Team GamePlan

Personalized Health Management

CS5351: The Business of Software

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1. Introduction

Over the past decade, health and fitness has become an increasingly integral part of people's lives for a complex set of reasons, including the heightened awareness of the health benefits associated with healthy living. People are now living longer, and wish to live better by taking a bigger role in managing their health – by monitoring their bodily functions; crafting and adhering to a goal-directed diet and exercise plan; and striving for work-life balance.

In the marketplace, consumer health shelves are being stocked with qualitatively different wares, going beyond simple portable heart rate monitors and home exercise videos. This wider selection includes products such as waterproof headphones for swimmers, fitness-oriented video games, advanced weighing scales with features like body fat percentage estimation. Even within the domain of home exercise videos, there has been an explosion in variety tailored to a diverse set of fitness objectives such as burning body fat, building muscle mass or increasing stamina for long-distance runs and swims.

At a broader level, Personalized Health Management, or PHM, is gaining popularity. The fact that consumers are increasingly interested in taking a bigger role in managing their health (and even disease) points to a large market opportunity. This potential growth has no doubt been made possible by advances in computational and communication technology, enabling the development of solutions allowing mass customization of health management and organization of personal health obligations. Indeed, this nascent market segment is projected to grow rapidly within the next 5 years.

In this report, we examine the market landscape and outlook for PHM. We also touch on the place of PHM in the wider health ecosystem and present an analysis of possible scenarios based on two major uncertain factors that will steer the development of this industry. We also provide corresponding recommendations for sensible courses of action that may be taken in the event that each of the scenarios considered pans out.

2. What is Personalized Health Management: Explanation

The PHM sector delivers technology-based solutions encompassing one or more of the following three aspects (*Figure 1*):

- Organization and Administration of Healthcare
- Achievement of Personal Health Goals
- Disease Management

These are explained below:

Organization and Administration of Healthcare

A lot of tedium is associated with the mundane work of organizing and administering one's own healthcare. Consider the example of managing one's vaccinations (*Figure 1*). There is a sequence of actions that require a tedious search process which can be off-loaded onto an expert, automated system, leaving one with a minimal set of actions to be responsible for.

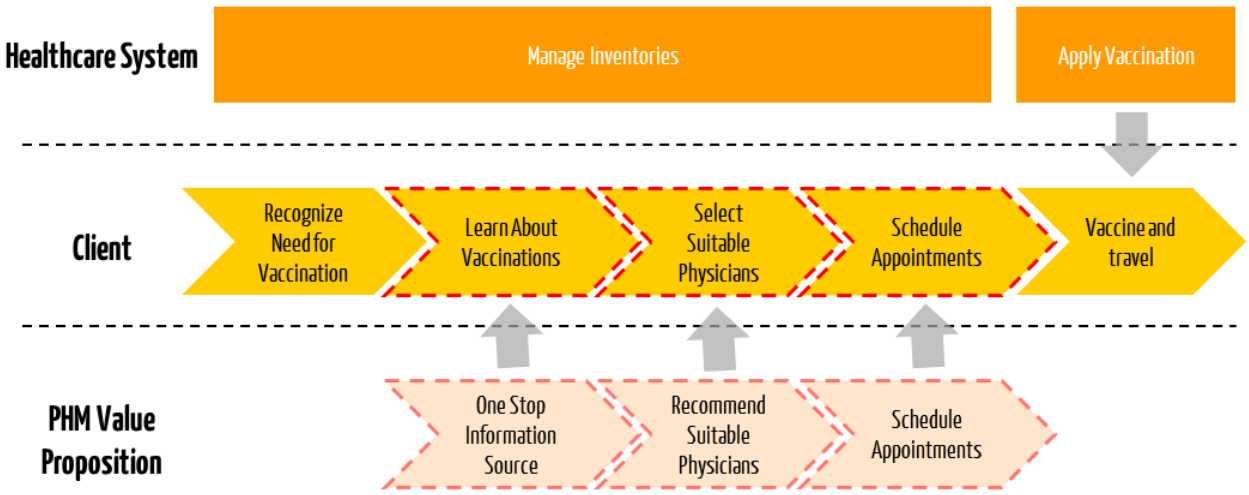

Figure 1. Use Case: Vaccination Scheduling

This aspect of PHM is equivalent to creating a shared service centre that specializes in administrative tasks such as locating a nearby GP with the shortest expected waiting time and making a reservation before one leaves home, saving time and reducing waits.

Achievement of Personal Health Goals

To the end of achieving personal health goals (e.g.: weight loss, achieving some level of athletic performance), many enthusiasts "do their own research" to create plans of action. This design process is fraught with "trial and error" and is extremely time consuming. Expert systems are well-placed to provide meaningful advice tailored to users' goals, progress and preferences (*Figure 2*).

