European Commission

Digital Transformation Monitor

Uptake of digital solutions in the healthcare industry

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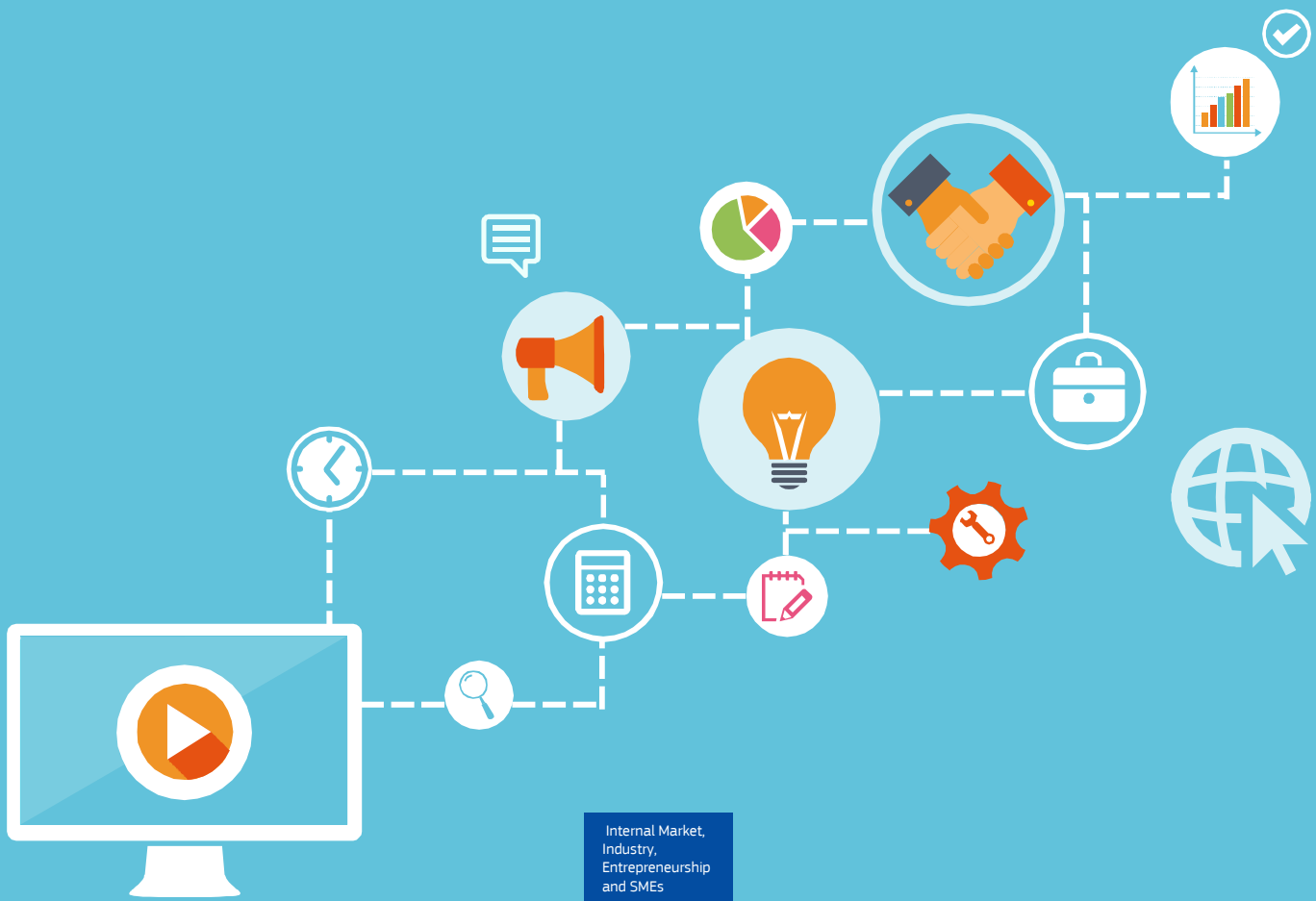

Internal Market, Industry, Entrepreneurship and SMEs

Uptake of digital solutions in the healthcare industry

Challenges facing healthcare and pharmaceutical industries are increasing: aging populations, limited healthcare resources, rising costs of treatment and more. Digital solutions, at the crossroad, hold promises to flip the traditional ways in which healthcare is managed and delivered, thereby streamlining processes, reducing costs, opening new business opportunities and improving the overall public health.

