LouHIE Business Plan

Approved by LouHIE board on 5-21-08

LouHIE
Louisville Health Information Exchange, Inc.

Louisville, Kentucky

May 20, 2008

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For the best of reasons

Version: 5-20-08

LOUHIE

BUSINESS PLAN – WORKING DRAFT

MAY 20, 2008

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1.0 EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

BACKGROUND

In March, 2006, the Louisville Health Information Exchange, Inc. (LouHIE), a nonprofit organization, was formed to support development of a community-wide health information exchange to improve quality and contain rising costs of health care. A governance structure developed by researchers at University of Louisville was used to obtain balanced input and ongoing participation from all interested parties in the community. Starting in January, 2007, LouHIE raised funds and hired an outside firm to conduct an independent, comprehensive market research study as a basis for developing a business plan.

RESEARCH

The business plan was developed based on market wants/needs identified through the research program, which was conducted August – November, 2007 by Noblis, Inc. The research included over 1200 responses: 209 from participants in 26 facilitated focus group sessions plus almost 1000 from phone, web and paper surveys. The results of the research are available in "The Greater Louisville e-Health Research 2007 Report" which is available at www.louhie.org.

CONCEPT

As the community's ***neutral, trusted, nonprofit health information exchange,*** LouHIE will create the ***Health Record Bank of Greater Louisvill****e*, offering ***free health record banking services for all.*** All 1.2 million citizens in the greater Louisville area, including Southern Indiana, will be offered a free health record bank account where their health information can be securely stored and managed – under their control. Healthcare providers will receive free access to the data with consumer consent. LouHIE will launch the services focused on ***medications, medication reconciliation and patient demographics***.

SERVICES

LouHIE services will be available free to consumers and providers, to include:

- Health Record Bank Account: a permanent, longitudinal record of the consumer's health information, starting with medication information.

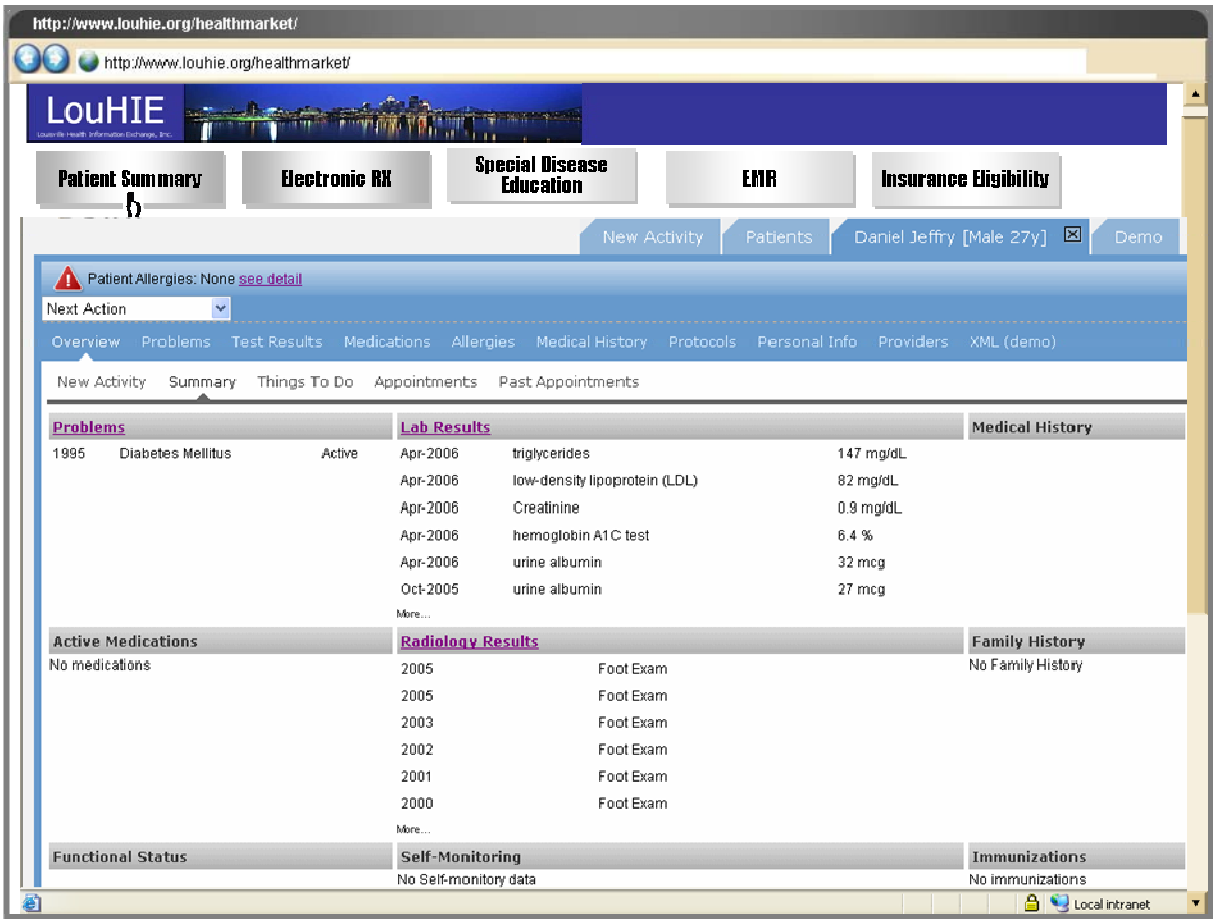
- Deposit function: supports deposits of health information from authorized health information sources, starting with medication information.

- Withdrawal function: supports transfer of consumer's health information to authorized recipients based on consumer consent.

- Privacy management function: supports the ability for consumers to determine which groups can withdraw and deposit information into the individual personal health record

account. The privacy management function will also be used for the consumer to make choices about other data functions.

Sample Physician View (Patient view will be similar)



LouHIE will focus initially on providing medication data, patient demographics and allergies for everyone. Additional services will be offered over time based on the needs of the community and availability of funds.

BUSINESS MODEL

As a nonprofit, LouHIE will rely on donations, contributions, grants and sponsorships. Start-up costs will be funded through major gifts and grants, plus a community fund-raising campaign. Ongoing services will be funded through consumer contributions, employer and health-plan contributions, government and non-government grants and contracts, and revenues from special services.

ENROLLMENT AND MARKETING

People will enroll through their doctor, hospital, pharmacist, employer, insurance plan, or other healthcare provider, or online. Once enrolled, people will have the option of receiving special

"Health Record Bank of Greater Louisville" access cards. A community-wide all-channels marketing effort will occur to enable area consumers and organizations to access and use the Health Record Bank of Greater Louisville. Projected enrollment is as follows:

Community Participation					
	Year 1	Year 2	Year 3	Year 4	Year 5
Consumers					
Households (2.2 people per household)	549,224	553,618	558,047	562,511	567,011
# Households Participating (free or paid)	-	13,730	29,465	81,002	191,366
Organizations					
Organizations (All 12 categories)	47,229	48,161	49,111	50,080	51,070
# Participating	96	3,104	6,284	10,590	17,652

ORGANIZATIONAL STRUCTURE AND MANAGEMENT

LouHIE, Inc. will operate as a Kentucky-based nonprofit organization. A 501(c)(3) application is in process. An interim management team will develop the organization using executives drawn from University of Louisville and major healthcare organizations in the community. After the start-up phase, a permanent management team will be put in place. The permanent team will include an executive director, chief financial officer, chief information officer, chief medical officer, chief development officer, compliance officer, benefits realization manager and administrative support.

OPERATIONS

Technology operations will be provided by one or more core services vendor(s) under contract with LouHIE. LouHIE will maintain control of security and privacy, standards of operations, operational process models, data ownership, marketing and management. The core services vendor(s) will be sought early in the development process. Health record banking services will be accessible by authorized parties through the internet as well as through web-enabled cell-phones, PDAs and TVs, and linked systems like EMRs.

TIMELINE

Conservative, expected and best case timelines have been developed. The conservative timeline assumes that the market is not yet ready to support full operations but is ready to support selected tactical projects, which "prepare the way". Under the expected timeline a community-wide Health Record Bank is launched in 18 months capable of providing access to medication, demographic, and allergy data for a majority of the area population and all area providers. The best-case timeline assumes that start-up funding is secured more quickly and that full operations are developed within 12 months. The expected case timeline is shown in the financial plan.

FINANCIAL PLAN

The LouHIE financial plan takes into consideration the necessary time and capital to start up LouHIE. The first two years of operation are primarily funded by start-up contributions, including donations, gifts and grants. Future years are increasingly funded by services contributions as more people and organizations contribute based on the value of the service.

Financial Summary	Year 1	Year 2	Year 3	Year 4	Year 5
Start-up Contributions	1,898,000	2,460,000	2,392,000	1,460,000	648,000
Services Contributions	37,004	1,597,735	3,369,128	8,005,254	18,087,672
Net Income	385,712	249,942	117,494	447,258	2,845,727
Year-End Cash Balance	168,374	187,547	120,182	156,992	1,953,926

BENEFITS TO STAKEHOLDERS

LouHIE has potential to help the community improve the quality and contain the rising costs of healthcare for all area consumers and organizations. Immediate benefits come from making ***medication data*** available across the community. This can benefit hospitals and physicians by streamlining ***medication reconciliation***, help consumers receive safer, better care in emergencies and office visits and help employers and health plans reduce avoidable expenses. Studies show that ***up to 1% of all hospitalizations could be avoided*** by making more complete medication information available at the point of care. Additional benefits can be developed once the basic system is built.

MARKET RISKS

There are risks associated with not doing a plan like this, and risks in doing it. If the expected timeline is delayed there is potential for personal health record services to come into the market with potential to fragment the community, making it increasingly difficult to develop a community-based service as time goes by. There are also risks associated with implementing the plan. These include risks related to trust, privacy and liability, federal and state politics, economics and implementation challenges. The plan includes strategies for managing these risks.

SUMMARY

After a two year process of listening to the consumers and stakeholders of the Greater Louisville area, LouHIE is now prepared to launch the ***Health Record Bank of Greater Louisville,*** offering ***free health record banking services for all,*** beginning with ***medications and medication reconciliation.*** As the ***community's trusted, neutral health information exchange,*** LouHIE will thereby deliver on its vision to improve quality and contain rising costs of healthcare for everyone in the Greater Louisville area. We believe Louisville is an ideal city to develop a service like this – with the right size, demographics and a great community spirit.