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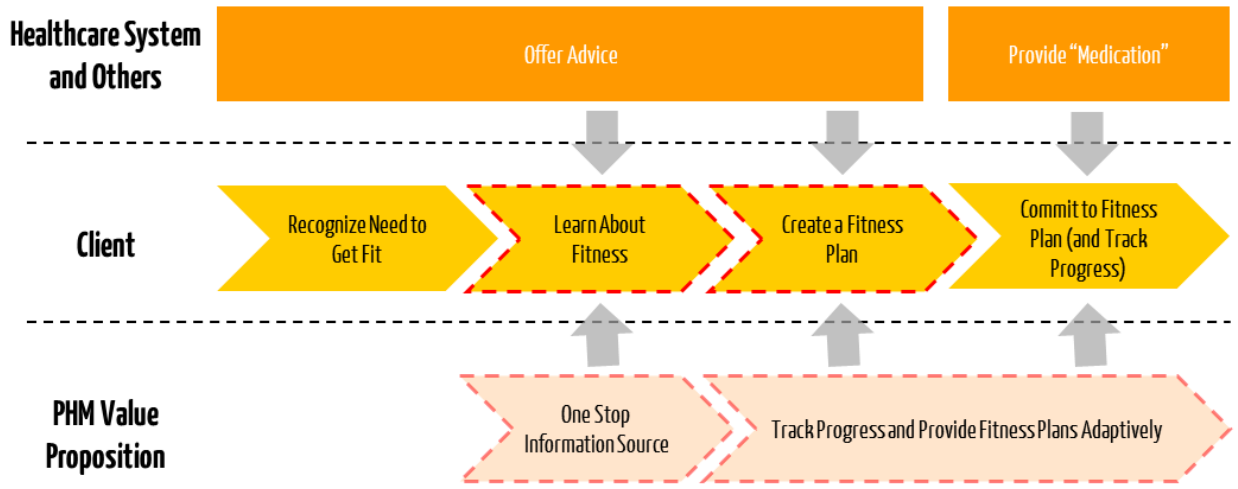

Figure 2. Use Case: Fitness Management

Disease Management

Living with disease is difficult, especially when it forces one to live within tightly circumscribed bounds in order to reduce the risk of additional complications. For instance, diabetics must ensure that their blood sugar levels only fluctuate within a band, planning their diets to respect this constraint. Unfortunately, the overloaded healthcare system typically is only able to provide very generic plans that do not conform to patient preferences, reducing welfare and quality of life.

A suitably designed expert system would be able to perform the same data driven computations as physicians and at the same time factor in the preferences of patients, as the following example illustrates (*Figure 3*):

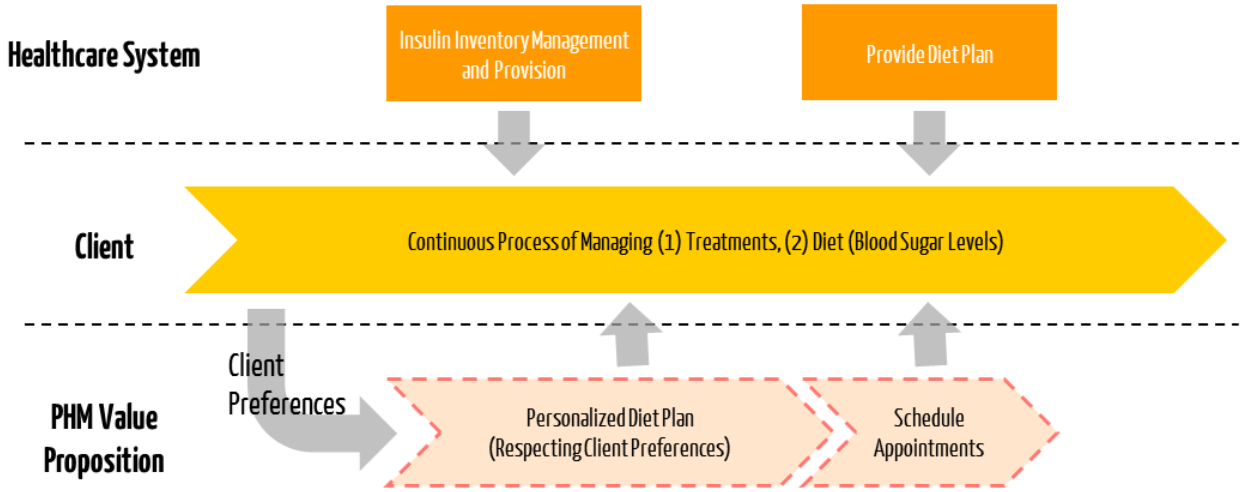

*Figure 3.*Use Case: Living with Diabetes (Nutrition Management)

Such systems will free up capacity in an overloaded healthcare system, promising improved overall healthcare outcomes. Furthermore, at the level of each of the many patients being treated, the potential for mass customization enables considerable improvements in well-being within the constraints imposed by disease conditions. (This would most likely be achieved with literal computational maximization using personalized models of well-being.) The importance of this contribution cannot be overstated.

3. Personalized Health Management in the Wider Healthcare Ecosystem

The healthcare ecosystem consists of multiple players working together, arguably in a fragmented manner, to deliver healthcare outcomes. These players include general practitioners ("GPs"), Pharmacies, Specialists, Wellness Practitioners, Hospitals and Insurers, to name a few (*Figure 4*).

