Getting Closer to Customers: Mobility Revolution in Pharmaceuticals

Executive Summary

The mobile revolution has irrevocably changed the way the world communicates. The initial contours of this change were felt in the social dimension, where communication barriers between individuals were eased. Over time, fueled by fertile minds, the contours extended to the business dimension, where greater effectiveness was achieved by establishing a personal connection with customers, which hitherto was almost impossible in some industry segments, such as pharmaceuticals.

This paper looks at how the mobile revolution is transforming the pharmaceutical industry by enabling a consumer-to-industry connection. It proceeds to give a glimpse of the transformation by discussing three real-life examples and concludes with a discussion on future trends and challenges.

Industry Challenges

Pharmaceuticals companies are in the business of offering products that save lives and enhance quality of life. Undeniably, the innovations of pharmaceuticals have helped millions of people lead dignified lives. Our healthy future is predicated on our ability to access required medicinal products. With increasing preference for generics over branded drugs, the pharmaceutical industry is facing severe revenue pressure. This, coupled with other industry forces like managing payers and regulatory authorities, has diluted the focus on patients over the years. The situation is accentuated by the specific nature of the pharmaceutical industry. Consider the following:

- A huge amount of money is spent on inventing very few products, with perhaps one major drug launched every couple of years or so.

- Consumers are not the decision-makers, and it's very hard to directly reach them.

- Reaching the influencers is increasingly difficult, with more oversight by regulators. Payers are increasingly exerting decisive influence over the success of the product.

- Ethical concerns surround how drugs are tested in clinical and pre-clinical stages.

- Over-the-shoulder regulatory supervision exists in almost all activities.

Pharmaceutical products reach consumers mostly through their prescribing physician. The commercial focus has been predominantly on figuring out how to encourage physicians to prescribe more of their products. It is estimated that $19 billion is spent by pharmaceuticals companies on drug promotion in the U.S., alone.[1]

Several key applications have been built by all pharmaceuticals companies to try to understand physician prescribing patterns, ways to ethically influence prescribers, types of marketing campaigns targeting select prescribers in select territories, etc. Similarly, applications that monitor drug safety, help with drug discovery

and track interactions with regulators have also been built. However, it would be surprising to find any application that directly talks about consumers and their opinion of the product, partly due to the peculiar nature of the industry. Building a better understanding of customer sentiments and consumer experiences with any pharmaceutical product has been made very difficult by the lack of direct customer access. The onset of social media, coupled with emerging channels, has introduced a welcome change in this direction.

Social media and emerging channels for interaction have opened pathways for better connections to both patients and physicians. According to recent estimates, Facebook has more than 500 million subscribers, and Twitter recently surpassed 190 million users (who tweet 65 million times per day).[2] Mining from social networking sites, one can get a wealth of information, from recruiting for clinical trials, to figuring out active physicians and their preferences. Pharmaceutical companies are conscious of the emergence of new power centers and the gravity shifts. For more effective connections with their consumer community, these companies are supporting brand Web sites, which provide a host of information about the product. One of the most successful instances is Novartis's Glivec Web sites,[3] which provide a lot of useful consumer information.

The Mobile Revolution: The Pharma Impact

Tectonic shifts in technology innovations open up innovative avenues to capitalize on these changes and improve human life. Ubiquitous, affordable, easy-to-use mobile devices are probably the most significant technology innovation to occur in the past few years. "Hyper-connection" is the order of the day, and the trend is irreversible. Unimagined possibilities are now on the verge of realization, due to the wide prevalence of mobile devices and formation of virtual communities. With interesting research happening in the areas of location-aware[4] and context-aware[5] mobile applications, pharmaceuticals companies will be able to touch the lives of their consumers in novel and fruitful ways.

