
# LEVERAGING CLOUD COMPUTING FOR HEALTHCARE

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COCIR

SUSTAINABLE COMPETENCE IN ADVANCING HEALTHCARE

European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry

# TABLE OF CONTENTS

# EXECUTIVE SUMMARY

Compared to other industries, healthcare has been slower to realise sustainable value from investing in Cloud Computing technology. Adoption by the European healthcare sector has been slowed by inadequate communications infrastructure, security concerns and a fragmented regulatory framework. However, an increased focus on resource efficiency and value-based healthcare is gradually forcing healthcare providers to seek innovative health IT solutions that can accommodate these concerns.

A further driver for adopting Cloud technology in the healthcare sector is its potential to support the delivery of integrated care, cost containment considerations, the explosion of mHealth apps and use of Big Data analytics. Key challenges that are preventing a more rapid uptake among healthcare providers relate to a lack of trust and confidence, poor procurement processes, healthcare providers' uncertainties on how to implement Cloud-based services, limited in-house expertise and insufficient interoperability.

## COCIR RECOMMENDATIONS

1. **Cloud Computing vendors** should provide implementation guidance for healthcare providers to accelerate adoption. This should focus on best deployment practices, Cloud Computing self-assessment readiness, change management and interoperability.

2. **Member States** should transpose Directive 2014/24 on public procurement without further delay. Vendors and public authorities need to work together to explore the best public procurement approach and timeframes.

3. **National Data Protection authorities and the future European Data Protection Board** should clarify privacy and data protection requirements. We call for a harmonised approach to certification schemes in health data, which should be issued at a European level. Likewise, we encourage regulators to engage with stakeholders to ensure a harmonised enforcement of the General Data Protection Regulation throughout the EU.

4. **Healthcare providers** should consider shifting IT investment from CAPEX to OPEX. This approach would allow them to keep up with the pace of technological innovation and, more specifically, to profit from the cost savings and efficiency gains that Cloud-based solutions may bring to their organisations.

5. **Healthcare organisations** should provide specific training on Cloud Computing for their in-house IT staff, addressing not only the technical aspects but also data protection aspects or Cloud Computing business models.

# 01 INTRODUCTION

Compared with other industries, healthcare has traditionally been slower to adopt Cloud Computing technology. As well as disrupting how IT services are provided, Cloud Computing holds huge promise for the healthcare sector. It can play a fundamental role in addressing many of the most pressing challenges currently facing European health systems. Significantly, first-mover healthcare organisations have been using Cloud Computing to achieve more than just cost savings and scalability; they have leveraged this technology to enable data driven healthcare delivery, enhance collaboration between relevant stakeholders in the care process and implement patient and family-centred care models.

Ultimately, healthcare providers are increasingly turning to Cloud Computing to achieve costs savings and to improve the quality and value of health care. Indeed, pilots studying early adopters are increasingly revealing significant benefits in terms of improved patient outcomes, care delivery innovation, reduced costs and improved value (Table 1 in Annex).

In the context of the Digital Single Market (DSM) Strategy, the European Commission (EC) recently launched the European Open Science Cloud initiative. This will encourage a trusted, open environment for storing, sharing and re-using scientific data and results. With this strategy, the EC aims to unite existing infrastructures and open up scientific data across both disciplines and Member States, making access to scientific data easier, cheaper and more efficient [1].

COCIR welcomes the European Open Science Cloud and expects that it will gradually broaden its original focus beyond scientific research, covering business and public services. This way, it will achieve the stated objective of creating new market opportunities and new solutions in key areas such as health, environment or transport.

This paper provides the health IT industry's perspective on the challenges and opportunities related to the use of Cloud Computing in the healthcare sector. It also outlines key market trends and provides a number of recommendations for accelerating the provision of high quality, secure, Cloud-based services in the healthcare sector.

# WHAT IS CLOUD COMPUTING?

- Cloud Computing is a computer technology and architecture that enables ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services). With Cloud-based services, physical storage location limitations are no longer an issue.

