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Health IT / eHealth In Europe

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Introduction

This report is published by the U.S. Commercial Service. It gives a snapshot of the European market for Health IT (HIT). Country specific reports can be found in our [Market Research Library](#).

HIT in the context of this report embraces a broad scope of related terminology and subsectors such as eHealth, mHealth, Electronic Medical/Health Records (EMRs/EHRs), telemedicine, telecare, remote patient monitoring/care, connected health, digital health, health 2.0, welfare technology, health telematics etc. The European Commission mostly uses the term eHealth, which they refer to as “the application of information and communications technologies across the whole range of functions that affect the health sector” and including “products, systems and services that go beyond simply Internet based applications” (2004). This definition more or less coincides with what in the U.S. context and in many scientific journal articles is referred to as HIT.

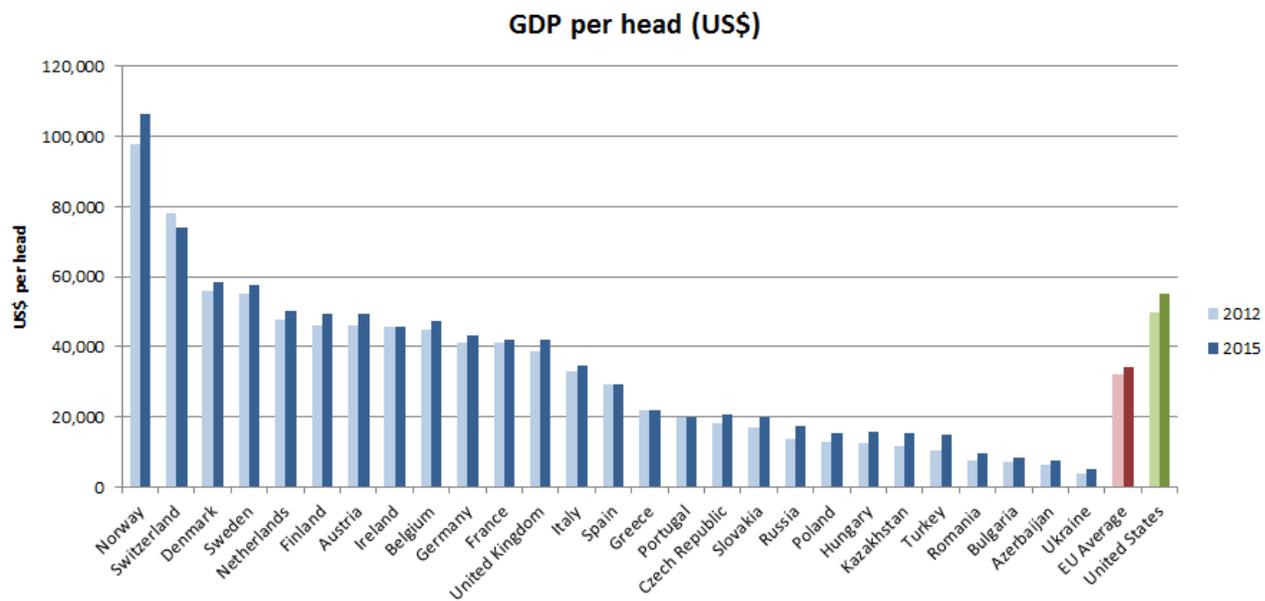
The report reflects ample market opportunities for U.S. HIT companies in the European market.

Market Demand

Europe in general

Europe consists of 27 soon to be 28 EU Member States and additional 22 countries. A list of country abbreviations and membership status is attached to this report. Total number of citizens is 733 million, accounting for 11 percent of the world population. Interestingly, 12.3 million EU citizens are resident in a Member State different from their origin (eurostat, 2011), which suggests a demand for interoperable systems.

The total European nominal GDP is 20,630 trillion USD (The Economist Intelligence Unit, 2012). Although European GDP overall is relatively high, there are major differences between the Member States, reflecting equivalent differences in the standards of living. As evident from the below graph, the average European GDP per capita is 31,980 USD, compared to 49,870 USD in the United States. Actually, only four European countries had higher GDP per capita in 2012 than the U.S., namely, Norway, Switzerland, Denmark and Sweden. Although the Western and Northern European countries have quite high standards of living, major increases are expected in the Eastern and Southern European countries. As an example, by 2015, GDP per capita for Ukraine, Turkey, Kazakhstan, Russia, Hungary and Romania are expected to grow by more than 25 percent (nominally) compared to 2012.

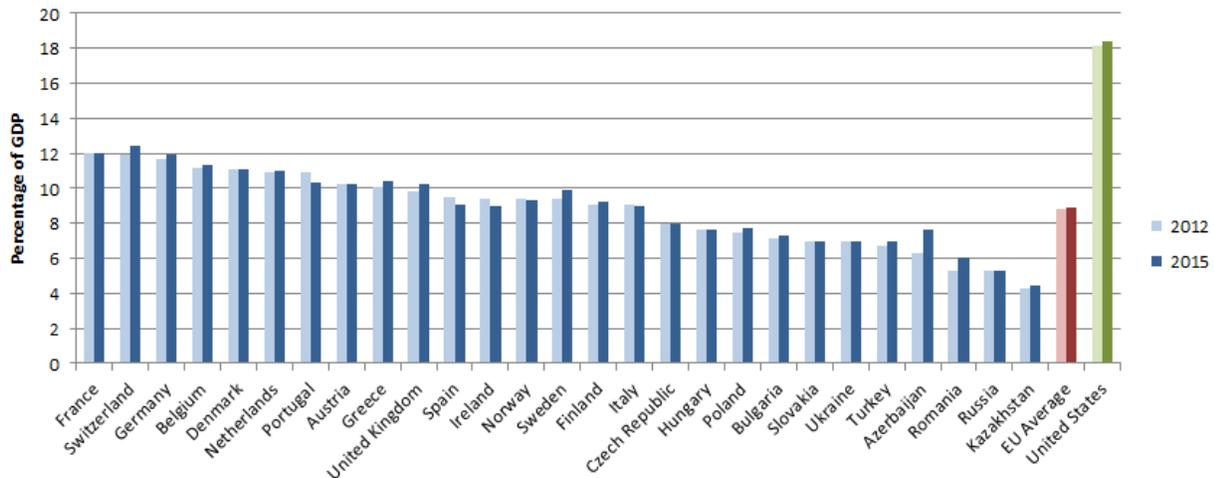


Source: The Economist Intelligence Unit (2012)

