DIGITAL™ WORKFORCE

# Intelligent Automation
## in Healthcare

# Contents

# Introduction

**Western healthcare systems are facing tremendous pressure** as societies slowly shift focus from the first acute wave of the COVID-19 pandemic towards recovery and the time after. In many countries, elective treatments – even those considered acute – are being postponed. This is being driven both by the decisions made by local health systems and by patient behaviour in response to the global crisis.

**Although the COVID-19 will remain a common threat to our wellbeing** for the foreseeable future, health systems are grappling with the challenges of how to restart normal operations and treat patients with chronic diseases and other health issues.

**The current crisis is an example of a situation outside the control of any health system in the world** in terms of preventive measures. Nevertheless, health systems are required to work harder to adopt preventive methods of healthcare in order to keep up with the increasing pressures they face. This

pressure also comes from demographic factors, such as the aging population, a shortage of healthcare workers, and ever-increasing patient expectations. As an increasing number of conditions can be treated effectively today, and with the cost of care and, especially, drugs significantly higher than ever before, health systems are under financial pressure. There is a need to reduce demand for curative and interventional treatments by focusing on preventive healthcare.

With the present crisis leading to an all-time low in elective treatment volumes, it becomes even more important for health systems to address avoidable conditions before they turn into something more serious. This is where data sharing and collaboration between stakeholders and responsible parties, patients included, becomes extremely important.

Aside from the data gathered in a typical healthcare setting, the social determinants of health (SDoH) are

now recognized as an (almost) equally important part of an individual's health profile. Social determinants of health include factors such as employment, education, place of living, and relationship status, all of which impact our holistic wellbeing. Healthcare providers are forced to take these factors into account as they shift focus to preventive healthcare to save money and scarce resources at the same time as serving the patient population better, more efficiently, and more effectively.

Many of the challenges health systems will face throughout the coming years are not under their existing parameters of control. To take care of patients better now and in the future, health systems will need to shift the way they work and provide holistic healthcare. They must be more efficient in their use of their human workforce, must utilize new ways to diagnose conditions, and develop a new approach to customer service.

**Over the last decade, we've witnessed the introduction of technology** that enables organizations, both private and public, to automate traditional functions and manual tasks.

Whereas other, private-functioning industries have adopted these technologies and new ways of working, the health sector has lagged behind in the adoption of automated capabilities – even for routine task execution. This is partly because of regulatory and legal reasons, but also because many health systems have been overly conservative when addressing new ways of working.