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Digital transition of healthcare

Digital solutions in the healthcare sector cover infrastructures (hospitals, clinics and internal information systems), as well as patient interaction, spanning from Health IT and Connected devices to healthcare services.

Revolution in health IT

Health IT is not a brand-new concept. It refers to applications used most often in facilities such as hospitals. Health IT encompasses Electronic Health Records (EHRs) that manage the patient data (e.g. medical history and radiology images) and IT inventory systems (e.g. appointment management, hospital beds and staff scheduling), etc. Finally health IT can include the coverage and billing for national agencies or private healthcare insurers.

The development of Health IT systems in Europe is moderate. The 2015 WHO survey[1] on eHealth reveals that 59% of Member States in the WHO European Region have a national EHR system. Meanwhile, "eHealth Action Plan 2012-2020" was launched to improve interoperability within subnational regions and cross-border systems.

85% of doctors say that the use of wearables helps patients to engage more with their own health [12]

Connected healthcare: the next frontier

Connected healthcare encompasses a variety of new products and services, ensuring that the right information is delivered to the right hands at the right time. Through connected devices and care delivery platforms, care givers, patients and funders are continuously connected within health systems.

Fitness trackers evolve to connected medical devices

Connected devices applied in healthcare refer to objects equipped with sensors and a connectivity module, enabling them to communicate with the external world. They can be wearables (wristband, watch, and sticky patch), stationary (medical equipment), implantable (pacemaker) or congestible (pill).

Two types of connected devices are playing an essential role in healthcare - connected medical devices and consumer devices. The difference between them lies chiefly in detected data types and reliability, metrics measured, regulatory compliance and eligibility to receive reimbursement.

There exist a myriad of consumer wearable devices that allow wellness tracking and coaching through companion apps, such as Fitbit, Apple Watch and Withings.

However, owing to a high abandonment rate and limited value-added services, pure consumer device players are gradually moving towards clinical device markets. Withings, for example, begins to diversify the product lines with a focus on monitoring blood pressure and a BLE connected Pulse Oximetry for multiple uses.

Telemedicine and remote monitoring

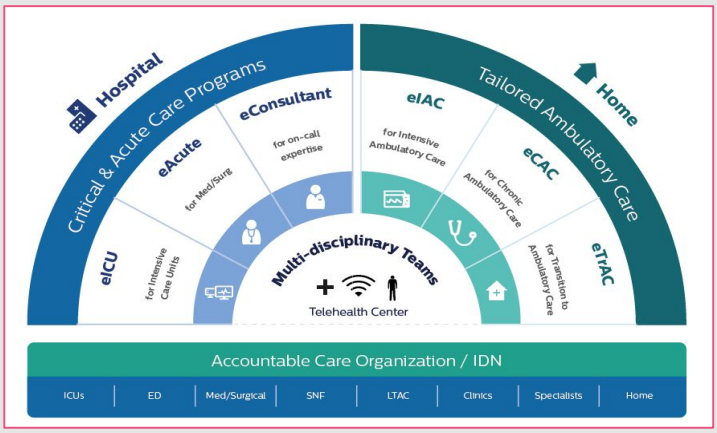
Connected medical devices, together with smartphones, brought forth a multitude of new services in the healthcare industry. Telemedicine, as one of the widely developed services, allows remote interactions between care givers and patients via connected sensors, mobile devices and service apps. Those services are mainly for the elderly or patients with chronic diseases, and those having inadequate access to healthcare services, e.g. in rural zones.

Remote monitoring unlocks opportunities that were non-exist before. Apart from virtual consultation, a variety of vital signs (e.g. blood glucose and ECG) can be collected by connected wearables and then be passed to health professionals via data management platforms. The analytics based on the continuous data sets provide clinical decision support for professionals. For patients, they can give timely alarm and aid, as well as advice to improve overall health conditions.

Figure 1: Withings product catalogue

Source: Withings, 2016

Figure 2: Philips Hospital and Home telemedicine solutions



Source: Philips, 2016

Consumer/patient healthcare apps

Savvy users of digital technology are getting more and more familiar with healthcare-related apps. Some mobile apps provide health knowledge, coaching or self-check instruction. In many cases, such apps are bundled into a telemedicine portfolio, allowing value-added services in addition to the communication with doctors.

eHealth solutions as a key component in the silver economy

A central theme in the silver economy is to take care of senior citizens, allowing them to "age friendly". This spans from eHealth, active aging, to senior tourism and age-friendly housing. Specific to ehealth, improving health conditions and longevity of seniors is at the centre of the silver economy.