Healthcare expenditure

In 2012, the European Average healthcare spending as percentage of GDP was 8.8 percent, whereas in the United States, this figure was 18.1 percent. By 2015, these figures will have increased to 8.9 and 18.4 percent, respectively, indicating a relatively stable ratio. A distribution by country is displayed below.

Healthcare spending as percentage of GDP

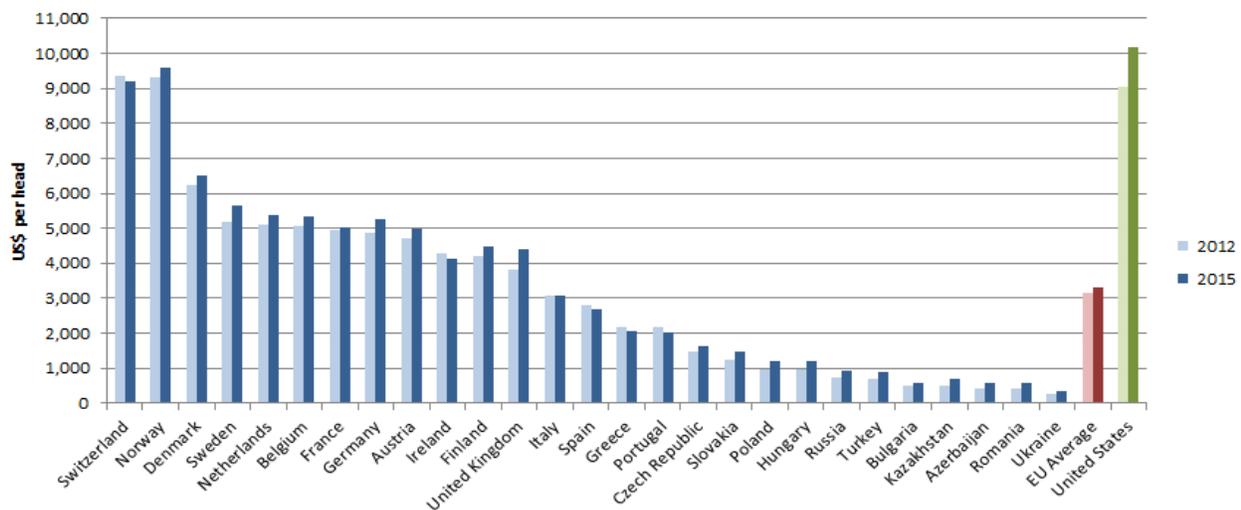


Source: The Economist Intelligence Unit (2012)

The 2012 average healthcare spending per head in Europe was 3,166 USD, ranging from 248 USD in Ukraine to 9,371 USD in Switzerland. In comparison, the United States spent 9,039 USD per head. The European average healthcare spending per head is expected to increase to 3,329 USD by 2015, indicating a nominal increase of 4.9 percent compared to 2012. For the U.S., this is expected to increase by 11.1 percent, reaching 10,164 USD.

In general, Northern and Western Europe are expecting increases of around 0-10 percent, whereas Southern European countries, such as Greece, Spain and Portugal are all expecting decreases of around 5 percent. Eastern European countries are expecting high growth in healthcare spending per head over the next three years. For instance, Romania, Azerbaijan and Kazakhstan are all expected to increase their healthcare spending per head by almost one third. A distribution by country is displayed below.

Healthcare spending per head (US\$)



Source: The Economist Intelligence Unit (2012)

Expenditure in HIT

eHealth is one of six prioritized markets in the European Commission's [Lead Market Initiative](#), a public-private dialogue to promote innovation and an open market. The Commission's [eHealth Action Plan 2012-2020](#) sets out the following goals and asks member states to work closely together with EU institutions to: 1) achieve wider interoperability of eHealth services; 2) support research, development and innovation in eHealth; 3) facilitate uptake and ensure wider deployment; 4) promote policy dialogue and international cooperation on eHealth at global level 5) improve legal and market conditions for developing eHealth products and services.

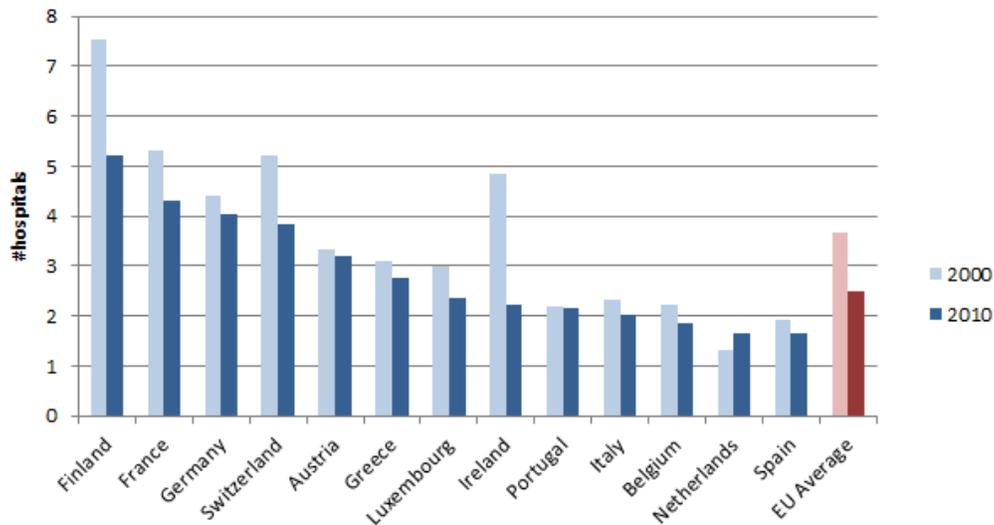
In 2011, the global telemedicine market was worth USD 11.6 billion. This is expected to reach USD 27.3 billion in 2016, representing a compound annual growth rate of 18.6 percent. Although the figures amount for the global market, the growth prospects are representative for Europe as well. The European telemedicine market is expected to be worth more than 6.6 billion USD per year by 2015 (European Commission).

