



Is Health Advocacy the Next Great Challenge for *Watson* in Healthcare?

RFG POV: *Watson* is growing up. And like a child nurtured by parents with extremely high expectations, IBM Corp.'s cognitive computing offspring, better known as *Watson*, is undoubtedly destined for greater achievements than playing *Jeopardy!* or helping investment bankers get even richer – despite the fact that most modern-day human beings can't help being drawn into playing engaging, competitive computer-aided or generated games and lots of us want to make as much money as possible, with or without the assistance of silicon-based intelligence.

Still, one can't help but imagine what *Watson* progenitors, with assistance from industry partners, can gen up in the various IBM development labs across the globe. For instance, is it possible that *Watson* can be "educated" to help solve the financial ills of our bloated healthcare system here in the U.S. and perhaps even contribute to improving health outcomes?

Empowered by this notion, I recently visited the *Watson* lab in Austin, Texas, to meet with *Watson* development team members for a peek at some new capabilities and a discussion about IBM's role in helping to drive a wellness agenda both internally and, more broadly, across the healthcare eco-system.

Wellness = Productivity and Savings

IBM is a data-driven enterprise as much as or more so than any organization on the planet and, one might argue, more enlightened about the benefits of wellness than most corporations. There is overwhelming evidence that points to a correlation between improved productivity, lower healthcare costs and wellness programs.

A Harvard study published in 2010 entitled, *Workplace Wellness Programs Can Generate Savings* found "For every dollar invested in an employee wellness program, the employer saves more than the dollar spent. The Citibank Health Management Program reported an estimated savings of \$4.50 in medical expenditures per dollar spent on the program."

If employees are healthier, they take fewer sick days and they feel better. It stands to reason that healthier, happier employees will be more productive. One can envision a *Watson-like* app being adopted by companies to help their employees monitor and guide their own individual wellness programs - and perhaps even health insurers could offer a *Watson* driven wellness program for their customers with the goal of lowering the payers cost for chronic disease management.

Data and the Wellness Conundrum

While the wellness = productivity and savings data may be overwhelming, *A Review of the U.S. Workplace Wellness Market* published in 2012 by the Rand Corporation and



sponsored by the U.S. Department of Labor and the U.S. Department of Health and Human Services indicates that even as wellness programs have become very common, as 92 percent of employers with 200 or more employees reported offering them in 2009, "In spite of widespread availability, the actual participation of employees in such programs remains limited." The Rand survey data indicate that the most frequently targeted behaviors are exercise, addressed by 63 percent of employers with programs; smoking (60 percent); and weight loss (53 percent).

The aforementioned Harvard study alludes to the fact that there is no single definition for a wellness program and that implementations vary widely. The Rand study states, "A formal and universally accepted definition that conclusively identifies the components of a workplace wellness program has yet to emerge, and employers define and manage their wellness programs differently. The Affordable Care Act (ACA) definition cited previously [see below] is particularly broad, and different stakeholders have different perspectives on which health-related workplace benefits are considered part of workplace wellness programs."

"The Affordable Care Act defines a wellness program as a program offered by an employer that is designed to promote health or prevent disease (Affordable Care Act, Section 12001)." The World Health Organization defines health promotion as "the process of enabling people to increase control over their health and its determinants, and thereby improve their health." (Rand report, page 12, section 2.1)

Health Promotion and Advocacy

According to the Rand report, "Health promotion is related to disease prevention in that it aims at fostering better health through behavior change. However, its focus is not a particular disease but the overall health of an individual." [Health advocacy](#), as defined by Wikipedia, encompasses direct service to the individual or family as well as activities that promote health and access to health care in communities and the larger public.

One could easily make the argument that the essence of wellness is a highly personal experience not easily defined, or delivered, by a government entity, corporation or healthcare entity. A September, 2012 [Pew Internet Health Related Search Survey](#) found that "72 percent of internet users say they looked online for health information within the past year. The most commonly researched topics are specific diseases or conditions; treatments or procedures; and doctors or other health professionals. Half of online health information research is on behalf of someone else – information access by proxy."

The Pew study also indicates that while 70 percent of U.S. adults with serious health issues got information from doctors or other healthcare professionals, whether online or offline, 60 percent of adults got information or support from friends and family and 24 percent of adults got information or support from others who have the same health condition. In addition, 35 percent of U.S. adults say that, within the last year, they have gone online specifically to try to figure out what medical condition they or someone else



might have. Using mobile devices to gather health related information is also becoming commonplace – more than 52 percent of cell phone and smartphone owners according to the survey.