Many tasks in hospitals, for example, are carried out by non-clinical staff. As such, these tasks are ideal candidates when starting the journey to find a more effective way of working that combines a human and digital workforce. The frontrunners are already automating and using automation in their core clinical and patient access processes to increase quality, and improve lead times and patient and employee satisfaction.
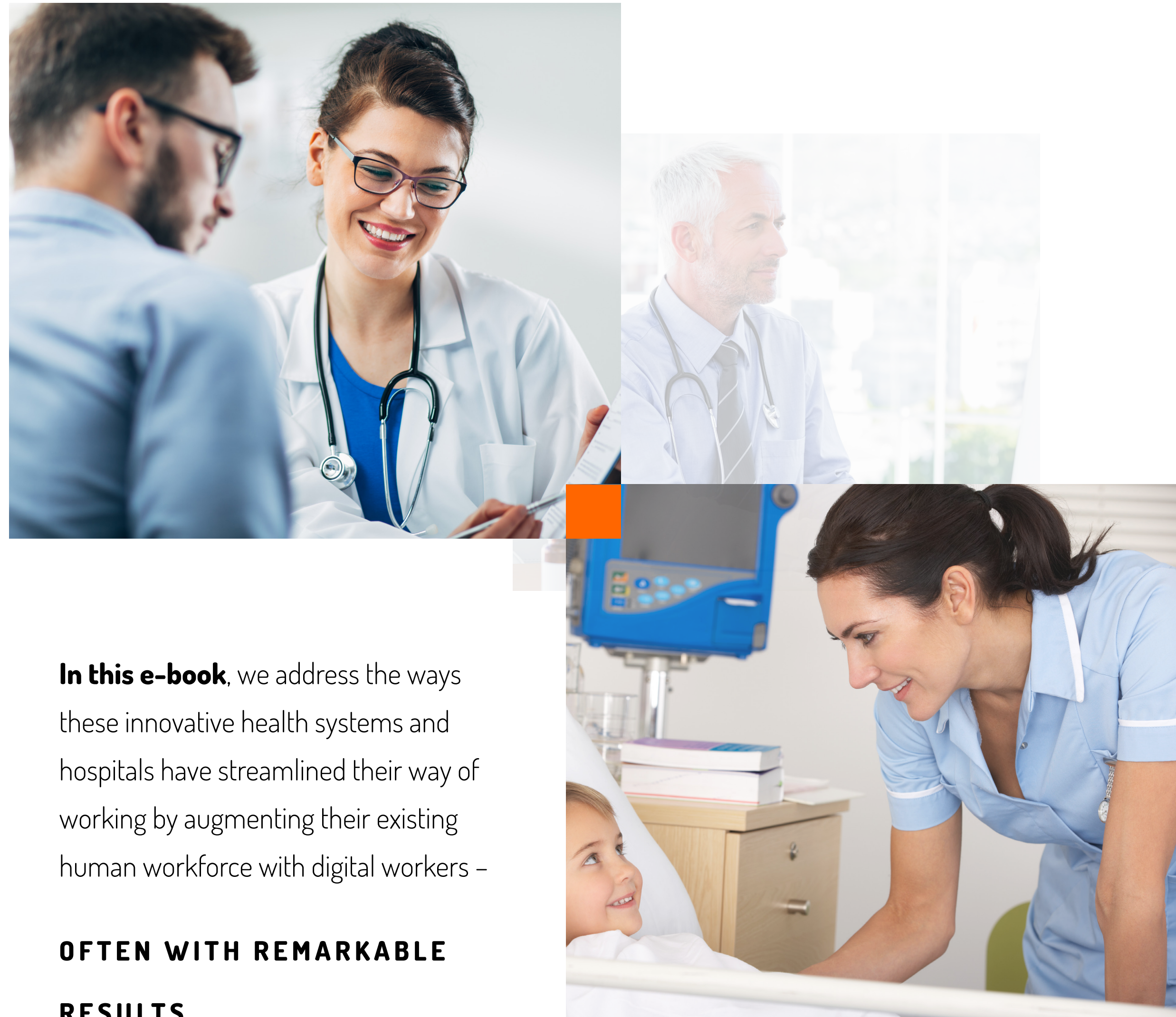
**In this e-book**, we address the ways these innovative health systems and hospitals have streamlined their way of working by augmenting their existing human workforce with digital workers –

**OFTEN WITH REMARKABLE RESULTS.**

# A changing landscape in global healthcare

Let us take a look at where the health industry is going and the factors that are impacting the health sector globally and locally. Evident cost pressure, a shortage of trained professionals, and expanding patient expectations are reshaping the future of healthcare.

## CONSUMER EXPECTATIONS

**Consumer expectations are evolving to challenge traditional delivery models.**

1. Experiential and perceptual competition raises consumer expectations; consumers want fast, convenient, and personalized healthcare services.
2. Millennial consumers typically have an expectation of service over price and are open to using digital devices as health managers.
3. Consumer want easy-to-use enhanced and integrated products and services across retail, pharmacy, and mental health.
4. There is retail clinic growth with consumers seeking price transparency and less expensive care.
5. Hyper-localization of care delivery; movement from inpatient care to distributed settings for care.
6. Medical technology is driving biological/genetic personalization (e.g. wearable bio-sensing).

## SOCIO-ECONOMIC FACTORS

**Socio-economic factors put a tremendous pressure on the existing system.**

1. Healthcare costs are rising faster than economic growth.
2. Increased cross-sector collaboration is needed to address national disaster response, the opioid epidemic, and diseases impacting public health.
3. In many Western countries, the senior population (over 65 years old) is expected to grow by 25% between 2017 and 2030 – creating extra demand in parallel with a growing shortage of healthcare professionals.
4. The financing of health and social care is converging, with greater consolidation and vertical integration.
5. There is an increased awareness of the social determinants of health and value-based reimbursements are on the rise.
6. Compliance with evolving legislation and regulations creates a need for health industry transformation.