Market Data

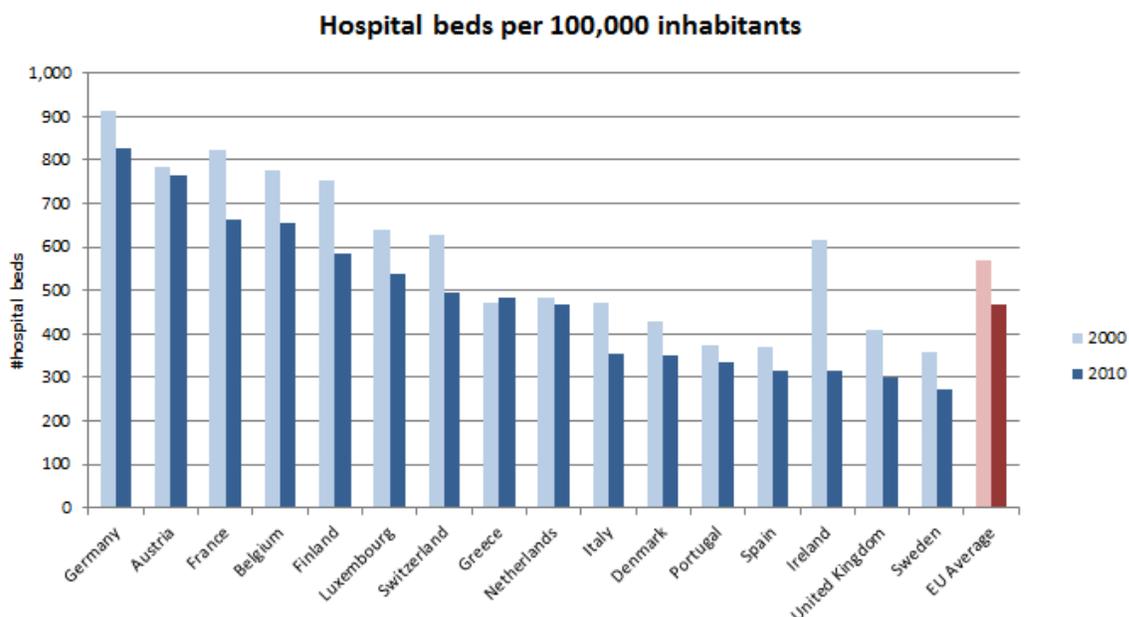
Hospitals

Over the past decade, the number of hospitals in Europe has decreased significantly. On average, there were 3.7 hospitals per 100,000 inhabitants in Europe in 2000. In 2010, this number was only 2.5, ranging from 1.7 in Spain to 5.2 in Finland. The same is the case for the number of hospital beds. There were on average 569 hospital beds for 100,000 inhabitants in 2000. In 2010, this number had decreased to 468, ranging from 273 in Sweden to 825 in Germany (World Health Organization: Regional Office for Europe, 2013). The reduction in both hospitals and hospital beds reflects the changes that most European countries have made in their healthcare systems and the accompanying focus on efficiency, centralization and integration (Hospitals in Europe: Healthcare Data, 2011). Below graphs display the number of hospitals and hospital beds in the different European countries:

Hospitals per 100,000 inhabitants



Source: World Health Organization, Regional Office for Europe (2013)



Source: World Health Organization, Regional Office for Europe (2013)

eHealth Deployment

eHealth has been high on the European Commission's [Information Society](#) (actions 75-78 specifically related to eHealth) policy agenda for more than a decade: starting with the eEurope framework, continuing into the i2010 strategy, and today as part of Pillar 7 (ICT for Societal Challenges) of the new Digital Agenda for Europe (DAE) for the period 2010-2015. The objectives are to improve the quality of care and at the same time reduce medical costs. In particular:

- Reduce medical errors, drug adverse events and associated costs (i.e. through computerized reporting systems for adverse events, ePrescription of diagnostic procedures, electronic health records, etc.)
- Improve adherence to prescriptions (through reminders and telemonitoring)
- Reduce in-patient costs while improving health outcomes (telemonitoring)
- Support and improve the work of professionals in various ways (picture archiving and communication systems, tele-radiology, computerised physician order entry, online transmission of clinical tests results)
- Streamline and make more efficient hospital administration (Integrated computerised systems for billing, order entry, discharging, etc.)
- Increase access and convenience for users (eBooking, access to their electronic health records, portability of their information across the system, etc.).

Apart from this, an increasing number of Member States have developed their own eHealth strategies and supporting instruments.

