mHealthinsights

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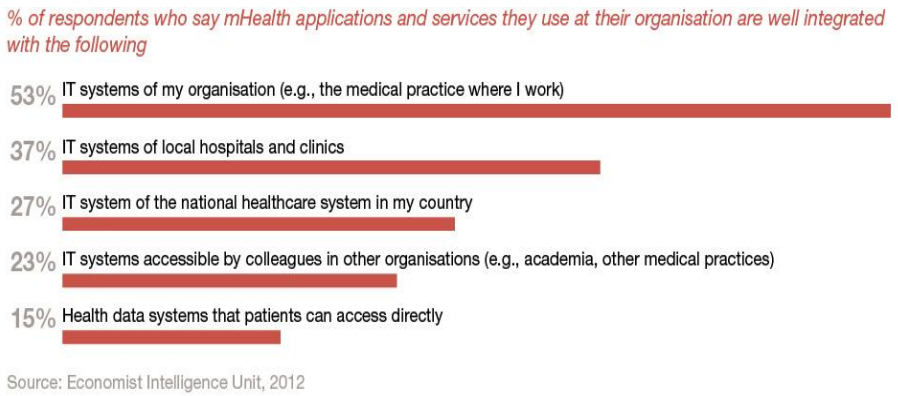
Interoperability: An essential component for scalable mHealth

Highlights

- Interoperability is a critical step in supporting scalable mHealth solutions, and can bring many benefits to providers and payers, but adoption of standards and guidelines has been inconsistent
- For a change in the status quo, buyers of the market i.e., providers, payers and regulators must impose pressure on their incumbent vendors to enable interoperability as part of their value proposition

According to the PwC-commissioned Economist Intelligence Unit report, ***Emerging mHealth: Paths for growth***, only 53% of doctors say that mHealth applications and services they use work with their organisation's information technology (IT) and even fewer say they are integrated with technology in other parts of the health system (see chart 1). The lack of interoperability between technologies is often to blame.

Chart 1: Poor integration of IT systems impedes update of mHealth



Interoperability, by definition, is the ability to create end-to-end solutions by interconnecting components and systems from multiple vendors forming a network. It is a critical step in supporting the broad commercial adoption of mobile health (mHealth), which is following that of other information technology developments in open interfaces, platforms and guidelines. The Continua Health Alliance, a non-profit industry organisation that certifies mobile health solutions globally, already publishes interoperability guidelines for connected health devices, but adoption of these guidelines has been inconsistent.

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[1] Economist Intelligence Unit, *Emerging mHealth: Paths for growth*, p. 19-20, 2012.

The predominant business model in connected health of the past, and which continues to be followed by many today, is for large, entrenched vendors to offer proprietary, closed end-to-end solutions. This closed approach is intended to create a dedicated customer base and a competitive advantage for the medical device company. For this reason, many healthcare systems are disparate and difficult to integrate, and only the vendor seems to know the secret on how to unlock the data.[2]

As a result, we're seeing a mixed approach in the adoption of standards and application programming interfaces (APIs). Some successful mHealth apps provide open or semi-open APIs allowing software to communicate with each other across a dozen other devices and apps. Others maintain the *status quo* of closed systems—despite the many benefits it offers to providers and payers. In the end, interoperability across diverse systems and vendors is essential to create truly scalable mHealth solutions.

Benefits of interoperability

The value proposition varies across each of the key stakeholders, but the vast majority of the value accrues to healthcare providers, followed by payers. Established, traditional device companies actually see very limited benefit with their current closed technology solutions.

The value proposition for healthcare providers stems from decreased errors rates, improved work flow, decreased IT support, and improved predictive capability.

Healthcare payers can realise decreased IT costs for consumer-oriented wellness solutions as well as chronic disease management solutions. It also allows for greater flexibility in choosing the right mHealth solution for the situation. System compatibility leads to higher adoption rates, resulting in a greater ability to control costs.

For new manufacturer entrants seeking to enter the healthcare space and gain market share from the larger players, the key benefit arises from reduced design, testing and implementation costs with new devices because the communication interfaces have only to be developed once.

And finally for consumers, scalable mHealth solutions would help drive adoption if they are able to integrate more data and services into one interface. Presently, individual technology interfaces are offered for every need. A user-friendly platform that allows patients to add or eliminate solutions required would enhance customer service.

