integration options: our flexible user interface offers different ways to integrate into any app or web environment.

Ease-of-use: Replace dedicated scanners with intuitive mobile scanning apps on smartphones, enabling healthcare teams to collaborate more effectively and cheaply.

Support: Work with specialist technical and best practice consultants during trial and implementation phases. Our post-live enterprise support options are highly valued by our clients.

Hospital Care

Primary healthcare systems range from public providers, to large private networks, and other mixed health economies funded by insurance and taxes. Regardless of infrastructure or ethos, there are shared pain points that mobile technology can help to address:

Reduce paperwork

Administrative tasks account for a large proportion of healthcare costs. Automating workflows, such as processing blood samples and tracking patients, using scanning on everyday smart devices, makes tasks faster, more accurate and more cost-efficient.

Reduce medication errors

Paper-based processes for prescribing are still widely used, leading to a higher risk of human error. Digitalizing the process by using everyday smartphones as enterprise-grade scanners gives clinicians instant access to patients' medical records and specific prescribing instructions.

Introduce affordable mobile automation

When automation is available in hospitals, it's often portable, in the shape of costly computers-on-wheels (COWs) rather than mobile devices. By using mobile hospital apps on easy-to-use, affordable smartphones, staff can more easily work at bedsides, in teams and across shifts. Scandit's technology modernizes a hospital's digital mobile capability without the need for a major infrastructure upgrade.

Make inventory management fast and accurate

The inventory manager outside an operating theatre needs to quickly find available kit and drugs. Using a smartphone to scan a barcode on a patient wristband, a medical device, or items on a pharmaceutical trolley can verify that medicine is authentic and safely administered, and stock is replenished in real-time.

Improve patient care

Increasing the accuracy and safety of regular tasks, like administering medications and taking observations, boosts preventative health measures and speeds up results. A secure and smart mobile scanning app with augmented reality (AR) connects healthcare staff to medical records and displays real-time information.

21%

Physicians spend 21% of their time on non-clinical paperwork, the equivalent of 168,000 physician FTEs not engaged in clinical activities.

The Physicians Foundation, 2016 Survey of America's Physicians, Practice Patterns & Perspectives

Social Care

Demand for social care, especially among vulnerable people, often in their own homes, is increasing. Social care provision is generally shared between central services, regional government and, increasingly, private agencies. Delivering effective continuity of care through a mix of nursing, domiciliary and social care teams is a challenge governments and care providers face, especially in Europe.

Make care visits more effective, safer and cheaper

Scandit makes care provision cheaper and eases the stress for workers by enabling staff to manage medication, stock and equipment better, while on the move. Organizations increasingly use BYOD (bring your own device) or COPE (corporate-owned, personally enabled) policies to equip employees with mobile devices.

Empower patients to manage their own care

There's a growing use of B2C medication re-ordering solutions, such as Pharmacy2U, where a smartphone with Scandit's scanning software would enable care workers or patients in the home, to replenish supplies with a scan. The UK NHS has launched the beta version of the NHS App, which could in time have barcode scanning.

58%

Medication errors are a global issue, ranging from 58% to 12% by country.

Medication Errors, Technical Series on Safer Primary Care, World Health Organization