2.0 BACKGROUND

2.1 INDUSTRY ANALYSIS

INDUSTRY ANALYSIS

Regional Health Information Organizations (RHIO) and Health Information Exchange (HIE) organizations from several areas around the country were selected for review as part of evaluating the industry for LouHIE. This industry analysis highlights each one's major characteristics and the details can be found in *Appendix V*. The analysis is presented in four parts. The first section addresses RHIO's/HIE's that have been found to be sustainable, and so represent working models. The second section addresses RHIO's/HIE's that are not sufficiently far along to confirm their models as being successful, but that are making visible progress towards that end. The third section focuses specifically on Health Record Banking entities, given that LouHIE is adopting this model. Finally, the last section points out some of the RHIO and RHIO-related efforts that have not been successful.

Given that there are over 200 initiatives in these areas currently underway across the country, this is not a comprehensive analysis. While the first section is limited by the number of advanced, operating organizations (there are not very many), so as many as could be identified were included, the second section was limited to a representative sampling of those organizations that seemed to:

- ✓ Be far enough along in their development that their approach could be analyzed
- ✓ Have sufficient publicly or privately available information upon which to base an analysis
- ✓ Represent organizations that bore similarities to the conditions under which LouHIE would be operating

This industry analysis list includes:

- **IHIE – Indiana Health Information Exchange:** Indiana
- **HealthBridge:** Ohio
- **CareEntrust:** Kansas
- **Connecting Healthcare in Central Appalachia:** Kentucky
- **MA-SHARE Clinical Data Exchange:** Massachusetts
- **PeaceHealth:** Oregon
- **CalRHIO:** California

Each of the RHIOs/HIE reviewed have mission and vision statements that are similar to that for LouHIE. The components that address containing rising costs and improving quality are common but only a few include providing **both** consumers and care providers with anytime, anywhere access to healthcare information and decision support. Two of the RHIOs/HIE we reviewed have a history of being financially self-sustainable. These include IHIE, located in Indiana and HealthBridge, located in Ohio. Both are primarily focused on providing care providers with cost effective access to selected medical information like labs and messages.

Sustainable RHIOs/HIEs

IHIE serves one fourth of the 6.3 million people in Indiana and its growth in 2007 is expected to service one third of Indiana. There are 27 Indiana hospitals connected to IHIE and 7 more are expected to be connected in the near term. IHIE is also connected to over 70 hospitals to monitor the state's public health surveillance network.[1] There are also 5,200 physicians who share laboratory test results, and can determine if tests were done elsewhere, and if so, what the results were to avoid ordering duplicate tests.[2] IHIE started operations in the 1990's. Initial funding for IHIE came from government and healthcare foundations.

HealthBridge is the largest health information exchange in the country in the Greater Cincinnati tri-state area and has created a sustainable business model around its clinical messaging system. Ninety four (94) percent of all test results from hospitals and national or local labs, within the region, are distributed electronically. That's 2.1 million results per month being fed to 25 different electronic medical record systems. Hospitals and labs fund the clinical messaging system from the savings created by the elimination of paper-related costs in the community. HealthBridge has continued to add services and has created real-time automated disease reporting to the Hamilton County Public Health Department.[3] Recently, HealthBridge has been offering their infrastructure and system capabilities to other RHIO's as a potential additional source of revenue. The initial funding for HealthBridge was provided by a combination of grants/foundations, providers and payers starting in the early 1990's.

RHIOs/HIEs making progress

Connecting Healthcare in Central Appalachia, located in eastern Kentucky and southern West Virginia, is primarily sponsored by McKesson. It is focusing on delivering an electronic medical record (EMR) that will initially only be available to care providers on a regional basis. The EMR will enable access to a consumer's health record across multiple providers in that region.

MA-SHARE, located in Massachusetts, is an organization that focuses on promoting inter-organizational exchange of healthcare data and is not currently providing the community with access to a community health record. However, it is providing e-prescribing and has completed several other initiatives which include[4]:

- Bioterrorism Syndromic Surveillance (BSS),
- Community Master Patient Index (MPI),
- Electronic Health Records,
- Electronic Patient-Centered Communication,
- MedsInfo-ED,

[1] Jennifer Simiski, Marketing and PR Director, IHIE - information, Aug. 29, 2007
[2] John Russell, IndyStar, "Taurel Go paperless, share records," Oct. 2, 2007
[3] Patty Enrado, Healthcare IT News, "Perspective: HealthBridge's standard way of doing business," Sept. 4, 2007
[4] MA-SHARE Initiative - Active Projects, www.mahealthdata.org.ma-share.projects, 2007.mht

- Pathology Database Query,
- Physician Credentialing, and
- Secure E-mail.

Funding for the MA-SHARE project was provided by Blue Cross of Massachusetts, in the form of a $50,000,000 allocation.

PeaceHealth, located in Oregon, is a ten year long collaboration between several hospital organizations which continues to make progress in trying to provide a community health record across multiple states. Care providers have access to medical information and there is a patient portal. Other online services are available which include access to consumer health assessment tools and a healthcare knowledge-base.

CalRHIO, located in California, is an organization that facilitates the incremental development of secure health data exchange systems throughout multiple community stakeholders and consumers across three major regions of the state. The state is broken into three regions: northern, central, and southern. Each region has separate health information exchanges that manage the inter-organizational heath information exchange. Across these regions, there are fourteen active HIE initiatives that are in various stages of development and maturity. Initial funding for CalRHIO came from a combination of providers and foundation grants.

At ***CareEntrust***, in Kansas City, Cerner Corporation and eleven other self-funded employers joined together to launch the RHIO in 2005. Cerner committed to building and operating the information technology for free for three years, then to charge only its costs on an ongoing basis. Much of the initial costs were absorbed in the company's research and development budget.[1] The employers paid a per-employee, per-month fee to get the RHIO up and running. Employees decide whether to participate. CareEntrust is now an operational health record banking service, and has agreed to be a collaborative partner with LouHIE.

Each of the above have an operational aspect that is aimed at providing for local data exchange networks within their state or in neighboring states. The common theme among these RHIOs was meeting the need to deliver cost effective and secure access to medical information between care providers.

Health Record Banking (HRB) organizations

In June 2007, the Oregon Medicaid agency, Division of Medical Assistance Programs (DMAP) proposed to develop and build the Health Record Bank (HRB) of Oregon. It will electronically store Medicaid health information and make it available over the Internet via a secure web connection. The HRB Oregon will be an online, standardized system which will provide access for Medicaid beneficiaries to access recent and historical lab tests, imaging reports, dictated reports, and other patient data. The information will be shared in clinical situations. HRB

[1] Joseph Goedert, HealthData Management,"Are RHIOS for Real?" August 29, 2007

Oregon will connect the Medicaid customer to private and public health systems and Medicaid managed care plans which will help coordinate care delivery.

In 2005, the state of Washington Legislature passed Substitute Senate Bill 5064 enacted as chapter 261, Laws of 2005. The bill required the Health Care Authority and the Health Information Infrastructure Advisory Board to develop a strategy for the adoption and use of electronic medical records and health information technologies. In 2006, The Washington Health Care Authority (HCA) and Health Information Infrastructure Advisory Board (HIIAB) recommended the implementation of a competitive health record banking model. A central feature of this model is the active role of consumers in determining access to their secure health records, beyond the federal and state protections currently in place. Under this model, consumers would select to have copies of key elements of their medical records from all sources deposited in a health record bank. These banks would allow aggregated copies of each consumer's medical information to be shared when and where needed, with the consumer's consent with authorized providers. The banks would also have the capacity to be queried for authorized public health and research purposes.

In June 2006, Rhode Island's legislature approved borrowing $20 million to finance the creation of a statewide repository of e-health records. The Rhode Island General Assembly approved the establishment of a health records bank that will hold digitized patient records and make them available to authorized individuals. The Governor of Rhode Island stated that up to $2 billion of the $6 billion spent on health care annually in Rhode Island is wasted because the right information isn't available when needed. For example, 20 percent of the diagnostic tests done on patients are unnecessary. In July 2007, The Rhode Island Department of Health awarded a three-year, $1.7 million contract to EDS to design, implement and manage the country's first statewide electronic health record network. The network, called the Rhode Island Health Information Exchange, will consolidate state residents' health data and provide authorized hospitals, physicians, pharmacists and other health care providers with access to the health records.

Unsuccessful Efforts

The RHIOs identified above are examples where successful plans for developing and sustaining an information sharing organizations have emerged, or are emerging. There are at least a few similar efforts that have not been successful. It is instructive to note that the primary reasons given for the failure of these efforts were:

- Failure to define a manageable set of objectives and capabilities
- Failure to define a viable and clear business model
- Failure to achieve community support
- Failure to identify and follow appropriate standards

The following examples highlight these challenges:

Santa Barbara County Care Data Exchange Formed in 1999 with a $10 million grant from the California Healthcare Foundation, this organization has never achieved the full promise with which it began. Initial supporters expected that they would be able to share radiology exams, lab work, prescriptions, discharge summaries, and other data. Eventually the goal was recognized as too ambitious. The willingness of the original participants was based on an expected return on investment that did not prove to be correct.

The Patient Safety Institute (PSI) has been a leading advocate and initiator of self-funded healthcare information sharing activities in several communities. Recently, PSI has decided to cease operations, despite having demonstrated the technical feasibility of data sharing across a community (Seattle pilot), based primarily on the difficulties faced in realizing the self-funding model. The issues with that model included:

- PSI's approach was seen as a complex process involving multiple parties with mixed records of cooperation;
- PSI's nonprofit governance approach was appreciated by industry, providers and consumers, but was unfamiliar and seen as "too different" to be accepted by the capital markets; and,
- PSI's comprehensive solution was viewed skeptically because it was a small nonprofit organization trying to accomplish what had evaded so many major organizations.