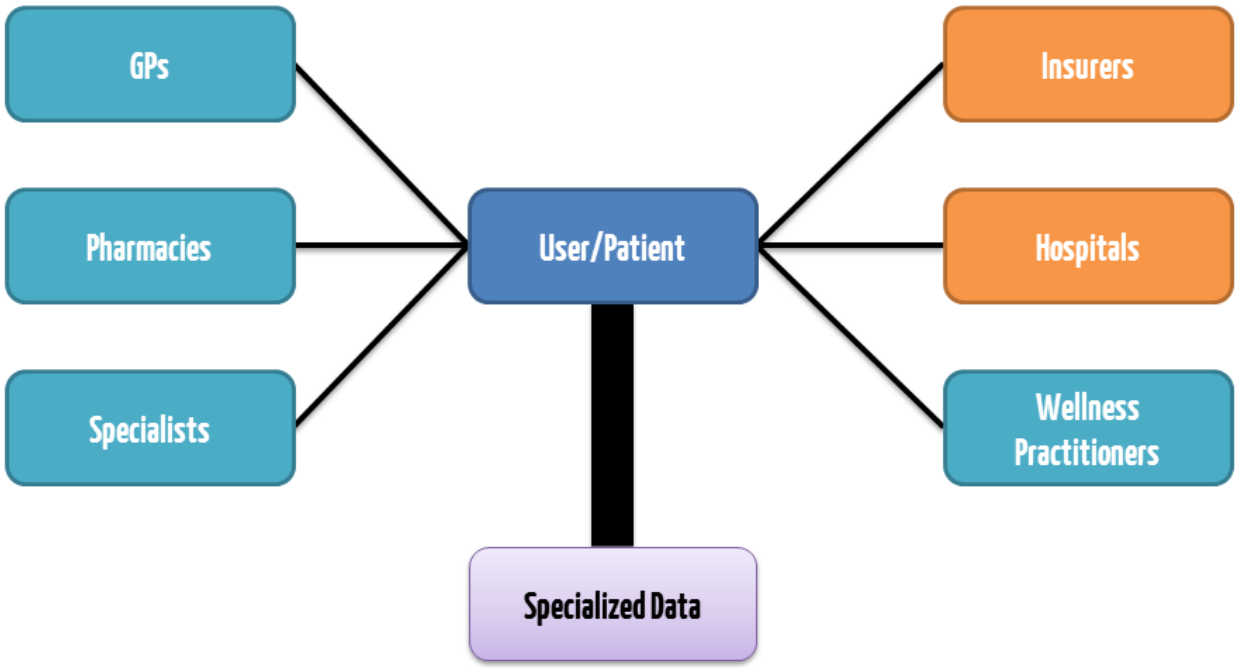

Figure 4. Healthcare Viewed from the Consumer Perspective

Presently, the single point of contact is the user or patient, who typically deals with many mundane and tedious administrative tasks associated with orchestrating the care of his/her health. Furthermore, he/she may also have to deal with the cognitively heavy task of going through specialized information, even just headlines, to form a possibly inaccurate picture of how to best make health decisions.

As an industry, PHM promises to be an intermediary that facilitates mundane administrative tasks and even reduces the cognitive load associated with straightforward but tedious tasks that are information intensive and unnecessary (*Figure 5*).

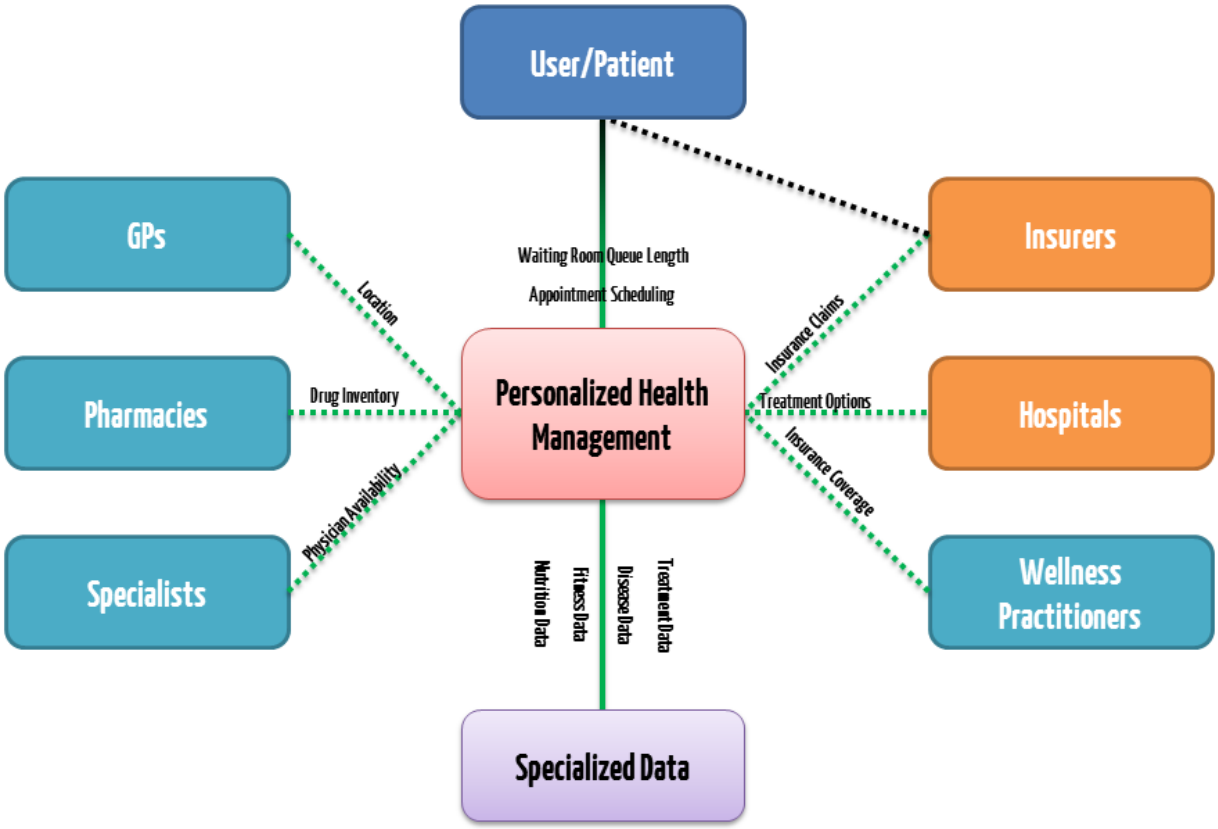

Figure 5. Personalized Health Management

While PHM may be used by consumers directly, it is foreseeable that some consumers may remain more comfortable with face-to-face contact with their healthcare practitioners. In this respect, PHM may be used to support healthcare practitioners in their work. Consider, for instance the diet planning example from earlier. A physician using such a solution would be able to provide his or her clients more effective care more efficiently. In this sense, by joining the wider ecosystem, PHM systems would be able to achieve potential synergies.