> *We believe there are four main areas where digital developments will drive value for pharma companies: an ability to deliver more personalized patient care, engage more fully with physicians and patients, use data to drive superior insight and decision making, and transform business processes to provide real-time responsiveness.*
>
> **McKinsey & Company**
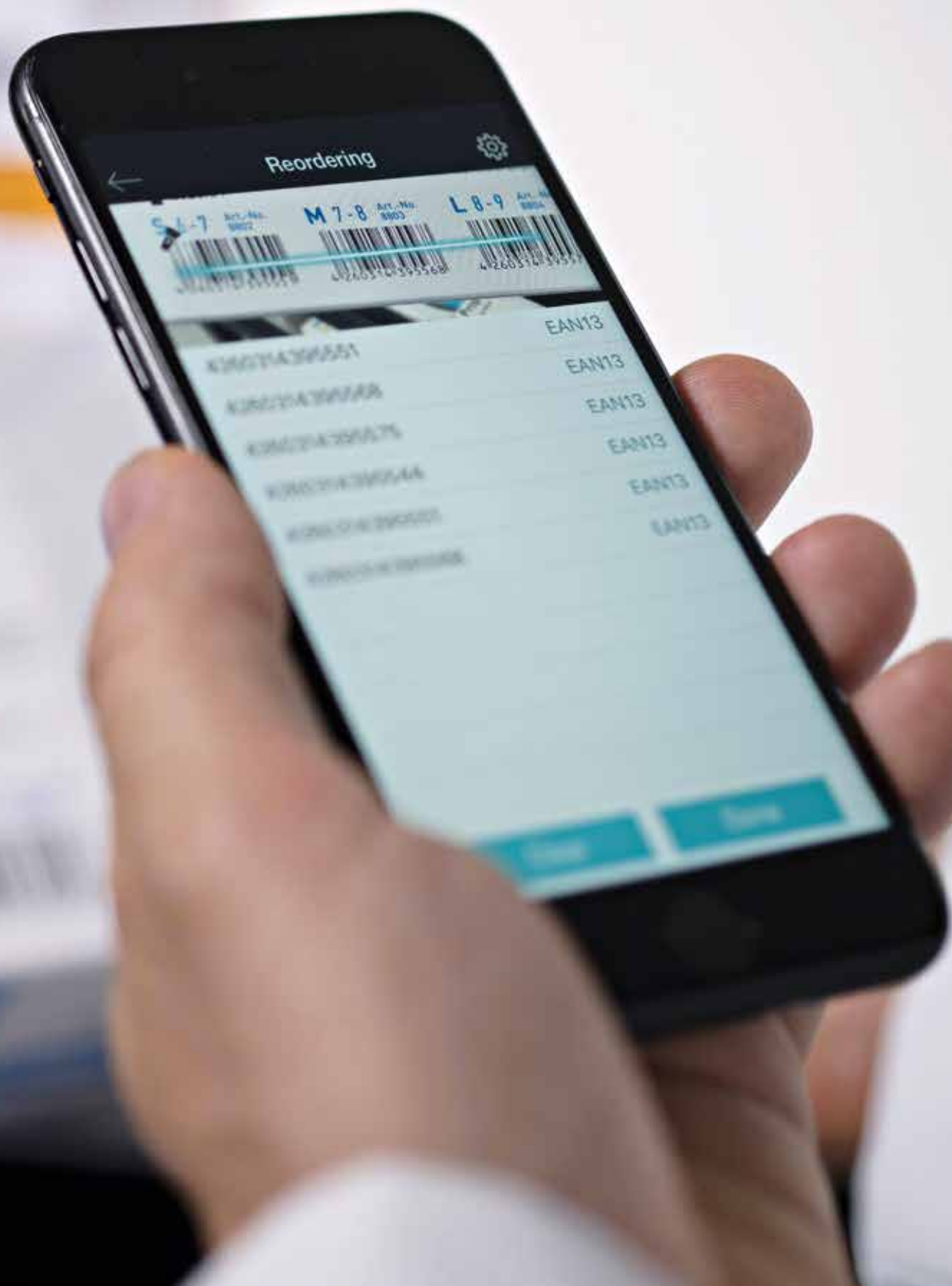
Pharma Distribution

The compliance challenge for healthcare professionals within an expanding supply chain is getting more onerous. Directives from regulatory bodies require drugs and equipment to be traceable, not only removing fake medicine from the supply chain, but also driving end-to-end automation. Smartphone scanning technology is a clever way to validate the authenticity of products.

Make traceability cheaper and more effective with mobile scanning

As traceability regulations get more rigorous, the ability to put scanners in more places along the distribution chain to capture more data points is a huge plus. Smart devices, enabled with scanning, are significantly cheaper to run than the dedicated scanners traditionally used by pharmacists and other distributors – and clearly more versatile. By reinvesting hardware cost savings into a broad digital mobile roll-out across an entire system, tracking and traceability are transformed.