2.2 BUSINESS ENVIRONMENT ANALYSIS

BUSINESS ENVIRONMENT ANALYSIS

The LouHIE organization will operate in a business environment that is highly complex and competitive. This includes not only the greater Louisville Medical Trading Area but also regions throughout the state of Kentucky and neighboring states. The following narratives break down the LouHIE business environment into four segments and the following summarizes the challenges and how the LouHIE business plan will respond to these environments:

Marketplace:

- The technology vendor marketplace is saturated with over 75 personal health record systems and over 300 electronic health record/electronic medical record systems.
  - LouHIE plans to deliver services that meet the needs of the community based on its consumer and stakeholder research. At the forefront will be a trusted and secure environment from a nonprofit organization whose mission is to serve the needs of the local community.
  - For non-core linked services, such as electronic prescribing systems or electronic medical record systems, LouHIE will manage a controlled oligopoly marketplace with selected vendors to ensure that no one vendor has a monopoly.
- Some payer organizations are offering a personal health record in addition to their payer-based consumer claims record histories, insurance benefits eligibility, care provider search capabilities, and health and wellness management programs. One payer in Kentucky is also offering a provider portal with the goal of having a single provider portal for all care providers in the state.
  - LouHIE will collaborate with payer organizations to augment and compliment services delivered to consumers and providers
- Less than ¼ of physician practices use an electronic health record (EHR) system. [1] As a consequence, ¾ of physicians do not have the technical capability to capture and share electronic health records with a personal health bank record system.
  - LouHIE plans to collaborate with the Kentucky eHealth Network on the state level and with local vendors to deliver solution platforms that meet the clinical and administrative needs of various community care providers.
- Not all hospitals and other health provider organizations have an existing electronic health record.
  - LouHIE will deliver capabilities to developing organizations that permit the capture of faxed document images into the personal health bank record. As organizations evolve from paper to an electronic health record, LouHIE's selected vendors will assist with the transformation process.

[1] FierceHealthcare, "EHR adoption held back by multiple issues," Jan. 28, 2007

- Pharmacy retailers could get higher reimbursements through Medication Therapy Management authorized under Medicare Part D and would need a simplified documentation procedure.
  - The Consumer Health Record Bank Account could provide value added services that pharmacies can use to review and document a consumer's medication therapy management. These services could augment the pharmacies' interest in receiving Medicare Part D reimbursement.
- Medical Products suppliers need to integrate their systems with LouHIE.
  - The technical architecture will be supported by selected vendors who will assist suppliers with system integration services.

State and Federal Government:

- Hospitals are sending de-identified patient data to the state for public health reporting but government is not getting similar information from all care providers.
  - LouHIE will collaborate with the Kentucky Hospital Research Foundation (KHRF) to explore enhanced public health reporting opportunities focused on reportable disease surveillance and bioterrorism surveillance.
  - LouHIE will operate as an aggregator of de-identified health data for its region and will share information with appropriate parties.

National Standards:

- The Health and Human Services Department will be starting trial implementations between HIEs to create the national standards for the National Health Information Network (NHIN).
  - LouHIE anticipates being a full participant in the Nationwide Health Information Network (NHIN). As part of meeting this requirement, LouHIE will require its core service vendor to meet the requirements of the Nationwide Health Information Network (NHIN) Health Information Exchange (HIE) Required Services as well as the Health Information Technology Standards Panel (HITSP) specifications[1].

Consumers:

- Consumers have deep concern over the privacy and security protection for their consumer health records.
  - The Consumer Health Record Bank Account will be a nonprofit trusted service that serves the interests of consumers and will protect consumer data from unrestricted access.
- Payment for Consumer Health Record Bank Account services may be acceptable to approximately 25% of the Louisville population but other segments that include the Medicaid and SafetyNet population may not be willing or able to pay for services. The Consumer

[1] http://www.ansi.org/standards_activities/standards_boards_panels/hisb/hitsp.aspx?menuid=3

Health Record Bank Account needs to be available to all consumers regardless of ability to pay for services.

– Core Consumer Health Record Bank Account services will be available “free” to all consumers.

2.3 NATIONAL ENVIRONMENT

NATIONAL ENVIRONMENT

Reimbursement

Reimbursement barriers exist for the adoption of eHealth initiatives both on the national level and state basis. Traditionally reimbursement methods from both private payers and Medicare have unintentionally rewarded providers based on how many procedures have been performed and not on the quality of care or the outcome. Reimbursement largely is paid on a complaint-by-complaint basis, so when a patient returns for care from a condition that was already treated, the hospital is paid again.[1] This practice is changing. In August 2007, Medicare will stop compensating hospitals for treating certain "reasonably preventable" conditions acquired there.[2] This appears to be a major step with Medicare changing from being a passive payer to an active purchaser. Some payers, such as Blue Cross and Blue Shield of Massachusetts (BCBSM), have been active purchasers through their pay-for-performance incentives since 2006.[3] BCBSM has been transitioning from a reimbursement system of automatic payments to a pay-for-performance system. It should be noted that there is no national standard for payers to use for measuring healthcare performance. As healthcare consumers become more engaged in the healthcare services they receive, they too might become active purchasers in healthcare services.

Consumer education

As stated earlier, the American Health Information Management Association (AHIMA) started a national awareness campaign in late 2007 to educate consumers on maintaining their own personal health record. The campaign focus is on consumers who are senior citizens, parents raising young children, home caregivers and patients living with chronic conditions. The AHIMA web-site provides an overview of PHRs and privacy rights and a guide to starting a personal health record. The site also outlines what information belongs in a PHR—such as physicians, emergency contacts, family medical history, dates and results of medical procedures, allergies and prescribed and over-the-counter medications.[4]

National standards

The development of nation-wide interoperable standards is at the forefront for various stakeholders. In 2005, the American Health Information Community (AHIC) was formed as a federal advisory body. It was chartered to make recommendations to the Secretary of the U.S. Department of Health and Human Services on how to accelerate the development and adoption of health information technology.[5] The objective was to help advance national efforts to achieve President Bush's goal for most Americans to have access to secure electronic health records by 2014. AHIC is currently transitioning from standards development inside the government to

[1] Jean, DerGurahian, Modern Healthcare Online, "Headed-ever so slowly-toward quality," Oct. 1, 2007
[2] Jane Zang, The Wall Street Journal, "Medicare to Stop Paying For Some Hospital Errors," August 20, 2007
[3] iHealthBeat, "BCBS of Massachusetts To Expand Pay-for-Performance," May 11, 2006
[4] Modern Healthcare Online, AHIMA to launch PHR Campaign, Sept. 27, 2007
[5] HHS.gov, "American Health Information Community - background," 2007

create a nonprofit entity that can further advance progress. The federal government will continue to play a major role in the standards development along with the entire private healthcare community. As part of supporting the standards adoption, the President signed an Executive Order requiring that all the federal agencies, including Medicare, Medicaid, the Veterans Administration, and Department of Defense will adopt the standards.[1]

In August 2007, the Health Resources and Services Administration, which is part of the Department of Health and Human Services, awarded $31.4 million in grants to help with the adoption of electronic health records and other health information technology.[2] The grants are intended to benefit safety-net providers, uninsured, underserved and special-needs populations. The grant funds represent continued federal support to help the nation achieve electronic health records adoption.

In October 2007, Health and Human Services Secretary Michael Leavitt announced that HIEs will be given contracts totaling $22.5 million for the creation of a health information exchange between the nine HIEs.[3] Together, the HIEs will form the "network of networks," and through trial implementations will form a foundation for the National Health Information Network (NHIN). Over time complex functions will be built upon that foundation.

Health Record Banking on the Rise

In February, 2008, the federal government for the first time recognized health record banks as a potentially viable approach for achieving the goals of the nationwide health information network. This is in response to growing concerns about the viability of existing RHIO and HIE models being developed at community and statewide levels.

[1] Secretary Mike Leavitt, HHS.gov, AHIC, Aug. 17, 2007
[2] Diana Manos, Healthcare IT News, "HHS awards millions to expand healthcare IT for underserved populations," Aug. 27, 2007
[3] Bernie Monegain, Healthcare IT News, "NHIN contracts awarded to nine exchanges," Oct. 05, 2007

2.4 STATE ENVIRONMENT

STATE ENVIRONMENT

State of Kentucky organizations

In 2005, the Kentucky General Assembly passed legislation for Senate Bill 2, which called for the creation of a statewide electronic health network. As part of this legislation, the following organizations were created:

- Kentucky e-Health Network (KeHN) Board to oversee e-Health development efforts in the state. The KeHN Board supports a statewide health information exchange and intermediate projects that promote near-term benefits to patients and stakeholders. The approach is to leverage existing health information exchanges, and build a statewide backbone network that encourages local innovation and collaboration. As each region joins the statewide network, the intent is to operate in a way that does not preclude future information sharing between regions.
- Kentucky Healthcare Infrastructure Authority, which is a partnership of Kentucky's University of Kentucky (U of K) and the University of Louisville (U of L) that provides leadership for the KeHN Board. This partnership provides research, resources, and recommendations to the Board.

In addition, the Cabinet for Health and Family Services (CHFS) provides leadership in fostering e-Health in the state by providing staff support to the Board and working with the Board leadership from U of K and U of L.[1]

State of Kentucky projects

In 2006, the Board created several projects to initiate eHealth in Kentucky. The Board appointed an advisory group, e-Health Advisory Group, which included Health Information Technology (HIT) professionals, clinicians, and representatives from Kentucky-based RHIOs. The goal of the advisory group was to assist with the long-term planning effort that was needed to establish a state-wide eHealth Network, currently referred to as the backbone of the state. These projects included:

- **Health Information Security and Privacy Collaboration (HISPC) Project:**
  - Assesses how privacy and security practices and polices affect health information exchange (HIE)
  - Assesses privacy and security policy, practice and state law and is developing a state implementation plan.
  - Three work groups were created:
    - Variations Working Group identifies business practices and policies related to privacy and security that are barriers to HIE
    - Legal Working Group identifies legal barriers to HIE

[1] Kentucky e-Health Action Plan, April, 20, 2007

- Solutions Working Group develops inventory of possible actions to address business and legal barriers to HIE

- **e-Prescribing Partnerships in Kentucky (ePPIK) Grant Program:**
  - Provide the incentives for the development of provider partnerships to adopt e-Prescribing. This program promotes the formation of partnerships within a community between physician's offices, hospitals, pharmacies and other health care entities to facilitate electronic prescription processing.
- **Kentucky Health Information Partnership (K-HIP):**
  - K-HIP is a public-private partnership between KeHN, major health plans and other stakeholders in Kentucky and the state government for promoting advances in eHealth for Kentucky.
  - To develop common web portal for provider-payer communications
  - The portal will have a clinical area for accessing a patient health summary, based on claims data, and an administrative area for handling common administrative transactions electronically, such as claims data.
- **Kentucky e-Health Summit**
  - Statewide meeting of payers, providers, policy makers, consumers and stakeholders to address e-Health issues in Kentucky.
- **Kentucky Organ Donor Registry**
  - In May 2007, a statewide organ donor registry went live with over 100,000 registered participants.