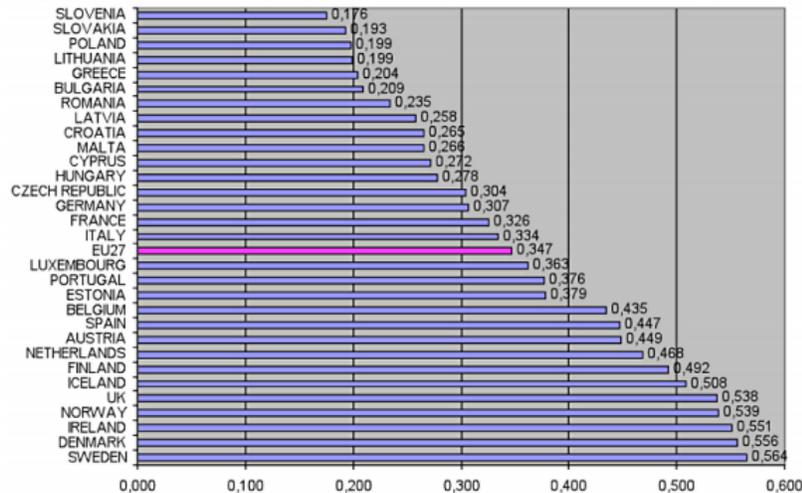
A European Commission JRC Scientific and Technical Report from 2011, "[A Composite Index for Benchmarking eHealth Deployment in European Acute Hospitals](#)" surveys CIOs and MDs in app. 300 acute hospitals in 30 European countries on the deployment of eHealth. The following 10 points summarize some of the most interesting findings:

1. More than 80 percent have a computer system connected to the internet
2. 53.3 percent support wireless communication
3. Around 40 percent have videoconference facilities and broadband above 50MBps
4. More than 70 percent have Electronic Patient Record, Integrated system for billing management, Electronic appointment booking system and Electronic Clinical Tests

5. Only 4 percent of hospitals provide their customer with online access to their personal health records
6. Only 8.7 percent provide telemonitoring services
7. Among user oriented applications, only eBooking (70.8 percent) seems to be quite widespread
8. 32.8 percent exchange electronically clinical information with hospitals outside their own system. 28 percent exchange clinical information with external specialists, and 27.6 percent with external GPs
9. Less than 5 percent exchange information electronically with healthcare providers in other countries
10. The highest percentage of in-country and cross border electronic exchange concerns radiology reports

Based on the survey, the Commission ranks the deployment of eHealth by country, with the Scandinavian countries and UK being the frontrunners where South East Europe remains with a significant potential, once technologically and financially ready (see below).

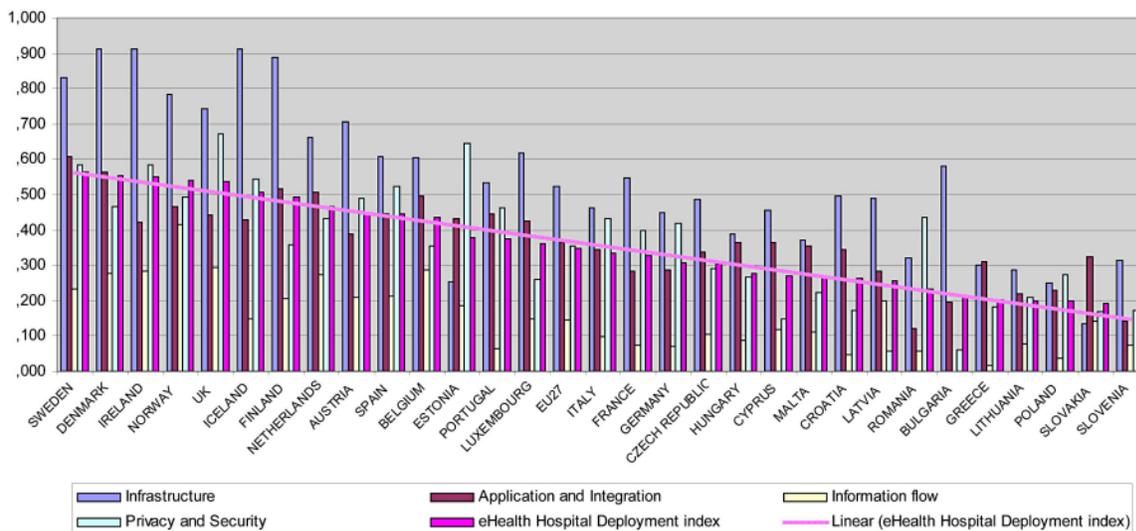
Hospitals' eHealth Deployment Composite Index: country ranking



Source: European Commission JRC (2011)

When also looking into the dimensions, it is interesting to see that for example Bulgaria ranks high in infrastructure, but lags behind in privacy and security and application and integration, possibly hindering equally advanced deployment.

Hospitals' eHealth Deployment Composite Index and dimension indexes: country ranking



Source: European Commission JRC (2011)

Based on the acknowledged model created by HIMSS Analytics in the U.S., [HIMSS Analytics Europe](#) has developed the European EMR Adoption Model (EMRAM), which identifies seven stages of EMR capabilities ranging from limited ancillary department systems to a paperless EMR environment. A snapshot of the model's European average is displayed below together with an estimated percentage of European acute hospitals at each stage.

European EMR Adoption Model SM		Europe
Stage	Cumulative Capabilities	
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing feeding outcomes reports, quality assurance, and business intelligence; Data continuity with ED, ambulatory, OP.	0,1%
Stage 6	Physician documentation interaction with full CDSS (structured templates related to clinical protocols trigger variance & compliance alerts) and Closed loop medication administration.	1,6%
Stage 5	Full complement of PACS displaces all film-based images.	15,0%
Stage 4	CPOE in at least one clinical service area and/or for medication (i.e. e-Prescribing); may have Clinical Decision Support based on clinical protocols.	3,8%
Stage 3	Nursing/clinical documentation (flow sheets); may have Clinical Decision Support for error checking during order entry and/or PACS available outside Radiology.	4,3%
Stage 2	Clinical Data Repository (CDR) / Electronic Patient Record; may have Controlled Medical Vocabulary, Clinical Decision Support (CDS) for rudimentary conflict checking, Document Imaging and health information exchange (HIE) capability.	24,6%
Stage 1	Ancillaries - Lab, Radiology, Pharmacy - All Installed OR processing LIS, RIS, PHIS data output online from external service providers.	18,1%
Stage 0	All Three Ancillaries (LIS, RIS, PHIS) Not Installed OR Not processing Lab, Radiology, Pharmacy data output online from external service providers.	32,5%

Source: Himss Analytics Europe (2012)

One third of hospitals are still on Stage 0 (many of them in Poland, Germany and Italy). At this stage hospitals are hardly improving clinical performance by the use of HIT. Less than 50 percent master Stage 2 or higher. Very few hospitals in Europe reach Stage 6 or higher. All in all, Himss Analytics Europe concludes that European acute hospitals still have a long and winding road to go in order to make optimal use of HIT.

