

The Economist-InnoCentive Healthcare Information Economy Challenge

“Worldwide Medical information eXchange (WiMeX)”

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Executive Summary

The vision of healthcare information technology in the next ten to twenty years is essential due to the concerns related to its affordability and transition within a sustainable context. This document outlines a vision for healthcare in 2020 in the form of a business plan. The benefits are a reduction in time spent searching for records, identifying fraud, and providing an exchange to form markets of data while ensuring the transparency of information. We conclude this document by providing some viable solutions that can be implemented in the coming future while suggesting some use-case scenarios that help explain our vision. In this plan, we will discuss our overall strategy, examine some of the technical challenges, and depict some scenarios of day-to-day uses of this technology.

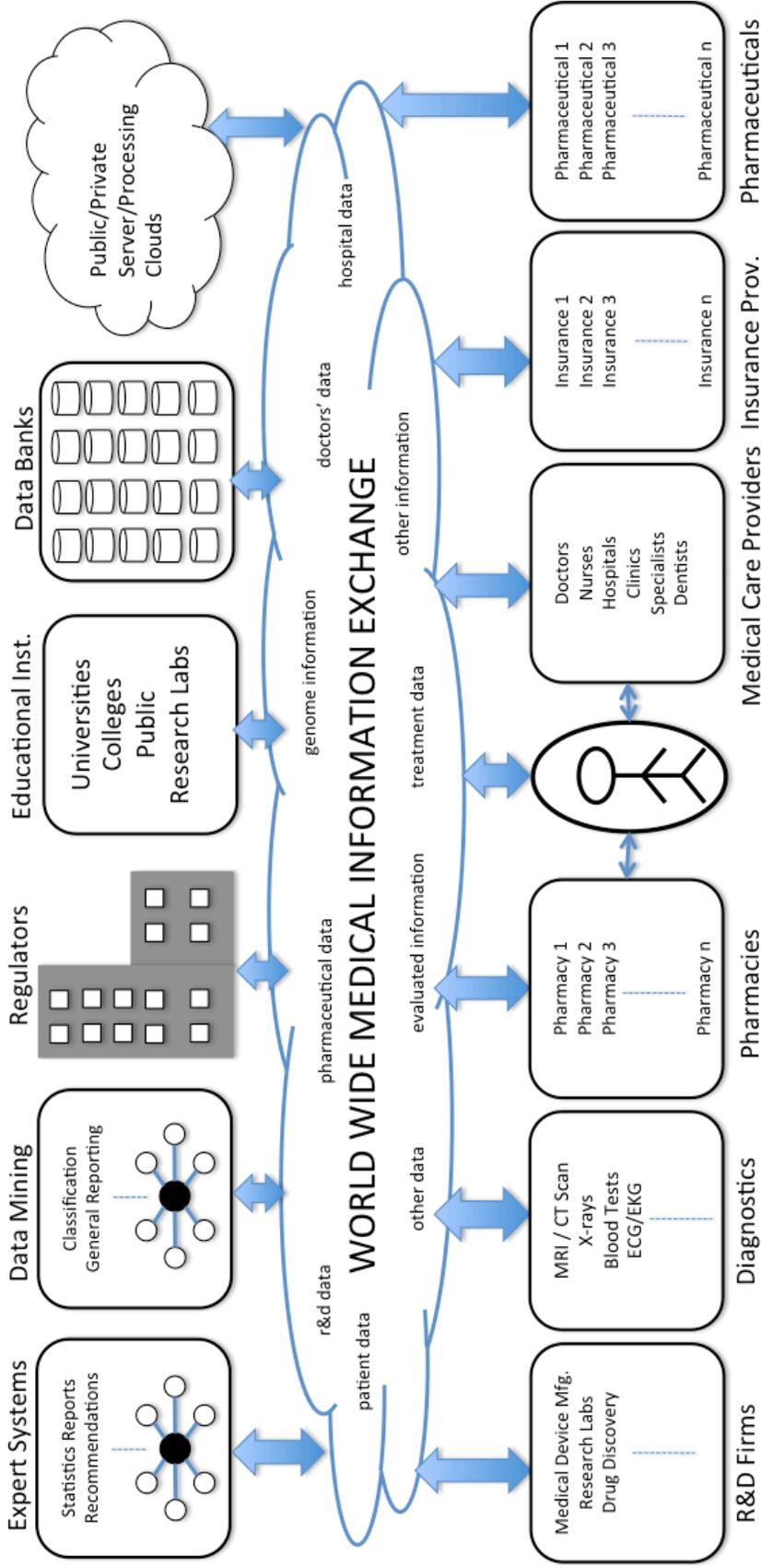
Business Plan

Time is the most valuable asset for patients' and health care facilities. Looking ahead to 2020, many treatments can be tailored to the patients. We envision a personalized form of medicine. Our business plan allows patients to be in control of their personal data that is stored in the health care exchanges. These exchanges would provide patients and health care providers the ability to trade information securely for example. This data will adhere to the next generation of laws and public policies introduced by the governing entities.

Healthcare exchanges would allow the medical care providers to analyze the patient records and build a case pertinent to the situation in hand. Expert systems can provide support in various forms ranging from recommending prescriptions with minimal side effects to suggesting a customized treatment plan for the patient. These systems could work on top of the exchanges to provide analyses that can be sold. We want to emphasize people as the center of this design rather than the technology. The goal of such a healthcare system is to maximize the quality of health care provided while controlling or reducing costs in a marketplace economy.

