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#SmartHealthSystems

Digitalization requires an effective strategy, compelling political leadership and a coordinating institution with a national mandate

- In terms of digitalizing its healthcare sector, Germany trails far behind several other countries as the potential for quality and efficiency in German healthcare remains untapped
- Countries that are succeeding in digitalizing their healthcare systems feature an effective strategy, political leadership and a coordinating institution with a national mandate
- Taking pragmatic steps that are driven by the expected benefits for patients and the healthcare stem alike is key to shaping digital transformation positively
- Promoting acceptance through strategies such as co-design measures is essential to success
- German health politics must take on a stronger pro-active role and strengthen its leadership in this area

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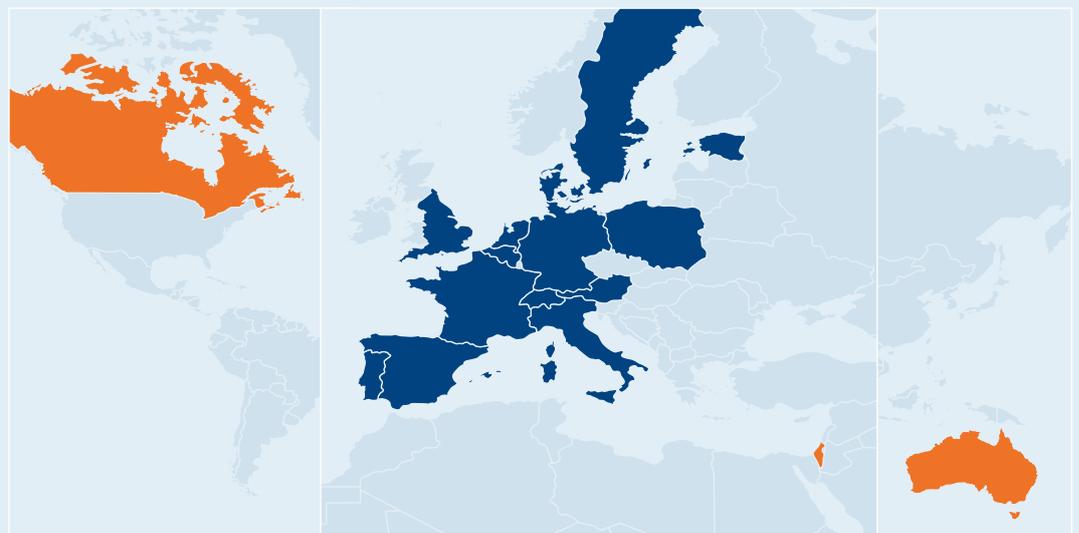
Digitalization's potential for healthcare provision is nowadays rarely subject to debate. Telemedicine has bridged many gaps in care provision and provides patients access to medical expertise no matter where they are. Hospitals, medical practices and other healthcare facilities can exchange information digitally, which increases safety and efficiency in treatment. Thanks also to the availability of online information and apps, patients can exercise greater autonomy in handling their condition. Last, but certainly not least, experts predict that we will see significant qualitative advances made in medicine as a result of the smart linkages and assessment of data in research, diagnostics and therapy.

However, Germany's healthcare system is not doing enough to foster its digital transformation. Most healthcare information continues to be exchanged in paper form, and promising digital innovations are not finding their way into standard care. It's commonly agreed that the German healthcare system lags far behind on international

comparison. But just how wide is the gap between the German and other systems? What strategies have other countries pursued that have demonstrated greater success in digitalizing their healthcare system? And what lessons can – or should – Germany draw from their experience? On behalf of the Bertelsmann Stiftung, the Bonn-based research institute empirica – Communication and Technology Research conducted an extensive cross-national study of digitalization strategies and the progress made in the German and 16 other healthcare systems.

The findings of the #SmartHealthSystems study show that on international comparison, Germany lags far behind in terms of digitalizing its healthcare sector. Of the 17 countries surveyed, Germany ranks 16th. Estonia, Canada, Denmark, Israel and Spain rank at the top of the list. The study also shows that success in the digital transformation of healthcare requires the presence of an effective strategy, compelling political leadership and a centralized institution with the

Countries surveyed by #SmartHealthSystems



■ EU member states ■ OECD countries
Figure 1 | Source: The authors

political mandate to coordinate the digitalization process. In Germany, those responsible for health policy must adopt a more pro-active approach and take a leading role in determining the process of digitalization.