Best Prospects

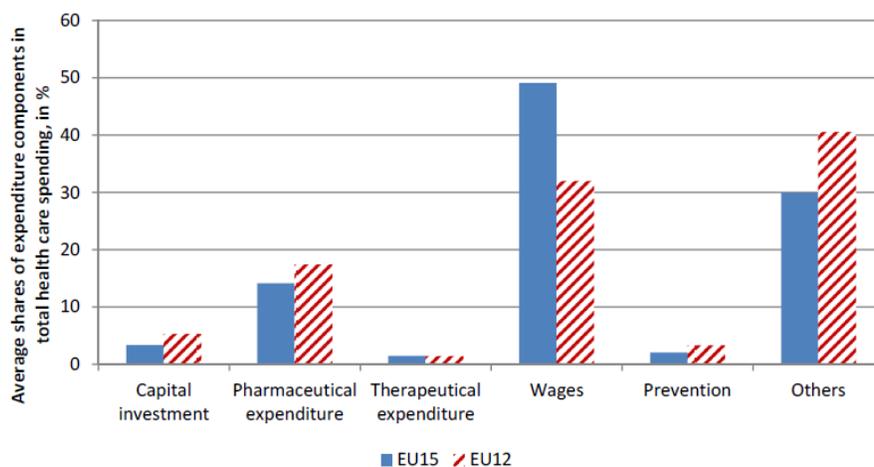
Technologies

Overall, there are two categories of technologies that are interesting for Europe: 1) any technology providing efficiency and cost reductions without reducing quality of treatment and 2) any technology offering treatment of previously untreated conditions.

The majority of European healthcare spending is on wages (The 2012 Ageing Report, 2012). Taking into consideration the increasing pressure on public budgets, it can be expected that both private and public decision makers will welcome technologies that allow them to reduce expenditure on wages.

Furthermore, with the shortage of healthcare professionals (especially in some areas like radiology), technology that reduces the administrative burden for professionals or allows for remote treatment is highly sought after.

Graph 3.3 - 10 year average shares of expenditure components in total health care spending (1999-2008), in % in EU15 and EU12



Source: Commission services, EPC (2008)

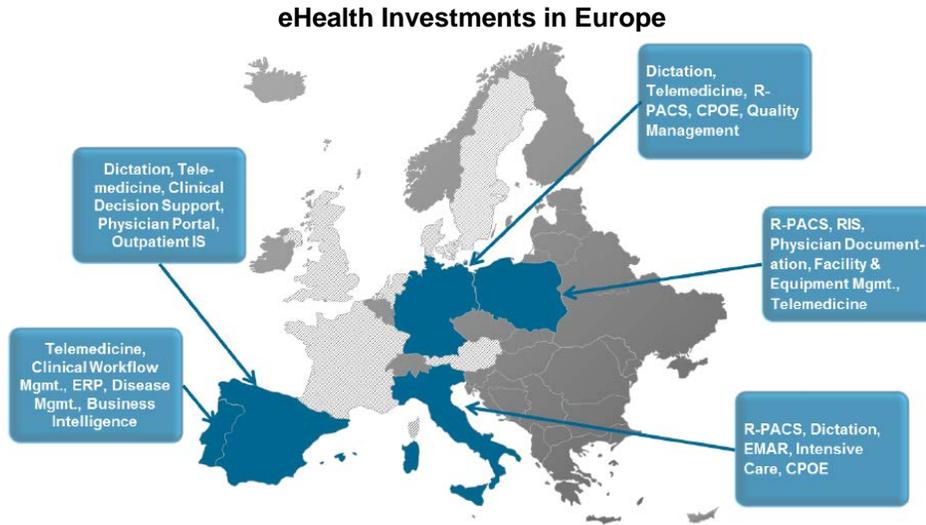
The previously mentioned European Commission survey on the deployment of eHealth in acute hospitals also listed which eHealth applications were most utilized by medical staff. These applications may also serve as indicators for best prospect technologies:

Utilization of eHealth applications by medical staff

Picture Archiving and Communication System (PACS)	67.6
Electronic order communication system for laboratory exams	62.9
Electronic patient record system common to most of the departments	59.9
eAppointment system	54.0
Electronic system to send and receive referral letters	49.6
ePrescription	39.4
Electronic system to send discharge letters to general practitioners	32.6
Videoconferencing for consultation	30.0
Telemonitoring of outpatients at home	8.3

Source: European Commission JRC (2011)

According to Himss Analytics Europe’s investigation of European acute hospitals, Italy and Poland invest heavily in picture archiving and communication systems (PACS) where Germany, Spain and Portugal prioritize telemedicine applications. Their findings indicate significant opportunities in Germany for computerized practitioner order entry (CPOE) vendors. CPOE is a critical component of Stage 4 in the EMRAM. Examples of primary eHealth investments in the investigated countries are displayed below.



Source: Himss Analytics Europe (2012)

Markets

In absolute terms, Germany and France have the largest HIT budgets. Several other indicators suggest that the Nordic Region and Great Britain are the most advanced HIT markets in Europe. Turkey, amongst other European countries, plans significant expansion in its hospital infrastructure in the years to come, leaving good prospects for U.S. companies. Other less developed South Eastern European countries offer particularly good prospects in the remote care segment.

