

THE INTELLIGENT ENTERPRISE IN THE EXPERIENCE ECONOMY FOR THE HEALTHCARE INDUSTRY

Delivering value-based,
patient-centered care in
the experience economy



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EXECUTIVE SUMMARY

The healthcare industry faces tremendous change in every aspect of advancing business and the provisioning of healthcare. Today, the patient journey begins with prevention programs offered prior to admission to secure the well-being of patients while capturing and using personal health data. The value and importance of analyzing and using patient data has increased significantly in past years – and **demand for targeted analysis of patient data will expand** in the future. In the experience economy, patients not only require transparent access to their healthcare data, they also expect to be informed about every step of their hospital visit at any time.

Providers need to gather data on patient experiences so they can continuously improve care delivery and patient-related processes. Enabling patients to provide feedback will shape the future of health services. Additionally, to build and maintain patient loyalty, it is important to focus on patient outcomes far beyond the patients' discharge. More than ever, healthcare providers are forced to act sustainably and be economically viable. The overall aim is to deliver state-of-the-art, best-quality healthcare services that are accessible to everyone – regardless of geographical location or social conditions. Supporting patients to engage with their healthcare providers from anywhere at any time by using mobile devices and applications will lift the interaction in the healthcare sector to the next level.

These continuous changes require quick and ongoing adaptations by healthcare providers. Implementing transparent, end-to-end business processes inspired by patient-focused

requirements will allow **healthcare providers to become intelligent enterprises**. Leaders will be motivated to reevaluate processes and structures to meet their strategic priorities, including:

- Improving the patient experience
- Subscribing to patient outcomes
- Operating smart and efficiently
- Enabling data-driven decisions
- Empowering the workforce

By 2025, we at SAP expect the healthcare industry to be characterized by **value-based care that improves patient outcomes and lowers costs** for all healthcare stakeholders. Healthcare models will evolve from providing care in hospitals and doctors' offices to offering care in patients' homes. As people become more aware of their own health and how to influence it, healthcare providers will continue to focus on prevention programs. The balance of power in healthcare will shift from providers to consumers and to those companies who can engage the consumer. Thus, the most important trigger for digital transformation is the healthcare consumer.

Our expertise in digitalizing every aspect of the customer value chain aims to help healthcare stakeholders provide the best value to their customers at an affordable cost. SAP creates the foundation and gateways to connect the digital healthcare network to core solutions for care and cure, healthcare management, and healthcare data insights.

This paper explores the trends in the healthcare industry that await us and how SAP will support healthcare providers on their journey to becoming intelligent enterprises.



HEALTHCARE IN A DIGITAL WORLD

Patient expectations in today's **experience economy** along with available intelligent technologies are creating new opportunities for healthcare providers to take a leadership role in delivering value-creating, affordable services.

Digitalizing every aspect of the healthcare value chain and taking advantage of Big Data science will help them shift focus from providing volume services to **improving the individual patient's quality of life**.

In an environment continuously characterized by staff shortages, automation – powered by artificial intelligence and machine learning with the Internet of Things (IoT) connectivity to the real world – will be key to meeting the needs of a growing and aging population. Innovative leaders need to encourage and enable their workforce to **turn digital innovation into outcomes** for the organization.

Trust, safety, and security are essential cornerstones for the functioning of a modern society and play a key role in relation to sensitive health and patient information. Healthcare organizations need to be equipped with the latest technologies and knowledge so they can trust and rely on data assets from any source and counteract cyberattacks.

Forward-looking healthcare organizations recognize digitalization as an **opportunity to rethink** the fundamentals of their business to build new capabilities rather than be left behind.

Mini Cases: Data in Action

Parkland Health & Hospital System is optimizing emergency room management, workflow, and patient care with a near-real-time dashboard that provides situational awareness of the total number of recent arrivals, the number of people in the waiting room, the volume in each pod, and how many people are pending discharge. The dashboard is displayed on big-screen televisions throughout the ER, giving staff 24x7 live data.

Technical University Munich (TUM) was able to revolutionize the speed and depth of understanding of the relationships between proteins and how they interact with drugs, enabling more-effective and targeted treatments of cancer patients.

HarrisLogic LLC is consolidating and transforming behavioral health data into lifesaving analytics, demonstrating that highly sensitive data, such as mental health records, can be safely anonymized while still producing actionable data insights.



PAVING THE WAY FOR BUSINESS MODEL INNOVATION

At SAP, we believe that as intelligent enterprises, healthcare providers will become highly efficient at saving and improving people's lives, delivering a seamless patient experience and **value-based healthcare**.

By 2025, we expect the healthcare sector will be characterized by a significant portion of patient services delivered remotely. A stronger health awareness of the population will lead to a growing focus on prevention. New players with a deep understanding of how to engage healthcare consumers will enter the healthcare market and give patients more power to interact.

Just providing high-quality healthcare will no longer be good enough. Healthcare organizations must redesign their service offerings to involve and collaborate with patients and allow them to impact their own care journey – and shape these services to their greater benefit.

Unprecedented access to Big Data and advanced technologies that let healthcare providers maximize their data assets and service value will **drive better business and patient outcomes**.

Business models will be changing continuously and require a high capability of agile adaption of healthcare organizations to new structures and innovations in any direction. Successful business model innovation, process optimization, and workforce productivity are directly linked to **delivering great customer and employee experiences**.