Watson: Personal Health Promoter and Advocate?

The data presented above strengthens the argument for more personalization of healthcare information and ease of access to online healthcare resources whether for an individual seeking support for improving his wellness regime, a mother seeking proven home remedies for her child's common sinus infection (think salt) or a family member acting as a health advocate for an aged parent or relative.

If IBM were to train *Watson* as a personal health promoter and advocate, it is unlikely to replace – at least in the near future – the personalized care or consolation one receives from family, friends or high quality care providers. Nevertheless, one can see the potential *Watson* has to fill in critical gaps not easily filled by any one individual's healthcare support system. Healthcare is far from being an exact science. In aggregate, doctors render inaccurate diagnoses roughly 15 percent of the time leading to additional expenses, unnecessary procedures, pain and suffering. See [Misdiagnosis in America](#).

Watson also has the potential to dramatically improve the speed and accuracy of diagnoses and support individualized wellness programs that reach far beyond the expertise and knowledge of any single clinician or health provider. Moreover, the healthcare eco-system is largely focused on treatment, not prevention or nutrition. It is also true that every person has an individual health profile based on genetics, environment and lifestyle choices. *Watson* excels at collecting data from a variety of sources, and could easily combine that with personal profile data and offer suggestions and recommendations – but not replace clinicians who are responsible for rendering a final diagnosis and drawing up a treatment plan.

In addition, *Watson* is capable of delivering an extremely broad set of health information objectively, the kind of objectivity only possible with artificial intelligence. This broad approach works provided *Watson* healthcare domain experts "teach" *Watson* to learn about a cross-section of health modalities beyond just U.S. healthcare industry standard allopathic medicines.

For centuries, individuals around the world have had success with alternative medicines and procedures such as acupuncture, chiropractic, homeopathy, kinesiology, naturopathic medicine, Chinese herbal medicine and Ayurvedic remedies. Perhaps most important of all is the role that nutrition and exercise - which are correlated with reducing stress and improving one's outlook on life – have in preventing chronic illnesses that plague a majority of U.S. citizens including arthritis, cancer, diabetes, heart disease and obesity.



Watson Engagement Advisor

Earlier this year, IBM heralded the arrival of its *Watson Engagement Advisor* to meet the demands of the,

- **"Cultural, social and technological shifts that are driving change** altering ways in which individuals interact, learn and attend to their personal and business needs."

According to IBM,

- **"Watson represents next generation cognitive computing**, capable of: processing vast amounts of data; putting content in context for greater insights; weighting with confidence recommended responses; and learning and adapting much the way humans do today."

IBM observes that,

- **"Individual expectations will be forever redefined** in terms of how they interact with organizations over the lifetime of the relationship empowered by IBM *Watson*."

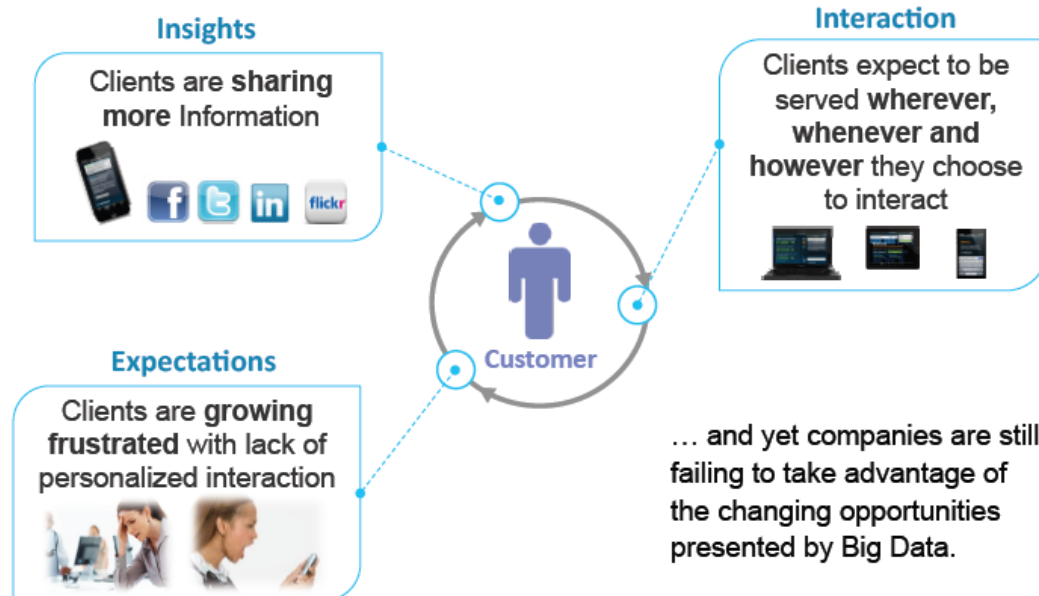
Financial Institutions Advancing Healthcare Technology