Key Suppliers

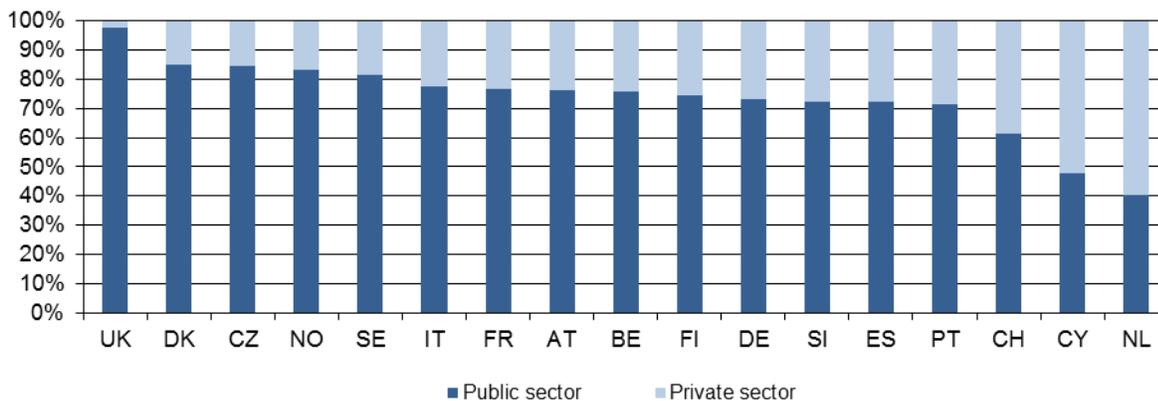
Large multinational players, such as CSC, IBM, Siemens etc. have a strong presence in various European countries, however, there is no vendor clearly dominating in a pan-European context. In some countries, like Italy, local and regional vendors have a big footprint. But in recent years U.S. vendors like Cerner, InterSystems, Epic, etc. increasingly take market share in Europe.

Prospective Buyers

Public Sector

The largest healthcare provider in the majority of the European Member States is the state itself. Most buyers of eHealth technology are hospitals and doctors.

Breakdown of health care expenditure by financing agent - 2008



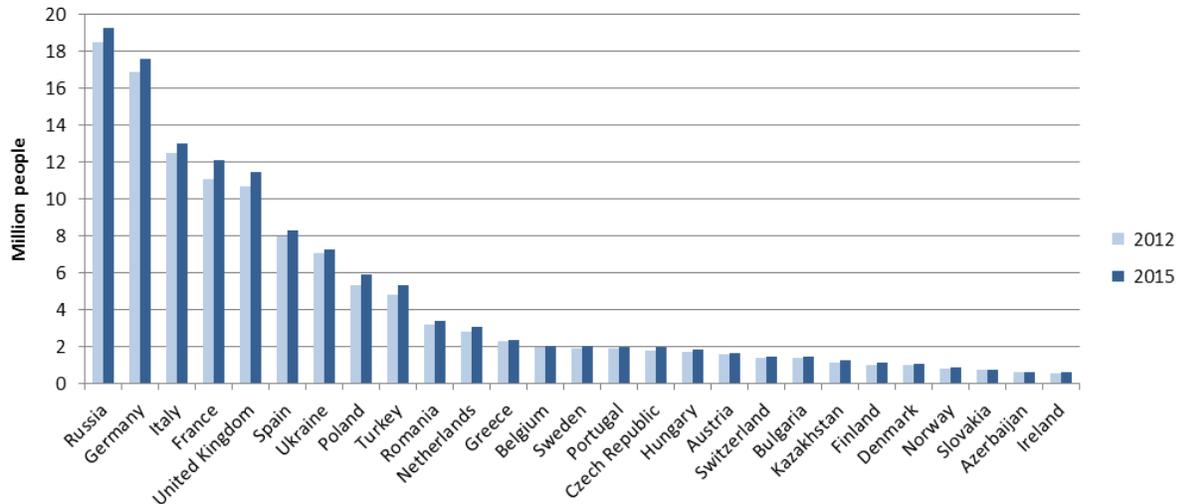
Source: The European Health Insurance Market in 2008 (2010)

As evident from above graph, the public sector plays a major role in the financing and provision of healthcare in Europe. On average, the public sector pays for 77 percent of total healthcare costs. Except for the Netherlands that introduced a new system in 2006, the public sector is the main source of financing in all European countries ([The European Health Insurance Market 2008](#)). Therefore, the respective governments will be the largest potential buyers HIT solutions.

European Citizens and State of Health

The total European population aged 65 and over is 123.3 million people. The average of population aged 65 and over is 15.9 percent. A distribution by country is displayed below.

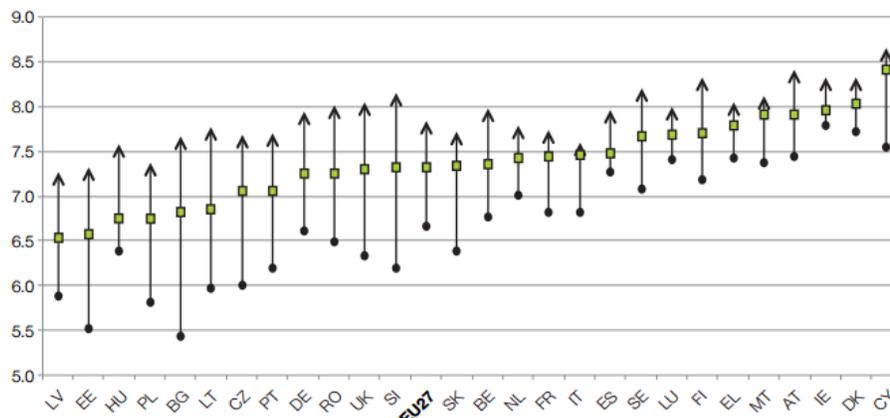
Population aged 65+



Source: The Economist Intelligence Unit (2012)