US\$10 trillion

Combined healthcare spending in the world's major regions by 2022¹

46%

Of hospital care can potentially be moved to patient homes in the following years (through 2026)²

78%

Of consumers are interested in having a "menu" of care options offered by multiple providers, allowing them to choose care from local providers or virtual care from specialists across the country³

91%

Of nurses will access electronic health record (EHR) data on mobile devices by 2022⁴

90%

Of large enterprises will generate revenue from data as a service by 2020 – from the sale of raw data, derived metrics, insights, and recommendations – up from nearly 50% in 2017⁵



FIVE PRIORITIES FOR SUCCESS

We have identified five strategic priorities necessary for healthcare organizations to transform their business:

- Improve the patient experience
- Subscribe to patient outcomes
- Operate smart and efficiently
- Enable data-driven decisions
- Empower the workforce



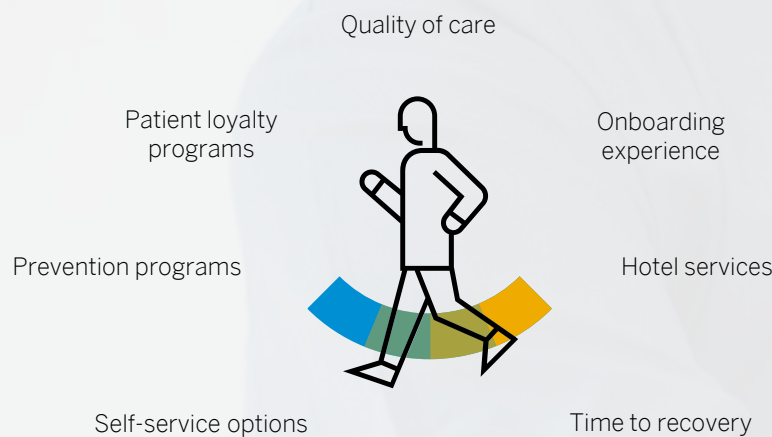
IMPROVE THE PATIENT EXPERIENCE

How can we meet the needs of patients evolving from passive recipients to active consumers of health services?

By 2025, healthcare will have turned into a competitive, consumer-focused business. In the **experience economy**, patients will transfer their consumer expectations into healthcare and new, nontraditional players with a strong customer-focused mind-set are pushing into the healthcare space. Providing a positive, seamless patient

experience across digital and physical interaction will be a key differentiator for healthcare providers. That includes applying technologies that are designed with an understanding of patients being among the main users of the solutions and that are aimed at making patient-provider interactions more convenient for the patient. (See Figure 1.)

Figure 1: Improve the Patient Experience



67%

Of the patients will book, change, or cancel appointments online, with this trend rising in the following years⁵



IMPROVE THE PATIENT EXPERIENCE

Health Engagement to Experience

TRADITIONAL SCENARIO



Patients have little to no involvement in the treatment process.



Low patient satisfaction results in low adherence to patient-care plans.



Inefficient care delivery and low cross-organization communication result in duplicate tests and no consideration of the impact on the patient.



Patient consumerism with hyperconnectivity of sensors and devices increases, but patients are not involved and don't have an overall picture.

NEW-WORLD SCENARIO



Educate patients about their conditions.

- Education and engagement about the state of patients' diseases
- Clinician education and engagement
- Patient segmentation using approved patient and third-party data to drive proactive patient visits and care



Engage patients throughout their care plan.

- Ongoing patient marketing throughout the care plan
- Patient case management for a "golden record" of engagement
- Expand beyond traditional care models



Follow up to ensure positive outcomes.

- Automated, proactive notification of care plans to help ensure compliance and improved outcomes
- Automated patient surveys that trigger next actions for clinicians based on patient feedback



Continually optimize patient experience.

- Integration with patient database to measure compliance to care plans; AI-assisted proactive patient communication
- Real-world evidence tracking for use in population health outcome research and optimization

POTENTIAL BENEFITS



Increased patient satisfaction by involving patients in the process and decision-making, hugely influencing their satisfaction about the treatment and outcome



Improved care efficiency by empowering the patient to be responsible for different parts of the treatment journey

Vitality Group provides motivation and incentives that help 7.8 million people live healthier lives. "We were looking for greater connectivity with our members, both in terms of marketing and micro interactions. You can do that only if you're on an intelligent, consolidated system that understands all the touch points. SAP Customer Experience solutions helped us create a real connection."

Steve Mitchley, Chief Strategy Officer, Vitality Group⁷

SUBSCRIBE TO PATIENT OUTCOMES

How do we provide healthcare services with optimized outcomes for each individual patient?

Patients will be able to see value from the options they have for their specific health issues, based on key performance indicators and assessments of other patients facing similar circumstances. Future self-management options that empower patients to affect the result of the treatment will positively

influence the patient outcomes. Pure statistics are not meaningful in this context. The demonstrated outcomes must be specifically relevant to individual patients and their particular context. (See Figure 2.)

Figure 2: How to Subscribe to and Measure Better Patient Outcomes

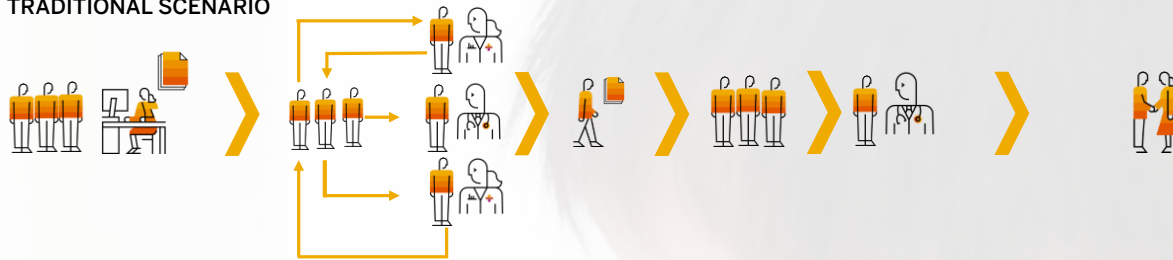




SUBSCRIBE TO PATIENT OUTCOMES

Diagnosis to Recovery

TRADITIONAL SCENARIO



Patient signs in with the admission desk staff, registers relevant details, and fills in and submits forms.