State of Kentucky eHealth Corporation

In early 2007, CHFS worked with the legislature on House Bill 185 that would allow the KeHN Board to create a nonprofit e-Health corporation that would assist with the development of the K-HIP initiative as well as the development of a Kentucky e-Health Network. In September 2007, Governor Ernie Fletcher authorized the creation of "The Kentucky e-Health Corporation". The e-Health Corporation is intended to work with the KeHN Board to develop an electronic system that will be used for storing and sharing medical information and eventually the e-Health Corporation will operate the e-Health Network.

The State of Kentucky recognizes that collaboration between the state government and the private sector is essential to successful planning, development and operation of an eHealth initiative. A fundamental challenge to implementing any eHealth initiative involves not only technical challenges but equally the challenge of changing healthcare's cultural and clinical workflow processes. The technical part of this challenge has traditionally been the first step by a number of RHIO/Health Information Exchanges. The driving factor is that technology deployment will enable process change. The limiting factor so far has been that much attention has been given only to care providers and payers and has not engaged the consumer of the

services. Within the state of Kentucky, a number of regional eHealth initiatives have been started.

Kentucky RHIOs/HIEs

There have been seven RHIO/Health Information Exchange (HIE) organizations created in the state of Kentucky. One new RHIO is in the proposal stage, Northeast Kentucky Regional Health Information Organization, and one RHIO expired in 2005, Meeting Information Needs of Referrals Electronically. The remaining five RHIOS are active.

Of the five active RHIOs, the Kentucky e-Health Network (Commonwealth of Kentucky) is the only active state-wide Kentucky RHIO.

Three RHIOs have a service area that covers multiple states: Connecting Healthcare in Central Appalachia, ED Information Systems - Kentucky & Indiana Hospitals, and HealthBridge.

The remaining two RHIOs cover a regional service area: Northeast Kentucky Regional Health Information Organization and the Louisville Health Information Exchange.

The oldest RHIO in the region is HealthBridge which serves eastern Kentucky, southern Indiana, and southern Ohio. HealthBridge formed in 1997 after the Community Health Information Network (CHIN) experiment and before RHIOs were envisioned.[1] It was formed by five hospitals and two payers. Physicians access medical information through a Web portal. However, information access can be limited. Some hospitals provide access to their electronic medical records and others only allow access to physician's notes to sign a chart. After several years of use, trust continues to be a limiting factor for the exchange of health information.

New Commonwealth of Kentucky Administration

The new Beshear administration, which took office December 11, 2007, has stated that e-health is an important priority for the administration. Lt. Governor Daniel Mongiardo, a physician, is actively involved in helping e-health in Kentucky move forward. The state is taking a collaborative and supportive position to LouHIE, giving LouHIE confidence that it can move forward with the state's support.

[1] Joseph Goedert, HealthData Management,"Are RHIOS for Real?" August 29, 2007

2.5 FACTORS ALIGNING & DRIVING LOCAL STAKEHOLDERS

FACTORS ALIGNING & DRIVING LOCAL STAKEHOLDERS

There are several conditions emerging at the national and state level which are helping align and drive local stakeholders.

National Level

The Department of Health and Human Services has recently taken a major step forward with developing the NHIN through the trial implementations of interoperability between HIEs.

A major vendor recently offered "free of charge" a global personal health record that is available to all. The solution offered may not meet all the stakeholder needs but will drive other vendor solutions in the marketplace to become more interoperable. Owners of existing investments in electronic health records systems and electronic medical record systems have a brighter future for system interoperability due to this new offering.

State Level

The Kentucky Information Highway initiative, supported by Connect Kentucky is expected to have had nearly 100% penetration to Kentucky households and businesses by year-end 2007. It is providing broadband network access to the state of Kentucky. This state-wide infrastructure initiative is enabling care providers in both rural and metropolitan areas with access to a state-wide broadband network. This means that the communications infrastructure will be in place to facilitate health information exchange across multiple communities throughout the state.

The Kentucky Health Information Partnership (K-HIP) effort has been working to bring together major health care organizations in Kentucky to develop a common web portal for provider-payer communications. Through the portal, health care providers would have secure access to clinical information and administrative tasks would be simplified and standardized.

Humana is offering its "Availity" provider-payer portal to also facilitate improved communications with providers in the state of Kentucky.

3.0 OPERATING PLAN

3.1 VISION, MISSION AND GUIDING PRINCIPLES

VISION, MISSION AND GUIDING PRINCIPLES

LouHIE's vision is to improve quality and contain rising costs of healthcare in the Louisville area by providing consumers and their providers anytime, anywhere access to complete healthcare information and decision-support.

Its mission will be to provide health record banking services to all area consumers and the organizations which serve them.

It will accomplish this by following guiding principles to maximize its ability to earn and maintain the trust of the community:

1. **Access for Life.** All services will be accessible, for life, to all participating consumers and healthcare providers, regardless of ability to pay.
2. **Everyone Has a Seat at the Table.** LouHIE will provide a "seat at the table" to all community consumers and organizations, through its board, committees and forums.
3. **Commitment to Consumer Consent.** Consumers will have the right and ability to approve deposits and withdrawals of copies of their health information, in accordance with emerging national standards.
4. **Integration with Workflow.** Enrollment and authorization processes will be integrated into organizational workflows so that services can continually generate a net-positive effect for all participating organizations (employers, government, healthplans, providers, physicians, etc.).
5. **Integration with State and National Networks.** LouHIE will work with Kentucky and with other communities and states so that it can develop as part of an increasingly integrated network that can maximize value for the Louisville community.
6. **Encouraging a Vibrant Marketplace for e-Health Vendors.** LouHIE will offer various vendors access to its "core" service platform to encourage development of a vibrant marketplace for health information products and services.
7. **Transparency.** LouHIE will be transparent regarding its financial and operational decision-making except as necessary to protect privacy and confidentiality of its members and/or employees.
8. **Contribution Funding System.** Funding for services will be generated through contributions, donations and grants. All consumers and organizations will be asked to make a fair "contribution" to cover the start-up and use of the service.
9. **Investment of Excess Contributions to Benefit those Most in Need.** Excess funds generated by LouHIE will be re-invested into the community to benefit those most in need (e.g. under- and uninsured populations).
10. **Supporting Cutting Edge Research.** LouHIE will continually seek to support cutting edge research to improve health and wellness in the community.

3.2 LOUHIE GOVERNANCE AND MANAGEMENT STRUCTURE

LOUHIE GOVERNANCE AND MANAGEMENT STRUCTURE

An effective organization planned for high performance is one that can find an effective balance between three important organizational design elements:

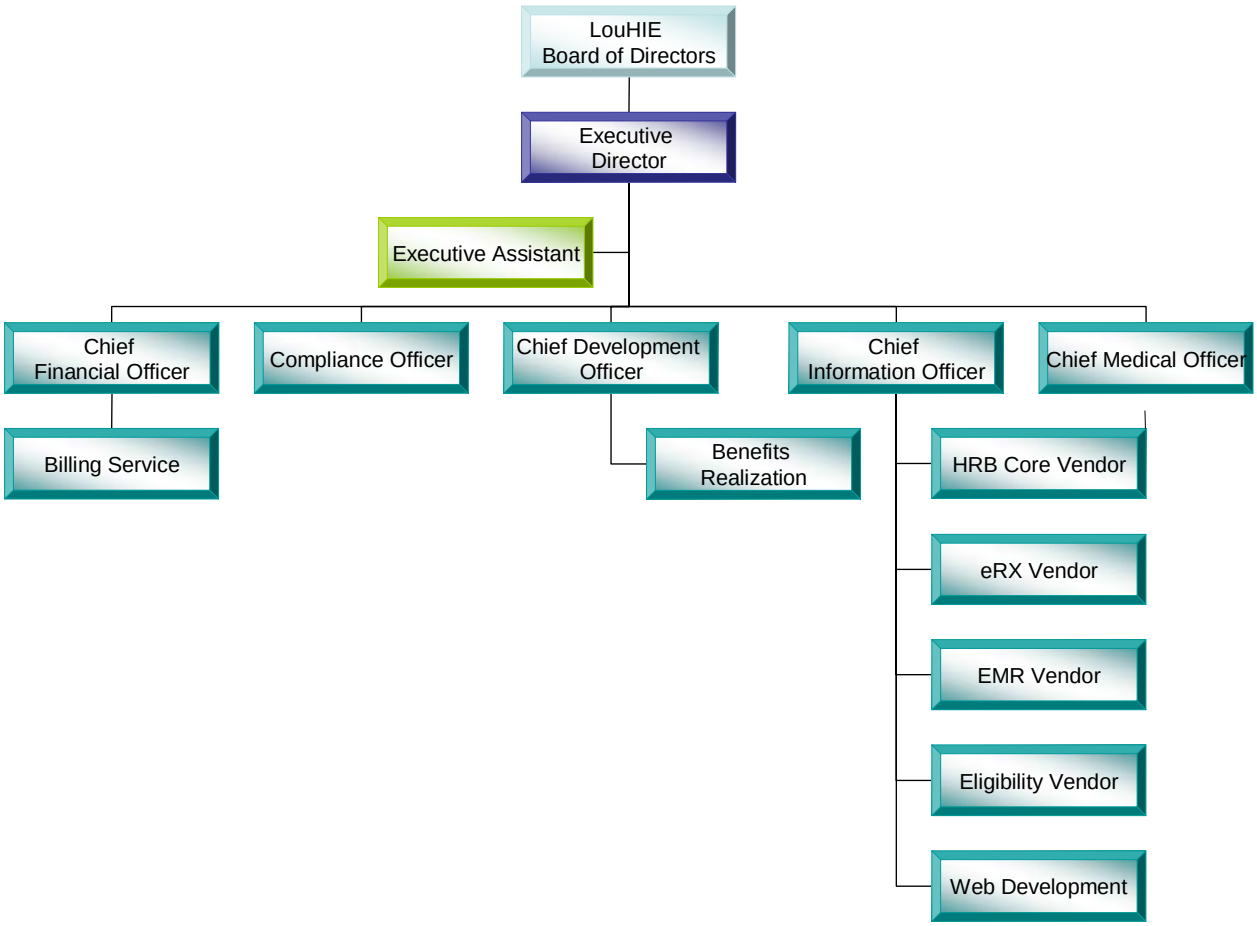
1. **A trustworthy organization**, establishing and building upon the credentials in the community to build an organization which is trustworthy, secure, and reliable. The community stakeholders have emphasized that a neutral organization which is comprised of appropriate safeguards is necessary to manage a system which protects private information from unauthorized access. In addition to safeguards, the presence of recognized community leaders should be a part of the LouHIE governance structure.
2. **A community-focused** group, dealing with strategic alignment and customer requirements. LouHIE's consumer research conducted thus far establishes the baseline of information for an in-depth understanding of the key issues facing consumers and the organizations that serve their healthcare needs. LouHIE must continue to stay aligned with its community members as its service develops.
3. **A delivery capability** that's flexible enough to meet the changing needs of the community.