In their 3rd report on [“Quality of life in Europe: Impacts of the crisis”](#) (2012), the European Commission gives a good picture of the state of health of the European citizens. Most Europeans say their health is good or very good (64 percent). Nevertheless, 9 percent report having bad or very bad health, with a higher proportion for women (10 percent) than for men (8 percent). Nevertheless, this difference between sexes can be explained largely by differences among the cohort of those in the 65+ age group, in which 21 percent of women report having bad or very bad health compared to 16 percent of men. When rating their satisfaction with their own health on a scale from 1 (very dissatisfied) to 10 (very satisfied), Europeans have a mean score of 7.3. See country comparison below (the arrows reflect difference in opinion when consulting low- and high income parts of the populations).

Satisfaction with health, by country



Source: World Health Organization, Regional Office for Europe (2013)

Altogether, 28 percent of Europeans report having a chronic (long-standing) physical or mental health problem, illness or disability. There are also differences among Member States: chronic illnesses and disabilities are most frequently reported in Finland (45 percent), Estonia (40 percent), Denmark (38 percent), Latvia (37 percent) and the UK (36 percent). The lowest proportions reporting a long-standing health problem are found in Malta, Italy (both 15 percent), Greece, Slovakia (both 18 percent) and Slovenia (20 percent).

Market Entry

EU initiatives

There are a variety of EU initiatives driving the uptake of eHealth. They include:

- [epSOS](#): An eHealth interoperability project co-funded by the European Commission and private partners. It aims to provide cross-border exchange of personal health data by creating interoperable patient health summaries and e-prescriptions. Various U.S. companies are part of this consortium that seeks to create a harmonized market for health records.
- [Renewing Health](#): Large scale pilot co-funded by the European Commission aimed to exchange information between 9 advanced regions in Europe to validate and evaluate the effectiveness of telemonitoring and telecare services.
- [European Innovation Partnership on Active Healthy Ageing](#): Pilot project launched in 2011, including funding for projects under the [Competitiveness and Innovation Program](#) on health, ageing and inclusion as well as proposals for [Assisted and Ambient Living joint program](#) which focuses on the development of ICT-based solutions for older adults.
- [Broadband-European Connecting Facility](#): The European Union is investing almost 12 billion USD on improving broadband connection in an effort to promote greater deployment of eHealth in remote areas.

U.S. companies may find inspiration from [Business Models for eHealth](#) (2010), a Commission funded study which explores business models for implementation of value-creating and sustainable eHealth systems in Europe. It also introduces a set of operational guidelines and policy recommendations for the European Commission and other stakeholders.

The U.S. Department of Health and Human Services (HHS) and the European Commission's Directorate General for Communications Networks, Content and Technology (DG CONNECT) signed a [Memorandum of Understanding](#) on Cooperation Surrounding Health Related Information and Communication Technologies in December 2010 under the auspices of the Transatlantic Economic Council. In order to implement the MOU, both sides have published a "[Roadmap](#) to strengthen trans-Atlantic cooperation in eHealth and Health Information Technologies (HIT)". The roadmap supports innovative and collaborative public- and private-sector entities, including suppliers of eHealth solutions, to develop, deploy, and use eHealth science and technologies to empower individuals, support care, improve clinical outcomes, enhance patient safety and improve the health of populations. The main objectives are advancing the development and use of internationally recognized standards supporting transnational interoperability of electronic health information and communication technology and the development of a skilled health IT workforce

Procurement

Government procurement in Europe is bound by certain international obligations in the WTO Government Procurement Agreement (GPA) and the EU Public Procurement Directives. U.S. based companies in the EU are allowed to bid on public tenders covered by the GPA at federal level, including eHealth and telemedicine equipment and services. Tenders at sub-central level are not covered by the GPA. European subsidiaries of U.S. companies may bid on all public procurement contracts covered by the EU directives in the European Union.

The TED ([Tenders Electronic Daily](#)) database is the official online site where tenders that are covered by EU public procurement law have to be published. [eHealth Procurers Community](#) is an initiative sponsored by the European Commission for eHealth procurers to exchange information. For more information on procurement in the EU, please see Commercial Service [report on Procurement](#).

Structural Funds

Structural funds, largely managed by national or regional authorities, are available for eHealth. [The European Regional Development Fund \(ERDF\)](#) allocates 6.6 billion USD for health infrastructure investments from 2007 to 2013. In particular eHealth solutions are becoming effective in regions with low population density. For more information on Structural Funds, please see Commercial Service [report on Structural Funds](#).

Research Funding

eHealth is a priority for EU research funding in the current [Seventh Research Framework Programme](#) (FP7) which runs from 2007 to 2013, with a total budget of more than 66 billion USD for the period. Total funding under the FP7 is app. 8 billion USD on health and 12 billion USD on Information and Communications Technologies. eHealth research falls under "[Challenge 5 – ICT for Health, Ageing Well, Inclusion and Governance](#)" with several rounds of calls for proposals in the past few years. FP7 funding and participation is open to legal entities established in the European Union. Researchers, universities, institutes and commercial firms established in the United States are allowed to participate in FP7 projects with at least three partners from the EU. In addition to the minimum conditions laid down in the general Rules for Participation, specific programs or calls for proposals may lay down additional conditions regarding the number of participants. For more information on FP7 programs, please see Commercial Service [report on Funds for Research](#).

From 2014, [Horizon 2020](#) will replace FP7, and will bring together all EU research and innovation funding under a single program including the the Competitiveness and Innovation Framework Program (CIP) and the European Institute of Innovation and Technology (EIT).