## NEW SCIENCE AND TECHNOLOGY

**New technology and science are the enablers in the new care delivery models.**

1. Scientific innovation and advanced diagnostics and therapeutics are driving a shift to specialty care.
2. Digital technology enables virtual, self-service and location-agnostic care and personalization.
3. There has been rapid technology advances in AI, robotics-led automation, advanced analytics, cloud, and security.
4. Technology modernization is driving administrative efficiencies and process optimization; artificial scale is created through thoughtful partnerships.
5. Investments are being made in targeted capabilities such as care management, utilization management, and consumer engagement to decrease the costs of care.

# Responding to global trends

A rapidly changing landscape forces organisations to change the way they operate. Finding ways to respond to and tap into these trends is critical. At Digital Workforce, we see Intelligent Automation as providing many different and proven ways to address these challenges.



## An increasing population in need of services, fewer healthcare professionals available

In many developed countries, as many as 25% of all nurses and up to 50% of the clinical support personnel in hospitals will retire within the next 10 years. It is a widely accepted fact that there will not be enough professionals to fulfil these positions in the future. The aging population puts extra pressure on health systems to be increasingly efficient while delivering better health outcomes. The large-scale use of robotics and Artificial Intelligence will be a crucial factor if developed countries are to deliver the required preventive and curative services.

## Social determinants of health: integration of social and health care

Efforts to improve health in developed countries have traditionally looked to the healthcare system as the key driver of health and health outcomes. However, there has been increased recognition that improving population health will require broader approaches that address the social, economic, and environmental factors that influence health more than traditionally understood. Technology, integration, analytics and artificial intelligence will be the key enablers in the process of integrating health and social care dimensions.

## Ineffective funding models and ever-rising costs

A lack of value-based care reimbursement models or health information exchange and insufficient funding in primary care means healthcare costs are rising faster than GDP growth in most developed countries. It is essential to introduce enablers that allow healthcare providers to focus on the core clinical and patient-access related competencies that require human intervention by using robotics and Artificial Intelligence to support these and other critical processes where possible and, in this way, to also save time and money.

## Increasing patient engagement & new medical technology such as wearables

Patients want to be more engaged with their own health journey. Whether it is for managing their own wellbeing or managing the health of their children or aging parents, this aspect of patient involvement, and especially patient-reported data, will change the way healthcare professionals acquire and collect data for diagnosis. An IoT-enabled refrigerator and a smart watch can generate more meaningful data for health professionals than they would otherwise have access to. This data can then be utilized in decision making using robotics and Artificial Intelligence.

## Value-based healthcare: reimbursement model transformation

The introduction of combined clinical and financial accountability has meant reimbursement models have evolved greatly over the past couple of years. Fee-for-service models miss the incentives to develop preventive care models by encouraging providers to focus only on curative treatments. Obesity and other lifestyle related non-communicable diseases are probably the greatest risk for developed societies globally. The introduction of easily deployable and scalable tools for preventive healthcare is a must-win battle for all developed health ecosystems.

## Distributed care settings & improved quality of life

As the aging population in developed countries creates increasing demand for more healthcare services, one of the most crucial aspects will be enabling this population to be treated in an outpatient setting for as long as possible. This is not solely driven by cost cutting but also by the need to assure quality of life for the aging population. It reflects very positively in health outcomes if patients can be treated where they live, for example. Chatbots and Artificial Intelligence together with modern wearables and robotics will advance this transformation.

# USE CASES

## of Intelligent Automation in healthcare

There is vast potential in both administrative and clinical processes for health and social-care automation. The main reason our customers invest in automation is to free up more hours for meaningful work, to increase patient safety, and to improve quality.