Lower costs

Interoperability reduces complexity and allows for faster and less costly integration of devices. Based on interviews with different stakeholders who develop and deploy interoperable medical devices solutions, PwC estimates that integration of an interoperable device into a mobile health solution or an electronic medical record (EMR) takes only one to three weeks instead of about three months (the time it typically takes to develop and test the code). It can also save an estimated US$40,000 to US$50,000 in design costs. This is because interoperability reduces costly and time consuming custom integrations between each solution component. Instead, the integration of each new device will require only limited testing efforts.

An example was during the Great East Japan Earthquake in 2011. Healthcare organisations in Japan developed a remote monitoring blood pressure solution for evacuees in campsites without a hospital infrastructure. In approximately two weeks, the whole solution was built with devices and software from six different companies due to their compatibility with interoperability guidelines. By following the same standards, all components of the blood pressure solution were ready to use just like the peripherals used in the consumer electronics and computer industry.

Greater speciality and convenience

New technology entrants, telehealth providers, and mobile operators can specialise in their core competency rather than attempting to build out an entire end-to-end solution. A disease management start-up can focus on developing a software app that is interoperable with a range of devices from other vendors rather than attempting to build the entire solution suite to monitor a chronic disease. The same economy of scale applies to payers, which can support a broader selection of devices instead of being restricted to a specific model.

An example of a scalable solution is the maternal mHealth programme Mobile Baby. Health practitioners can offer primary healthcare to pregnant women in rural Africa and the Middle East regions using the service through a self-sustaining ecosystem. By partnering with neighbouring telecom providers, the application seamlessly works with phone-based decision support systems, remote diagnostics, payment structures, third-party tools and data storage for its

[2] Economist Intelligence Unit, *Emerging mHealth: Paths for growth*, p. 19-20, 2012.

successful implementation across borders. Since the programme first launched in Tanzania in 2011, the region's in-medical facility delivery rates have risen to 70% from a baseline of 40%.[3]

Increased confidence among patients and regulators

Vendors must demonstrate the clinical efficacy and return on investment of mHealth solutions to gain physician acceptance. Interoperability plays a key role in this, because it ensures greater data accuracy, which in turn increases the confidence of both physicians and patients. And a device that is interoperable with various systems enhances data security and reliability thus making it easier for device manufacturers to gain regulatory approvals.

As patients and physicians become more confident in the compatibility and usability of disease management mHealth apps and devices, adoption rates will increase. This helps payers contain costs by monitoring outcomes and gathering information on clinical conditions.

Demand for greater interoperability comes from healthcare providers, payers and regulators

Interoperability standards, guidelines and APIs have demonstrated their value to providers and payers in supporting the growth and adoption of mobile devices. So far, those that have most quickly applied and adopted interoperability have been small start-up companies using open APIs, while the larger companies have either resisted or slowly applied global standards and guidelines.

There is a gradual shift among the healthcare industry where the implementation of interoperability standards is becoming more prevalent. In early March 2013, Cerner, McKesson, Allscripts, athenahealth, Greenway Medical Technologies and RelayHealth announced the launch of the Common Well Health Alliance™ a not-for-profit organisation that will "support universal, trusted access to healthcare data through seamless interoperability." Aimed at lowering costs for patients and providers, the partnership will pilot a national infrastructure that will help developers and providers link and match patients as they transition through care facilities, regardless of the underlying software system; foster a simple patient-centred management of data sharing consents and authorizations in compliance with regulations; and help providers deliver a history of recent patient care encounters, and with appropriate authorization, patient data across multiple providers and episodes of care. The intention is to achieve data liquidity through systems and promote common platforms and policies.[4]

The future of online services is also moving away from stand-alone applications to cloud services where interoperable systems stream their data into a customised view based on the individual's need. For example, one product developed by a US telecommunications company is creating a cloud-based interoperability portal that enables same-language dialogue between different electronic health record platforms. The product promises to connect any electronic medical record or health information exchange securely.

Some regulators are also starting to recognise their value and support their adoption. In the US, the Food and Drug Administration (FDA) has supported efforts to drive greater interoperability, and the Centers of Medicare & Medicaid Services, through the third stage of its Meaningful Use criteria launching in 2016, will enable patients to generate data in their electronic health record, making interoperability a prerequisite.

