



Accenture Life Sciences

Rethink Reshape Restructure... for better patient outcomes

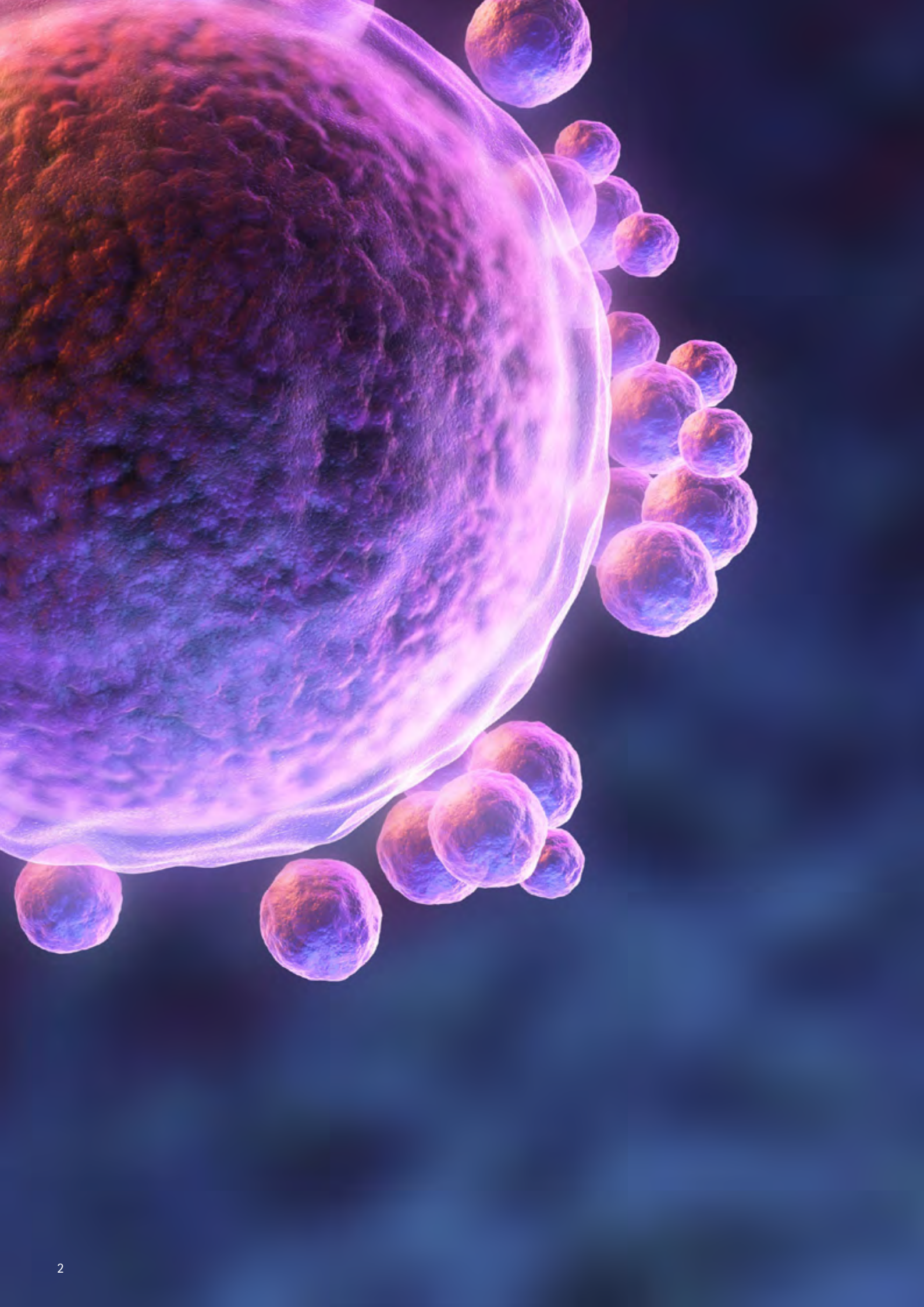
Brave New World

The Transformative Power of Healthcare Technology M&A in Life Sciences

By James Crowley and Arda Ural, PhD

A grayscale microscopic image showing a large, textured cell on the left and several smaller, spherical cells floating to its right.