Initiatives of aging-friendly covers the monitoring of living conditions, security, as well as senior health evolution, chronic disease management and event alert. On top of that, home-based medical and social services, such as nursing call centres and home-care delivery teams, will be indispensable and considered as part of silver economy as well.

Personalised medicine

The overarching objective of personalized medicine is to treat the diseases in a personalized, predictive and preventive approach. This is done by leveraging patient EHRs and "-omic" (genomics, proteomics or metabolomics) data. It is expected to accelerate a new era of medicine delivery that takes into account individuals' health history, genes, environments, and lifestyles. Technology is at the heart of the shift to personalised medicine; the industry demand of Big Data and analytics are on the rise.

"Precision Medicine Initiative" announced in 2015, and a series of research projects funded by the European Union, such as IC Leukaemia Targeted and PerMed.

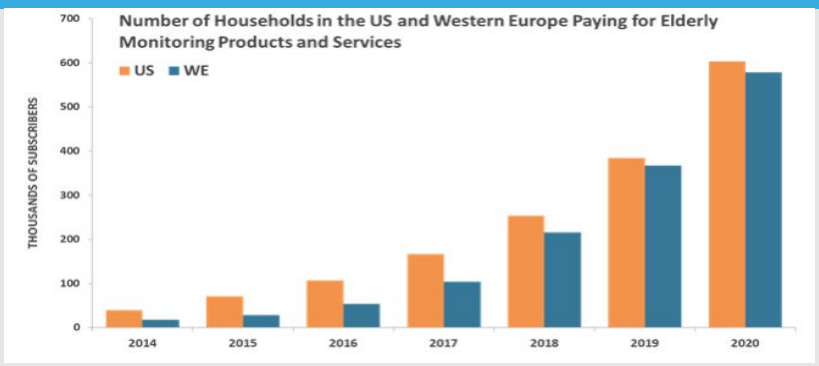
Digital transition on the upswing

Despite the moderate development of health IT, the connected health segment and silver economy are moving forward rapidly. IDATE predicts that the global connected health services will be worth almost EUR 17.6 billon by 2020, at a CAGR of 23.5% between 2014 and 2020.[3]

Regarding the revenue from the global silver economy, Merrill Lynch[4] estimates a growth from EUR 6.4 trillion per year to EUR 13.6 trillion by 2020. Research by Strategy Analytics is optimistic with the volume, estimating that the households paying for elderly monitoring products and services will grow to over 600,000 homes in the US and 579,000 homes in Western Europe by 2020, increasing more than 600%.[5]

17,000 strokes could be prevented each year, if a genetic test is used to properly dose the blood thinner Warfarin.[2]

Figure 3 : User base of Elderly Monitoring Solutions in the US & Western Europe



Source: Strategy Analytics[5], 2016

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Opportunities opened up by digital solutions

Cost saving for health organisations

Digital solutions can help reducing healthcare expenditures for organisations primarily by enabling Health IT systems to use automation in order to create cost savings; self-managed care through connected solutions to reduce costs on hospital admission and readmission; and cloud based infrastructure to save both hardware and software investment.

Accenture[6] estimates that FDA-approved digital health solutions achieved EUR 5.4 billion in cost savings in the US in 2014, primarily driven by medication adherence, behavior modifications and fewer emergency room visits. This figure is expected to rise to EUR 16.3 billion in 2016 and EUR 45.4 billion in 2018.

Improved care delivery efficiency

For healthcare providers, Health IT helps in the streamlining of processes (better exchange of information between patients and doctors, health institutes etc.), thereby reducing fragmentation of patient care and improving service delivery rapidity.

Meanwhile, the enlarged care access and patient management apps coming with connected mobile devices also save time and healthcare resources.

Figure 4 : Validic's data integration platform (clinical, fitness and wellness)

Source: Validic

Increased care quality and outcome

Digital tools contribute to a higher quality of care, increased drug and patient safety, and better risk management. The health apps, together with remote monitoring of patients, provides the care continuity on a 24/7 basis, thus reducing emergency situations and improving clinical decision-making.