Digital Workforce is the leading provider of intelligent automation in health and social care and our solutions have given millions of hours back to healthcare providers. We have a dedicated health team with deep expertise, including in medicine, process learning, robotics and AI. Digital Workforce has a medical device CE certification for clinical process automation.



In the following **five client stories**, we introduce use cases where Intelligent Automation has had a major impact on the way these healthcare providers operate on a daily basis.

# How can you save hundreds of man days of manual EPR data migration effort using RPA?

## SITUATION

Our client had a significant challenge situation just months before its EPR go live. It had to find a way to migrate up to 20,000 operating room case requests from the old legacy system into the new patient record system.

## CHALLENGE

The migration of operating room case requests required a manual conversion effort to get data from the old system and into the new system. There was no option to utilize any existing automated conversion approaches.

Our client estimated it would require an effort of around 250 man days to complete the migration. The migration would have to be started, completed and validated in just four to five business days.

## SOLUTION

Digital Workforce developed an RPA tool using Blue Prism technology to complete the migration tasks with minimal, if any, manual effort required. Our Robot-as-a-Service cloud-based solution provided up to ten robots running in parallel. It completed the task without any systems changes or integration requirements using the existing end-user interface.

## VALUE DELIVERED

Our client was clear from the beginning that it would be unable to find the required staff to complete the migration on time. The worst-case scenario was to rely on nurses and unit secretaries to complete the manual migration efforts. This would have had a huge cost impact and it would directly impact patient access and the quality of care delivered during the migration period.

The Digital Workforce solution not only saved 250 man days but also helped to avoid the situation where the client had to recruit manpower to complete the required task.

# How can you use RPA to reallocate scarce staff resource towards more meaningful work?

## SITUATION

Our client is a mid-sized university hospital that treats patients solely based on incoming primary care referrals. Every year, this organization receives over 300,000 elective referrals from its primary care network.

## CHALLENGE

These referrals are handled manually by clinicians that should be focusing on patient-facing work. During peak periods, manual handling tends to take more time which extends the patient journey for the patient receiving the treatment, while reducing crucial access to care for others.

Process automation using traditional software development is not possible in such a constantly changing environment, thus our client had to look for solutions outside the traditional system integration path.

## SOLUTION

Digital Workforce developed an RPA tool using Blue Prism technology to execute the manual referral routing. Referral handling has been outsourced from healthcare specialists to a digital worker. Each referral center, one for each speciality, has its own digital worker routing referrals once every hour.

## VALUE DELIVERED

Referral handling with robotic process automation frees ten health specialists to spend their time on patient care instead of manual referral handling. This has improved the quality of the care and reduced the costs associated with referral routing.

A digital worker is capable of handling referrals 24/7 and can be multiplied during peak periods. Efficient referral handling leads to a shortened patient journey for the patient receiving the treatment – thus freeing resources to further improve overall patient access.

# How can you support physicians to review test results and increase utilization?

## SITUATION

Our client is a university hospital that treats patients in a tertiary care setting. Often, the outpatient test results are routed to a "physician InBasket" (effectively an email inbox). Test results from each test arrive frequently and must be looked at by a physician. These test results must be reviewed before subsequent procedures or visits can take place.

## CHALLENGE

As specialty physicians are grouped into larger groups of speciality or sub-speciality physicians, the test results are often pooled in large InBasket pools that all physicians in that group can access. While this reduces the risk related to absence, this causes a challenge whereby physicians might not be able to utilize and review the required test results at their convenience, but are required to book slots in their schedule to review the test results – lowering their utilization.

## SOLUTION

Digital Workforce developed an RPA tool that automatically routes the InBasket messages to separate sub-folders. This streamlines the workflow and reduces the need for physicians to book separate blocks in their daily schedules for test reviews.

## VALUE DELIVERED

Physicians have less need to block their daily schedules to review incoming messages. Rather, they can rely on the new InBasket structure and automation that routes the respective messages to the right folders to support and streamline the physicians' daily work.

# How can physicians focus on the support required by patients and increase patient engagement and satisfaction?

## SITUATION

Our client is a student healthcare provider with a patient population of 50,000 students. Every year, thousands of laboratory tests for sexually transmitted diseases (STDs) are taken and examined for STDs within the young student population.