Triage nurse performs triage and records some notes. The doctor carries out the initial examination, ordering several services and orders diagnostics.

Patient goes to the waiting room with hand-filled forms and waits to be called by the doctor.

Once diagnostic results are available, the doctor calls the patient, discusses the results, and prescribes medication.

Administrative staff schedules an appointment for surgery and hands over printouts with all relevant information.

NEW-WORLD SCENARIO



Patient has already completed the self-check-in. The triage nurse performs triage and adds information to the patient's electronic record. While waiting for the doctor, the patient can check the waiting time monitor (WTM) and app for information regarding the schedule.


All data is permanently available for everyone involved in the process. The doctor checks the patient's electronic record and orders services.


Patient waits for further information about the diagnostic results and receives notification on their mobile device or through the WTM.


Once diagnostic results are available, the doctor calls the patient, and results are transparently displayed for the patient to discuss further procedures.

Patient schedules a surgery appointment and receives all relevant information electronically.

POTENTIAL BENEFITS

 **Reduce reimbursement delays** through accurate data provided by patient

 **Improve patient experience and compliance** by informing and reminding the patient about things to bring and procedures to follow before a visit

 **Improve resource use** by reducing no-shows

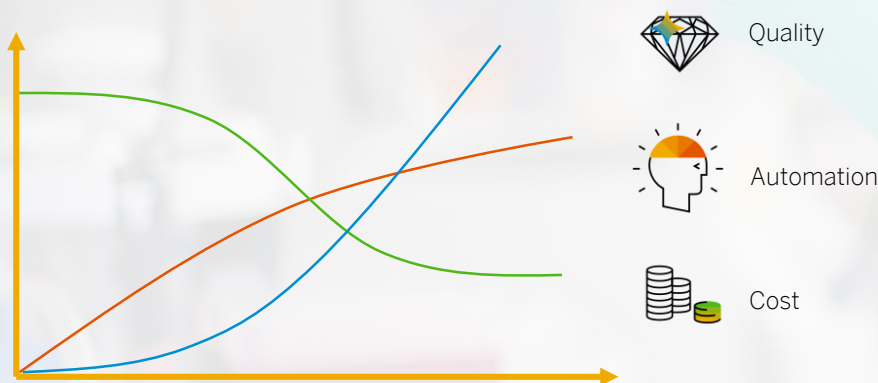
OPERATE SMART AND EFFICIENTLY

How do we remove unnecessary costs and waste and free resources for innovation and better patient care?

Providers are under constant cost pressures and resource constraints. In upcoming years, the next-generation digital core will be the foundation for a smarter business – leveraging IoT and machine learning for higher automation and offering cockpits with embedded analytics, prediction, and simulation to ensure a more agile nervous system

for the entire organization. With that in place, healthcare providers can excel in terms of operational efficiency – for example, by reducing variations in clinical care to standardize best practices, by using resources and supplies more effectively, or through more-precise claims. (See Figure 3.)

Figure 3: Operate Smart and Efficiently



The automation of processes through intelligent technologies can free up staff and resources as well as reduce operational cost while increasing the quality of delivered work.

“We simply couldn’t find a better enterprise solution – once we saw the flexibility with the SAP Qualtrics® Core XM platform, we were sold. We are getting tremendous value for our money. For the same cost as having multiple survey subscriptions, we have standardized on a superior survey platform.”