The patient's specified primary physician will have ubiquitous access to their patient data at all times. Hospitals can request access by using patients' and the attending physicians' biometric data. This biometric data can be used to ensure authorized access. When a health care facility makes a charge to an insurance company, the company is given access to the current visitation records in the medical chart to verify claims. The patient must give explicit access to third parties, and can charge companies for this data. Information that is generated from the data would belong to the company generating it and may be available to the others in the exchange for a small fee e.g. Health Evaluation rEport (HELP). HELP would include a summary of information generated from analyses of genome, medical history, etc. This would be analogous to a credit report from a reputable agency.

The worldwide medical information exchange (WiMeX) [next page] can potentially charge a fee for accessing the data or information. This fee can be used to maintain the day-to-day operations of the exchange. To incentivize patient participation, patients can sell access to their data, set their own prices, and set access dates for their data. Data mining companies can sit on top of the exchange to buy and analyze data. These companies could expose correlations in data sets and provide extremely valuable information in form of disease vectors to medical care providers. This information can be sold to: government organizations for public policy development or research and development organizations to make targeted developments of medical technology. **Information transparency** is key to reducing the cost and increasing the accountability. A competitive pricing system could arise for medical data out of this exchange platform.



Personalized Healthcare with transparent flow/exchange of medical data in 2020

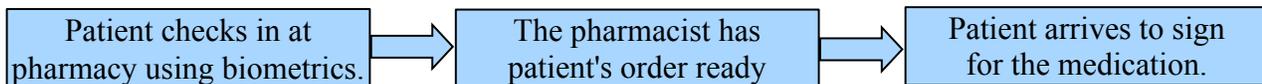
Potential Features & Benefits

- Data Marketplace:** Sell personal medical data anonymously/non-anonymously.
- Transparency:** Transparent flow of information is mandatory. This will help in controlling prices and encouraging competition.
- Choice:** Freedom to choose doctors, insurance companies, pharmacies etc. as they compete to gain your business.
- Multi-lingual Support:** Gain access to the data/ information automatically translated into your local language with predicted improvements in automated language translation technologies. E.g. Google Translate.
- Regulations and Fraud Monitoring:** Expert Systems and regulators can be used to detect frauds and monitor the flow of data and information as mandated.
- Eliminating Redundancy:** Importing the required data as and when needed instantaneously would reduce the administrative costs related to repeated data entry and other related costs.
- On-demand Computational Power:** Healthcare research using computational processing power can make use of computational power from public or private clouds on-demand.
- On-demand Data Banks:** Huge data banks consisting of public and private data can be used to support healthcare research and publish results that can be bought.
- Consumer is the King model**

Scenarios

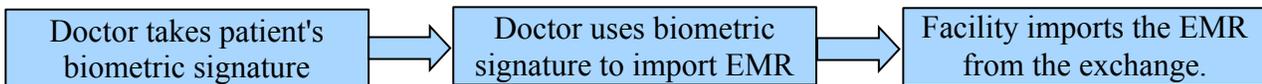
Scenario 1: Mike is driving home to his wife and kids in Idaho. He receives a call from his wife in Portland, OR and reminds him to pick up his medicine. His medications can be picked up with a bit of hassle today. The pharmacy would have access to your prescription sent directly by your doctor while also making phone calls to confirm insurance coverage. In 2020, the pharmacist uses Mike's biometrics to import his prescriptions and fill it.

Figure 1: Pharmacy in 2020 accessing the Exchange



Scenario 2: Susan Khan is a doctor at Monroe County. She has a patient who is unconscious and is being treated in the ICU. In 2010, the patient, Mr. Sood, is identified by the license found in his pocket. She uses her best judgment to diagnose the problem while attempts are made to locate his next of kin and/or his primary doctor to ask about his medical history. In 2020, the healthcare data exchange will store all the patients' medical records. Under the 2015 Emergency Medical Act, Dr. Khan would use biometric technology to import the patient's medical records from the exchange into their electronic medical record.

Figure 2: Doctor in 2020 accessing the Exchange



Scenario 3: In 2010, Steve Mercer, a case manager at the Monroe County contacts the insurance company of Mr. Sood. The company has Mr. Mercer wait on hold many times during the encounter to do insurance information check. The phone call lasts for one hour to determine patient treatment eligibility. This process is repeated for many different patients throughout the day. In 2020, Mr. Mercers' services are no longer necessary, as all the information is already pre-verified, thereby reducing costs.

Conclusion

The scenarios above depict the behavior we expect to be designed into our envisioned healthcare system. The technical and implementation details can be developed at a later stage, as we develop a better understanding of the behavior of our clients. This system would give equal opportunities to both small and large business or non-profit organizations and encourage healthy competition.

Future Work

The solution proposed here is based in part on the ideas inspired by the world's financial markets. The evaluation of funding such a system should be fully investigated and analyzed. Use of human computer interaction techniques to generate deeper insights of the problem should be funded. Some healthcare Solutions in the future:

- On-demand Personalized Healthcare: Collaborative intelligence: incentivizing collaboration through digital technologies like interactive forums. This can facilitate contribution of information and knowledge exchange among doctors and nurses for example by providing tangible incentives.
- Open Marketplace: There would be free flow of data and/or information in this digitized marketplace.
- Preventative medicine concepts: Public Policies geared towards targeted high risk areas that include educational and funding programs
- Innovative forms of treatments: Nanotechnology robots customized according to the patient would provide one of the best possible treatments known.
- Improving the efficiency of imparted knowledge in the educational system with reforms.