Access to physicians for pharmaceuticals sales executives is increasingly becoming a challenge. Physicians are shifting to more convenient channels for interaction such as the Web, which offers the flexibility of being available anytime with the most recently updated information. Pharmaceuticals are forced to find new ways to engage with physicians. Manhattan Research estimates that about 81% of physicians will own smartphone devices by 2012.[6] This mobile revolution has come as a silver lining, offering new ways to engage with physicians. New mobility applications target not only the traditional sales force but also the patient community by offering wellness-based, informative applications.

Emerging channels such as Web portals and mobile devices enable consumers with the latest information about pharmaceutical products. Social networks empower consumers by forming a community. Offering opinions and hearing advice from more experienced consumers is now a reality. This can improve or mar the chances of success for pharmaceutical products. With every passing day, the increasing consumer influence on pharmaceuticals is felt.

In his classic work on Web 2.0,[7] Tim O'Reilly observes with great foresight that harnessing collective intelligence is about "users themselves deciding what is important for them rather than a few people in a back room deciding what is important for users." Of course, the context of this remark was that of Web page rankings, but we can see the extension of this thought manifesting itself in the form of "harnessing collecting intelligence" elsewhere. In the context of the pharmaceutical industry, we see the following uses for collective intelligence:

- **Payer community:** Direct evidence from consumers on their perception of the efficacy of pharmaceutical products.

- **Pharmaceutical:** The ability to hear the customer voice directly and gain valuable insights from it.

- **Consumers:** The ability to influence the future of pharmaceutical products.

The mobile revolution has given power to the average Joe to generate opinions and increase his social networking possibilities. This increase in social networking traffic requires elastic storage and processing capabilities. Cloud solutions provide the right kind of infrastructure for intelligence generation. One can see the link between mobile applications, social networks and cloud solutions. There are interesting applications that pharmaceuticals can create for monitoring health conditions via an implanted device and a physician's mobile device, which can change the contour of care beyond the known boundaries of today.

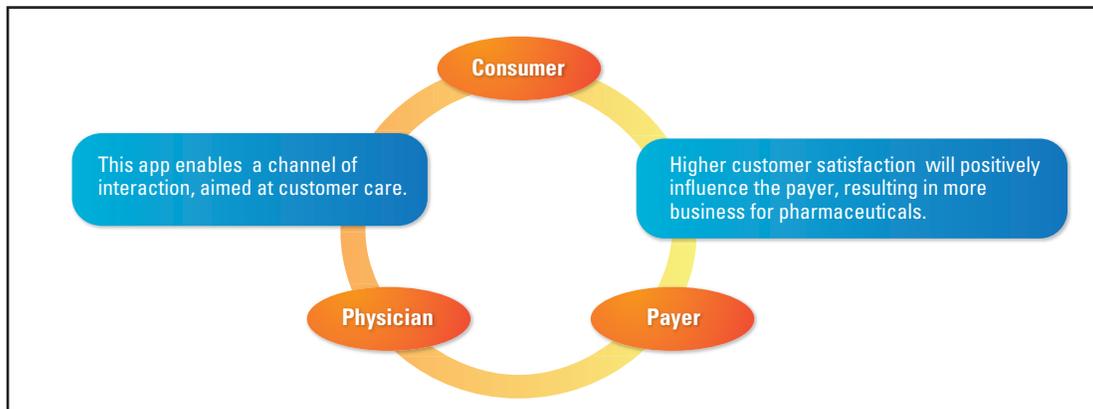## Mobile App for Consumer-Physician-Payer Connection

Figure 1

We studied the popular applications developed by pharmaceuticals that are targeted toward consumers. In parallel, we also looked at the interesting mobile applications available in the public domain pertaining to healthcare. With these, we identified the broad themes and picked out mobility applications in which these themes were well-expressed. We will describe three such applications that are illustrative of the technology and domain trends.

Three Real-Life Examples

Pharmaceuticals are motivated by the desire to improve consumer health and well-being. The mobile revolution has enabled computing power in mobile devices, and pharmaceuticals are taking advantage of that to improve consumer health. The examples below are linked by this common theme: how to use the mobile revolution to improve consumer satisfaction and enable higher quality of life. We will see how each of these manifests this theme in innovative ways.