- Typically, in Cloud models, all information technology (IT) resources are usually outsourced and managed by the Cloud provider; hence Cloud Computing services often go hand in hand with Managed IT Services [2]

- The main types of services provided through this technology are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). Cloud Computing-based services can be provided via a private cloud (private network), a public cloud (off-site over the Internet) or a hybrid cloud (combining private and public clouds)

- Cloud Computing provides network access to computing resources, data processing/storage and IT applications that can be rapidly provisioned and released with minimal management effort or service provider interaction. Upscaling and downscaling can happen rapidly, both technically and financially. Moreover, this on-demand model allows customer costs to be calculated on the basis of the actual use of the service

# 02 EUROPEAN MARKET MATURITY AND OUTLOOK

Although Cloud Computing has evolved substantially over the past ten years, becoming more robust, secure, open and interoperable, uptake in the European healthcare sector has been slow, mainly because of security concerns and a fragmented regulatory framework.

A good example of this fragmentation is the rules governing the secondary use of health data. Within the European Union (EU), only 50% of the countries apply their general data protection regulatory framework to the secondary use of health data; the rest have developed country-specific rules to regulate secondary use of health data, often following very different legal approaches in terms of purpose and safeguards [3].

Two years' time may see a more harmonised approach across all EU countries, when the General Data Protection Regulation comes into force. However, it remains to be seen whether national specificities will still prevail even under the umbrella of the new Regulation.

This fragmentation has led to significant differences between EU countries in terms of Cloud adoption. So far, countries such as Denmark, Sweden, Finland, Austria and Estonia have been much more open to remote storage and archiving of patient data than the largest EU economies, France, UK and Germany [4]. Indeed, Nordic countries lead the way for Cloud Computing market maturity in the healthcare sector; the Netherlands, Estonia and Austria are in a maturation phase, while Belgium, France, Germany, Italy, Spain, Switzerland and the UK can be considered emerging markets, even though each is progressing at a different speed (Table 2).

Adoption of Cloud Computing has been greater in primary care and ambulatory/outpatient settings than in acute care, mainly driven by the need to host basic IT functionalities such as scheduling, administration and billing as well as patient records. In acute care settings, there is limited deployment of Cloud Computing-based services.

There are several reasons that may explain this lower uptake:

- Lack of willingness in acute care settings to leverage internal know-how built over the years around deployed health IT solutions
- Lack of Cloud-ready software and the investment made in legacy systems, such as hardware and servers that host on-site Electronic Medical Records and other Clinical Information Systems
- More IT solutions that are complex and support tightly coupled processes that need to be integrated, compared to primary care and ambulatory/outpatient settings
- The critical nature of the service provided by acute Electronic Medical Records and other Clinical Information Systems requires absolute trust in the Cloud providers' ability to effectively deliver the right level of Service Level Agreements and data security

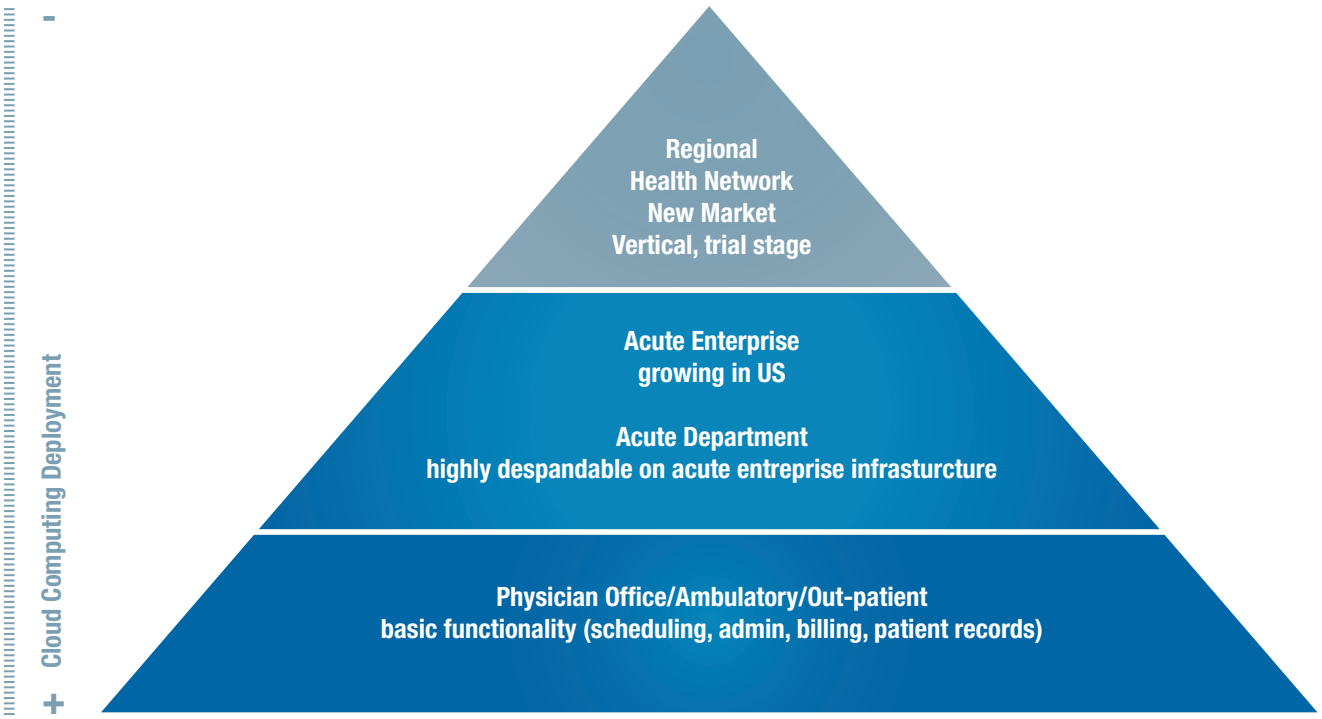
Finally, regional health networks are emerging as a new market segment; however, current deployments are in pilot phases (Fig.1).