Take the headache out of non-prescription drug ordering

Scandit enables the frictionless ordering of non-prescription drugs by eliminating the burden of extra paperwork coordinated by the pharmacist. Scandit mobile scanning captures the supply chain standard GS1 barcode, plus text and images from other document formats used within approvals – all with the same, easy scan.

How Scandit Supports Healthcare

Scandit-powered smart devices help to improve the efficiency of healthcare and pharma distribution workflows, unburdening clinicians of the time it takes to deal with paper-based processes. With our computer vision and augmented reality (AR) on everyday mobile devices, you can easily track patients, medication and critical medical supplies on-the-go.

We work closely with you to devise the best way to digitalize processes, specific to your healthcare environment.

Patient Care

Healthcare Administration

Search & Find

Medication Authenticity Tracking

Patient Verification

Inventory Management

Asset Tracking

ID Verification

Medication Authenticity Tracking

Search & Find

Medication Tracking & Administration
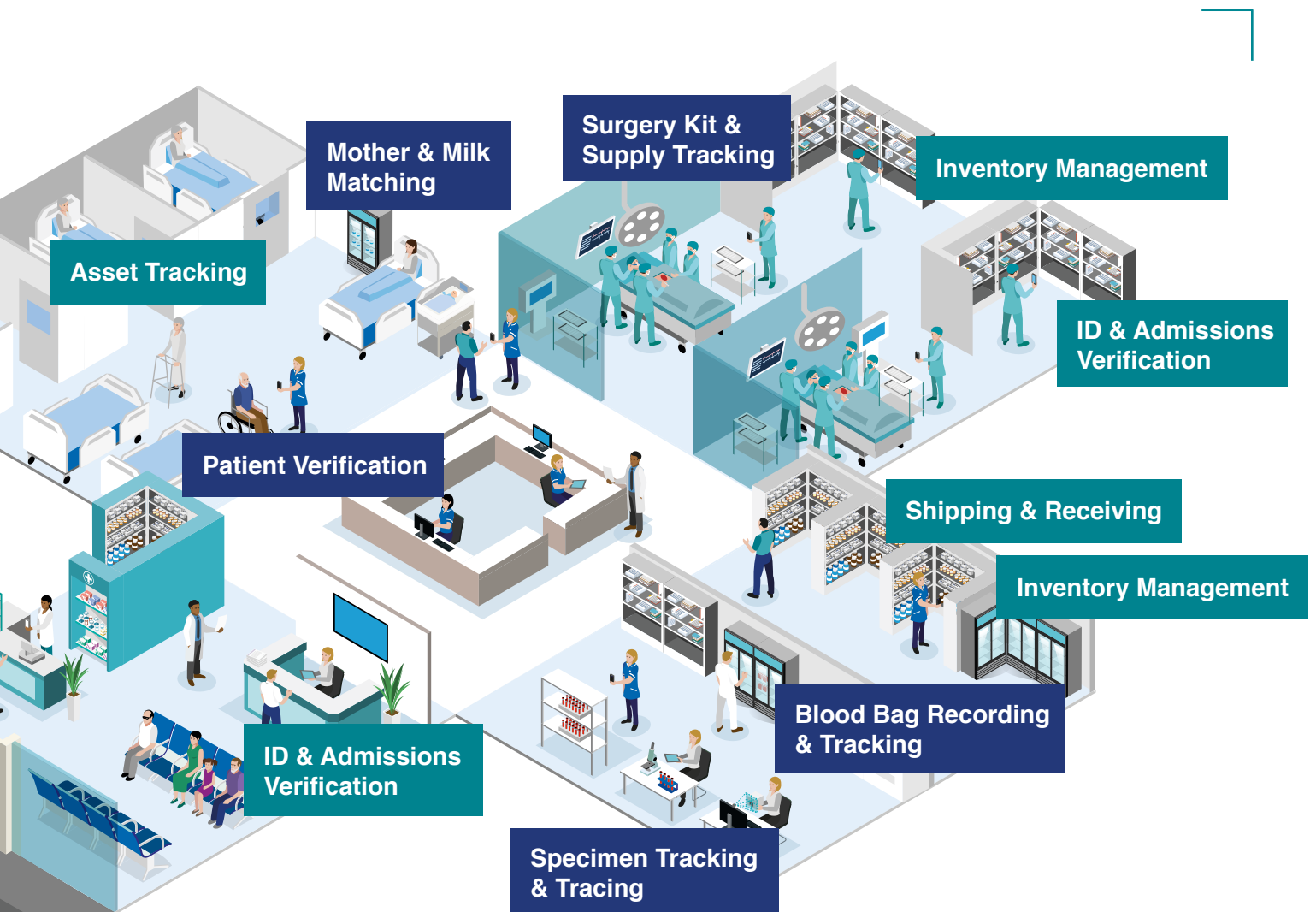
Patient Verification