Remote Patient Monitoring

The market for medical devices is growing briskly. Market size for medical devices in the U.S. was about $94.9 billion in 2010.[8] Medical devices are capable of automatically transmitting the health conditions of the consumer to the physician, who uses this information to assess the patient's health. Currently, this is mostly being done by logging on to a Web site and viewing the transmissions or using hard copies, both of which generally introduce a time lag. Exploiting the technological

advances, pharmaceuticals are experimenting with novel mobile applications that can notify the physician about the consumer's health instantaneously. This application enables the physician to work even when he is not in the office. Such a capability transcends the constraints of time and space, demonstrating customer care practically anytime, anywhere. Figure 1 illustrates how the application fits in the pharmaceutical-consumer-physician chain.

The simplified flow of this application is depicted in Figure 2.

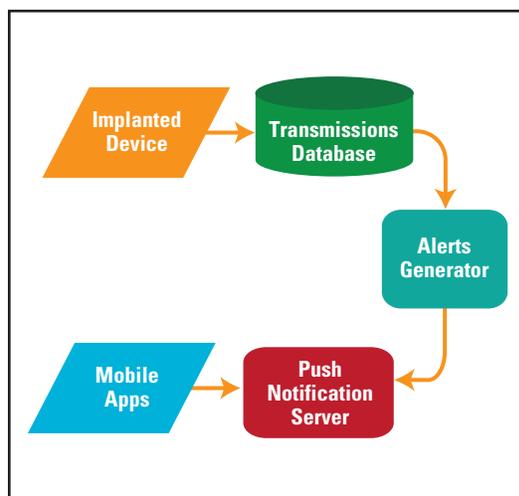### Automatic Transmission of Alerts from Consumers to Care Providers

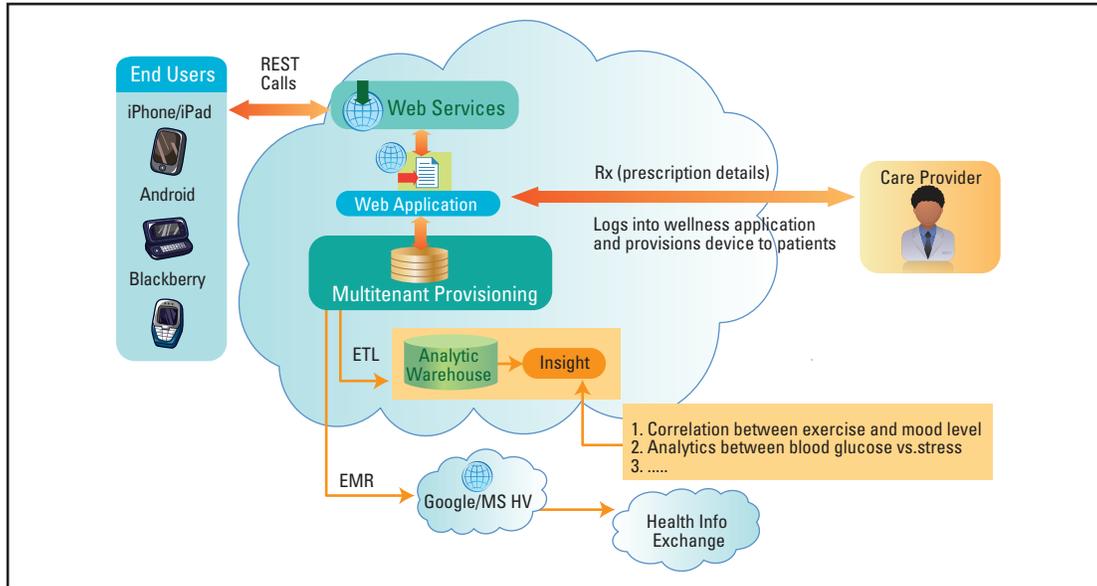Figure 2

The Salubris Ecosystem

Figure 3

Salubris: A Wellness Framework

Wellness – whose responsibility is it? The consumers? Pharmaceuticals? Physicians? Ultimately, wellness is the consumer's responsibility, and the entire ecosystem can and should help the consumer achieve it. The seed idea of the Salubris platform is using mobility technology to empower patients to take charge of their wellness and, in the process, generate real-world evidence to help both pharmaceuticals and the payer community.