Tom Summerfelt, Vice President of Research, Advocate Health Care⁸

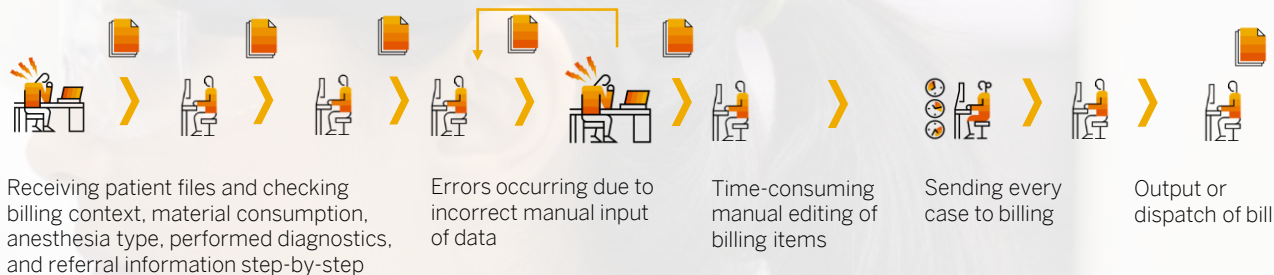


OPERATE SMART AND EFFICIENTLY

Admission to Cash

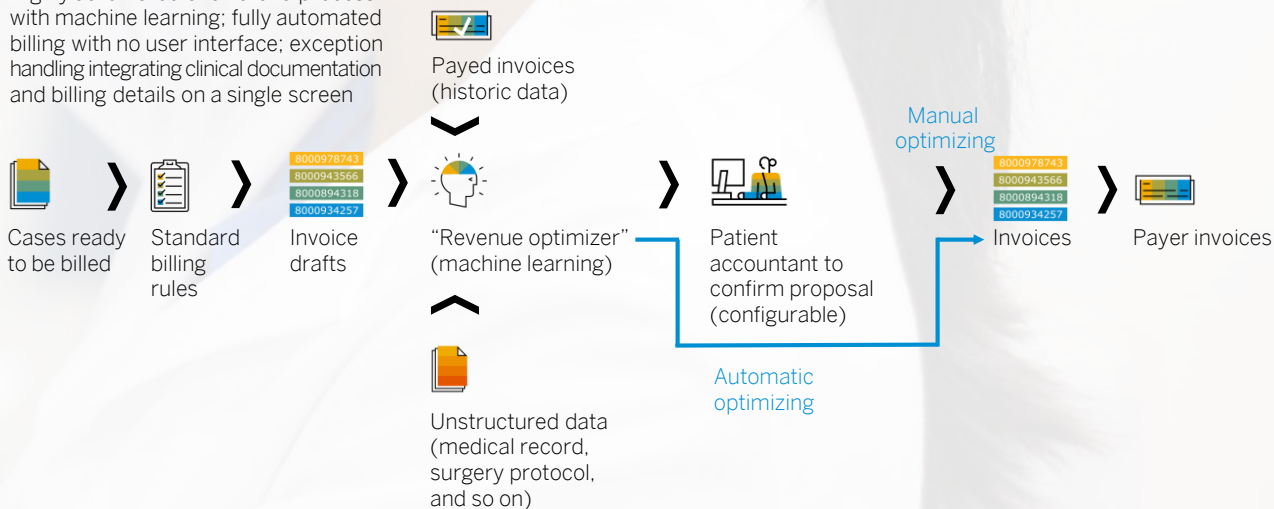
TRADITIONAL SCENARIO

Process spanning across systems; data typically displays on two screens in parallel and involves multiple transactions



NEW-WORLD SCENARIO

Highly automated end-to-end process with machine learning; fully automated billing with no user interface; exception handling integrating clinical documentation and billing details on a single screen



POTENTIAL BENEFITS

- Increased accuracy** between front-end and back-end processes
- Reduced revenue leakage** by reducing insurance claim denials and speeding up point-of-service billing

- Streamlined insurance claims** to enable clean claims submission for faster reimbursement
- Improved productivity** by reducing manual work in billing and claims process

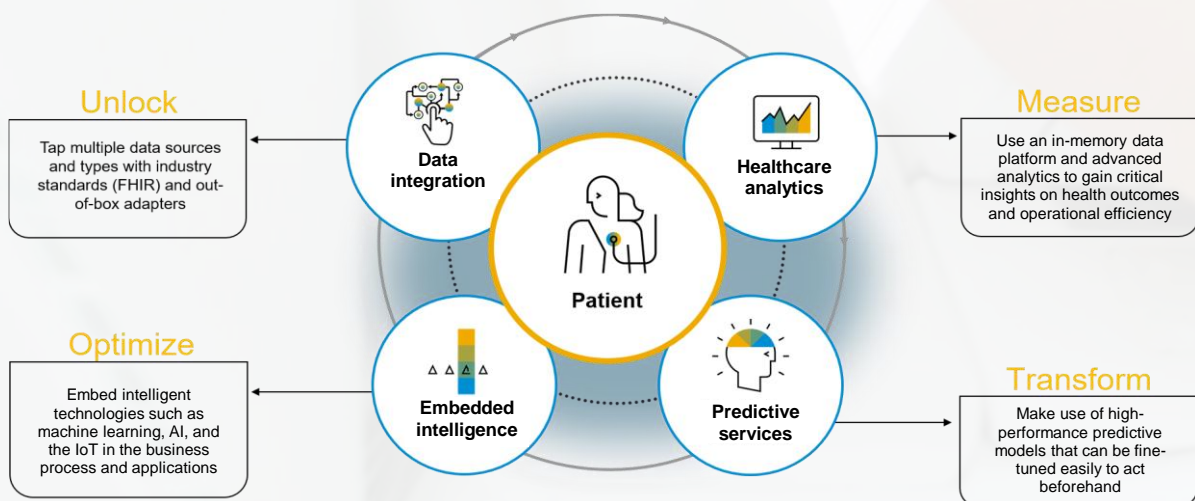
ENABLE DATA-DRIVEN DECISIONS

How can we move from a mainly experience-based healthcare model to delivering care based on real-world evidence?

The most dramatic change in the digital economy will be driven by hyperconnectivity and Big Data science. Electronic medical records, data from apps, wearables, mobile devices, sensors, and clinical innovations will create a vast zettabyte of data and an ocean of information. By 2025, the healthcare value chain will be changed massively through the ability to monitor patients, collect

health and outcome information from structured as well as diverse raw and unorganized sources, analyze information in real time to react early, and use predictions to act beforehand. Big Data technologies, analytics, artificial intelligence, and machine learning will help unlock valuable insights in data lakes and enable an insight-driven healthcare business. (See Figure 4.)