One of the first proving grounds for *Watson Engagement Advisor* is the financial industry. It's a very positive outcome for *Watson* to be developing its analytical chops with large financial companies. Financials have lots of money to help speed development of tools that down the road will benefit later adopters in all industries including healthcare. The following chart illustrates IBM's case for deploying *Watson Engagement Advisor* in a number of industries including banking and healthcare. It takes but a little imagination to see a rather similar scenario playing out at a large healthcare provider organization of a health insurance payer.



IBM WATSON

Client expectations and influence has never been greater



Re-imaging *Watson* in Healthcare

Watson is already actively being deployed across the healthcare eco-system helping to – what IBM refers to as – Re-imagine medicine in 2020. The way medicine is "Practiced (WellPoint with Utilization management and Sloan Kettering community cancer centers) and Taught (Students learning from and "teaching *Watson* at the Cleveland Clinic)" – and soon perhaps also the way medicine is researched. *Watson-ready* applications are also in use to help predict hospital readmissions ([ICPA](#)) and provide comparative effectiveness research support ([Similarity Analytics](#)) to help clinicians with diagnostics.

Monetizing *Watson* for Health Promotion and Advocacy

As we have seen, *Watson* has a foothold in the financial and healthcare industries and will soon be adopted by forward thinking enterprises in other industries as well including telecommunications and energy. Meanwhile, the U.S. healthcare system is in crisis. The Center for Disease Control estimates that more than 75 percent of healthcare costs in the U.S. are due to chronic, mostly preventable diseases and about 133 million Americans live with at least one chronic disease including heart disease, cancer, stroke, diabetes, and arthritis.



Memo to IBM: The U.S. healthcare system could use *Watson*, big time, to focus on preventing illnesses at the individual, personalized level. To date IBM's *Watson* in healthcare model has been entirely enterprise focused – which dovetails nicely with IBM's broader, very successful business model. IBM got out of the consumer part of the computer business years ago. But perhaps it is time for IBM to consider a reentry strategy with *Watson* in the lead.

Understandably, IBM has sought out partners to help promote *Watson's* underlying technology as a tool set to develop applications. Health Insurance companies are a logical target. But even the partnership with mega-payer WellPoint is primarily focused on improving care by speeding up the approval process for treatments, not keeping their premium payers from developing chronic illnesses and the general public has built up a tremendous amount of animus towards health insurers who, rightly or wrongly, are blamed for perpetuating artificially high healthcare costs.

Payers have yet to figure out how to gain the trust of most individuals even as they work to stay relevant for the majority of organizations with group health plans. And if corporate wellness programs, for whatever reason, are only marginally successful, why not focus on the individual who is now turning to the Internet for more health information, and why not play a more direct role in providing consumers of healthcare information with timely, accurate, secure and insightful, personalized healthcare data?

Apple Healthcare: Something for *Watson* to Ponder

When reviewing Apple's intended healthcare direction, one word comes to mind: wearables. Apple analysts and devotees expect big things coming from Apple for consumer healthcare devices including the forthcoming *iWatch*. And the Apple store has experienced an explosion of over 10,000 new clinical and fitness apps – although many need to be moderated by Apple for safety and viability reasons.

Imagine all of the personal data that will be generated by the millions of people wearing Apple healthcare devices. Just the sort of data *Watson* loves to get its artificial brain around!

Conclusion

IBM needs access to lots of healthcare data to drive its *Watson* in healthcare agenda. Today, sources for that data include the Internet, payer and provider partners, academic sources, research and government agencies and, to a lesser extent, individuals.

RFG POV: The mega-trend for gathering and disseminating healthcare data is clearly at the point of origin: the individual. IBM understands how Personalization and Consumerization are in the process of transforming its core business: enterprise customers. The ultimate question for IBM is how to capture the imagination of the individual and thereby enable us to happily part with our personal data. Perhaps *Watson* can provide a recommendation.



Additional relevant research is available. Interested readers should contact Client Services to arrange further discussion or interview with Mr. Gary MacFadden, Principal Research Analyst.