Integrated PHM could then be a platform for bigger things, and it is not too inconceivable that other vendors with businesses peripherally related to health might tap into this ecosystem as well.

4. Industry Analysis

Current Market Trends

There are already hints that PHM has already surfaced in the mass market, most notably in the health and fitness market where technology is empowering consumers to assess their fitness levels, set achievable goals, track progress and make exercise more rewarding. Products such as heart rate monitors, calorie counters, and more recently, fitness devices like Nike FuelBand and Jawbone UP that track exercise progress have been emerging in the current marketplace. Even video games manufacturers like Microsoft (Xbox) and Nintendo (Wii) have introduced fitness-oriented games that allow users to simulate exercise activities. Interestingly, in large part due to the design of the aforementioned gaming platforms, these have proven to be extremely popular, especially among casual gamers. (*Figure 6* below illustrates the fitness technologies purchased by consumers last year.)

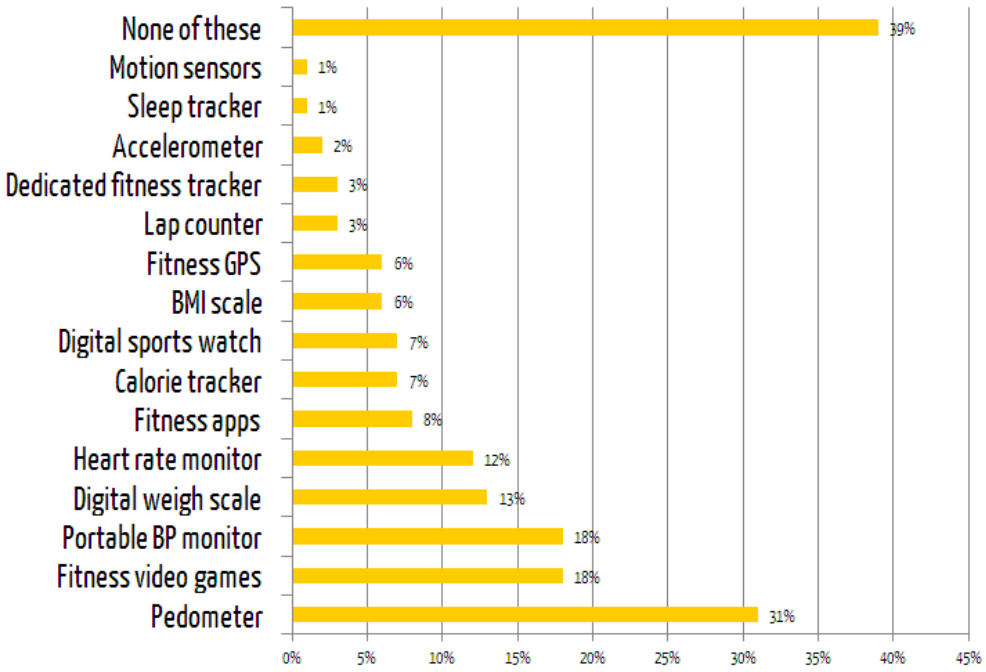

Figure 6. Fitness gadgets bought by consumers last year

Besides the general increased use of health-related technology devices and apps in the market, positive signs are emerging that further illustrates the potential and growth of the PHM segment. To provide some statistics, more than 220 companies will showcase their health-and-fitness products at CES in 2013, a 30% increase compared to last year; 30 million wearable health devices are shipped in 2012; 60% of urgent care visits could be addressed virtually; 88% cost savings could be achieved by using biometric devices to monitor patients with serious conditions *(Consumer Electronics Association, 2012)*.

The interest on the part of healthy individuals to use wearable technology and sensors to support their health goals hints at a likely willingness to rely more on technology, and even the willingness to leverage technology for the more serious purpose of coping with disease.

Market Size and Total Addressable Market

Here we establish that there is a sizable likely market for PHM, making it both viable and potentially profitable. Examining Figure 7, the personalized medical care segment, one of our two addressable markets, is presently only a USD 2 billion market. However, if telemedicine or the use of telecommunication and information technologies to provide clinical health care at a distance takes off, the market has the potential to reach USD100 billion. We rate this as very likely on the basis that the prospective strains on the healthcare sector are likely to spur innovation along these lines.

The nutrition and wellness market size is double the size of the personalized medical care market at USD 200 billion. This is in part due to its maturity as a market segment. Its size and relevance of PHM also point to it being a valuable market opportunity.