## TABLE 2:
### CLOUD COMPUTING MARKET MATURITY IN EUROPE

| CLOUD MATURITY: | COUNTRIES: |
|---|---|
| **Mature and innovating** | Denmark, Finland, Sweden |
| **Maturing** | Austria, Estonia, The Netherlands |
| **Emerging markets** | Belgium, France, Germany, Italy, Spain, Switzerland, UK |

Source: adapted from IHS Technology Media and Telecommunications report presented at COCIR 2016 eHealth Summit workshop

## FIG. 1
### CLOUD COMPUTING DEPLOYMENT BY HEALTHCARE SETTING




Source: adapted from IHS Technology Media and Telecommunications report presented at COCIR 2016 eHealth Summit workshop

# 03 OPPORTUNITIES AND CHALLENGES

Healthcare providers seek innovative health IT solutions that allow them to address the increased focus on both resource efficiency and value-based healthcare, delivering better care at lower costs. In this context, the drivers of Cloud technology adoption in the healthcare sector are its potential to support the delivery of integrated care, cost containment considerations, the explosion of mHealth apps and use of big data analytics.

## 1. CLOUD SUPPORTS INTEGRATED CARE MODELS

In response to the healthcare needs of an ageing population and the increase in chronic diseases, health systems across Europe are progressively transitioning to more integrated care models. Integrated care brings together health and social care providers, along with patients and carers to collaborate more effectively throughout the care pathway, from prevention, trough diagnosis, treatment and follow-up. Cloud Computing can enable the delivery of integrated care by providing:

- **Flexible innovative solutions for population health management, collaboration, data sharing and improved processes** that can be easily scaled from pilots to widespread daily use. They provide the possibility of creating patient centric solutions with built-in collaboration models across the continuum of care, from prevention through precise diagnosis, effective treatment and recovery[1].
- **Timely access to health data** in case of emergency care beyond hospital or primary care boundaries, and the interoperability of systems and processes across care settings and care boundaries.
- **Greater patient engagement**, in particular through mHealth cloud-enabled applications. A new generation of Cloud-based health apps will enable patients to access and integrate self-generated data alongside their EHRs, offering them greater control of their journey throughout the care pathway.

[1] A good example of how this technology may supports the coordination of care is the INCA project that aims at enhancing the coordination of socio-sanitary services to reduce costs, improve patient experience and achieve greater efficiency and value from health delivery systems. Initially funded partially under EU Competitiveness and Innovation framework Programme and 100% served from the Cloud, INCA project consists in delivering a personalised network of stakeholders (Social Services, Service providers, GPs, Specialists, Caregivers, Volunteers…), empowering patients that will be able to communicate directly with their circle of care in involved partners' countries (Spain, Croa'ia, Cyprus and Latvia). Starting with 5 pilots in partners' countries, INCA project foresees to impact more than 125.000 users and directly engages 1550 stakeholders as active users and improve outcomes for patients, creating access to better integrated socio-sanitary care e-Services outside of hospitals, reducing unnecessary hospital admissions and enabling effective working of professionals across provider boundaries.