But to truly see a difference, the buyers of the market—providers and payers—must impose pressure on their incumbent vendors to enable interoperability as part of their value proposition. In this regard, information technology, telecommunications and new entrants will likely lead the charge in instigating change. This, along with payers, providers and regulators—and consumers who buy the devices—pushing for greater interoperability, we expect to see more device companies and vendors delivering on this capability.

[3] Cargo,Mojca. "What is the role for Mobile Operators in MDG4? A look at Etisalat's Mobile Baby service", www.gsma.com/mobilefordevelopment/2012/09, September 2012.

[4] "Cerner, McKesson, Allscripts, athenahealth, Greenway and RelayHealth Announce Ground Breaking Alliance to Enable Integrated Care", press release, 4 March, 2013, www.businesswire.com/news/home/20130304006293/en/Cerner-McKesson-Allscripts-athenahealth-Greenway-RelayHealth-Announce

Contacts

For a deeper discussion please contact:

mHealth Team for PwC

Global

Patrick Figgis
Global Health Industries Leader
+44 (0) 207 804 7718
patrick.figgis@uk.pwc.com

Michael F. Swanick
Global Pharmaceutical and
Life Sciences Industry Leader
+1 267 330 6060
michael.f.swanick@us.pwc.com

Vicki Huff
Global Technology, Communications
and Entertainment & Media
Leader
+1 408 817 4136
victoria.huff@us.pwc.com

Thomas Tandetzki
Global Communications
Industry Leader
+49 211 981 1105
thomas.tandetzki@de.pwc.com

Leads by territory

Africa, Europe & Middle East
Dagfinn Hallseth
+47 (0) 9526 1248
dagfinn.hallseth@no.pwc.com

Australia
John Zelcer
+61 (3) 8603 0436
john.zelcer@au.pwc.com

Austria
Andrea Kdolsky
+43 1 501 88 2959
andrea.kdolsky@at.pwc.com

Belgium
Marc Sel
+32 3 2593410
marc.sel@be.pwc.com

Canada
William Falk
+1 416 687 8486
william.f.falk@ca.pwc.com

China/Hong Kong
Mark Gilbraith
+86 21 2323 2898
mark.gilbraith@cn.pwc.com

Finland
Karita Reijonsaari
+358 (0) 9 22800
karita.reijonsaari@fi.pwc.com

France
Benoît Caussignac
+ 33 15 657 6902
benoit.caussignac@fr.pwc.com

Germany
Volker Fitzner
+49 69 9585 5602
volker.fitzner@de.pwc.com

Sevilay Huesman-Koecke
+49 (0) 69 9585 3675
sevilay.huesman-koecke@de.pwc.com

Greece
Kelly Vamvaka
+30 210 687 4400
kelly.vamvaka@gr.pwc.com

India
Mohammad Chowdhury
+91 22 6669 1560
mohammad.chowdhury@in.pwc.com

Rana Mehta
+91 124 330 6006
rana.mehta@in.pwc.com

Sujay Shetty
+91 22 666 91305
sujay.shetty@in.pwc.com

Japan
Naoya Takuma
+81 80 4959 7701
naoya.takuma@jp.pwc.com

Mexico
Armando Urunuela
+52 (0) 55 5263 6000
armando.urunuela@mx.pwc.com

Netherlands
Cokky Hilhorst
+31 (0) 8879 27384
cokky.hilhorst@nl.pwc.com

Singapore
Abhijit Ghosh
+65 6236 3888
abhijit.ghosh@sg.pwc.com

Sweden
Jon Arwidson
+46 (0) 10 213 3102
jon.arwidson@se.pwc.com

Switzerland
Axel Timm
+41 (0) 58 792 2722
axel.timm@ch.pwc.com

South Africa
Diederik Fouche
+27 11 797 4291
diederik.fouche@za.pwc.com

United States
David Allen
+1 713 356 6424
david.allen@us.pwc.com

Daniel Garrett
+1 267 330 8202
daniel.garrett@us.pwc.com

William H. Molloie
+1 858 677 2531
w.molloie@us.pwc.com

United Kingdom
Sheridan Ash
+44 (0) 20 7212 2171
sheridan.ash@uk.pwc.com

Andrew McKechnie
+44 (0) 20 7212 6327
andrew.mckechnie@uk.pwc.com

Stephen McMillan
+44 (0) 121 265 5901
stephen.mcmillan@uk.pwc.com