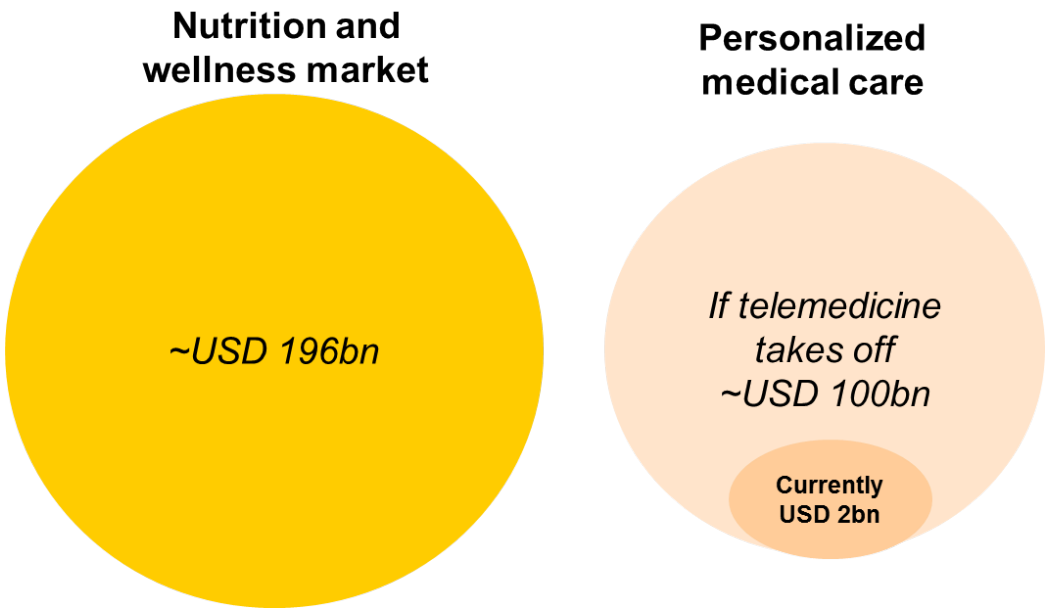

Figure 7. The two key addressable markets

In Figure 8, we estimate the total addressable market that PHM will serve.

We begin by considering fitness enthusiasts who appreciate the use of technology to support superior fitness outcomes. From a base of the entire US population, we classify as such enthusiasts people that exercise for more than 30 minutes a day. According to the US Census Department, only 5% of the US population fall into this category. Based on an average spend of $500 per person on fitness per year, and a 30% allocation to technology, we arrive at a market

opportunity of USD 1.64 billion here.

For the other market directed at disease management, we form an estimate based on an examination of 4 major diseases plaguing the USA: namely Asthma, Alzheimer's Disease, Diabetes and Heart Disease. There are an estimated 90.4 million that suffer from these diseases. Estimating that this figure forms 80% of the chronic disease market and postulating that 30% of those with chronic diseases may have more than 1 chronic disease, we arrive at a market size of 79.1 million. Chronic disease typically entails huge expenditures on healthcare, and we model a USD 1500 per year per person spend on technology-related healthcare, leading to a USD 118 billion market size. This is a huge nascent market that dwarfs the one based on fitness. In part this is due to technology not being the dominant expenditure category in the former. But perhaps most importantly, disease management is a necessity for sufferers of chronic disease.

Fitness Enthusiasts Market Size

All figures in USD m

Age Distribution	Male	Female	Total	% enthusiasts	Fitness Enthusiasts
0 - 14	32.1	30.7	62.8	NA	-
15 - 24	22.1	21.2	43.3	7%	3.0
25 - 54	63.7	63.6	127.3	5%	6.4
55 - 64	18.3	19.7	38.0	3%	1.1
> 65	18.4	24.1	42.5	1%	0.4

Total market size (in population)	10.96	
Average spend	$500	
% spend on tech	30%	
Total market size (in dollars)	**$1,643.94**	*a*

Disease Management Market Size

All figures in USD m

Chronic Diseases	
1. Asthma	26
2. Alzheimer's Disease	5.1
3. Diabetes	32.8
4. Heart Disease	26.5

Total	90.4	
Overlapping %	30%	
Estimated % of chronic disease covered	80%	
Chronic disease market size	79.1	
Average spend on technology	$1,500	
Total market size (in dollars)	**$118,650**	*b*

Figure 8. PHM Total Addressable Market

We believe the market is primed for further acceptance of the PHM segment, with various pieces in place to guarantee the growth of the larger segments, which are projected to grow at a rate of 11% annually over the next 5 years.

In total, we see a USD 120 billion addressable market. This is huge. Most of this may not be realized within the next 5 years especially in disease management. However, as solutions mature and both patients and physicians buy into the market, growth will be accelerated by the inexorable force of economic gravitation.

Current Players in Personalized Health Management

A diverse range of companies exist and are emerging in PHM. We previously identified three major aspects of the PHM solutions they provide and will now cite examples of existing firms according to what we believe are the dominant characteristic of their solutions.

PHM solutions supporting the *organization and administration of healthcare* typically include services such as medical charting, appointment scheduling, online communication between patients and medical professionals that is facilitated by geo-spatial data and electronic medical records. Examples of companies offering such services as their core offerings include Practice Fusion, Dossia, iCouch, Geisinger, Patients Know Best and Simplee. We will describe Practice Fusion in greater detail.

Practice Fusion's core value proposition is its provision of free web-based Electronic Health Records (EHR). A full spectrum of services including e-Prescribing, medical charting, online booking, scheduling, mobile access, referrals, billing, and imaging is seamlessly integrated with this EHR data. Surprisingly, Practice Fusion charges neither physicians nor patients for these services, but uses targeted advertising to generate revenue. Since its founding in 2005, Practice Fusion grew strongly and established a large user base. Today, there are over 100,000 medical professionals across 49 specialties using this free web platform to serve more than 50 million patients. Though the company is private and thus is not obliged to publish comprehensive financial information, information from public sources reveal that Practice Fusion has received about USD 134 million in funding so far.

PHM solutions focusing on helping users *achieve health goals* include familiar names to smartphone users, such as RunKeeper, Jawbone and GAIN fitness. Less well-known offerings such as tailored diet and exercise plans are also emerging in the market.