Patient Care

Scanning a patient's wristband enables clinicians to access digital workflows, including patient medical records and dosage advice, and to confirm when meds have been administered or blood samples dispatched. Done with scanning on a mobile device and augmented reality (AR), support staff can book beds and discharge patients while on the move. Tracking and tracing specimens and surgery equipment is also much easier.

Healthcare Administration

Advanced scanning on smart devices supports regulation compliance whether that's authenticating medication or verifying a patient's identity. Clinicians can track assets in real-time and manage stock inventories 40% faster with Scandit-enabled apps, releasing time to focus on more patient-centric care. Pharmacists can do just-in-time stock replenishment: scanning inventory in real-time, like drugs, blood and equipment, reducing errors and boosting efficiency.

Mother & Milk Matching

Surgery Kit & Supply Tracking

Inventory Management

Asset Tracking

ID & Admissions Verification

Patient Verification

Shipping & Receiving

Inventory Management

Blood Bag Recording & Tracking

ID & Admissions Verification

Specimen Tracking & Tracing

Patient Care

Technology is reshaping the relationship between patients, healthcare providers, and the health system. Mobile will play a crucial role, as it has become the patient's constant companion.

Deloitte

Patient Verification

Identify patients easily in any healthcare environment

Scandit-powered smart devices enable clinicians to quickly and accurately confirm a patient's identity and administer medication. This significantly speeds up patient verification and reduces human error in administering medication. Scandit's technology ensures the right patient gets the right medication, at the right time, in the right place and at the right dose.

Mother & Milk Matching

Match babies with their mother's milk instantly

Equipped with a Scandit-enabled mobile device, ward staff working in busy neonatal and maternity wards can ensure they match the right mother's milk to the right baby, whether the mother is in hospital or expressing milk at home. The augmented reality (AR) feature in an app quickly automates in-hospital breast milk management for nursing staff and reduces the risk of human error.

Medication Tracking & Administration

Instantly match a patient with the correct medication

Clinicians can scan medication information into a record and instantly see critical medication information, including patient-specific instructions. Providing mobile access to digital records means the correct dosage or allergy information is displayed, improving patient safety.

> " Scan4Safety will allow us 24/7 tracking of our patients to allow our endoscopy, radiology and theatre teams to be as efficient as possible. It allows our clinicians to manage their patients more closely and safely.
>
> **David Berridge, Deputy Chief Medical Officer, The Leeds Teaching Hospitals NHS Trust**

75%

of patients indicated that physicians who integrate mobile technology within their practice provide a faster and more convenient healthcare experience.

SOTI Consumer Survey 2019

Specimen Tracking & Tracing

Track and match laboratory samples more efficiently

With Scandit's technology, it's easy to track blood and laboratory samples in real-time and trace barcodes back to their origin, achieving an accurate chain-of-custody. It gives clinicians an intuitive and efficient way to track time-sensitive specimens for patient analysis and diagnostics.

Surgery Kit & Supply Tracking

Increase the efficiency of pre- and post-operative surgical kit tracking

Surgical and sterilization department staff can use mobile devices to scan instruments and other surgery supply items quickly, before and after surgery. This increased efficiency helps to improve patient safety and reduce costs.

Blood Bag Recording & Tracking

Find a specific blood bag from multiple bags in seconds

Blood bags with multiple barcodes can be scanned in one instance, saving time and improving efficiency. Clinicians can use smart devices, like smartphones and tablets, enabled with Scandit software to perform blood bag identification.