Salubris provides the ability to set medication schedules and alerts, capture food consumption and exercise patterns and record vitals and symptoms. It also offers hooks for connecting to social networks such as Twitter and Facebook. Salubris provides learning materials to motivate customers to understand their conditions scientifically. The architecture is depicted in Figure 3.

As the consumer records information about his or her dietary patterns, exercise, symptoms and medication compliance, the data is sent to the back-end server, from which the consumer can opt to store it in an electronic health record format. What is of interest is the ability to mine the data for aggregated trends from the server. For example, a trend analysis can be drawn up for a particular age group for body mass index (BMI) and blood glucose values over a year's time against reported symptoms of appetite, feeling of thirst, urge for urination and vision (see Figure 4).

Such a correlation will help in establishing evidence of whether the drug worked as expected. It is of invaluable help for the payer community,
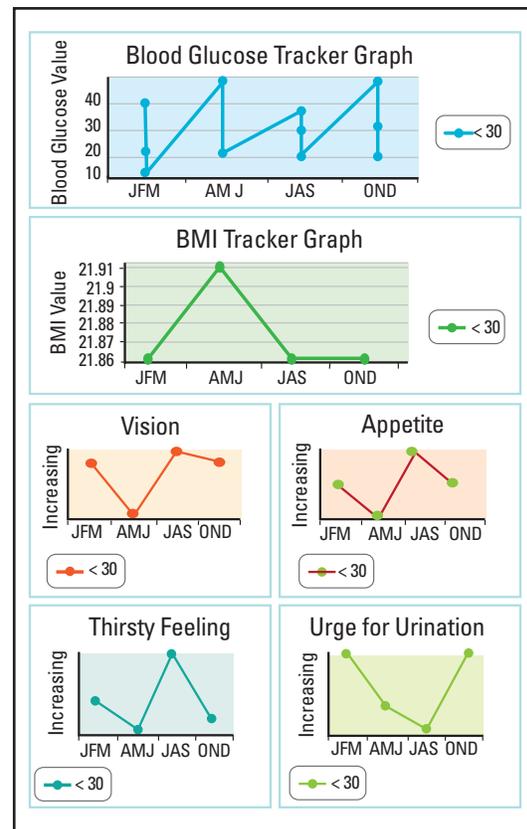
Correlation of Vitals to Symptoms

Figure 4

as well; for instance, it will be possible to relate a symptom − say, the worsening of eyesight for a diabetes patient − to lack of compliance with a prescribed drug. This is an exciting possibility for all: consumers to manage their health, payers for evidence and pharmaceuticals firms for whether the drug benefits are realized.

Reincarnation of Information Dissemination Web Sites as Consumable Mobile Apps

The need to access important, timely, concise and relevant medical information is extremely important for both physicians and consumers. A recent study by Manhattan Research shows that accessing clinical or medical information is one of the top three most-used mobile medical functions

for physicians, accounting for 41% of their mobile usage.[8] Web sites like WebMD provide very good information; however, accessing this information from mobile browsers is not always an enjoyable experience.

Pharmaceutical companies are creating summaries from their educational information in easy-to-use native mobile applications. The various types of information, such as 3-D diagrams, news, journals, calculators, etc., are subscription-controlled and available in different languages for end users. Search is an essential feature in applications of this nature. The flow diagram in Figure 5 illustrates the contours of this application.