Figure 4: Set the Patient in the Center of Care by Applying Data-Driven Insights

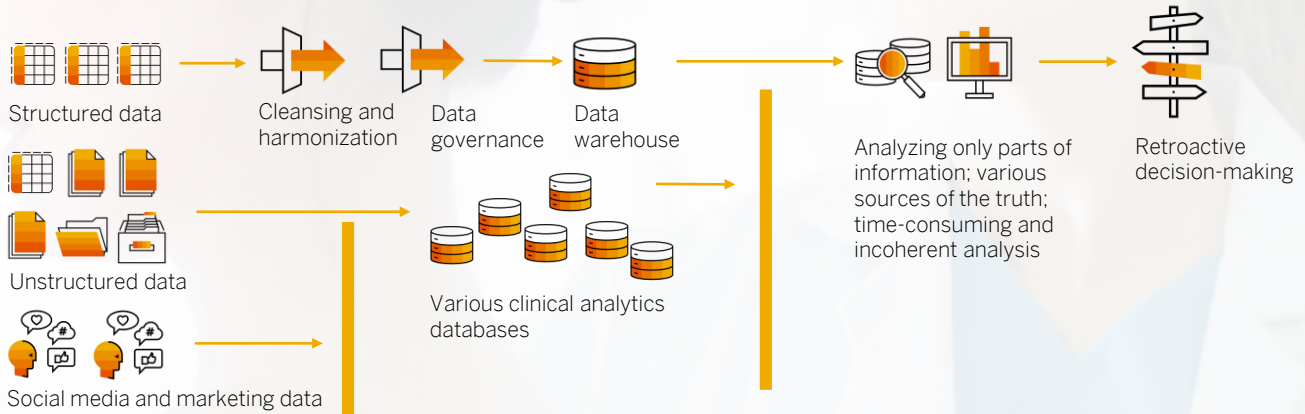




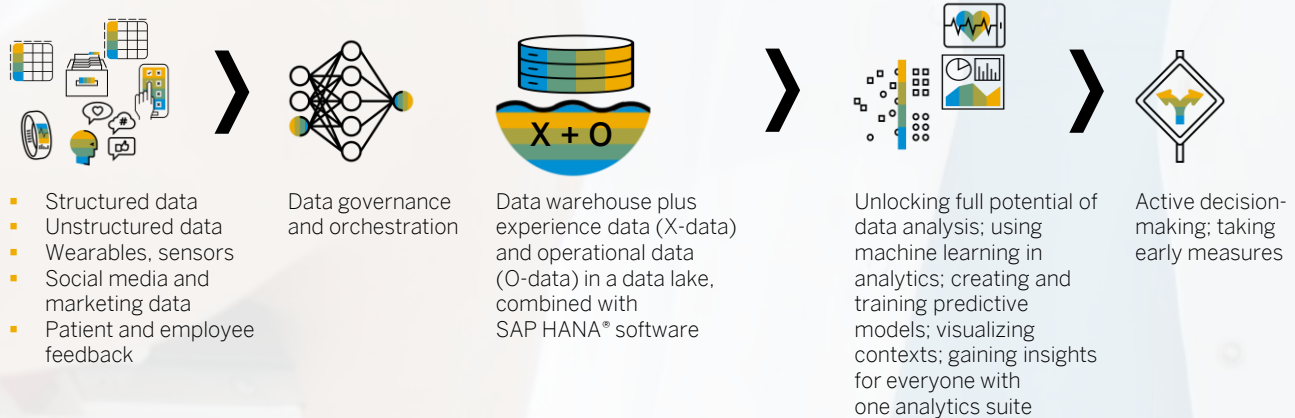
ENABLE DATA-DRIVEN DECISIONS

Data to Insights

TRADITIONAL SCENARIO



NEW-WORLD SCENARIO



POTENTIAL BENEFITS



Reduce data integration costs by orchestrating and harmonizing organized and unorganized data from various sources



Reduce IT spend by enabling data visualization across your healthcare organization using a single, trusted platform



Improve quality of care by getting real-time access to Big Data for structured and unstructured information, including social media and personal experience data

Source: SAP Performance Benchmarking

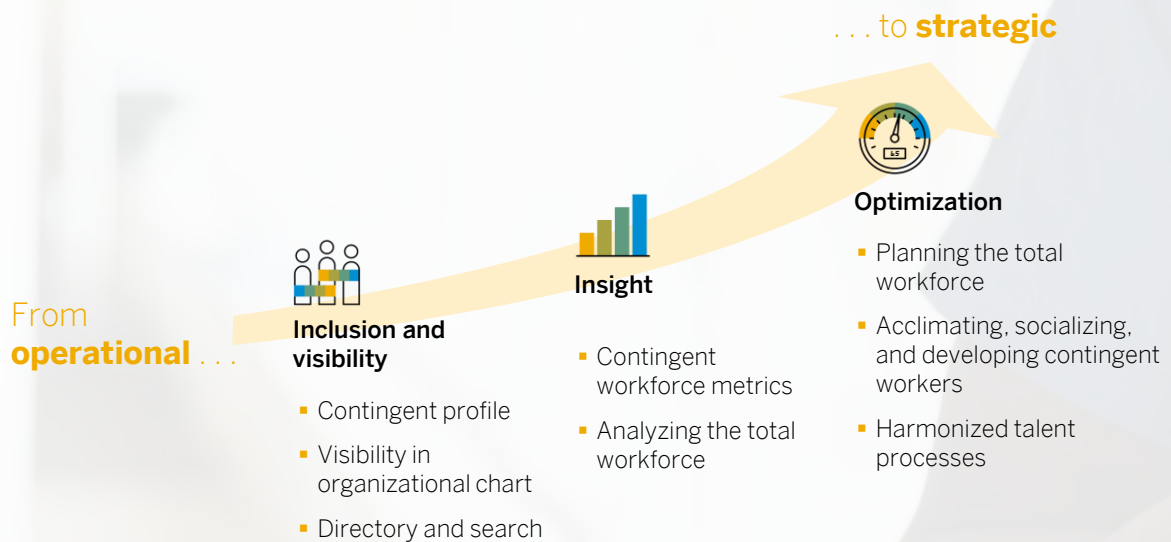
EMPOWER THE WORKFORCE

How can we restructure and empower our workforces to allow them to perform at their best?

Complexity is the enemy of workforce empowerment. It can drive up costs and slow down progress. New digital tools enable the workforce of the future to reevaluate how they work and help them get the most out of their professional training – freeing

them from paperwork to focus on patient care. The aim is to provide clinical staff with mobile devices to allow faster communication, just-in-time delivery of information and results, and flexibility in their work environment. (See Figure 5.)