LouHIE's organizational model includes: 1) a multi-stakeholder board of directors that includes representation from all key participants in the healthcare ecosystem for the Greater Louisville area; 2.) an executive team comprised of an Executive Director, Chief Financial Officer, Compliance Officer, Development Officer, Chief Medical Officer and Chief Information Officer; 3.) a core-services vendor subcontracted by LouHIE to provide technology services to LouHIE's customers.

As organizational structures (i.e., for-profit and not-for-profit) were evaluated during the course of the consumer research, consumers and other stakeholders openly discussed concern with a for-profit entity managing the interests of the community. The concern indicated that a community-based not-for-profit entity would be most trusted to provide these services to the community. Privacy and security issues were of paramount. So, the organization structure includes a commitment to the highest privacy and security standards – standards of the Health Record Banking Alliance regarding data-use will be used.

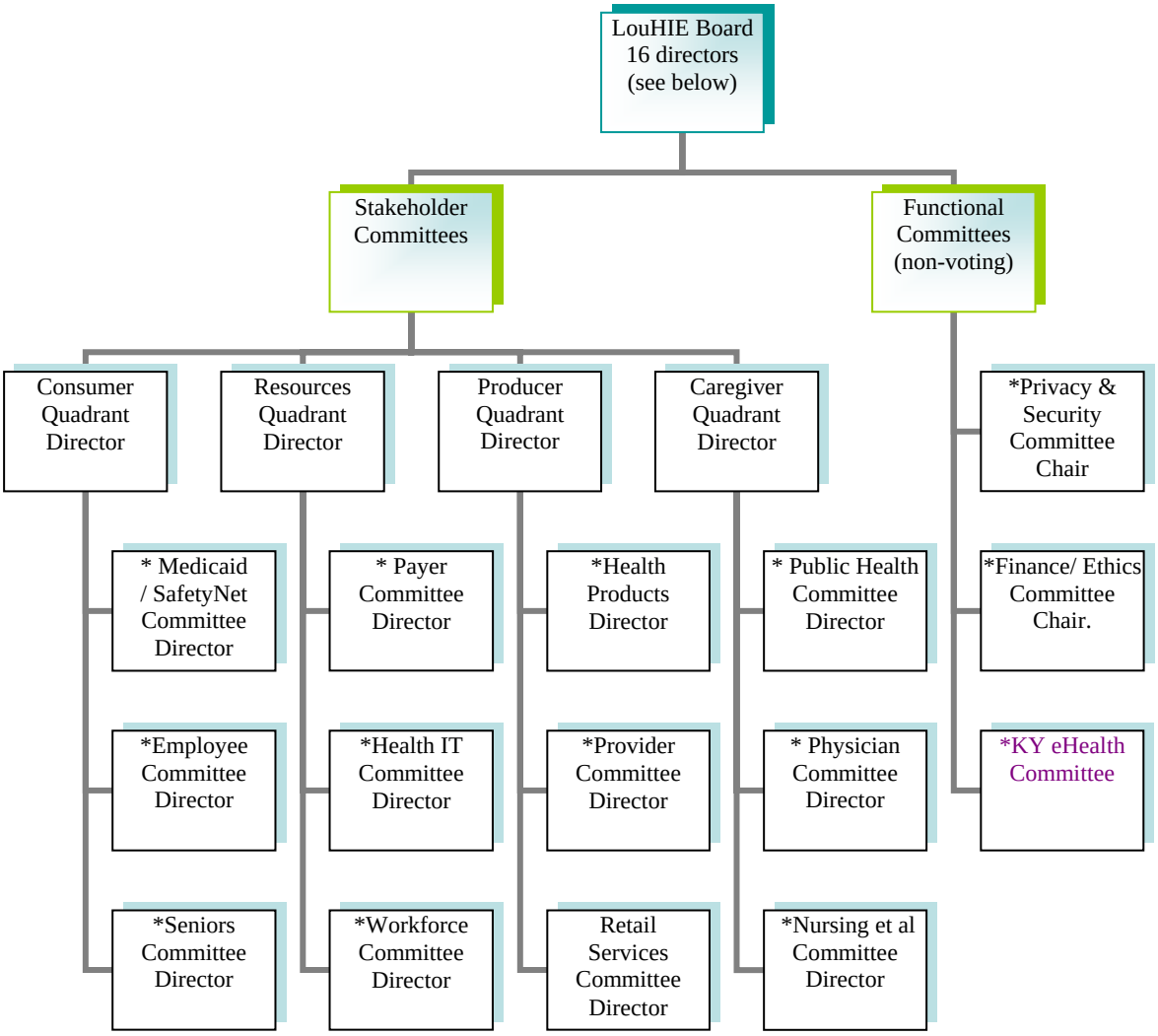
The LouHIE management team will be held accountable to the multi-stakeholder board depicted in the illustration below.

Figure 1: LouHIE Organizational Structure



Trust and collaboration among diverse stakeholders are crucial elements for LouHIE. Thus a governance structure that effectively represents and resolves conflicts among key stakeholder groups is essential. Because no exchange is possible without data providers, the governance structure must especially ensure stakeholder interests are defended regarding the protection and use of sensitive information. Defining agreeable practices is a major role of the LouHIE governance process. The Board of Directors must include representatives from all stakeholders. Balancing of the stakeholder and functional committees was carefully planned so that no one organizational entity had more votes or power than another organization. Each representative accounts for one vote on the board. The Board meets monthly or on an as needed basis. In between Board meetings, the Board Executive Committee, comprised of the 4 quadrant directors, can meet to discuss and recommend strategies and actions to the Board. The recommended strategies or actions are then ratified by the Board at the next meeting.

Figure 2: LouHIE Board Structure



The board structure was determined based on research conducted in 2004-6 by the University of Louisville's School of Public Health and Information Sciences to ensure balanced representation of all stakeholders in the healthcare ecosystem. It is believed that this board structure has contributed to the development of the community's **social capital** as LouHIE's plans have developed since 2006.

In addition to the current committees, Noblis recommends an increased role for the Commonwealth of Kentucky representatives in the committee and board structures of LouHIE. The LouHIE consumer research indicates significant interest in staying aligned with the State of Kentucky's program and having respected members be involved.

For a complete listing of the LouHIE Bylaws see Appendix II.

Organizational Responsibilities

The table below summarizes the responsibilities of each organizational group within LouHIE. For individuals who participate in multiple roles the aggregations of responsibilities apply.

Role	Responsibility
Board of Directors	▪ Develop vision, strategy, outcome metrics, and business plans ▪ Build trust, buy-in, and influence participation of the major stakeholders ▪ Assure equitable and ethical approaches ▪ Approve policies, standards, and agreements ▪ Balance interests, referee or resolve disputes ▪ Influence interoperability for state-wide and national initiatives ▪ Authorize the execution of tactical initiatives ▪ Provide financial and legal accountability, compliance, and Risk management ▪ Educate and promote LouHIE to the community
Board Committees and Stakeholders	▪ Be credible representatives of their representative committees ▪ Actively participate in decisions and projects ▪ Offer expertise and advice ▪ Actively support the LouHIE mission ▪ Actively participate in fund raising and promotional activities
Executive Committee	▪ Meet as needed ▪ Provide strategic guidance to the LouHIE Management Team ▪ Conduct the business of the Board of Directors between board meetings
Management Team	▪ Execute strategic, business, and technical plans ▪ Coordinate day-to-day tasks and deliverables ▪ Establish contracts and other relationships within the guidance of the business plan ▪ Provide health related industry and business knowledge ▪ Measure and report meaningful outcomes ▪ Establish participation agreements ▪ Provide fiduciary and compliance accountability
Executive Director	▪ External LouHIE Leader in the community ▪ Respected community leader and influencer ▪ Actively participate in fund raising and promotional activities ▪ Develop and manage the management team
Executive Assistant	▪ Supports the Executive director and management team with administrative tasks such as: – Meeting scheduling – Written correspondence – Receptionist – Office supply procurement and fulfillment

Role	Responsibility
Chief Financial Officer	▪ Insures fiduciary and compliance accountability ▪ Helps obtain capital financing, grants, and other financial sources ▪ Manages investments ▪ Manages the financial accounting system and procedures ▪ Oversees billing service (based on volume need)
Compliance Officer	▪ Ensures security and privacy principles, policies, and procedures are maintained ▪ Provides the external privacy leadership in the community ▪ Establishes the privacy and security policies and procedures in accord with LouHIE's mission and established principals ▪ Conducts regular audits of vendors to insure compliance ▪ Reviews various audit trail information to insure privacy polices are being appropriately administered
Chief Development Officer (CDO)	▪ Develops and oversees community marketing programs ▪ Plans, coordinates and implements outreach programs ▪ Works with community groups and leaders in fund-raising efforts ▪ Maintains accountability and compliance standards for donors and funding sources ▪ Actively promotes the goals and benefits of LouHIE to the community
Benefits Realization	▪ Establishes performance benchmarks for services provided by LouHIE ▪ Creates measurement frameworks to guide benefits realization capture process ▪ Conducts review of the benefits achieved and compares to benchmarks ▪ Communicates benefits results to the community/ stakeholders ▪ Reports to the CDO
Chief Information Officer (CIO)	▪ Manages day-to-day technical and services operations, including vendor oversight ▪ Manages technology operations ▪ Central contact for participating vendors ▪ Establishes services policies and procedures which support the LouHIE mission
Chief Medical Officer	▪ Ensures development of services consistent with clinical healthcare standards in the country ▪ Guides and oversees clinical and research activities to ensure validity and reliability ▪ Interfaces with the healthcare community to assure patient needs and clinical standards of practice are addressed
Core Services Vendor and Linked Vendors	▪ Delivers service to LouHIE customers according to contract terms ▪ Assures performance management guarantees are adhered to ▪ Works with LouHIE to promote customer adoption
Project Managers	▪ Conduct work in accordance with project contracts which may be developed

During the start-up period, an interim management team will operate the corporation, playing various roles as required. "Executives on loan" from area healthcare organizations will be sought. Recruiting for the permanent positions will begin as sufficient funds are raised.