In addition, personalized medicine enhances the ability to more precisely diagnose illnesses and target treatment of diseases, ensuring high care quality in a case-by-case approach.

Data-driven new business

Digital solutions serve as catalysts to boost a multitude of new business, increasing demand for data management in the healthcare industry. Data silo problems, however, have not yet been resolved. The healthcare providers see the solution integration with the legacy systems and care paths as a key imperative to eliminate the complexity of the adoption.

Further, the sensitive nature of health data nurtures new business around data aggregation, privacy and security, for example, a tiers data custodian who intermediates the patients and service providers. Validic, for example, is a FDA Class I Medical Device Data System that secures and manages data hosting, sharing and access among multiple stakeholders.

Beyond that, some insurers partnered with wearable manufacturers, providing incentive-based insurance programs to employers, who also have an interest in improving employees' health. Employees will receive rewards such as fitness centre discounts, each time they meet pre-set objectives. Axa and Withings bundled such programs in a health insurance program in 2014.

Paving a way for public health

From a broader perspective, digital solutions may promote the public health. Care delivery centered around the hospital and physicians' offices may be transformed to be located more conveniently for patients, meaning closer to home or even at home. Especially connected health solutions, such as mobile health apps and telemedicine, are deployed in this context in order to improve individuals' ability to manage their health and the health of their community.

On this basis, advanced analytics works at both individual and community levels. This approach is expected to monitor best practice, epidemic spread, and to reduce or prevent chronic diseases at local or national levels, thereby increasing the overall health condition of the whole population.

Mitigating the budget pressure

The social security systems in Europe take charge of the majority of payments for healthcare services and patients have much less out-of-pocket expenses, compared to those in the US.

With the aging population growing, the social burden is getting larger. According to the EU Commission[7], public spending on ageing in the EU accounts for 25% of GDP and 50% of general government expenditure and is projected to grow by 4% of GDP until 2060.

Connected healthcare solutions hold potential to bring social costs down to a sustainable level. The promise of connected healthcare technologies will lie in reduction of beds, shorter in-patient stays, reduced readmission, prevention of deterioration as well as improving general population health.

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Digital transformation in healthcare: still a long haul

A growing aging population and chronic conditions

Aging is one of the major current social challenge. By 2025 more than 20% of Europeans will be 65 or older, with a particularly rapid increase in numbers of over 80 year olds[8]. The increasing health and well-being needs of aging people and those with chronic conditions put pressure on the current care delivery model. This calls for a shift to connected patient and home-care delivery.

Government and regulatory support

Government and regulatory support includes supportive eHealth policies, legal and ethical frameworks, adequate funding from various sources, infrastructure development and developing the capacity of the health workforce through training. A WHO survey[1] implies that 84% of Member States have eHealth policies to support their progress in achieving universal health coverage, 69% have financial support available for the implementation, and 89% offer education or training on how to use ICT and eHealth.

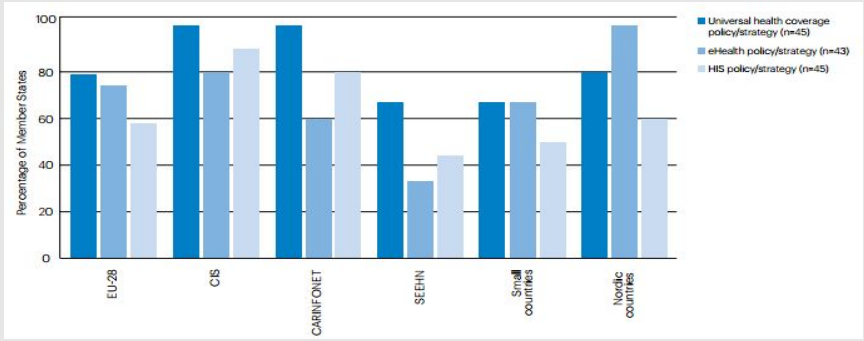
Attitude to share health data

Willingness to share health-related data varies widely, depending on whom the data will be shared with. In general, consumers will be more open to share data if two conditions are met, namely that access is self-controlled and governed by the user, and improvement in their health or other benefits such as competitive insurance fees are expected.