Figure 5: Addressing Your HR Challenges to Empower the Workforce





EMPOWER THE WORKFORCE

Total Workforce Management

TRADITIONAL SCENARIO



Siloed systems for planning, resource management, and recruiting – resulting in higher labor costs and compliance risks

Disconnected processes in all departments in the organization

No single access point to manage the workforce – leading to missing engagement and alignment

Operational inconsistencies and inefficiencies due to missed opportunities as well as slow adoption and execution

NEW-WORLD SCENARIO



Plan workforce and projects

Generating a plan by modeling the demand for talent (performed by the organization) and identified needs

Identify internal talent

Searching for existing resources with required skills

Recruit new hires and contingent workers

Opening requisitions, finding candidates, and making offers

Onboarding

Completion of paperwork, receiving equipment, conducting training, and meeting team members

Working

Delivery of ongoing training and development

Paying and closing

Paying employees using payroll software, submitting project expenses, and offboarding resources

POTENTIAL BENEFITS



1 platform for talent management, learning management, and data insights



24x7 access using any mobile device

Source: SAP Performance Benchmarking



KEY TECHNOLOGIES

Each of these priorities will be enabled by emerging intelligent technologies.

Artificial Intelligence and Machine Learning

Implementing machine learning in clinical routines and hospital workflows promises improved patient outcomes through better and faster diagnoses. It helps improve decisions around prevention, treatment plans, medication management, and precision medicine. Augmenting healthcare manpower with machine learning can also be an essential building block in addressing the constantly growing demand for healthcare services. Machine learning enables algorithms to “learn” from existing data. Once the algorithm is trained, it can then predict future outcomes based on new data.

The Internet of Things

Every patient, healthcare organization, and machine can be connected – changing all the established rules for healthcare channels. Connectivity drives the collaboration of patients, providers, and supporting businesses and assets in the digital healthcare network.

Data Platform to Manage Experience

Leaders are interlocking the operational performance data from hospitals’ business systems (what is happening) with the experience data coming from patients and employees (why it is happening).

Advanced Analytics

Empowered users can get real-time visibility into their changing environment, simulate the impact of business decisions, mitigate risk, and achieve better patient outcomes.

Blockchain

The ability to share healthcare data and collaborate in a secure, trusted, and transparent manner between different healthcare stakeholders forms the underlying principle of the health network. Blockchain technology has the potential to be a game changer in the healthcare industry, promising improved data flow between disparate systems and heightened security.

Virtual and Augmented Reality

Virtual reality (VR) uses digital technology to create immersive simulations. Augmented reality (AR) lets users interact with digital content that’s overlaid on the real world. Both technologies have great potential to overcome physical constraints in healthcare – for example, through remote surgeries or by precisely locating concealed tumors.

Conversational AI

Voice interfaces will be the go-to technology for the next generation of applications, allowing for greater simplicity, mobility, and efficiency while increasing productivity and reducing the need for training.

Robotic Process Automation

Robotic process automation streamlines repetitive, rule-based processes and tasks in a hospital and reduces costs through the use of software robots that replicate specific tasks.

At a Glance

~50%

Of new mobile apps use voice as a primary interface, and 50% of the consumer-facing G2000 use biometric sensors to personalize experiences by 2020⁹

US\$1.2 trillion

Will be the amount of IoT spending in 2022¹⁰

45% of patients surveyed

Do not use wearables (for example, smart watches) today, but they aim to use them in the near future and would allow storing data for their digital twin¹¹

10

Key use cases will drive IoT growth across all industries through 2020, including remote patient monitoring in healthcare¹²

93%

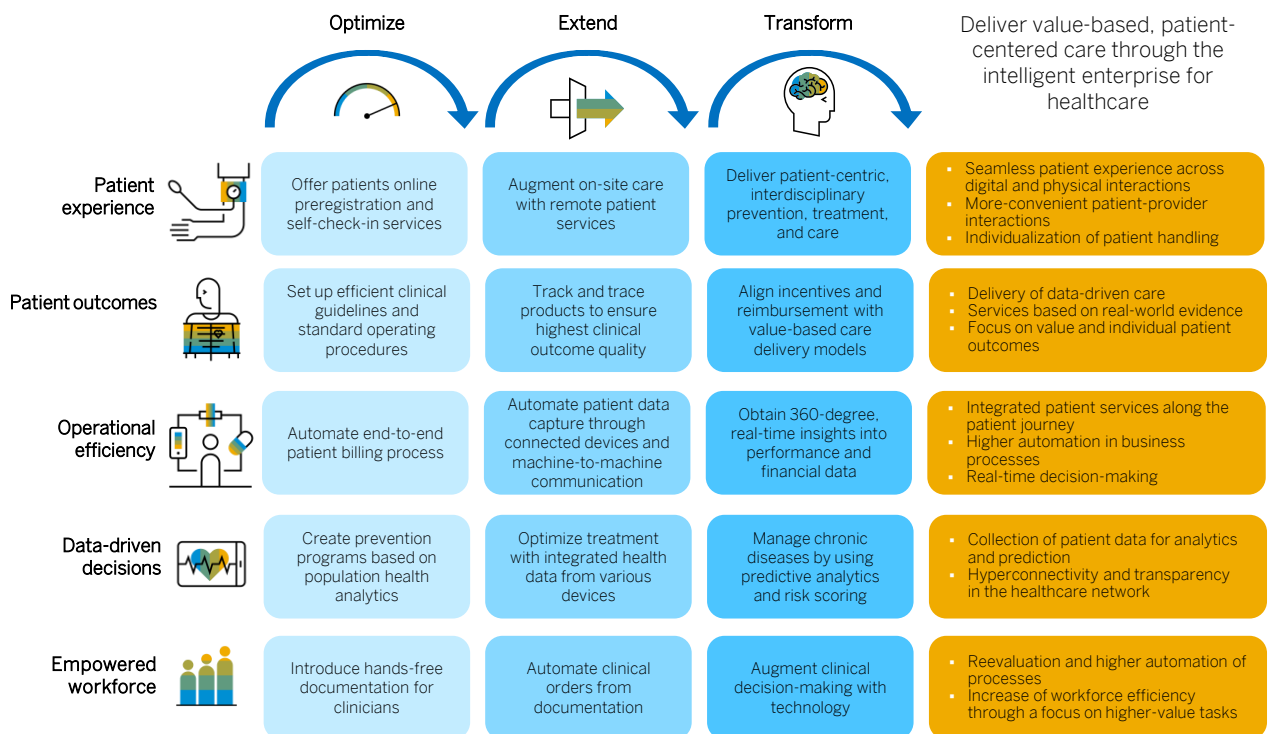
Of cloud decision-makers believe it’s important that the software for their business processes integrates across an end-to-end value chain in an industry cloud¹³