Focus on framework conditions and success factors

The study aims to do more than provide a simple description of the extent to which digitalization has been adopted within a given healthcare system. It therefore focuses on the framework conditions, paths taken and success factors that are specific to each country and which can differ considerably. Countries of varying sizes and with different types of healthcare systems were selected for analysis; they include 14 EU states and three OECD countries (i.e., Australia, Canada and Israel) (see Fig.1). In the first part of the study, each of the 17 countries was subject to a benchmarking process and then compared with each other through the use of a new Digital Health Index that was developed specifically for the study. The second part of the study examines five of the 17 countries in greater detail (see Info box).

Germany trails far behind, its potential remains untapped

Digital Health Index results are plain and clear: Germany ranks at second-to-last in terms of digitalizing its healthcare system and thus lags far behind other countries (see Fig. 2). Although none of the countries surveyed have fully realized digitalization (i.e., have reached a fully perfect state of digitalization), most of them are far ahead of Germany in their efforts in all three areas examined: policy activity and strategy, technical implementation and readiness and the actual use of data.

Digital Health Index with sub-indices

Legend: The three sub-indices of the Digital Health Index are represented as bars. The bars include each sub-index, which are represented by different colors and placed horizontally, side-by-side. The overall index value is obtained by dividing the total length of the bars by three.

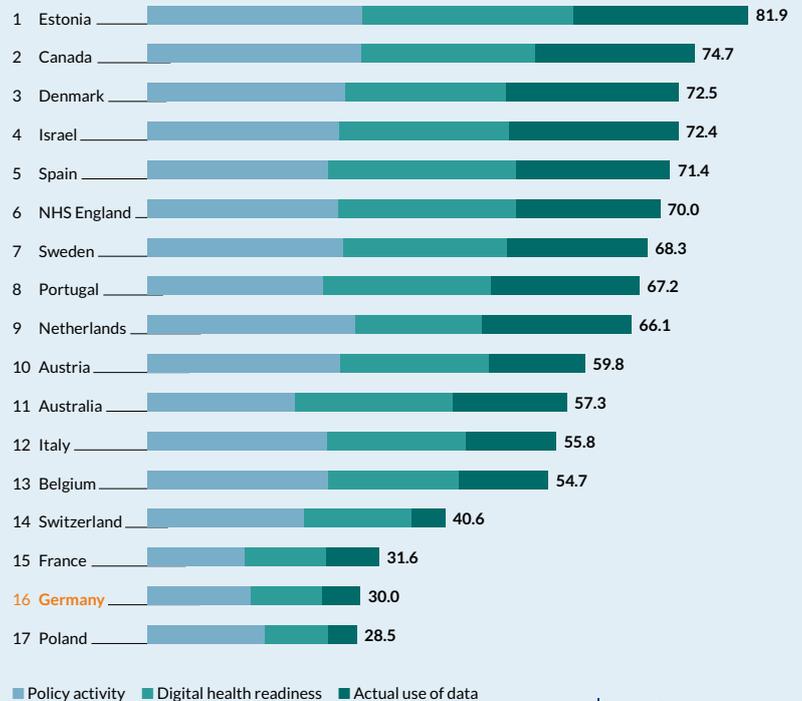


Figure 2 | Source: The authors

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#SmartHealthSystems Methodology

Part I: Digital Health Index

- Digital Health Index comprised of three sub-indices:
 - Policy activity: Political and strategic processes (legal framework, governance, institutions)
 - Digital health readiness: Technical implementation and semantic maturity
 - Actual use of data in the healthcare sector
- Data collection and evaluation by national correspondents in 17 countries
- Questionnaire comprised of 154 questions and 34 indicators
- More than a statistical survey: draws on both qualitative and quantitative data

Part II: In-depth country analyses

- Denmark, France, Israel, the Netherlands and Switzerland
- Additional on-site interviews conducted with representatives from ministries and associations as well as independent experts.
- Focus: Factors contributing to success/failure of digital solutions, lessons learned
- Examination of political preferences as well as economic and cultural factors