3.3 HRB/EXCHANGE OPERATIONS

HRB/EXCHANGE OPERATIONS

Staff/Support

The HRB operations will be managed by the management team, as defined above. For each of the positions (e.g. Executive Director, etc.), a single FTE will be sought.

Facilities

The LouHIE executive team and support staff will need a facility to accommodate a minimum of 8 full time staff and 3 – 4 vacant offices for contractors and vendors. A conference room should be available to accommodate up to 40 people. Additional large space conference capability should exist on an as-needed basis to accommodate community forums. The LouHIE staff should have available:

1. Desk and file cabinets
2. Laptop style computer
3. Telephone
4. Internet service
5. Central area where a network printer and facsimile machine is located

Core Services Vendor

One or more core services vendor(s) (CSV) will be responsible for operating the health record bank technologies. The technical architecture must support the logical and functional requirements of LouHIE. Disaster recovery and business continuity plans must be provided by the selected organization. The HRB technology plan is the responsibility of the selected core vendor.

Contribution billing/collections

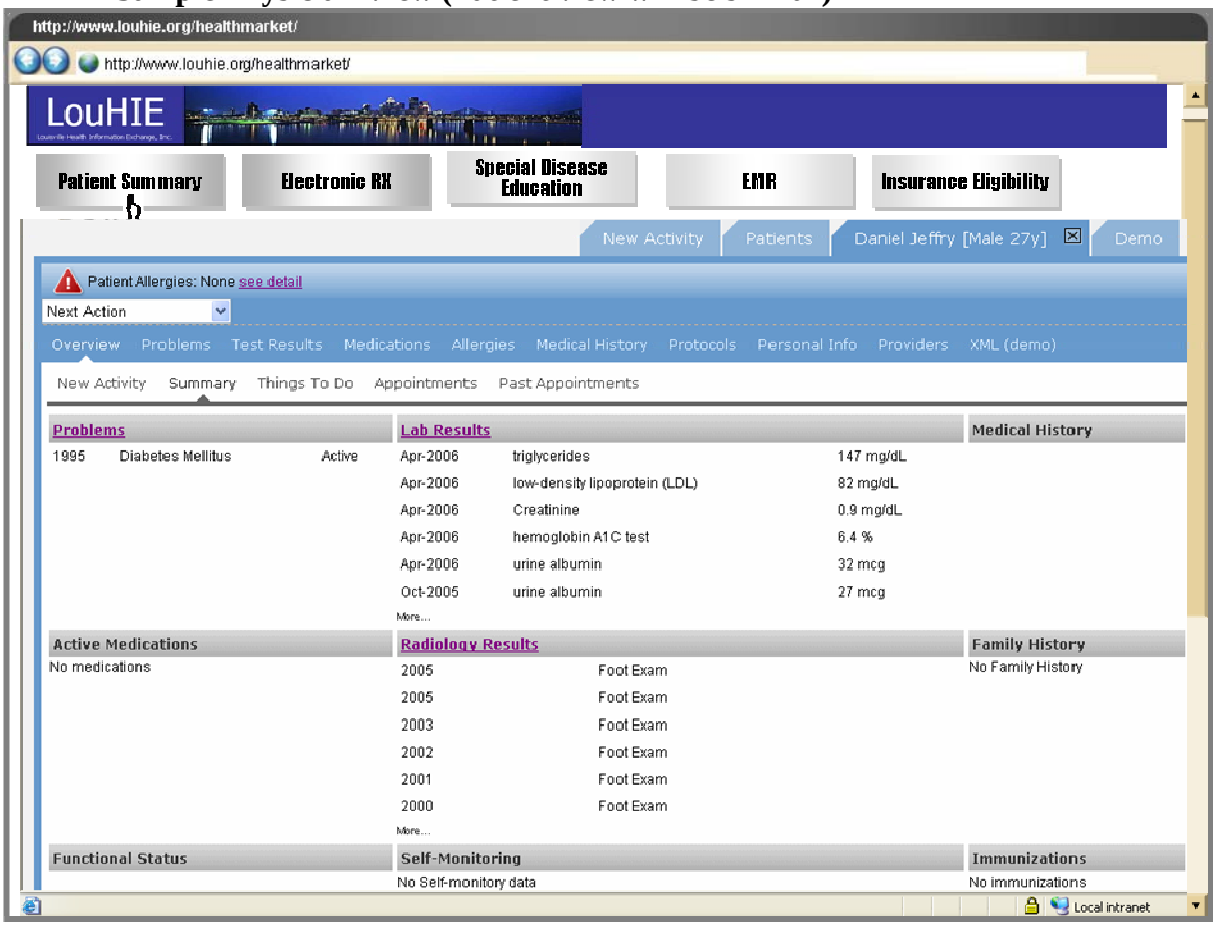
The HRB billing/invoicing system will be the responsibility of a separate billing and fund-management service contracted by LouHIE. Until the need arises for a billing service, use of QuickBooks or another suitable "small business" invoicing system will be used.

3.4 SERVICE OFFERINGS

SERVICE OFFERINGS

Figure 1 illustrates LouHIE's core service offering, as it may look to a consumer or physician user:

Sample Physician View (Patient view will be similar)



Screens will be viewable by authorized users via computers, web-enabled TV, cell-phones or other handheld devices like personal digital assistants.

The screen-view shows different sections for different types of information. LouHIE will initially provide demographics (name, address, etc.), plus medication data and allergy data for the greater Louisville community. Medication data will be automatically updated through pharmacy benefits managers, and linked to a "master patient index" for everyone in greater Louisville. Allergies will be added by patients or physicians' offices. Thereafter, additional data-elements will be added to create an increasingly accurate and complete ***patient clinical profile.*** The LouHIE data will also be available and viewable through "linked" services.

Service Details

The following table provides additional details about services which LouHIE will offer.

Service	Definition
Core Health Record Banking Service *For consumers, employers, government, physicians and providers*	LouHIE's core health record banking service to consumers, benefits purchasers, providers and payers will include: 1. Health Record Bank Account: a permanent, longitudinal record of the consumer's health information – beginning with medications, demographics and allergies. 2. Integrated Enrollment system: supports enrollment through payer networks, at point of care, web, cell-phone, or, over time, kiosks. 3. Deposit Window: supports deposits of health information from physicians, pharmacies, consumers and other authorized health information sources. 4. Withdrawal Window: supports transfer of consumer's health information to providers or others with consumer authorization. 5. Individual controls –consumer ability to control access to the record at different levels of granularity, including suppressing specific information such as a medication. 6. Organization Views: authorized organizations will be able to access/view information through windows tailored to their needs. For example, a physician summary page will be provided according to physician requirements. 7. Integrated registration, eligibility, and contribution processing services. 8. Integrated research capabilities.
Research Services	With consumer consent, LouHIE will provide researchers access to data for research purposes. Consumers will control what kind of data are available, and whether it is de-identified or identifiable. Special controls will be put into place to insure only authorized researchers access data. Researchers will pay LouHIE a fee for data-access.
Non-core Vendor Services	LouHIE will provide health information product and services vendors ability to link their services to LouHIE's health record bank, thereby enhancing their product/service value, while opening new markets. Vendors will be asked to contribute administrative and/or volume fees to be linked to LouHIE. Types of vendors who may be interested in LouHIE's vendor services include providers of EMR, eRX, Health Risk Assessment, wellness programs, smartcards, daily diaries, payer eligibility and claims submission, product recall services and etc.
Personalized Messaging and Content Services	Personalized messaging services may include automated reminders such as an "appointment reminder" or "prescription refill reminder" on a cell-phone. Personalized content services may include personalized recommendations for books, articles and other healthcare information.
Future Services	Future services may be developed based on customer interest. Examples of additional services include: 1. Lists of providers 2. Environmental data 3. Standardized state reporting 4. Consumer surveys 5. Job recruiting 6. Dictionaries of terms 7. Educational content 8. Comparison shopping 9. Formulary lists by payer plan

3.5 RESEARCH AND EVALUATION PLAN/OPTIONS

RESEARCH AND EVALUATION PLAN

Research is an important additional function for LouHIE as a basis for measuring improvements in healthcare quality and reductions in costs created by health record banking and health information exchange services. The revenue model, the benefit model and the technology/data architecture all anticipate the ability of LouHIE to deliver high-quality, timely and broad-based data to support ongoing health related research activities.

Research Data

Data collection and availability within LouHIE is based on a consumer consent model. Consumers will have to explicitly give their permission for data to be stored for research purposes (in dedicated repositories designed for that sole purpose), as well as for release of information in support of research.

Data Acquisition – The sources providing data for the operational data repositories are also expected to contribute to the LouHIE research repositories. Additional sources of research-only data are also expected – including through purchase or other types of agreements. Regardless of the source (operational sources, research-only sources) research data will be acquired and pre-processed using mechanisms and processes that are duplicates of those used to manage the operational data repository.

In discussions with the organizations expected to be data providers to LouHIE, several key points of their data delivery capability have been identified.