One such company is Dynamic Ideas Health, which offers the Lifestyle Analytics System (LiA) that designs a personalized meal and diet plan. LiA leverages analytics and optimization technology to process existing data and user feedback to create customized plans. Indeed, one of the founders noted that one is more likely to stick to a diet plan if the meal plan proposes

food tailored to one's own taste. Contrary to similar offerings in the sector that use generic (population-level) data, LiA makes heavy use of personal data, a model that we believe will become increasingly prevalent going forward.

PHM solutions in *disease management* are specialized solutions that address patients' direct demand for better care, leveraging large amounts of historical medical data and research.

One such solution is PatientsLikeMe, an online community for people with health conditions that forces them to change their lifestyles. Unlike traditional giants in the healthcare industry who have resources to sponsor expensive clinical research and gather data from its strong industry network, PatientsLikeMe pools medical information from its massive users to enable large scale analyses. In some sense, it is like a social network for patients. Patients share their health conditions and treatment histories, use population statistics to guide their medical decisions and report the outcomes (adding to the collection of medical data). To generate revenue, PatientsLikeMe sells aggregated, anonymized data to partners such as pharmaceutical companies and medical device makers. There are currently around 200,000 registered users contributing over 2000 conditions and more than 1 million treatment and symptom reports. So far, PatientsLikeMe has raised USD 30 million in funding. Other than PatientsLikeMe, large players such as Eliza Corporation, GNS healthcare and IBM, and also some start-ups such as Comprehend Clinical and Nodality offer disease management solutions.

To visualize existing players' offerings, we have identified two characteristics that define the approaches adopted (*Figure 9*).

Figure 9. Players and Positioning

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dimension relates to

5. Analysis of Trends

To study the growth prospects of Personalized Health Management, we examine the macro-environmental trends using a STEP (social, technological, economic, political/legal) framework, utilizing it to identify the factors driving PHM growth.

Social: Evolving Norms and Behaviour

Evolving social norms and demographic trends drive both the desire to use and the need for PHM. While people are increasingly getting involved in the management of their own health, global demographic shifts points to an aging population in developed countries. This, coupled with the likely inability of healthcare systems to meet these rising capacity needs makes the development of an efficient PHM sector necessary.

While people increasingly understand the benefits of a healthy lifestyle, they are taking steps to achieve it in a disciplined manner. With the unprecedented access to information through the

Internet, people are taking the initiative to learn about and take ownership of their own health. This is demonstrated by a number of phenomena: (1) "Internet self-diagnosis" where people consult a doctor only after they formed a basic judgment of their illness via Google/WebMD-based diagnoses, (2) increased un-prescribed usage of personal medical measurement devices such as heart rate monitors and blood pressure monitors, (3) increased use of applications to help manage diet and monitor health metrics like heart rate, blood pressure and body temperature.

More evidence may be drawn from other aspects of life. At the workplace, work-life balance is emphasized increasingly and it is common for sports activity groups to form within organizations. Health and fitness clubs are observed signing deals with organizations to provide their group membership to local gyms. In schools, physical fitness is now a criterion for measuring school excellence. Furthermore, increasingly many marathons, biathlons, triathlons, dragon boat races, and other sporting events are being organized to cater to the growing fitness communities. In the Google and iTunes online application stores, more than 40,000 mobile health applications are available as developers see the market potential of health-related apps business.

Alongside these trends, the world's urban population is aging drastically. People are living longer and senior citizens require disproportionately more healthcare services. This will further strain the already understaffed healthcare industry, where healthcare providers are under tremendous physical and mental stress trying to meet the needs of an overwhelming number of patients seeking healthcare. As such, there is an urgent need for the use of technological solutions as a force multiplier for the capabilities and expertise of healthcare staff, freeing up capacity that may be better used for complex tasks that cannot be easily automated.

Based on how society has been evolving and will evolve, PHM not only promises to relieve some pressure on the existing healthcare system, but also helps to increase the quality of life. Notably, implicit in this is a virtuous cycle wherein as more people manage to remain healthy even at an old age, strain on the healthcare system is reduced, enabling better care for those who require it and a faster transition back to health for them.

Technology

Data is meaningless until it is transformed into information for further knowledge. The amount of data required to describe each user used to be the main factor limiting the proliferation of data-driven healthcare. However, recent advances and breakthroughs in sensor technologies, mobile technologies, cloud computing and basic biomedical research have laid the technological foundations for effective data collection, efficient data sharing and processing.

The term *Big Data* refers to large collections of data which cannot be effectively managed and processed with conventional analytics tools due to its size. Such collections of data, in the PHM setting, are typically collections of data from many users/patients. Effective personalized health management requires the intelligent use of "big data" and user-level data. Advances in

computational technology have made the previously intractable problem of processing "big data" merely "challenging".

By integrating patient user-level data with population-level data ("big data"), individuals can benefit from the experience of countless others. The increased specificity and statistical power suggested implies that better healthcare can be delivered at the same or an even lower cost.

Sensors are becoming cheaper and more accurate. The capture of health data, including heart rate histories, blood pressure histories, sleeping patterns and so on has become significantly more affordable, providing the data needed to make statistically significant conclusions.

In addition, the pervasiveness of the Internet, especially over mobile, has made it possible for patients to access their clinical data with few temporal or spatial constraints. This makes it possible for users to use PHM anywhere anytime.

Economic Considerations

Economics is tightly coupled with other elements of the STEP framework. Therefore, in discussing economics, we talk about the decisions made by economic agents and the incentives that drive them. Thus, we consider a few important supply-side and demand-side aspects of PHM and touch briefly on some incentives driven by the increased amount of information associated with PHM.