Website
#SmartHealthSystems

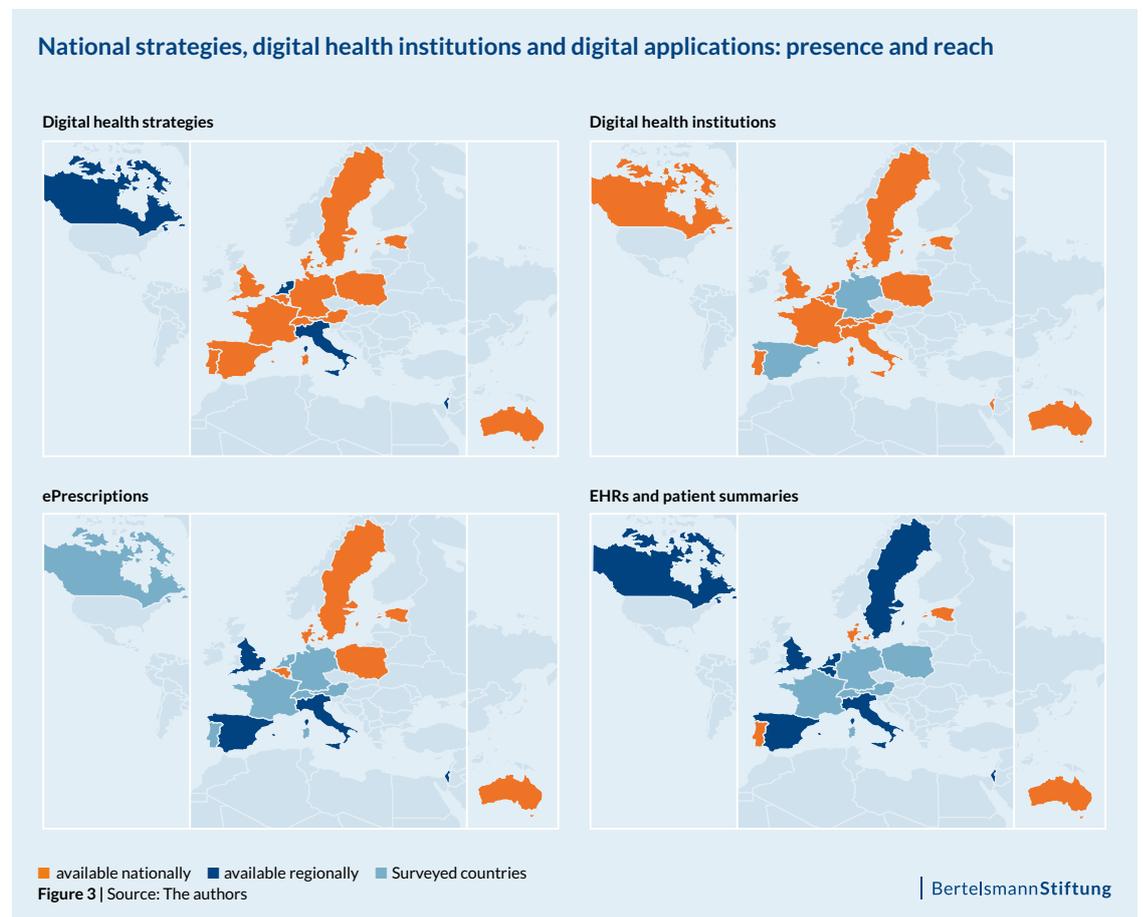
Details on Digital Health Index findings, reports on the countries surveyed, and reactions to the report on social media can be found at our dedicated website www.smarthealthsystems.de

Germany’s poor ranking has nothing to do with insufficient technology or even a lack of innovation potential. Indeed, for several years now, there have been a number successful digital projects in German healthcare provision – but as either a regional offering or that of an individual provider, they have been limited in scope. In other words, Germany certainly has the “ingredients” it needs, but it lacks an appropriate “recipe” in terms of a comprehensive strategic approach,

“teamwork in the kitchen” and a “chef” who can lead the team to positive effect.

With legal requirements in place such as the eHealth Act, Germany does feature some strategic elements of digital health. However, in contrast to 15 of the 17 surveyed countries, Germany has not, for example, established an institution tasked with coordinating all aspects of digital health (see Fig. 3). According to the current plan, a comprehensive electronic health record is not scheduled to be made available until 2021, and discussions about the proper approach to establishing ePrescription services are ongoing.