Healthcare Administration

€34 billion

A McKinsey study prepared in partnership with the German Managed Care Association (BMC) suggests that up to EUR 34 billion in potential value could have been realized in 2018 if the German healthcare system had been fully digitized.

McKinsey & Company

Medication Authenticity Tracking

Comply easily with medicine authenticity regulations

Scanning Datamatrix codes on prescribed medication enables traceability, proves authenticity and supports healthcare providers with regulation compliance as well as increasing patient safety and protecting brand reputation.

ID & Admissions Verification

Instantly check identities anywhere in a healthcare environment

Healthcare professionals can verify different forms of ID with Scandit's ID solution which combines barcode and text scanning. This not only prevents fraud but also ensures regulation compliance, supports efficient patient admission and reduces the risk of human error.

Inventory Management

Check medical stocks are provisioned and replenished efficiently

Clinicians can update stock or inventory on-the-go, obtain detailed medication information and manage disposable replenishments. This releases clinician time previously spent on administration, back to patient care. Fast accurate scanning eliminates the need for recounts and speeds up the re-ordering process.

> **Cardinal Health is pleased with how much better, faster and easier order entry has become since the launch of the Scandit-powered Order Express app. Glowing customer testimonials are a testament to overall process improvement.**
>
> **Brendan Gardner,** Senior Product Manager, Mobile Applications and Websites, Cardinal Health

Search & Find

Help staff find equipment and supplies quickly

Healthcare workers can locate an item quickly, based on predefined criteria. By pointing a smart device at stock inventories, Scandit's augmented reality (AR) feature highlights the correct item and displays it on the device screen. This saves time, reduces stress and lowers the risk of human error.

Shipping & Receiving

Increase the accuracy of tracking and authenticating medical supplies

Capturing all the data from medical supplies in a single scan dramatically reduces the time needed to authenticate the shipment or receipt of goods. By automating the process and using real-time data, it's easy to inspect and store supplies, report damaged or missing items, document supplies sent to the wrong place or instantly re-order and replenish items.

Asset Tracking

Optimize asset use in hospitals and care facilities

Apps using advanced image-recognition algorithms can process barcodes in any condition. This gives greater visibility of how resources are deployed throughout the day and saves countless hours finding, repairing and replacing items.

Getting on the Pathway with Scandit

We will work closely with you to support your strategic business objectives through digital transformation. Adding Scandit's computer vision technology to your mobile platform will provide innovation today and into the future. Our solutions consultants provide technical and best practice expertise to help you navigate these key steps:

Identify the business goals and/or pain points
What needs to change and why?

Select a use case that can enable this change
e.g. Patient Verification, Medication Tracking & Administration, Specimen Tracking & Tracing, Inventory Management, Asset Tracking etc.

Requirements gathering
Specify the solution and business case and set KPIs

Deliver solution
Configure, build and user test

Field test
Monitor in live scenario and track analytics

Validate business case
Assess KPI results and learnings, and adjust the solution and processes as necessary

Roll-out
Manage roll-out plan and assess KPI results and ROI

Build-out
Develop business case for additional use case solutions

We can advise you on the use cases best suited to meet your needs and goals, supported by business cases and KPIs (key performance indicators).

When integrating our technology into your own tailored apps using our SDKs (software development kits), the possibilities are limited only by your imagination. We also offer solutions to add scanning to existing enterprise apps where no integration is needed. Developers tell us they appreciate our well-structured and easy-to-use documentation.

Why Customers Choose to Work with us

Scandit's market-leading computer vision and augmented reality (AR) software brings unrivaled barcode scanning and text recognition performance to any app on any camera-enabled smart device, turning it into a powerful data-capture tool.

One reason for our market-leading position is our commitment to technological innovation, which drives constant development of new products. Our customers tell us they enjoy this innovation partnership, which helps them future-proof their own organizations.

Work directly with us

Our patented technology can be integrated into any IT environment and is designed for enterprise-grade use with market-leading scan speeds and accuracy. It's scalable to support large implementations and we continually invest in and innovate the technology, so our customers evolve their digital transformation with us.

We offer specialist technical, solution and best practice support during design and implementation phases and a range of support and analytics options during live service.