## 2. THE SHIFT FROM CAPITAL EXPENSES TO OPERATIONAL EXPENSES AND REDUCED COST

Given the reductions in public health expenditure that some European countries are experiencing, converting Capital Expenses to Operational Expenses is a key factor in driving investments in Cloud by hospitals. Ultimately, the use of "pay per use" web-based applications allows healthcare providers to avoid the costs of purchasing and maintaining hardware.
The area of imaging IT provides an excellent example. Demand for archiving medical images is expected to grow exponentially. Healthcare providers need cost-efficient additional storage systems to back up their data; Cloud Computing-based storage may cost them as little as one–tenth of regular storage systems [5]. In addition, Cloud storage implementation may result in dramatic savings on the training resources needed to manage storage systems.

Cloud Computing can also make Electronic Health Records (EHRs) and other clinical information systems affordable for smaller healthcare providers and for smaller organisational units that were previously uneconomic to support. In Scotland, for example, NHS Grampian hosts EHR computing services for the highly dispersed island populations of NHS Shetland and NHS Orkney. These support the provision of locum physicians, remote clinics and emergency air response. In addition, the cost of scaling up capacity is lower for Cloud-based systems compared to traditional health IT business models[2].

## 3. UBIQUITOUS ACCESS TO HEALTH DATA BY HEALTH AND SOCIAL PROFESSIONALS

The trend for decentralising information is expected to increase, with more physicians and social care professionals accessing information from remote locations using their own mobile devices and applications. In particular, Cloud-enabled messaging platforms that ease communication and collaboration among medical teams are already gaining traction in some countries. In England, East Kent NHS Trust has provided its clinical staff with the ability to access medical records and other data on their mobile devices and via web browsers. The Cloud app collates clinical workflows and information, sends alerts[3] and enables doctors and medical staff to communicate and discuss patient needs and tasks, thus leading to a more effective care provision [6].

[2] In France, a single patient-centric, Cloud-enabled portal solution launched more than ten years ago has experienced tremendous growth and already enables more than 1,500 biology labs, 130 hospitals and 15,000 primary care physicians to share information between them and with patients. The latter can access their lab results using their Google Android™ or Apple iOS™ mobile digital devices. More than 14 million reports have been distributed via this portal, of which 5 million were targeted at patients [14].

[3] Project estimates indicate that 600 handovers and 1.000 messages and alerts each week are sent through the app.

### 4. GROWTH IN HEALTH AND WELLNESS DEVICES AND INTERNET OF THINGS

Mobile health (mHealth) applications on smart phone are increasingly being used to enable healthy living and health prevention. mHealth applications can use a Cloud computing technology to perform the key back-end related services, extending their computational capacity and storage capabilities. Additionally, data gathered by remote monitoring solutions can also be stored in the Cloud and integrated with Cloud-based EHRs and even non-Cloud applications. In Europe, home healthcare programmes, telecare and telemedicine initiatives have been an important driver in Cloud adoption. In home healthcare, Cloud also enables leveraging the capabilities of social networks in serving continuity of care purposes. It enhances collaboration and coordination from hospital to home across the care team, including patients, their carers and the wider community.

One of the most important drivers is the capacity for patients with similar conditions to share their experiences, treatments and strategies for managing their lives better.

### 5. SECONDARY USE OF DATA AND THE POTENTIAL OF BIG DATA ANALYTICS

Inevitably, Cloud and Big Data analytics will increasingly go hand-in-hand, as they create immense opportunities for data sharing and collaboration. Data analytics has a great potential to support clinical decision-making, enhance patient safety and enable a continuous learning process in the care delivery pathway.

However, it can demand computational capabilities and flexibility that may not be easily fulfilled by traditional health IT network platforms. Given the inexorable rise in the quantity of data available for analysis, healthcare providers will most likely turn to Cloud-based solutions to expand storage capacity and provide timely access. Such solutions provide healthcare providers with adaptable computing power at the point of time the need it to perform a given data analysis, scaling back down when it is no longer needed. Moreover, secure access for diverse clinician groups to patient data across multiple systems and EHRs can help rapidly streamline, prioritise and analyse complex patient data.