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Explosive advances in healthcare technology are creating "technology M&A" opportunities leading to new patient-outcome focused pharmaceutical business models. Digital is a crucial vehicle to create healthcare technology-enabled services that enhance the value of products and improve patient care. With deal activity between biopharmaceutical and medical device organizations at an all-time high—the race is on to reshape product portfolios and place bets on new technology to position for growth and innovation.

A shifting landscape

To say that the pharmaceutical industry is changing is an understatement. Healthcare reform in the United States has started to shift risk from payers to providers and, in turn, to consumers. In response to this fundamental change, huge effort is being focused on innovative ways to take cost out of the system, demonstrate superior health outcomes and improve patient experience and satisfaction. 2014 marked a high point for M&A activity in life sciences with more than \$390 billion in transactions,¹ a level that dwarfed the previous years' volumes. So far, this momentum is sustained in 2015. This deal activity has been, in part, an attempt to expand product portfolios to areas of specialty medicine and grow existing portfolios.

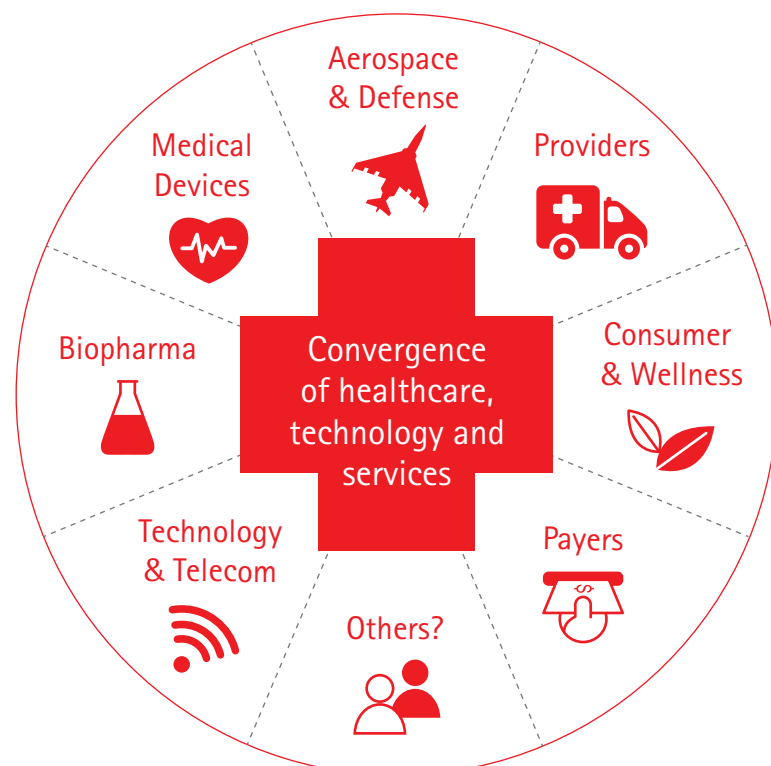
Significant advances are now possible thanks to the ability to capture and exchange patient health information through electronic medical records, mobile devices that can interconnect through lower-cost cloud-based networks, and sensor technologies to monitor patient behavior. What's more, big data and analytics capabilities allow for the processing of vast amounts of data sets quickly to enable individualized interventions at the point of care.

All of these factors have led to unprecedented explosive growth in new applications and capabilities for managing healthcare and delivering better patient outcomes. This

convergence of healthcare, technology, and services has created new entrants and forced new collaborations among unlikely players across the healthcare ecosystem (Figure 1).

Figure 1

Deal making re-defined: Healthcare is undergoing a fundamental shift of risk, creating new entrants, and forcing new collaborations and convergence with technology and services across the ecosystem.