As a consequence, Germany is not leveraging the benefits of digitalization – the country’s potential to improve quality and efficiency in its provision of healthcare is untapped. This missed opportunity is rendered abundantly clear by the examples observed in the Index’s top-ranked countries (see Fig. 4). In Canada, for example, the digital transmission of ePrescriptions is a matter-of-fact, as is the use of electronic patient summaries, which store a patient’s most important health information. In Estonia and Denmark, all citizens can view their examination results,



medication plans or vaccination data online and they can also determine which physicians and other healthcare professionals have access to their information. In Canada, remote treatment and diagnostics by video are a common feature of healthcare provision. And Israel is even further ahead. In Israel, intelligent algorithms are being used to predict and prevent illnesses and for research and development. This is possible thanks to the data made available through the presence of an electronic health record that has been in place for several years. What can Germany learn from the top performers?

An effective strategy, political leadership and a coordinating institution bring success

The study shows that although the right contextual features for digitalizing a healthcare system might be in place – such as was the case with Estonia, which began with a clean slate after the fall of the Soviet Union – there is no evidence that a country's size or infrastructure, the type of healthcare system or the resources available will necessarily make digital transformation any easier. There is no simple recipe for success when it comes to digitalizing a healthcare system.

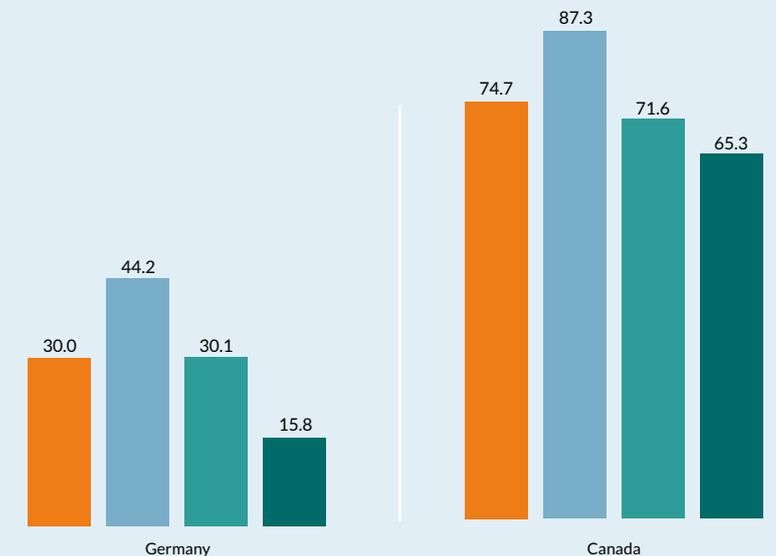
There is, however, a clear pattern to be identified in the success stories: Digital solutions are already in place nationwide in those countries with an effective strategy (see Fig. 5), where the political leadership is showing the way forward and which features either one or a number of institutions with the political mandate to coordinate the process.

The strategy pursued should also be based on a vision that is shared by all key stakeholders. Ideally, this means that “everyone will gather around the same fire,” as an interviewee from Denmark noted. Germany has yet to demonstrate vision.

Political leadership must provide a clear framework and drive developments forward

Thirteen of the 17 surveyed countries feature a clearly formulated national digital health strategy (see Fig. 3). Generally, these strategies are comprised not of rigid and detailed plans but of a goal-oriented vision that helps solutions designed for local or regional use to scale nationally without losing the capacity to adapt to local or regional developments. There are several types of strategies observed. Italy, for example, offers a broad and generalized framework from which

Comparison between Germany and Canada in the Digital Health Index and sub-indices, in percentage of the maximum number of points that can be achieved



Legend: Digital Health Index – sub-indices (orange), Policy activity (light blue), Digital health readiness (teal), Actual use of data (dark teal)