## CHALLENGES

It is clear that Cloud Computing holds huge promise for improving the quality of care provided across European health systems. However, there are five key challenges that must be overcome to unlock the full potential of this technology for the healthcare sector.

### 1. TRUST AND CONFIDENCE

Users need to have assurance that data security and privacy risks have been properly identified and are being managed. Specific topics like data transfer across settings, regions or countries as well as terms and conditions specific to Cloud need to be clearly explained and addressed. In this context, the industry working group set up by the European Commission, as part of its 2012 Cloud Computing Strategy, is currently preparing a Code of Conduct on data protection for Cloud providers. This will provide guidance to the applicable data protection rules in Europe and highlight best practices. It should be noted that this type of soft-law mechanism is particularly appropriate for Cloud because of the rapidly changing nature of the technology and the services provided. The new General Data Protection Regulation has acknowledged the suitability of soft-law in this context, specifically encouraging self-regulatory mechanisms.

## 2. PROCUREMENT

Traditional public procurement processes and rules lack the required flexibility to purchase eHealth solutions effectively [2]. In addition, Cloud Computing-based solutions present the following specificities that make it even more complex for public authorities and healthcare providers to purchase this type of solution.

- Misalignment of economic incentives; traditionally, the purchasing of new health IT solutions has been funded through procurers' capital expenses (CAPEX) budget, taking advantage of amortisation and depreciation over an extended period. Therefore, healthcare providers are not inclined to purchase solutions that are meant to be funded from their IT operations (OPEX) budget.
- Implementation can be complex, frequently requiring a proof of concept to be conducted to test the solution before delivery.
- Vendors have disparate Cloud Computing business models, hindering the technical and economic comparison of different offers.

The European Public Procurement legislative package, adopted in 2014, may help to remove some of these roadblocks.
However, only six countries[4] have communicated national transpositions measures of Directive 2014/24, even although they had until the 18 April 2016 to transpose this Directive into national laws.

## 3. GUIDANCE AND SELF-ASSESSMENT

Healthcare providers need further guidance on which Cloud service model best addresses their needs and requirements. Support and stronger guidance is also to assist in change management. Additionally, customers need a clear understanding of what the Cloud-ready applications are as well as their overall level of readiness to migrate to, or make best use of, Cloud Computing.

## 4. INTEROPERABILITY

There needs to be greater interoperability between health IT and Cloud service vendors to enable data portability and seamless use of applications across different Cloud service providers. COCIR welcomes the announcement by the European Commission that Cloud Computing has been identified as one of the five priority areas where they will concentrate standard-setting resources in the near future [7].

## 5. HEALTH IT EXPERTISE

As the clinical and administrative processes of healthcare organisations become increasingly reliant on health IT services, healthcare providers are becoming increasingly dependent on their internal IT resources. At the same time, very few healthcare providers have the in-house IT expertise to accurately predict future demand, costs and legal implications associated with the provision of Cloud-based services.

[4] As of the 27th of April 2016 only Austria, Bulgaria, Denmark, France, Spain, Hungary, Lithuania, Portugal and United Kingdom have communicated national transposition measures

# 04 COCIR RECOMMENDATIONS

## ACTIONS BY CLOUD COMPUTING VENDORS

### 1. CLOUD COMPUTING IMPLEMENTATION GUIDANCE TO DRIVE ADOPTION:

Vendors need to educate healthcare providers, genuinely partnering with them to implement of Cloud Computing-based services. It is important to communicate effectively on the key elements for a successful deployment, as well as sharing insights on implementations that have encountered major pitfalls, have met resistance or have failed. Guidance to healthcare organisations on self-assessing their Cloud readiness is also critical to allow rapid reaping of the benefits of "low hanging fruit". Change management is a third area where training gaps should be addressed. Finally, providing guidance on interoperability and standards would also help healthcare providers purchase Cloud-based services that are interoperable across Cloud providers and across borders.