The need to go beyond pills and apps

Life sciences companies need to redefine their role in the new healthcare ecosystem, going “beyond pills and apps.” Providing a combination of products and embedded services to augment market position and deliver improved patient outcomes is not traditionally a core pharmaceutical skill set. Yet pharmaceutical, biotech and medical device companies are well poised to participate in this transformation since they have the ability to go beyond just offering products to offering solutions to the largest healthcare cost-contributors, including cancer, diabetes, heart failure, COPD and neurologic disorders. Several companies have already started to invest in this space, (Figure 2) exploring healthcare technology-enabled products and services.

In particular, healthcare technology assets offer an attractive way for companies to begin connecting with patients, providers and payers. Accenture estimates that the commercial opportunity for pharma to transform into a digital business is greater than \$100 billion in the United States².

Commercial Reach

Increasingly the audience for health information, for both prescribers and patients, are shifting to mobile devices and offering commercial

avenues to target messages to the right audience at the right time. This is the first step for exploring how to take advantage of healthcare technologies. But many superficial attempts at building apps have been met with limited success (see sidebar).

Adherence Programs

Drug non-adherence is one of the largest issues in patient engagement. Pharmaceutical companies have responded with a number of targeted programs including apps. However, success in this field has yet to be proven and will likely involve a more holistic approach that encompasses digitally-enabled interventions across stakeholders including patients, providers and care givers. In fact, our recent survey of 10,000 patients around the world found that less than one in five patients are even aware of the services available to help them manage their health yielding further evidence that current efforts are not adequately reaching patients.

Clinical Research

Companies are exploring applications of healthcare technology in clinical research both to monitor and collect patient data (wearables to monitor cardiovascular risk or gather patient reported data or patient activity) and to ensure adherence to clinical protocols.

At-Risk Care

Customers of life sciences companies are struggling with how to control care and costs. As a strategic partner, life science companies can help shoulder some of these burdens by taking on some of the risks associated with patient health outcomes. Using a combination of patient monitoring, adherence programs, outreach and predictive analytics, health care technology can help providers and those around the care ecosystem to understand health risks and deliver the most appropriate solutions (e.g., predictive analytics, personalized medicines).

Clinical Evidence

The first phase of evidence-based care was showing patient outcomes through studies. The next phase will rely on showing results in the “real world.” Leading companies can understand clinical practice (through health records and claims data), patient behavior (patient monitoring, patient reported outcomes) and other variables (environmental factors) and show the real impact of their products and services.

Pharma is active in creating apps but has achieved limited results



There were are more than 725 apps available from 11 pharma companies



Equates to 65 apps / company on average compared to 1–2 apps from typical health app publisher



But the apps have shown limited consumer interest

Pharma companies with the most downloaded apps (over 6.6MM downloads since 2008) have less than 1MM active users

Source: “Pharma companies have many apps, relatively few downloads” mobihealthnews, 2014

Figure 2

Non-exhaustive list of publicly-disclosed examples of life sciences companies investing in healthcare technology.

Company	Action	Rationale
Biogen	Announced in December 2014 the use of Fitbit in 250 Multiple Sclerosis (MS) patients to track their level of activity and sleep patterns ³ .	Biogen has five MS drugs on the market. The disease affects patients' mobility, and Biogen says collecting data on a daily basis—about how much and how fast MS patients walk, for example—could yield data about the progression of the disease and lead to better treatments.
Merck & Co	Created Merck Global Health Innovation Fund focused on healthcare technology and digital health fields ⁴	Allows Merck to understand healthcare technology trends outside of the core pharmaceutical business.
Novartis	Strategic partnership with Google announced in July 2014. Financial terms remain undisclosed (future revenues will be shared) ⁵ \$100M invested in Qualcomm Ventures in January 2015 ⁶	Develop a "smart lens" with non-invasive sensors, microchips, and miniaturized electronics embedded in a contact lens, which can measure body glucose levels in real time, correct vision for patients with presbyopia, etc. Develop products and services that "go beyond the pill" by leveraging Qualcomm Ventures' field experience in wireless technologies and digital health.
Otsuka	Announced partnership with Proteus Ltd. in July 2012. Financial terms remain undisclosed ⁷	Develop commercial products in therapeutic areas of unmet medical need by combining Otsuka's renowned pharma with Proteus's digital health feedback system and novel sensor-based technologies.
Roche	Invested \$1.2B in Foundation Medicine in January 2015 ⁸	Create next generation personalized healthcare in oncology by combining Foundation Medicine's genomics and molecular information with Roche's expertise in the field of oncology.
Sanofi	Partnership with MannKind for \$150M in August 2014 (incl. 35% profit share) ⁹	Combine Sanofi's rapid acting inhalable insulin with MannKind's new palm-sized Dreamboat inhaler technology.