Personalized Health Management solutions, as described in this report, are software solutions that depend heavily on technological enablers. However, what was previously prohibitively expensive has become significantly cheaper. To put things in context, the cost per billion floating point operations cost about US$836 in May 2000 (in 2013 dollars) whereas by June 2013, the cost fell to US$0.22, a whopping factor of 3800. 1GB of disk space cost US$20 in May 2000 but by March 2013, this fell to $0.05, a factor of 400. This explains, from a supply-side perspective, why PHM is considerably more economically viable compared to a decade ago.

On the demand side, a strong case for the consumer appeal of PHM has already been made. To add on to this, it should be noted that should spending on PHM solutions be made claimable under insurance plans, their appeal to physicians and consumers would greatly increase. Notably, presently even claims for expenditure on "holistic treatment modalities" such as chiropractic care are tenable. This means that it is very likely that claims for PHM solutions will be allowed. The potential systemic healthcare cost savings from better prospects of good healthcare outcomes makes this argument even more likely. When this becomes a reality, this will provide a strong revenue boost to companies providing PHM solutions.

To lead into our discussion on privacy, there are incentive implications relating to information and access to it. Should insurers have a right to see the long trails of personal healthcare data that arises in PHM? Supposing they can and are able to set premium rates based on that information,

it would incentivize individuals to lead healthier lifestyles. On the other hand, privacy concerns will be raised, especially by and on behalf of those with lifestyles deemed to be more risky and who may thus be discriminated against. Presently, some innovative auto insurance companies work around privacy regulations by taking an opposite approach. By offering telematics devices that monitor driving behavior (in particular, whether a driver exceeds the speed limit and how often), such auto insurers obtain a better estimate of the payout risk associates with clients that voluntarily accept such monitoring (Tanner, 2013). This enables them to charge high baseline premiums and offer discounts to clients they deem less risky. As the reasoning goes, clients trade privacy for lower premiums, and insurers trade premiums for better information (especially for improved segmentation). If and when PHM systems become more widely used, economic incentives may be offered to users in return for access to that data (in so far as that data is verifiable), this may in turn cause behavioral changes that reduce personal risks.

Political/Legal Issues

As pointed out in *Privacy of Information System and Healthcare Enterprises* (Roy, 2008), contemporary concerns about privacy are no longer tied to officials physically searching someone's house, but rather the use of private records, especially sensitive ones such as patient medical records.

In the USA, considerable legislative efforts have been devoted to standardize the handling of medical records with the protection of data privacy in mind. The Health Insurance Portability and Accountability Act (HIPAA) enacted in 1996 was a big step towards legislation on protecting patients' privacy in the context of insurance regulation. The act established privacy rules that regulates the use and disclosure of protected health information (PHI) held by "covered entities" including health care clearinghouses, employer sponsored health plans, health insurers and medical service providers that engage in certain transactions (Terry, 2009). On Feb 24, 2011, the US Department of Health and Human Services (HHS) issued a fine of US$1M to Massachusetts General Hospital for its potential HIPAA privacy violations due to lost data. The incident stemmed from documents containing protected health information on 192 patients being left on a subway train by an employee in March 2009. This precedent is regarded as a "game-changer" in HIPAA enforcement (Jaeger, 2011).

Aligned with efforts to promote health information technology by government, the Health Information Technology for Economic and Clinical Health Act (HITECH Act) was enacted in 2009. Subtitle D of the HITECH Act extends both complete Privacy and Security Provisions of HIPAA to business associates of covered entities and accounts for disclosure requirements of information that is used to carry out treatment, payment and health care operations when an organization is using an electronic health record (EHR).

It is also worth highlighting that on July 14, 2010, HHS released a list that contained around 700 thousand entities and 1.5 million business associates who would have access to patient information without patient concern after patient consents on their medical practitioner's HIPAA release (Institute for Health Freedom, 2010). Clearly, legislators have observed increasing use to information technology in the healthcare sector and are reacting to it. The HITECH Act established a framework to leverage the technology to promote EHRs as information standards and to improve healthcare services, and privacy rules have been extended in the HITECH Act to protect digitalized patient information.

> "*Although the solutions to many modern economic and societal challenges may be found in better understanding data, the dramatic increase in the amount and variety of data collection poses serious concerns about infringements on privacy.*" (The Stanford Law Review, 2013)

As healthcare data sources grow to include an increasingly diverse set of information channels beyond traditional physician entered medical records (such as automated healthcare management system log data, sensor data and so on), some unique challenges emerge. In particular, the analysis of appropriate data can enable the identification of information held as private. A particularly poignant example is how Target was able to use purchase information to accurately identify whether a customer was pregnant (Hill, 2012). A fresh understanding of data usage and privacy protections may be necessary in the view of new trends.

In light of these privacy regulations, providers of PHM solutions must engineer their solutions such that privacy laws are adhered to. On top of privacy concerns, there is the looming possibility of regulation relating to claims PHM solutions of being able to deliver superior healthcare outcomes. Such regulation may impose expensive requirements to demonstrate efficacy of solutions such as through clinical trials.

As a point of note, consider the average per-patient trial costs across all therapeutic areas. In "Phase I", costs rose from USD 15,023 in 2008 to USD 21,883 in 2011. In Phase II, the cost rose from USD 21,009 to USD 36,070. In Phase IIIa, the cost increased from USD 25,280 to USD 47,523. In Phase IIIb, costs jumped from USD 25,707 to USD 47,095. Phase IV expenses rose from USD 13,011 to USD 17.042 per patient. (Silverman, 2011)

6. Scenarios, Recommendations and Assessment

Any companies seeking to make a play in the Personalized Health Management space face strategic uncertainty. We consider two forms of strategic uncertainty that we see as being very important. They are presented below in *Figure 10*.