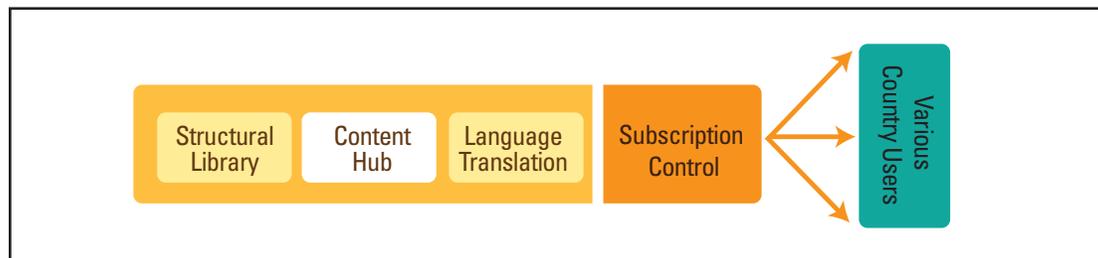## Realizing Information Portlets as Mobile Apps

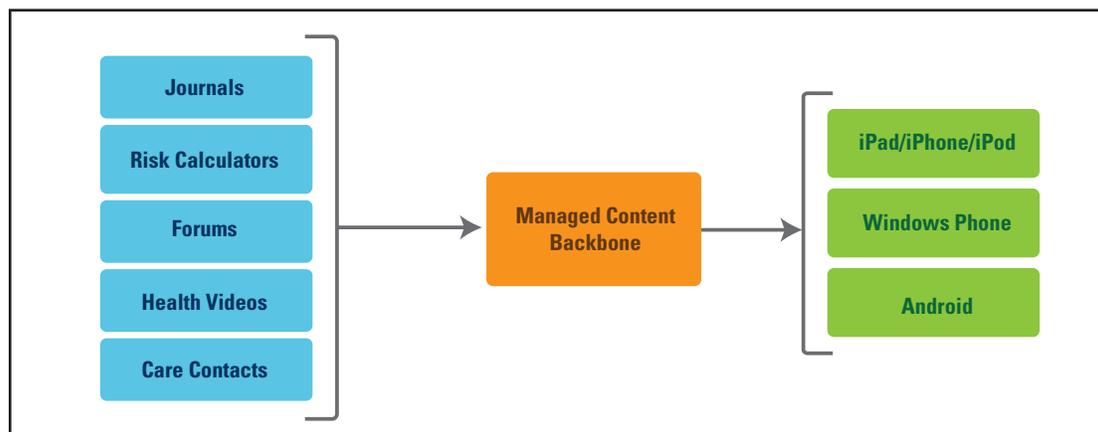
Figure 5

Content Managed as Capsules

Figure 6

Figure 6 provides an expanded view of the content managed.

Native mobile features of touch, location and imaging functions are put to creative use in these applications. This will result in an innovative, immersive and more satisfying user experience and will serve as an enticement to use mobile channels for accessing information.

Crystal-Balling the Future

Today, pharmaceuticals companies monitor online sites for opinion and brand perception. In the not-too-distant future, brand perception will be created and shared from mobile channels, as well. We expect new applications from pharmaceuticals companies offering an innovative and engaging experience that facilitates the generation and

sharing of the customer voice. Applications of this nature will have wellness management functionality enabling consumers to take charge of their health and well-being.

Managed care is on the verge of transformation. Alerts that are indicative of serious conditions emanating from implanted devices will be instantaneously routed to a mobile application, which will be specifically designed to handle this type of situation. The physician who is using the mobile application will immediately arrange for the right care for the consumer.

Mobile devices will emerge as the single system of record for the consumer. The consumer will be able to walk into a physician office and just hand over his device, which will contain information on all the details of his or her eating habits, exercise patterns, symptoms, medical history, etc. The physician will simply pull out the required information and correlate it with the verbal observations of the consumers. This will enable better targeted care and ultimately prove beneficial for all parties.