Increasing user adoption

The patients are getting digitally savvy. According to McKinsey, more than 75% of respondents would like to use digital healthcare services, as long as those services meet their needs and provide the level of quality they expect.[9] Another report by PwC indicates that two-thirds of the 400 care providers regard telemedicine as one of the highest priorities - a 10% increase ascompared to 2014.[10]

Figure 5: Member States with policies or strategies addressing eHealth, universal health coverage and HISs, by sub-region



Source: WTO Europe[1], 2016

Strict data and privacy regulation

Healthcare industries operate in a highly regulated space. Although consumers are relatively more open than before to sharing health data, the health data access and processing is still constrained by interoperability issues, related regulation and policies (HIPAA, GDPR, the European mHealth Green Paper etc.).

Health information is thus prevented from flowing seamlessly at reasonable costs, to support patients and health professionals when and where it matters.

Need to prove effectiveness and value

Besides health costs reduction, there is thus far no consensus on the true value that can be achieved in practice. For may common conditions, the accuracy of diagnoses for in-person care vary largely case-to-case, even among telemedicine providers. In some cases, patients will still require physical visits and diagnosis.

The uncertainty in outcome, on the one hand, makes healthcare providers prudent in applying connected devices or service in their practices; on the other hand, it keeps both social system and private insurers out of play.

Apart from improving device and system reliability, some industry-wide policy or protocol(s) that increase guideline adherence for connected health and home-care solutions are required.

Business model

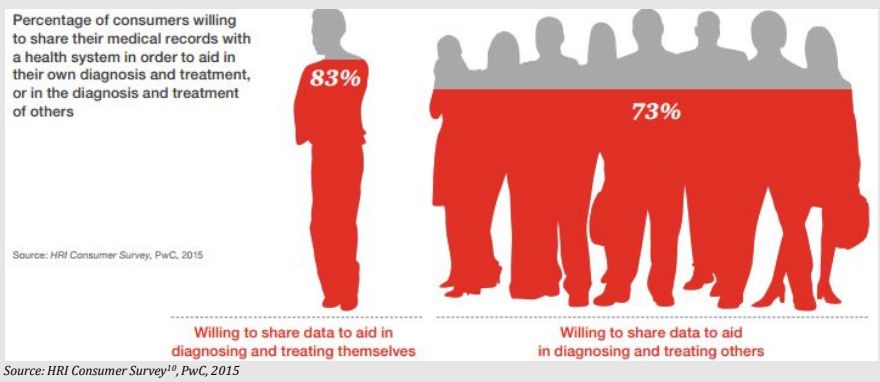
While for connected medical devices, consumers are less willing to pay out-of-pocket money. According to Rock Health[11], in 2015, only 7% strongly agreed that they are willing to pay out-of-pocket for their healthcare expenses.

In addition, coverage policies are not yet defined. The types of devices and services covered and their reimbursement compared to in-person services need to be established. Also, the payers (social systems and private assurance companies) are reluctant to make bold bets before the real benefits of connected solutions to health industries are widely proved.

Capex/opex issue for caregivers

As raised above, unproven value is an extensive brake on investment by hospitals and in new policy making. Physicians have to purchase new hardware and software, redesign their practices, purchase or upgrade EHRs, and reconfigure or add medical office staff. However, the return on such investment is not clear.

Figure 6 : Consumers' willingness to share medical data



Source: HRI Consumer Survey[10], PwC, 2015

Some countries are prioritising investment in health IT and different connected healthcare solutions. For example, the UK created an institute to calculate what it is worth (or not worth) to invest in for the healthcare sector.

Liability from the use of connected healthcare solution

The issue of identifying potential liability is complex, as it involves multiple actors: manufacturers of the connected devices, caregivers, any other service providers involved in data management or wireless communications. The damage to patient health can come from various sources.

Lack of expertise on healthcare professional side

Many medical professionals indicated that they are unfamiliar with the alternative systems and management strategies. More investment should be attributed on ease-of-use, training or consulting services, to prepare industry experts properly to leverage connected solutions along this path.

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About the Digital Transformation Monitor

The Digital Transformation Monitor aims to foster the knowledge base on the state of play and evolution of digital transformation in Europe. The site provides a monitoring mechanism to examine key trends in digital transformation. It offers a unique insight into statistics and initiatives to support digital transformation, as well as reports on key industrial and technological opportunities, challenges and policy initiatives related to digital transformation.

Web page: https://ec.europa.eu/growth/tools-databases/dem/

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