New role for pharma M&A

Pharma has traditionally looked at M&A as a source for therapeutic assets to fill the development pipeline¹⁰. But turning that lens to healthcare technology can generate a differentiated market position and help re-define life sciences companies' role in the new healthcare ecosystem: positioning them as a solution provider and thus changing their perception from being a contributor to healthcare costs to an essential player in helping deliver improved health outcomes.

If the flow of venture funding is a leading indicator for emerging innovation, Figure 3 offers a guide for life sciences companies towards areas to consider for future investment. Life sciences companies need to overcome the fragmentation of the space to identify the right technology in the right space at the right stage of maturity.

There are thousands of companies innovating in the space. These entities range from multi-billion dollar established technology firms (Google, Qualcomm, Apple, etc.) that are intent on participating in the healthcare growth spur, diversifying revenue

beyond their core business, to teams of entrepreneurs trying to gain access to funding from life sciences companies to fund disruptive technology.

Life sciences companies can leverage this transformative healthcare technology wave by creating interconnected ecosystems and exploring promising technology assets from a pool of

thousands as a source of growth and innovation to add to portfolios. They can then integrate digital healthcare technology to augment an existing product's revenue model, or bring in healthcare technology-enabled services to supplement the market position of a traditional pharma product.

Figure 3
2014 Healthcare venture funding for top six categories¹¹

Rank and Category	2014 Investment
1 Analytics and Big Data	\$393m
2 Healthcare Consumer Engagement	\$323m
3 Digital Medical Devices	\$312m
4 Telemedicine	\$285m
5 Personalized Medicine	\$268m
6 Population Health Management	\$225m

Source: Rock Health Digital Health Funding Year in Review, 2015

Rare disease diagnosis at the point of care

Isabel Healthcare¹² is a venture-backed company that offers a web-based system designed to assist clinicians in diagnosing rare diseases. The company provides a dynamic diagnosis checklist within the normal workflow either as a standalone tool or fully integrated with the electronic medical record (EMR). The system, used at 125 hospitals in the US, contains possible diagnoses with critical "Don't Miss Diagnoses" flagged. When integrated into the EMR system the software provides "one click" seamless diagnosis support with no additional data entry. The company is also developing patient tools to help with self-diagnosis to prepare consumers for informed discussions with providers. The net result: reduces the risk of an important diagnosis

being missed, improving the overall quality of patient care. This capability can offer pharma companies with rare disease portfolios an opportunity to acquire new patients, which is the single-most important value driver in the rare disease space.

The Technology used

The cloud-based clinical decision support system is fully-integrated with several leading EMR systems. The company has APIs operating the software within the hospitals' EMR system with no need to exit the clinical workflow when entering patient information or prescribing tests or medications. The software uses machine learning algorithms

to scan the information routinely captured during providers' workup, whether unstructured or structured data, and instantaneously provides a diagnosis checklist for review.

Healthcare benefits

The company has set new standards for the clinical testing of decision support systems after undergoing a robust, peer-reviewed validation process over 16 years to demonstrate its accuracy, effectiveness and value. To date, more than 20 articles including independent clinical studies, multi-center collaborative studies, and the company's own studies as developers have appeared in prestigious peer-reviewed journals.

Pharma needs to untap the potential of Healthcare Tech M&A to transform its business model

Using healthcare technology to augment clinical outcomes will be an increasingly important part of the pharmaceutical corporate business model. There are several at-scale examples to indicate that the healthcare technology enabled M&A model is sustainable. There are some immediately actionable areas where healthcare data and technology can provide unique opportunities and insight. Life sciences companies who can apply their M&A tools, identify these opportunities, and test and scale up new healthcare technology-enabled business models will gain greater operational agility and competitiveness.

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