## CHALLENGE

For standard STD tests, the results are binary (either positive or negative). Approximately 90% of the lab tests undertaken have a negative result. The clinicians spend hours every month communicating results and answering phone calls related to the STD test results.

## SOLUTION

The Robotic Process Automation (RPA) checks each and every lab result as the lab tests are being finalized. If the result is negative, the solution sends an SMS message to the patient through the healthcare system to notify them of the negative test result and inform them that no further action is required. If the case is positive, the result is forwarded to the doctor who placed the order for the lab test for the planning of further action and care.

## VALUE DELIVERED

After the RPA solution was deployed, doctors needed to address only the positive results. 90% of the transactions were filtered out by the RPA solution which then notified the patient of the negative results automatically. Physicians no longer had to review test after test. This led to huge time savings for physicians and they were able to focus solely on the cases where their involvement was necessary for care-planning purposes.

In addition, patient satisfaction was greatly improved since the negative results were discreetly and timely communicated to the patient. This reduced the overall lab test cycle to a minimum and the patient was informed about the results on a same-day basis. Overall, the positive impact on patient access was substantial since doctors could avoid time going through negative test results and focus on patient-facing clinical work.

# How can you automate your operation room supply ordering processes and increase operating room utilization?

## SITUATION

Expensive surgical supplies are ordered based on expected demand. Storage levels are kept low, thus putting a lot of pressure on the supply chain performance. Clinicians used to place the orders manually in the target system as part of their daily routine. The process was time consuming and prone to manual error. This also led to unstandardized procurement flows, such as placing orders outside the standard system.

## CHALLENGE

Lack of critical supplies sometimes led to a situation where elective surgeries had to be cancelled, causing patient dissatisfaction, issues around access to care, and leaving expensive resources underutilized.

## SOLUTION

Surgical units are provided with barcode scanners to expedite the ordering process. A clinician can place the order by simply scanning the barcode from the supply package. The barcode scanner communicates the order request to the RPA with all the required information to place an order successfully. The RPA solution records the order in the procurement system and informs the individual when the order request has been successful.

## VALUE DELIVERED

Automated surgical supply ordering saves the time of almost 1.5 FTE clinicians every year. This time can be invested in patient-facing care. As all orders are placed in the system exactly as per the standard process, the risk for manual error has been massively reduced. The vendor is able to provide the correct supplies and the risk of cancelled surgeries is consequently greatly reduced. In addition, the system-based ordering workflow enables automated invoice control to increase the accuracy and completeness of the accounts payable processes.

# Key takeaways

**1**

The current COVID-19 pandemic has accelerated the demand for processes that are less dependent on human workers.

**2**

Clinicians must be able to focus on the clinical patient-facing work rather than doing something that automation could handle.

**3**

The foreseeable challenges that western nations are facing will require healthcare providers to provide care with even fewer available resources, thus human workers will need to be augmented with digital workers.

**4**

We have witnessed our clients showcasing substantial value delivered. This can have a direct impact on an organization's EBITDA, patient access and other critical indicators.

**5**

Automation in healthcare using digital workers to support healthcare delivery is already proven. Even organizations using world-leading electronic medical record systems are augmenting them with automation to streamline their processes. Automation does not only help with support functions but also core clinical, patient access and back-end revenue-cycle processes.

**DIGITAL** WORKFORCE

Digital Workforce automates and maintains business processes – freeing up the time of employees for more purposeful work. Digital Workforce is a trusted advisor and a globally leading independent provider of services in intelligent automation on an industrial scale. Today, over 150 large global customers use Digital Workforce's services to transform their businesses with intelligent automation. Founded in 2015, Digital Workforce employs over 240 Intelligent Automation specialists in the US, the UK, Poland, Germany, Finland, Sweden, Norway and Denmark.

**We offer a full suite of services, tools, and insights to support your journey through the intelligent automation lifecycle. Partnering with Digital Worlforce is the easiest way to build an industrialized automation solution. We help you design, build, run, and maintain intelligent digital workers at scale.**

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