- **Complete, non-incremental datasets** – data providers have no desire to manage the filter to identify which consumers have given consent and which have not. As a result, the data providers intend to supply LouHIE with scheduled data files that contain incremental information (since the last scheduled extract from the data provider) about all consumers within the LouHIE geographic limits. It will be the responsibility of LouHIE pre-processors to select the data for consumers where authorization has been obtained, and to discard and destroy the data for which no authorization is in place.
- **Non-standard message formats** – data providers have stated a preference for delivering data to LouHIE in formats that already exist. LouHIE's stated intention is to minimize the amount of translation and mapping for which they are responsible. In support of this approach, LouHIE would publish specifications for data receipt that would require the data providers to map and translate their data into standardized LouHIE format and content (coding schemes, etc.).
- **One-way communication** – data providers have limited-or-no ability to receive query, notification or update messages from outside their environments. As a result, LouHIE does not plan to create mechanisms to support outbound (from LouHIE) messaging to data providers.

Initial Data Population for Consumers – Given LouHIE's principle of storing data ONLY for consumers for which they have authorization, there will be no initial load of data into the research data repositories. Once a patient has provided consent for research use of their health data, the appropriate LouHIE pre-processing filter will be updated to utilize all subsequent files

from data providers to incorporate the information about that consumer into the research repository. From that point forward, the data received for that consumer will be routinely incorporated into the research repository. There is no planned ability to perform any historical load of pre-authorization data for consumers. As a result, it will take a significant number of consumers providing research authorization as well as the post-authorization receipt of significant data for those consumers before the research repository will be viable to support research activities. Research-based revenue has not been incorporated into the first year of LouHIE operations.

Note that it is entirely possible that some consumers will allow the use of their data for operational purposes, but not for research purposes. In this case, the research filter will NOT be changed and the data will continue to be discarded by the research pre-processor.

Data De-Identification – Research data does not require the ability to identify specific consumers. Processing of data for inclusion into the research repository will include de-identification of consumer data to an extent sufficient to prevent re-identification at a later time. This de-identification process will apply to 100% of data within the demographic and clinical data components of the repository. Where possible, de-identification will occur to the contents of the document/image portion of the repository, but scanned images or annotated images may still contain embedded information that might allow for consumer identification. This is why this data will be kept in a separate data-store.

Uses of the Research Data

While specific uses of research data have not been identified at this point in LouHIE operational planning, results of research focus groups strongly suggest that there is a great deal of interest in the data that LouHIE is planning on collecting in the research repository. Groups likely to be interested in data from the research repository would include:

- ✓ Academic research institutions
- ✓ Healthcare providers
- ✓ Public health organizations
- ✓ Pharmaceutical and Biotechnology companies (though de-identification would not allow for use in marketing or identification of clinical trial candidates)
- ✓ Governmental agencies
- ✓ Directed research organizations (e.g. – MDA, Arthritis Foundation, etc.)

Access to Research Data – LouHIE is planning to make research data available in several modes:

- ✓ File Extracts – these would be single-use or regular-use extracts created to meet the specific needs of a research activity or other query. The data would be extracted by LouHIE and delivered to the requesting entity based on a contract that would define the terms of data use, storage and retention requirements, intellectual property rights, etc. Alternatively, LouHIE can store the data as an additional service offering.

- ✓ Research Portal – this would be a real-time capability to provide flexible and timely access to the research repository. Use of the research portal would be restricted to select

researchers or organizations, with appropriate limitations on scope of searches and queries, uses of the data, specific users authorized to access the data, etc.

Evaluation Research Projects – Beginning in year two, LouHIE anticipates working closely with the University of Louisville, the Kentucky Healthcare Infrastructure Authority and other research partners, to develop, fund and conduct effective evaluations of the utility of e-health and health record banking services in the Louisville area.

3.6 TECHNICAL ARCHITECTURE

TECHNICAL ARCHITECTURE

OVERVIEW

The purpose of the technical architecture section of the LouHIE business plan is to provide a high-level definition of the capabilities required in several areas required to support the mission and functionality that LouHIE has proposed to deliver to the Greater Louisville community. Ultimately, the success of LouHIE will be defined by how well it connects the various members of the healthcare community (customers, providers, funding entities) and is able to utilize those connections to improve the quality and lower the cost of healthcare. Each of these capabilities is critical to LouHIE being able to accomplish its goals. The capabilities are:

Privacy and Security

LouHIE must be trusted for the ability to provide a secure repository for the healthcare data of its users and the community as a whole. To meet the expectation of security, measures will have to be designed and implemented to provide sufficient physical and logical protections. Beyond the issue of security, though, LouHIE will need to build a privacy structure that allows the individual user to manage how and by whom their data is viewed and used.

Data Acquisition and Management

Ultimately, LouHIE is about data. Data for LouHIE will come from a variety of sources – the users will directly provide it, healthcare providers will document their activities and outcomes, claims based information sources may contribute information about patient claims, ancillary service providers like labs may submit information about the services they have rendered. Initial data to be collected will be medication history. LouHIE will develop a well defined strategy and structure to receive, process, store and manage these streams of data.

Information Presentation

As soon as LouHIE is in possession of data, there will be an immediate need to make that data available. Users will require access to see and maintain their data and to determine who will be allowed to access it further. Providers will need access to inform their treatment of patients who are LouHIE users. Public health organizations will seek access to data to enable and improve their ability to protect public safety through disease monitoring. Researchers will request sets of specific data that will enable analysis and study to improve all aspects of healthcare. LouHIE will make information available (with permission) via a portal, or through infrastructure allowing other systems to obtain and "present" LouHIE data within their formats.

The Core Services Vendor(s)

LouHIE does not intend to be a supplier of technology infrastructure services. Instead, it expects to purchase those services from one or more core services vendor(s) (CSV). The CSV will be expected to be able to deliver the necessary hardware and networking infrastructure, the software development and deployment capabilities, the operational procedures and processes, and be able to help manage the complex relationship between itself, LouHIE and the various participating individuals and organizations that make up the LouHIE user and consumer community.

Given the intention of LouHIE to contract for services, this technical architecture discussion is not intended to limit the technology choices of the CSV, but rather to identify the type and nature and quality of services required, as well as the standards that LouHIE desires to support and perform in compliance with. Ability to deliver on these capabilities within the structures of the desired standards will be an important component in the evaluation and selection of CSV.

PRIVACY AND SECURITY STANDARDS

The research conducted by LouHIE shows clearly that privacy and security of healthcare data are principal concerns of consumers. These consumers are a primary constituency of LouHIE, so meeting that expectation of privacy and security in the LouHIE operating environment is NOT optional. In order to meet the goal of providing privacy and security to all participants in the LouHIE environment, the organization has enlisted a number of top experts in the field to participate in planning and governance activities over the last year. LouHIE has also included the standards of the Health Record Banking Alliance (HRBA) in defining their organization and the associated functional requirements. These standards also have significant implications for the technical architecture.

The major privacy and security principles related to LouHIE include:

Individual ownership of their own healthcare information

Regardless of the source of data, when it has been pooled into the LouHIE repositories, the person about whom the data relate will have ownership of the data. Ownership in this context does have limits, for example:

- Owners may NOT delete or request deletion of data selectively – they grant permission for LouHIE to collect data or not.
- Owners may NOT alter the content of data. Any challenges with the contents or the accuracy of data would need to be discussed with the originator of that data, and changes would need to be initiated from that originator before it would be updated in the LouHIE environment.
- Owners do have the ability to select what person or organizations may access their data, either selectively or in total (i.e. – access to certain data may be restricted to only select accessors, other data may be available to all accessors). NO access is possible without prior authorization from owners.
- Owners will have the ability to know what accesses of their identifiable information have occurred, and by whom.
- Owners will have the ability to designate someone other than themselves to manage their health data.

The principle of individual data ownership defines several requirements of the technical architecture. Specifically:

- All data streams coming to LouHIE will have to be "filtered" to allow processing and storage of only those records where authorization has been received from the individual involved.

- A capability will need to exist to allow owners to dynamically establish, maintain and remove authorizations to collect data and make it available to others. Owners will have to be able to specify both what types of data may be accessed, and what types of users may access the data by type. The capability will support the designation of someone other than the owner to manage the owner's health data.
- Access management will be strict, and will function at the level of both user and specific data types.
- Access audit trails for person-identifiable information need to be complete and available to the owner for their review.

Adherence to Regulatory Requirements for Privacy and Security

LouHIE will be operating in an environment that is heavily regulated. HIPAA and other state and federal regulations are relevant to many of the activities in which LouHIE will be engaged. In working with the CSV, LouHIE will need to require security and privacy precautions that will meet very stringent requirements to control access, provide for physical and logical security of data, and establish robust operational measures that will prevent breaches of security or privacy.

Technical approaches in this area should include:

Access Control – passwords and other standard security measures will be applied to manage appropriate access to information and administrative capabilities within the system. Consideration should be given to additional biometric measures to increase the level of confidence in the security capabilities of the LouHIE environment. Role-based functionality and access will also be a large part of the protective measures provided in this area.

Physical and Logical Security of Data – appropriate measures to secure the physical location of the hardware and networking infrastructure will need to be a component of the offering of the CSV, as will plans for providing alternative infrastructure in case of failure or disaster. This subject area would also include the process of de-identification of data within the repositories, as well as the actual separation of data within the repositories to minimize the damage of an unintended or intentional breach.