Figure 4 | Source: The authors

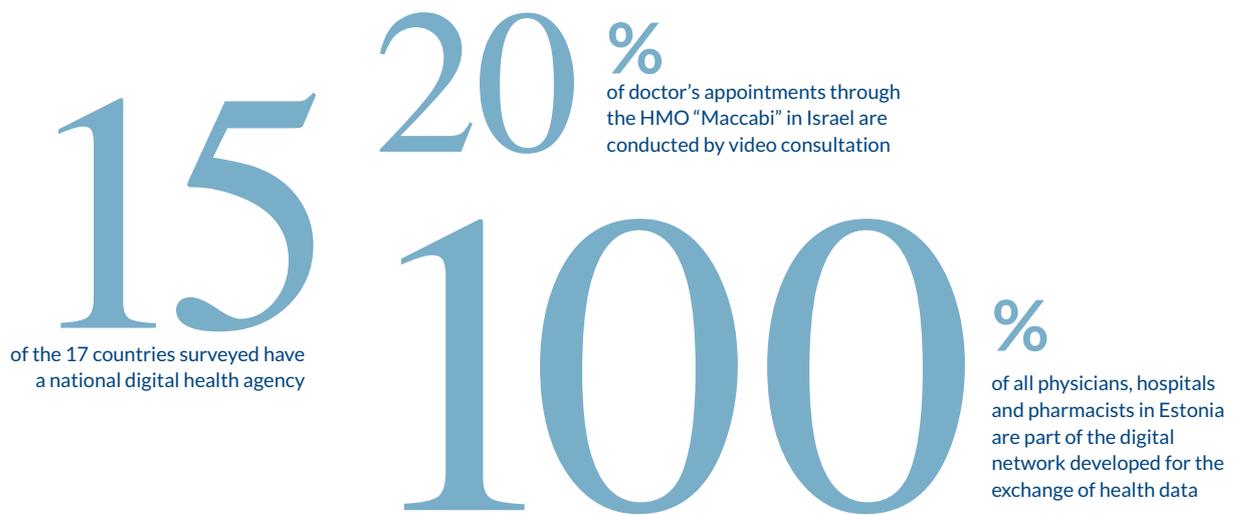
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Correlation between policy activity and actual use of data



Figure 5 | Source: The authors

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individual regions can derive specific goals and strategies; the same is true for Canada. The Netherlands, however, has focused instead on several different strategies that taken together form a larger framework.

Political leadership in digitalization does not involve simply prescribing measures from the top down. On the contrary: Good health policy involves providing a clear framework that fosters acceptance and drives developments forward. Centralized forms of digital health implementation are therefore found in only a small number of countries. It is often the case that regionally organized healthcare systems prove the most effective in integrating digitalization into standard care. Denmark, for example, is one such country in which the healthcare system is subject to centralized management, but the administration and form of individual services are determined regionally. The regions thus also supervise the national digital health agency MedCom. This form of organization allows digital projects with regional success to eventually scale nationally.

Spain and Portugal demonstrate that political leadership and the strategies they pursue are more important than the sheer availability of vast resources. Indeed, these two countries have achieved more in terms of digitalizing their healthcare systems than have several other central European states with more "expensive" systems. In both countries, the political will of leadership has proved essential to advancing digital transformation.

“Structured data, interoperability and a new communications culture are required if electronic health records are to become more than poorly run libraries.”

Dr. med. Yvonne Gilli, Head of eHealth,
Swiss Medical Association (Foederatio Medicorum
Helveticorum, FMH), Switzerland

Digitalization processes need coordination

Nonetheless good strategies and political determination alone are not enough – the diversity of tasks and interests involved with digitalization require effective coordination and management. With the exception of Germany and Spain, each of the surveyed countries have a centralized institution of expertise or agency for digital health. In seven countries, these politically mandated institutions serve not only an advisory and coordinating function, but also issue binding regulations and standards and are therefore actively involved in the development process itself. Experience shows that while regulations do provide clarity, they should not be so narrowly defined as to inhibit innovation processes or to risk obsolescence in the face of current technological developments.

One of the main tasks of a centralized agency is to establish both technical and semantic interoperability. In order to ensure a truly beneficial exchange of data, a system must not only meet certain technical requirements, but it must have data that all users can understand and leverage for their specific purposes. In addition, a variety of experts and stakeholders must be involved in a broadly consensus-oriented process to develop standards. And these processes should be coordinated by a national agency or centralized institutions. Successful countries like Denmark, the Netherlands and Austria have increasingly shifted toward developing data models for specific clinical scenarios such as discharge papers and ePrescriptions as a block.

Advancing digital transformation is best achieved step-by-step

A look at developments in other countries confirms that digitalization is not an end in and of itself. The processes it involves must be geared to the benefits they can deliver. Digitalization strategies should therefore always bear in mind the priorities of a national health policy – such as improving the quality of care and services or making it easier to provide care in rural areas. For example, Canada’s “Canada Health Infoway,” a state funded organization, determines new funding priorities every three to four years in concert with all key stakeholders – and maintains the delicate balance between regional and national interests.