Mobile devices are more ubiquitous in developing markets than in developed markets. Users in emerging markets are more comfortable with and enthusiastic about using mobile devices.[9] Though this appears seemingly simple, it has profound implications for pharmaceuticals companies. Where traditionally it has been difficult to gain an understanding of consumers, it can now be much more easily achieved in emerging markets, given the eagerness to use and penetration of the mobile devices. Thus, using mobile channels, emerging markets can be understood much better than developed markets. Pharmaceutical innovations in customer understanding are more likely to emerge from developing countries, and we can expect new mobile applications targeted to local markets.

Conclusion and Future Work

The above are some examples where we are closely involved. These hand-picked examples illustrate the alignment efforts of pharmaceuticals companies with their customers. There are a lot of applications in Apple's iStore that offer health-related services, from tracking one's dietary behavior, to registering symptoms, to physician/consumer educational materials.

Mobile channels offer the best passage for pharmaceuticals companies to gain an understanding of the consumer. This trend will strengthen over the next few years. The consumer is the common interest for the ecosystem of pharmaceuticals, care providers and payers; we are set to witness the launch of well-amalgamated, innovative mobile applications covering all dimensions from the consumer perspective.

By way of caution, we must add that there are some genuine concerns that one needs to address to make the mobile experience an irreversible reality:

• Security concerns related to the wireless transmission of data. It is important to safeguard consumer interests and ensure that data sharing happens with informed consent.

• Portability of mobile applications across mobile devices and the need for the evolution of widely accepted standards.

• Regulatory concerns around the best level of engagement with consumers.

• Controlling the proliferation of apps, as well as creating a mechanism to find and design the most worthwhile ones and rate them as such.

There are concerted efforts to address the above concerns. We are sure they will be addressed in the near future and that the full potency of the mobile revolution will be within reach of consumers. Some suggestions for future work in this direction are:

• Architect applications to evaluate the effectiveness of the mobility channel.

• Monitor regulatory guidelines on pharmaceutical and consumer interactions, as they greatly influence pharmaceutical sales.[10] Regulators' interests are closely aligned to that of the consumer, so it's vital to create innovative applications designed for greater transparency with regulators.

• Use powerful capabilities in mobile devices such as photography and location awareness for creating applications that will help those who may be in urgent need for care.

• Repurpose innovations in educational and retail-oriented mobile applications for pharmaceutical customers.

Footnotes

1. Wikipedia pharmaceutical industry definition. http://en.wikipedia.org/wiki/Pharmaceutical_industry

2. Cliff Mintz, "Social Media's Impact on Clinical Trials Enrollment," Life Science Leader, November 2010. http://www.lifescienceleader.com/index.php?option=com_jambozine&layout=article&view=page&aid=4136

3. Novartis Glivec Web site. http://www.glivec.com/index.jsp

4. Jonna Häkkilä and Jani Mäntyjärvi, "Developing Design Guidelines for Context-Aware Mobile Applications," Proceedings of the 3rd International Conference on Mobile Technology, Applications & Systems, 2006.

5. Stefan Saroiu and Alec Wolman, "Enabling New Mobile Applications with Location Proofs," Proceedings of the 10th Workshop on Mobile Computing Systems and Applications, 2009.

6. Manhattan Research. http://www.manhattanresearch.com/

7. Tim O'Reilly, "What is Web 2.0?" O'Reilly, Sept. 30, 2005. http://oreilly.com/web2/archive/what-is-web-20.html

8. MarketResearch Web site. http://www.marketresearch.com

9. "Measuring the Information Society: The ICT Development Index," International Telecommunication Union, 2009.

10. Stefan Stremersch and Aurelie Lemmens, "Sales Growth of New Pharmaceuticals Across the Globe: The Role of Regulatory Regimes," *Marketing Science,* Vol 28, No. 4, July 2009, pp 690-708.

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Acknowledgments

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