## ACTIONS BY MEMBER STATES

### 2. PROCUREMENT:

All Member States should transpose, without further delay, Directive 2014/24 on Public Procurement. This will allow public authorities to leverage the new European Procurement Reform for public Health IT purchasing. An adequate transposition of these new rules will provide public authorities greater flexibility in adapting processes to fit the specific needs of Cloud Computing procurement and commissioning. However, merely putting the new rules in place will not automatically simplify things.

Vendors and public authorities need to work together in exploring the evaluation criteria used for comparing Cloud Computing bids, discussing how to draft sufficiently detailed tenders that do not hamper innovation and negotiating reasonable timeframes for bid preparation.

### 3. SECURITY AND PRIVACY:

National Data Protection authorities and the future European Data Protection Board should clarify privacy and data protection requirements. This should address both national and international Cloud Computing implementations with a focus on health data, cross-border data transfer and Cloud contract terms and conditions. Here, it is important that there is a harmonised approach to certification schemes in health data, which should be issued at a European level. Likewise, regulators should widely consult stakeholders throughout the implementation phase of the new General Data Protection Regulation to ensure a harmonised enforcement of its provisions throughout the EU. We also encourage them to specifically reach out to healthcare providers to provide clear guidance on the practical implications of the new data protection framework.

There follows a list of five recommendations, organised by stakeholder group, that will leverage the benefits of Cloud Computing for healthcare.

## ACTIONS BY HEALTHCARE ORGANISATIONS

### 4. SHIFTING HEALTH IT SPENDING TO OPEX:

To realise the benefits and potential cost-savings from Cloud computing-based solutions, healthcare providers need to shift health IT spending from CAPEX to operational budgets. Making technology an operational expense will enable on-demand payment based on the capacity required. As requirements evolve and change, this will ease and speed up the budgeting process.

### 5. EDUCATE THE IN-HOUSE IT WORKFORCE:

Provide specific training materials and activities on Cloud Computing to in-house IT staff, further developing their understanding of the technical aspects as well as other areas such as data protection or Cloud Computing business models.

Adoption of Cloud Computing has been greater in primary care and ambulatory/outpatient settings than in acute care, mainly driven by the need to host basic IT functionalities such as scheduling, administration and billing as well as patient records.

# 05 ANNEX

## TABLE 1:
### EVIDENCE ON THE BENEFITS OF CLOUD COMPUTING IN HEALTHCARE

| CLOUD COMPUTING BEST PRACTICE: | BENEFITS: |
|---|---|
| **FINLAND** [8] | |
| Cloud-based Kanta Patient Data Repository offers citizens access their medical records. In March 2016, the number of people whose records have been stored in the Cloud-based Kanta Patient Data repository reached 4.895.847 (almost 90% of the entire country population). In 2015, over 49 million electronic prescriptions were also dispensed via the same Cloud Infrastructure, a 26% increase compared to 2014 | The Kanta Patient Data Repository service offers citizens the opportunity of examining their medical records, easily and irrespective of time and place. It also supports healthcare delivery where patients seek treatment outside their place of residence.The Kanta Prescription Centre enables patients to pick up their medicines with an electronic card from any pharmacy and access and renew electronic prescriptions. It also allows professionals to check patients' medication records and prevent possible adverse drug interactions and overlaps |
| **SCOTLAND** [9] [10] | |
| Emergency Care Patient Summary is hosted in a national cloud data centre, comprising demographic, prescribing data, and allergies for 99% of the Scottish population (approx. 5.5 million) | The system has reduced consultation times and improved patient safety in unscheduled and out-of-hours care, providing key information in emergency and out-of-ours care environments and reducing errors. NHS Boards and hospitals can monitor and predict number of emergencies and elective admissions as well as the number of beds occupied at regional, NHS Board and hospital levels |
| **ENGLAND** [11] | |
| Children's asthmatic inhalers were equipped with Internet of Things (IoT) connectivity that uploaded medication adherence data to the Cloud. When participants were not adhering to their medication regimen, alerts went out to the children and their care managers. By reminding the children to take their preventative doses and alerting care managers to follow up, providers were able to head off acute attacks and subsequent costly Emergency Department admissions before they happened | Three studies have shown a substantial reduction in the need for oral steroids, indicating a significant reduction in severe attacks and an increase in lung function. The study, undertaken by Dr Robert Morton (University of Sheffield), found that using this technology resulted in a 144% increase in adherence, a 14.9% increase in lung function and a 37% reduction in oral steroid use, indicating reduced severe exacerbations |
| **SPAIN AND LATIN AMERICA** [12] | |
| Saluspot interactive online health community enables professionals from primary care centres to treat patients who suffer from chronic conditions, such as heart failure, diabetes and hypertension | In the Valencia region, the use of this platform resulted in a 33% reduction of hospitalisations and a 50% reduction of primary care visits |
| **DENMARK** [13] | |
| The large-scale Chronic Obstructive Pulmonary Disease (COPD) TeleCare Nord pilot project has paved the way for nationwide telemedicine, providing COPD patients with the opportunity to measure and report data thanks to a cloud-enabled Web portal and tablet app technology | The project has demonstrated substantial benefits for both COPD patients (increased control and comfort) and public spending. Potential economic gains estimate an annual cost reduction of 7,000 DKK (€960) for each patient suffering from very severe COPD, primarily driven by fewer hospitalisations |