Market Issues and Challenges

There are a variety of market barriers to implementing the large scale deployment of eHealth. Some of the most prominent ones are:

- lack of user trust and awareness
- lack of legal framework, for instance regarding data privacy and protection and reimbursement
- lack of technological expertise, both among end-users and medical staff
- interoperability issues
- linguistic issues and fragmentation of the procurement market

Legislation

There is no single EU legislation for eHealth, although there is a range of legislation that may apply to eHealth, including processing of personal data, the delivery of information society services, the use of medical devices, the conclusion of contracts at a distance and agreements that may have an influence on the competition between undertakings. Below are a few top pieces of legislation that may impact eHealth:

- **The Data Protection Directive:** Directive ([95/46/EC](#)) and [proposal for revision](#)
- **Directive on Patients' Rights in Cross-Border Healthcare:** Directive ([2011/24/EU](#))
- **Electronic Commerce Directive:** Directive [2000/31/EC](#)
- **Medical Device Directives:** Directive [90/385/EEC](#), Directive [93/42/EEC](#), Directive [98/79/EC](#)
- **Directive on Distance Contracting** Directive [97/7/EC](#).
- **Directive on Electronic Signatures:** Directive [1999/93/EC](#)

You may find further information in the European Commission published report [Legal and Regulatory Aspects of eHealth](#) (2008). There is also upcoming Commission guidance on legal aspects of mHealth.

Standardization

There is an overall lack of standardization and interoperability in eHealth in the EU, though the European Commission does have one [Mandate 403](#) which allows European Standards Organizations (ESOs) to develop and adopt European standards. There are other initiatives such as previously mentioned epSOS, the MOU between HHS and the European Commission, and [Continua Health Alliance](#), a coalition between

healthcare and companies with more than 230 Members, whose aim is to create interoperability guidelines and promote the harmonization of personal eHealth products.

Trade Events

Please contact the authors of this report for exhibiting/speaking/matchmaking opportunities and other Commercial Service organized events during the below conferences:

- [ConhIT](#), April 8-10, Berlin, Germany
- [Med-e-Tel](#) (by ISfTeH), April 10-12, 2013, Luxembourg
- [eHealth Week & The World of HIT Exhibition/WoHIT](#) (by Himss Europe and the European Commission), May 13-15, 2013, Dublin, Ireland
- [ECHAlliance Connected Health Leadership Summit](#), June 11-12, 2013, Oulu, Finland
- [Health 2.0 Europe](#), November 5-6, 2013, London, United Kingdom

Resources & Contacts

More information can be collected from the below key stakeholders. We can facilitate an introduction for you.

Industry associations:

- [Himss Europe](#)
- [European Connected Health Alliance](#)
- [Health 2.0 Europe](#) (chapters in Paris, London, Amsterdam and Copenhagen)
- [Continua Health Alliance](#) (Europe Union working group)
- [ISfTeH](#) - International Society for Telemedicine & eHealth

To date, the Commercial Service has reports on some of the top European markets for HIT, including [Germany](#), [Italy](#), [Denmark](#), [Greece](#), [Czech Republic](#), [Hungary](#). Contact the authors of this report for inquiries about other European markets, or search the Commercial Service's general [Market Research Library](#).

For More Information

The Commercial Service helps U.S. companies enter or expand activities in the European market by providing country-specific as well as pan-European counseling and market research, and by helping with identification of potential business partners and sales opportunities. For the HIT sector, U.S. companies are recommended to establish some kind of local presence or work through strong local partners. The Commercial Services offers a number of services, including customized market research, PR and marketing assistance, and high level events in embassy auditoriums or Ambassadors' residences (roundtables, receptions, dinners etc.) in order to bridge U.S. companies to local governments and decision makers. For more information, please contact:

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Comments and Suggestions: We welcome your comments and suggestions regarding this market research. You can e-mail us your comments/suggestions to: Customer.Care@mail.doc.gov. Please include the name of the applicable market research in your e-mail. We greatly appreciate your feedback.

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Appendix: Europe country abbreviations and EU membership

<u>Country</u>	<u>Abbreviation</u>	<u>Membership</u>
Albania	AL	Potential Candidate
Andorra	AD	
Armenia	AM	
Austria	AT	EU
Azerbaijan	AZ	
Belarus	BY	European Neighborhood Policy (ENP)*
Belgium	BE	EU
Bosnia and Herzegovina	BA	Potential Candidate
Bulgaria	BG	EU
Croatia	HR	Acceding Country – July 1, 2013
Cyprus	CY	EU
Czech Republic	CZ	EU
Denmark	DK	EU
Estonia	EE	EU
Finland	FI	EU
France	FR	EU
Germany	DE	EU
Greece	EL	EU
Hungary	HU	EU
Iceland	IS	EFTA** & Candidate country
Ireland	IE	EU
Italy	IT	EU
Kazakhstan	KZ	
Kosovo	KS	Potential Candidate
Latvia	LV	EU
Liechtenstein	LI	EFTA**
Lithuania	LT	EU
Luxembourg	LU	EU
Macedonia	MK	Candidate
Malta	MT	EU
Moldova	MD	European Neighborhood Policy*
Monaco	MC	
Montenegro	ME	Candidate Country
The Netherlands/Holland	NL	EU
Norway	NO	EFTA**
Poland	PL	EU
Portugal	PT	EU
Romania	RO	EU
Russia	RU	
San Marino		
Serbia	RS	Candidate country
Slovakia	SK	EU
Slovenia	SI	EU
Spain	ES	EU
Sweden	SE	EU
Switzerland	CH	EFTA**
Turkey	TR	Candidate Country
Ukraine	UA	European Neighborhood Policy*
The United Kingdom	UK	EU
The Vatican City		

*European Neighborhood Policy: Agreement between Countries than either fall outside geographical Europe, or are not currently suitable for potential EU membership counties due to socio-economic situation, and the EU members on some economic and cultural issues.

**European Free Trade Area