Find us through your ISV or mobile device provider

Given the centralized purchasing arrangements of many hospitals and care providers, Scandit technology is often accessed through an existing relationship with a solution or software provider. Scandit has strong working relationships with point solution software providers in the healthcare market. For example, the Scandit Barcode Scanner SDK was used to add powerful scanning functionality to US-based Epic's Rover app on android devices for health record management.

We also work closely with mobile device vendors, such as Samsung, that provide a variety of pre-loaded mobile devices into healthcare institutions. The Scandit SDK integrates scanning capability, which converts an iOS or android device into a smart tool utilizing AR to increase patient safety, staff productivity and improve user experience.

Some special features you'll want to know about:

✓ TCO (total cost of ownership) of smartphone scanning solutions is typically one-third that of traditional scanning hardware.

✓ We combine barcode scanning with text recognition (OCR) to handle more complex documents such as ID or to scan LOT or REF numbers from medication packaging.

✓ Our high-performance scanning is fast and accurate – with the unmatched ability to scan in bad light, at any angle and with damaged labels.

✓ We have partnerships with device manufacturers, ISVs and SIs such as Samsung, SAP and Deloitte to make integration even simpler.

✓ We use augmented reality (AR) to display information on the smart device screen, such as correct medication for a patient.

✓ We offer a choice of software-integration methods featuring easy-to-use SDKs (software development kits) for native apps or web apps on a variety of operating systems.

✓ Our patented MatrixScan software reads multiple barcodes in a single scan at high speed, significantly reducing the time spent on tasks like inventory management.

✓ Our solutions consultants provide best practice and technical support during design and implementation, and we offer a range of technical support and analytics options during live service.
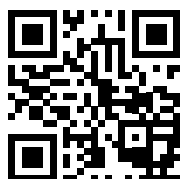
Interact with Scandit

Scandit's technology is transforming the way healthcare providers operate. It's establishing new ways to improve patient care, comply with regulations and increase efficiency. Learn more about what we could do for you and take your first step towards your digital future.
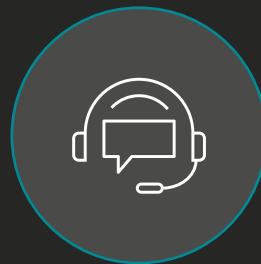
Visit our website:

www.scandit.com

Browse our healthcare use cases:

www.scandit.com/industries/healthcare

Watch Scandit
solutions in action:

www.scandit.com/resources/videos

See how it works
with a demo app:
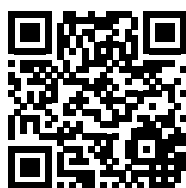
www.scandit.com/resources/demo-apps

Contact us:

Worldwide: +41 44 586 4540
USA: (415) 528 5050

www.scandit.com/contact-us

About Scandit

At Scandit, we help enterprises harness the power of mobile computer vision to bring unrivaled scanning performance to mobile devices for their customers and employees. We bring the physical and digital worlds together by changing the way people interact with everyday objects.

Our computer vision software combines advanced barcode scanning, text, image and object recognition to deliver real-time insights through augmented reality. And what's clever is it can be deployed through enterprise-grade apps on standard smart devices, turning them into enterprise-grade scanners and powerful data-capture tools. It's giving enterprises unprecedented insights into processes and workflows and a plan of how to make them more efficient, more fulfilling and innovative. It means you can deliver exceptional levels of service through an empowered workforce – better decisions, faster delivery, lower cost and happier customers. Today, we have thousands of Scandit-powered data solutions, taking billions of scans every year for customers across the globe.

Don't just take our word for it. Many of the world's most progressive and successful companies are already reaping the rewards of Scandit's computer vision technology. As well as being the preferred mobile barcode scan technology provider of GS1, other clients include The Leeds Teaching Hospitals NHS Trust, Cardinal Health, ERS Medical, GE Healthcare, ZELTIQ, myRXteam, DHL, DPD Russia, and Post NL.

SCANDIT

Scandit AG
Förrlibuckstrasse 181, 8005 Zurich, Switzerland

Scandit, Inc.
535 Mission Street, Floor 15, San Francisco, CA 94105

www.scandit.com