# 06 REFERENCES

## BIBLIOGRAPHY

[1] European Commission, "COM(2016) 178 final. European Cloud Initiative - Building a competitive data and knowledge economy in Europe," 2016. [Online]. Available: http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=15266.

[2] COCIR, "COCIR eHealth Toolkit. Integrated care: breaking the silos," Brussels, 2015.

[3] Time.lex, Milieu Law and Policy Consultancy, "Overview of the national laws on electronic health records in the EU Member States and their interaction with the provision of cross-border eHealth services," 2014.

[4] European Commission, Joint Research Centre, Institute for Prospective Technological Studies , "European Hospital Survey: Benchmarking Deployment of eHealth Services 2012-2013," 2013.

[5] Frost & Sullivan, "Opportunities in Healthcare Cloud Market in the US and Europe," 2014.

[6] R. Moore-Colyer, "Cloud, digital data and the IoT: The next steps for health and social care," V3.co.uk, 27 October 2015.

[7] European Commission, "COM(2016) 176 final. ICT Standardisation Priorities for the Digital Single Market," 2016. [Online]. Available: http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=15265.

[8] Kanta Finland, [Online]. Available: www.kanta.fi. [Accessed 3 May 2016].

[9] Gartner, "Health Information Exchanges: Global Lessons Learnt From Implementations and Best Practices," 2014.

[10] NHS Scotland, [Online]. Available: http://www.nisg.scot.nhs.uk/currently-supporting/emergency-care-summary. [Accessed 3 May 2016].

[11] R. M. Morton, "Randomised control trial to investigate whether electronic adherence monitoring with reminder alarms and feedback can improve clinical outcomes in childhood asthma. Abstract number: OA4772," in European Respiratory Society's International Congress 2015, Amsterdam, 2015.

[12] Mobile World Capital Barcelona, "RITMOS 2015: The emerging mHealth solutions to be applied in Latin America," 29 October 2015. [Online]. Available: http://mobileworldcapital.com/ritmos-2015-emerging-mhealth-solutions-are-set-to-be-applied-in-latin-america/.

[13] Danish Agency for Digitasation, "TeleCare Nord has a model for nationwide telemedicine," March 2016. [Online]. Available: http://www.digst.dk/Servicemenu/English/News/TeleCare-Nord-as-a-model-for-nationwide-telemedicine.

[14] Agfa-Gevaert N.V., "Most Used LIS System in France HEXALIS will be Showcased At EuroMedLab JIB-2015," Newswire Today.com, 22 June 2015.

## GENERAL INFORMATION ABOUT COCIR

COCIR is the European Trade Association representing the medical imaging, radiotherapy, health ICT and electromedical industries.

Founded in 1959, COCIR is a non-profit association headquartered in Brussels (Belgium) with a China Desk based in Beijing since 2007. COCIR is unique as it brings together the healthcare, IT and telecommunications industries.

Our focus is to open markets for COCIR members in Europe and beyond. We provide a range of services in the areas of regulatory, technical, market intelligence, environmental, standardisation, international and legal affairs.

COCIR is also a founding member of DITTA, the Global Diagnostic Imaging, Healthcare IT and Radiation Therapy Trade Association (*www.globalditta.org*).

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