GETTING THERE: A PHASED APPROACH

Healthcare organizations will become intelligent enterprises on three distinct tracks as they evolve their strategic priorities to match their organization's vision. They will:

- **Optimize** what they already do by implementing a stable and scalable digital core to make processes more transparent and integrated
- **Extend** their current processes by connecting them to the real world using IoT technologies
- **Transform** their business using a constant stream of data, enabling new service-driven business models (See Figure 6.)

Figure 6: Strategic Priorities Across the Maturity Framework





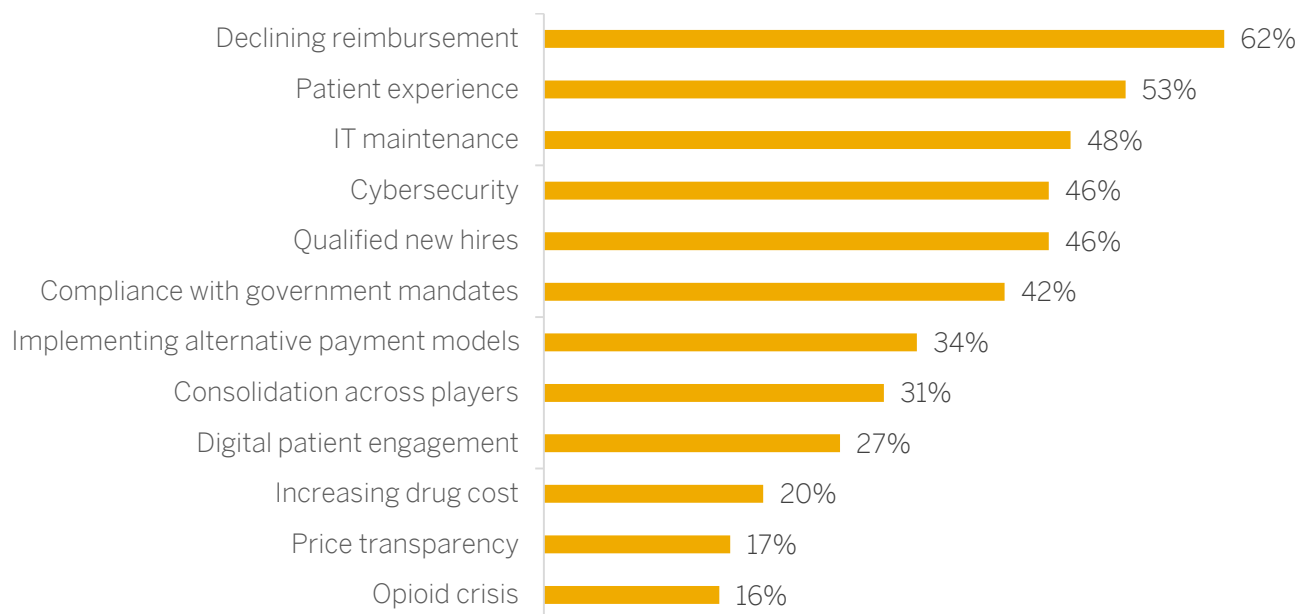
TACKLE YOUR CHALLENGES AND BECOME A LEADER IN YOUR INDUSTRY



What are the challenges you must tackle?

According to the study by Porter Research that was commissioned by SAP, which gathered input from health system executives from acute care hospitals and integrated delivery networks, the two issues to be top of mind for health systems in the coming three years are, first, addressing the cost pressures that have resulted from declining reimbursements; and second, improving the patient experience. These are followed by upgrading IT and cybersecurity. (See Figure 7.)

Figure 7: Top Challenges to Tackle on the Way to Becoming an Intelligent Enterprise in the Healthcare Industry¹⁴



SAP'S FRAMEWORK FOR THE INTELLIGENT ENTERPRISE IN THE EXPERIENCE ECONOMY

Most organizations understand what is happening in their business, but they may not always know why.

They know what's happening because they have systems that capture operational data (O-data) – about their customer transactions, supply chain, manufacturing, spending, and the activities of their workforce. They can see that data through reports and dashboards. They can see trends and predict what will happen next.

But to influence what happens next, companies need data about the interactions that people have with their products and their business. Experience data (X-data) captures beliefs, emotions, opinions, and perceptions – the “why” something is happening. And when companies know why something is happening, they can make an informed decision about the best way to respond.

To win in this experience economy, intelligent enterprises connect experiences with operations. They use both experience and operational data to guide their business decisions. Intelligent enterprises collect insights from customers, employees, products, and brands at every touch point. They use powerful technologies to automate and integrate their data, processes, and applications, enabling them to sense risks, trends, and opportunities. And they act on this intelligence across every part of their business (see Figure 8).

Only SAP has the strategy, expertise, and solutions to deliver on this vision, enabling intelligent enterprises to turn insight into action.

Figure 8: SAP Intelligent Enterprise Framework



HOW TO PLAN YOUR PATH TO THE INTELLIGENT ENTERPRISE

In the digital economy, intelligent technologies and integrated business processes are now driving digital transformation.