Firstly, we consider uncertainty in the consumer's attitude towards PHM solutions. Are consumers comfortable with using the technology directly, or are they more comfortable with face-to-face contact with a living, breathing physician in a white lab coat? The other dimension of uncertainty is regulatory. Some PHM solutions may promise health outcomes. As such, it stands to reason that governments may feel inclined to regulate these claims of efficacy. This may be done, for instance, through clinical trials which will impose a large expense on solution providers.

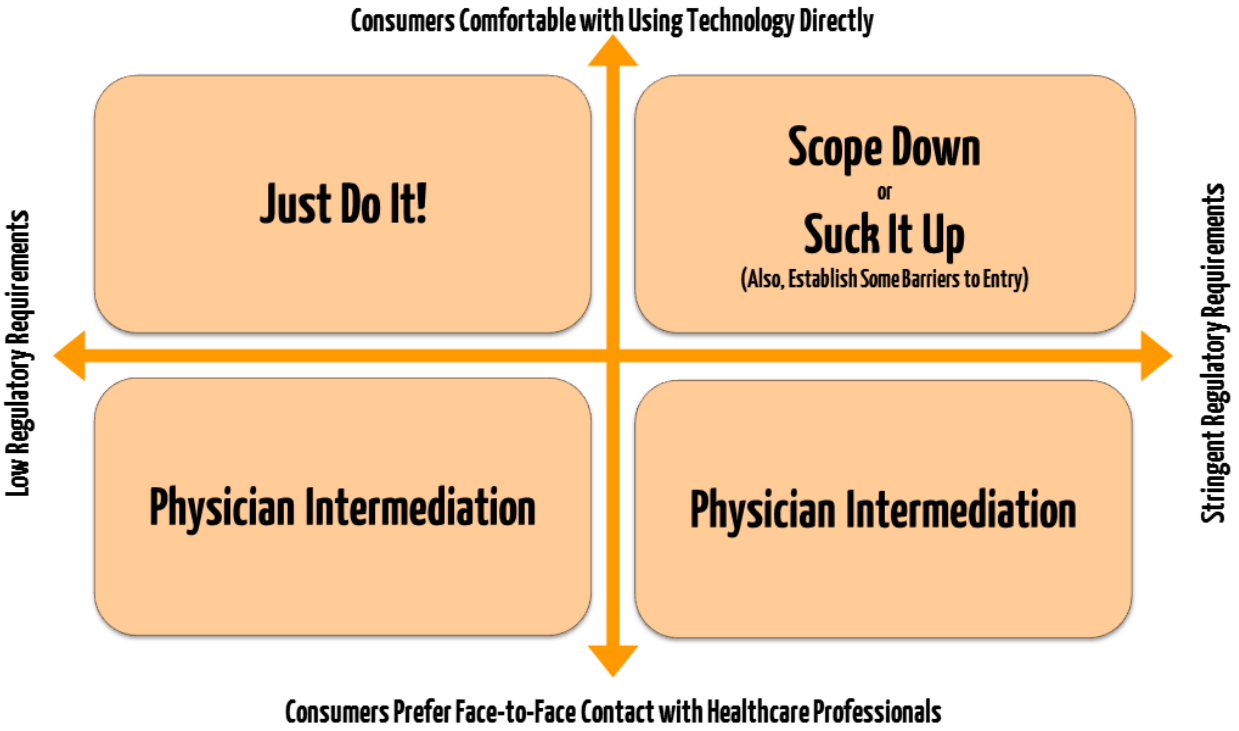

Figure 10. Scenario Analysis

Physician Intermediation. In the case where consumers prefer face to face contact, regardless of how the regulations play out, PHM solutions may be marketed to physicians who will use PHM solutions to support their decision making. In the case where regulation is a concern, physicians may serve to insulate the PHM service provider from regulatory concerns because an informed physician is using a PHM solution to automate a task that he/she understands.

Just Do It! In the simple setting where consumers are willing to use PHM solutions directly and there are low regulatory barriers, companies will have broader latitude in the design of their solutions. However, due to the low barriers to entry, to succeed companies must strive to create innovative high-value solutions and deliver them effectively to consumers. This may be achieved through proprietary knowledge or technology.

Scope Down or Suck it Up. In the setting where consumers are willing to use PHM solutions directly and but regulations are stringent, entrepreneurs should either scope their work down to something non-medical, or suck it up and build up the costly machinery to demonstrate efficacy. Once that is done, it would be an additional barrier to entry for competitors.

We believe that presently, the mass market consumer prefers face-to-face contact with healthcare professionals. However, that will change over time, especially if physicians use PHM solutions in the presence of their patients. It thus makes sense for PHM solutions to be designed with flexible interfaces so knowledgeable healthcare professionals will be able to leverage their knowledge while consumers have the option of using simpler interfaces. Incentives might also be provided to physicians to refer their clients.

However, as consumer acceptance of technology grows, governments will see the need to step in to protect consumers. Before that happens, companies should pre-emptively perform formal studies of the efficacy of correct use of their technology. Such formal validation would make for good marketing collateral and enable low/no disruption to business if and when the regulatory hammer comes down.

7. Concluding Remarks

Personalized Health Management (PHM) is in a unique position in that it is driven by both consumer demand and societal needs. Enabling technologies have become mature enough to support the component processes of PHM like data collection, storage, sharing and analytics. Furthermore, PHM promises more effective and more affordable healthcare costs more broadly by supporting both patients and healthcare professionals in achieving better healthcare outcomes. PHM is a promising industry sector poised for growth. Being an adolescent industry, the many PHM opportunities are matched by ambitious companies jostling for competitive success.

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