This kind of approach benefits from taking things step-by-step. Countries with a proven record in digitalization target specific treatment pathways – such as diabetes – or focus on “simpler” processes such as introducing ePrescriptions or a nationwide electronic emergency data record. Implementing such things will involve the use of open data models and linkages in order to ensure the exchange of data between different systems as technologies change. By contrast, large-scale, all-encompassing programs will tend to fail. This is demonstrated by the example of NHS England, where a centrally planned, complex and very expensive program was brought to an end in failure just a few years ago. The repeatedly delayed introduction of a telematics infrastructure and electronic health insurance card in Germany also illustrates the complexity of such an approach.

Co-design is an effective means to promoting acceptance

Resistance to the changes brought on by digitalization is common in Germany and other countries as well. Physicians in particular often act as veto players in the beginning. And in those cases where patients must actively choose to use digital solutions, that is, to opt-in, there are still several hurdles to be cleared. As a result, many countries have recognized that promoting acceptance is of strategic importance and that this requires the availability of resources. Canada and the Netherlands, for example, have each developed a communications campaign to promote acceptance. In the case of Canada, a special division within Canada Health Infoway is tasked with managing this campaign.

“Many of the best projects begin in cooperation with patients in the clinic. That’s where we can test projects that can then be carried out on a national scale.”

Jakob Uffelmann, Director Innovation
sundhed.dk, Denmark

Whether or not a digital solution is met with acceptance depends ultimately on the benefits it brings to patients, physicians nurses and other healthcare professionals. Digital processes and solutions should therefore be tailored to the needs of users. They should be co-designed by end-users and key stakeholders alike and whose involvement is integrated into the development process. This applies as well to the formulation of digitalization strategies – through the inclusion of focus groups, for example – as well as the conceptualization of products. Danish hospitals, for example, encourage their employees to submit ideas for how to digitalize their daily work. The operators of Denmark’s national patient portal sundhed.dk take care to observe physicians and caregivers in their day-to-day work and regularly invite patients to evaluate new developments. In short, digitalization should not prove to be a burden or new challenge; it should be an agent of positive change – for the healthcare system and for every person involved. Also in Germany.



The “#SmartHealthSystems” report is available for free at www.smarthealthsystems.de

Recommendations for action

Resolute action needed in health policy

If Germany's healthcare system is to catch up in terms of digitalization and ensure that its patients can benefit from the innovations in care, health policy makers must exercise determination and implement digital health measures more swiftly. Any such action should take the lessons learned from other countries into consideration.

Expand political leadership

- The digital transformation of the German healthcare system must be driven by proactive leadership. Policy makers must act more purposefully than in the past and lead the way forward.

Establish a national agency

- Coordinating processes from a central headquarters is essential to success in digitalization. In addition to involving existing institutions, interest groups, experts and users, the agency should be tasked with standardizing digital applications and defining interfaces. It should be a publicly-run institution that remains independent of special interests.

Take incremental steps forward

- In moving forward with the digitalization of healthcare, pragmatic steps should be taken in targeting individual treatment areas and processes. Anticipated improvements to care as well as potential gains in efficiency should drive action.

Promote acceptance

- Digital transformation must build on acceptance and be underpinned by a broadly shared vision of targeted objectives. Policy makers need to understand and take seriously the need to communicate more effectively with the public, physicians and other healthcare professionals. They also need to treat dialogue and desirable developments as a strategic task.

Include end users in the process

- When developing specific strategies, digital applications and processes, it's important to involve the people who will use and be affected by them – that is, patients and physicians. If these strategies and products are to prove popular, the focus must be on their end users, not their producers. Promoting acceptance also involves making the benefits of applications clear and visible at an early point in the process.

SPOTLIGHT HEALTHCARE is an initiative of the "Improving Healthcare – Informing Patients" program at the Bertelsmann Stiftung. Published several times a year, SPOTLIGHT HEALTHCARE addresses topical issues in healthcare. The Bertelsmann Stiftung is committed to promoting a healthcare system relevant to public needs. Through its projects, the Stiftung aims to ensure the provision of needs-based and sustainable, high-quality healthcare in which patients are empowered by access to readily understandable information.

This issue of SPOTLIGHT HEALTHCARE is a product of the "Digital Patient" project.

More information at

www.bertelsmann-stiftung.de/en/our-projects/the-digital-patient/
www.bertelsmann-stiftung.de

For readability purposes, we have not used female gendered forms. All references to persons are intended to refer to both genders equally.

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