To do this effectively requires an end-to-end plan for becoming an intelligent enterprise. (See Figure 9.) This includes creating an intelligent enterprise road map and implementation plan with proven best practices and deployment options that optimize for continuous innovation with a focus on intelligent outcomes.

Figure 9: The End-to-End Journey to Becoming an Intelligent Enterprise



To move forward with speed and agility, it helps to focus on live digital data and combine solution know-how and industry-specific process expertise with data analytics so that the right digital reference architecture is defined and delivered. In that context, a model-company approach is aimed at simplifying and increasing the speed of the digital transformation journey. Model companies represent the ideal form of standardization for a specific line of business or industry. They are built on preconfigured SAP solutions based on best practices supported by SAP, along with the business content that encompasses our experience and expertise relevant for the industry. They provide a comprehensive baseline and come with the accelerators to jump-start digital transformation projects.

[Read more](#) on how to achieve a successful transformation to an intelligent enterprise with SAP Digital Business Services.

COMPREHENSIVE SAP ECOSYSTEM ORCHESTRATING THE PARTNER ECOSYSTEM TO DELIVER VALUE FASTER

Our comprehensive ecosystem for the healthcare industry offers:

- The Intelligent Enterprise as the overarching strategy to meet future requirements, providing:
 - SAP S/4HANA co-development programs for customers and partners
 - Industry co-innovation programs for industry-specific use cases
 - Delivery of enterprise-to-enterprise industry clouds
 - Thought leadership, evangelism, and enablement by industry through events, councils, and regular customer exchange
- Integration into a wide range of business services (OEMs, suppliers, key vendors, and more)
- Open architecture, with a choice of hardware and software specifically designed to meet requirements
- Complementary and innovative third-party solutions to provide leading-edge, state-of-the-art technology

Our partner ecosystem includes, among others:

 **accenture**

 **Capgemini**

 **CenturyLink**

 **Cerner**

 **COMPUNET**
INTEGRANDO TECNOLOGIA INFORMATICA

 **EY**

 **FUSION**

 **IBM**

 **iMED solutions**

 **MERCYHEALTH**

 **Microsoft Azure**

 **mySiss**

NEORIS

 **OPENTEXT**

 **seidor**

 **T-Systems**

 **Vistex**

 **workforce.com**

SAP IS COMMITTED TO INNOVATION



10-Year Innovation Vision

SAP delivers fully intelligent business solutions and networks that span across company boundaries and promote purpose-driven businesses. These solutions will be the most empathic symbiosis between machine intelligence and human ingenuity.

- Self-running enterprise systems
- Self-organizing business ecosystems
- New markets and business models



Comprehensive Industry Coverage

SAP enables comprehensive coverage of the complete hospital value chain across the enterprise. With its clear industry road map, SAP is the partner of choice for the healthcare industry.

- More than 7,900 healthcare providers in 94 countries innovating with SAP solutions
- 7 of the 10 best hospitals in the world running SAP solutions
- Support for all lines of business on a single platform



Proven Services Offering

By bringing together world-class innovators, industry and emerging technology expertise, proven use cases, and design thinking methods, we help healthcare organizations develop innovations that deliver impact at scale.

- Proven methodologies to drive innovation, from reimagining customer experiences to enhancing operations
- Innovation that is fueled through a managed innovation ecosystem from SAP
- Ability to build your own innovation capability and culture

SAP supports healthcare organizations in becoming intelligent enterprises – providing integrated business applications that use intelligent technologies and can be extended on SAP Cloud Platform to deliver breakthrough business value.



Learn more

- [SAP for Healthcare](#)
- [SAP Services and Support](#)



RESOURCES

Outlined below is external research that was used as supporting material for this paper.

1. [“2019 Global Health Care Outlook: Shaping the Future,”](#) Deloitte, 2019.
2. [“No Place Like Home: An Analysis of the Growing Movement Away From Hospitals Towards Providing Medical Care to Patients in Their Own Homes,”](#) Gupta Strategists, 2016.
3. [“Provider Systems of the Future: What Happens When the Hospital Is No Longer the Center of the Health Universe?,”](#) PWC Health Research Institute, 2018.
4. [“The Future of Healthcare: 2022 Hospital Vision Study,”](#) Zebra Technologies, 2017.
5. [“IDC FutureScape: Worldwide IT Industry 2018 Predictions,”](#) Doc. #US43171317, IDC, October 2017.
6. [“Accenture 2019 Digital Health Consumer Survey: Today’s Consumers Reveal the Future of Healthcare,”](#) Accenture, 2019.
7. [“Vitality Group: How Does a Leading Health and Wellness Program Revolutionize Customer Engagement?,”](#) SAP, 2019.
8. [Advocate Health Care Qualtrics Research Suite Case Study,](#) 2013.
9. [“IDC FutureScape: Worldwide IT Industry 2018 Predictions,”](#) Doc. #US43171317, IDC, October 2017.
10. [“IDC Forecasts Worldwide Technology Spending on the Internet of Things to Reach \\$1.2 Trillion in 2022,”](#) IDC, June 2018.
11. [“Der digitale Zwilling – Erwartungen und Einschätzungen der deutschen Bevölkerung mit besonderem Fokus auf Diabeteserkrankungen,”](#) PWC, November 2018.
12. BCG Perspectives, [“Winning in IoT: It’s All About the Business Processes,”](#) The Boston Consulting Group, 2017.
13. [“Emerging Opportunities to Deploy Industry Processes in the Cloud,”](#) a Forrester Consulting thought leadership paper commissioned by SAP, July 2018.
14. [“Rising to Meet Healthcare Industry Challenges – Health System Executives Seek New Ways to Reduce Costs and Tackle the Patient Experience,”](#) a study supported by Porter Research, 2019.

Note: All sources cited as “SAP” or “SAP Performance Benchmarking” are based on our research with customers through our benchmarking program and other direct interactions with customers.



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