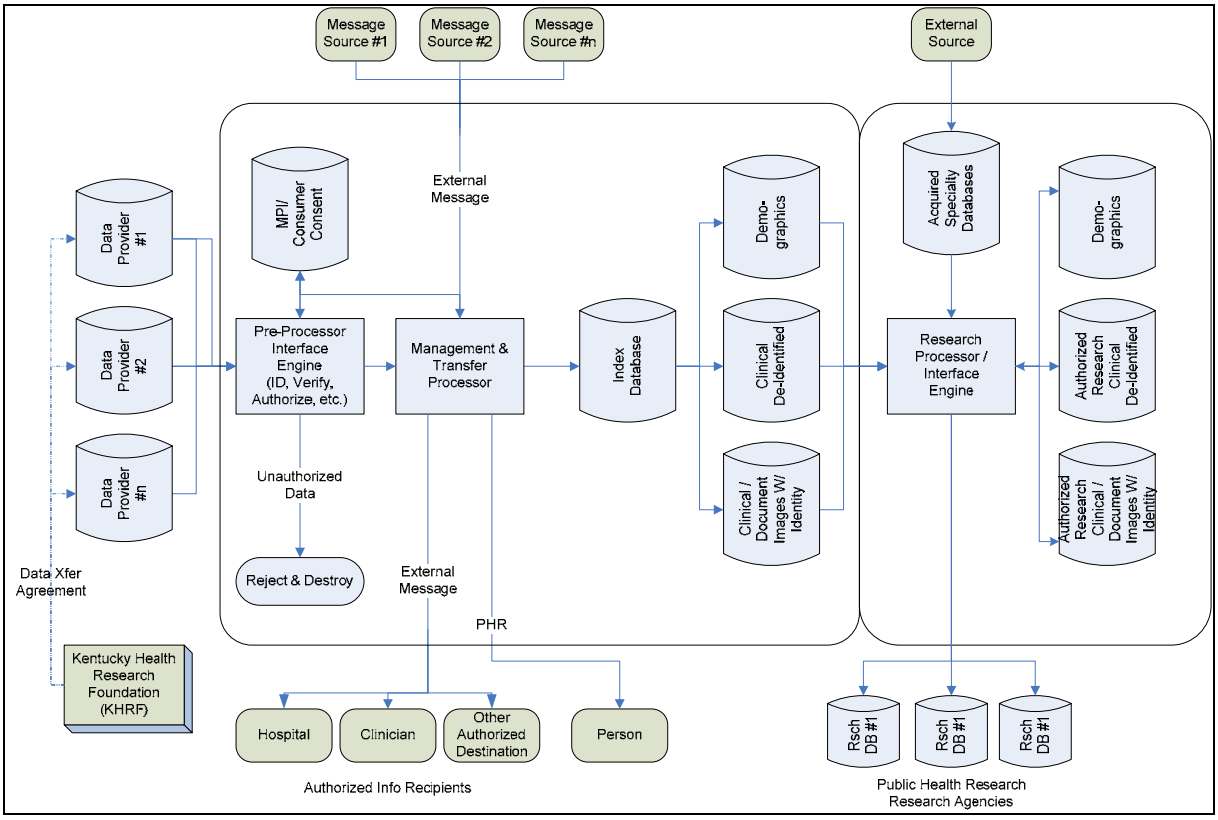
Operational Measures – careful scrutiny will need to be applied to the operational and performance measures to be put in place by the CSV. This would include areas such as backup and data retention policies, functional business continuity planning, help desk and support activities, privacy and security training, monitoring and auditing capabilities, etc.

DATA ACQUISITION AND MANAGEMENT

The LouHIE plan for data management is based on the centralized vs. the federated model. Under the federated model of data management, the actual data is stored in the originating facilities (hospitals, physician offices, pharmacies, etc.), with the central organization maintaining a reference file identifying where data of particular types are stored. This model assumes the ability of those originating facilities to manage requests for the data (in the form of queries/responses), as well as the ability of the system as a whole to support a high volume of transactions as data from multiple sources is aggregated for presentation to the requester. There

is a great deal of complexity in trying to maintain such relationships between data in diverse formats, scattered across originating facilities, and changes over time. Different privacy and regulatory environments across separate originating facilities further increase the complexity of a federated model.

While many of the issues raised in the federated model are also a component of the centralized model, there are benefits in the centralized model that can make it easier to manage the issues. For example, participants in a centralized model will still have to arrange agreements with LouHIE that meet their individual privacy needs, but once such agreements are in place, LouHIE will be able to operate according to the one standard set of privacy rules – providing for greater transparency and ease of administration.



LouHIE Data Architecture and Process

The Data Model and Data Mapping

A primary technical challenge for LouHIE will be accepting data from disparate sources in varying formats and translating that data (in content and format) into a single data model for storage in the LouHIE repositories. In order to minimize the effort required of data providers (and therefore to maximize their likelihood of contributing data to LouHIE), the data feeds will be accepted in any structured, definable, electronic form. It will be the responsibility of LouHIE to define the mapping of data (with the assistance of the providing organization) and to execute the reformatting of the data from the source-organization format to the LouHIE format.

There are several standards available for data modeling, including some that have been incorporated into software products that might be considered for use by LouHIE and the CSV. The completeness, relevance and flexibility of the underlying data model would be a consideration in the assessment of potential CSV and their application offerings.

Data Repositories

The architecture for LouHIE envisions the storage of data in two separate repositories – one for operational purposes, one for research purposes. The objectives of establishing two repositories are several, including:

- Separating high-frequency-access data (operational) from low-frequency-access data (research)
- Enabling more thorough de-identification of data in the research repository
- Allowing for the likelihood that the two repositories may utilize different data models
- Supporting the possibility that separate vendors will maintain the two repositories

In the architecture diagram, the repositories are further separated into sub-repositories for demographic data, de-identified clinical data (non-image or document-based), and document or image-based data. The goal of further separating the data is primarily increased security and privacy. Inappropriate access to the demographic section, for example, would not compromise the privacy of clinical information, and access to the clinical data would not yield any identifying characteristics. Note that it will not be possible to de-identify the image/document-based information, as personal information is likely a part of the documents and images that would be stored.

Data Sources and Processing

LouHIE has every incentive to keep the provision of data by diverse entities as simple as possible. A simple data provision process will maximize the likelihood that organizations will be willing to supply data to LouHIE. For that reason, LouHIE has decided to accept the responsibility for transforming the data from the formats used by the data provider into the formats required for LouHIE internal processing. LouHIE has also committed to managing the data filtering process, thus allowing data sources to transmit complete data files containing information on all relevant persons and LouHIE will be responsible for selecting and processing data only for those who have given their consent to participate in LouHIE. All other data will be discarded in a fashion consistent with the privacy and security procedures of LouHIE and the data provider.

Once the data stream has been passed through the filtering process and matched to known person identifiers (or new LouHIE identifiers have been proposed or established), the data would be formatted and applied to the repositories.

Master Person Index

The LouHIE architecture will require the creation and maintenance of a Master Person Index (MPI). This will be used to associate data received from data sources (with their associated

person identifier) with the corresponding LouHIE person identifier. Establishment of the MPI will require both inputs from the inbound data processing function (to identify potential matches of new persons with established entries in the MPI) as well as manual validation (where the identified new matches are not exact).

The other functions of the MPI would include:

- Storing data access authorizations associated with the person
- Tracking sponsorship/underwriting information related to the person (i.e. - name of the sponsoring organization)
- Tracking identified interests/concerns to be used to tailor customized content.

Customized Content Repository

This repository would contain content to be presented to users of the system. This content would be provided by outside entities, and screened for appropriateness based on LouHIE's defined standards for such content. It would also be associated with types of users to whom the content would be available.

INFORMATION PRESENTATION

LouHIE will require several different components to support the variety of presentation and access options that will be available to users of the system. These include:

Consumer Portal/Infrastructure

The consumer portal/infrastructure will be the primary means for the consumer users of the LouHIE solution to access their information as well as the associated consumer administrative functions. The consumer portal will be a presentation framework that will consist of several components and capabilities:

- Registration capability – this function will support the initial establishment of the consumer and provider (user) as a registered user of the LouHIE solution. It will enable the user to give permission to the system to receive and process data for both operational and research data stores, and to modify that permission as required by the user. It would also allow for the de-registration of users who chose to end their participation in LouHIE;
- Access management – this function will allow the user to establish, manage and suspend access to the various types of data by user type (physician, hospital, emergency room, researcher) and by data type;
- Clinical data viewer – this function will allow the user to see the contents of data stored in the operational data store. The user can review the data for purposes of validating it, tracking it over time, initiating a request to correct it, recording it for use in interacting with caregivers, etc;
- Targeted content provider – this will be a store of information provided by LouHIE partner organizations that will be presented to the users based on 1) rules identifying appropriate

content based on user attributes and 2) level of contribution of the user (higher levels of contribution equate to more focused and less frequent content being presented).

- Notifications and Alerts – this would be additional content either presented by LouHIE (e.g. names of underwriters or sponsors) or by other relevant agencies (e.g. health-related alerts).
- Additional capabilities and options that are available to contributing consumers would be incorporated into the framework and made accessible through additional options presented via the portal.
- Cell-phone access: the system must be accessible by any web-enabled cell-phone, given that many members of the greater Louisville community may not have computer access, but will have cell-phones that can receive messages or access the web.

The LouHIE portal services may also be accessible to consumers through linked portal services such as payer portals or external PHR portals. These services will be accessed by the outside service through the LouHIE infrastructure. Initially, in year 2, a "base level" of the functionality in the categories listed above will be provided. The base functionality will be steadily improved over time. Also, additional value-added features may be incorporated into LouHIE over time.

Provider Portal/Infrastructure

The provider portal is the principal means by which healthcare providers will access information about patients who are also registered users of LouHIE. Many of the capabilities will be similar to the consumer portal/infrastructure, but with a focus on the needs of the providers as the focus. These capabilities will include:

- Registration capability – for providers this would be the means for them to define their grouping (i.e. – ED, Hospital, Physician, Mental Health professional, etc.) for purposes of gaining access to appropriate parts of user information;
- Patient Clinical Summary - this view would serve a similar purpose for the provider and the consumer. Clinical data would be made available (as approved by the owner of the information) for use in supporting treatment of the consumer;
- Access to linked systems and services
  - ePrescribing function – this would be available via the provider portal to those providers who are participating in the program established by LouHIE.
  - Electronic Medical Record (EMR) – LouHIE intends to provide access to an EMR capability to physicians who are active in LouHIE and who do not currently have such a capability of their own. Access to the EMR functionality would be through the LouHIE provider portal.
- Notifications and Alerts – this would be similar to the consumer portal, but with content relevant to the provider community.
- Targeted Content – this would be similar to the consumer portal, but with information relevant to the provider.

Using the LouHIE provider portal/infrastructure services, LouHIE's data-services may also be linked to existing EMRs and other provider systems. In addition, other value-added capabilities will be incorporated into the provider portal and infrastructure as they are identified and implemented within the LouHIE framework.

Employer and Health Plan Interfaces

Employers and Health Plans will receive special interfaces and services to gain access to information for which they are authorized. For example, employers may wish to have access to special "group" reports through their payer network. Payers may wish to link their member records to LouHIE's records, to provide seamless services to their members and groups. Again, the capabilities would mirror those of the other portals, with some different functions relevant to employers or other stakeholders, including:

- Registration capability – for stakeholders to establish themselves and maintain profile and administrative information relevant to their role and access requirements.
- Reporting capability – a significant benefit available to stakeholders will be the ability to receive advanced reporting from LouHIE repositories. Such reporting would be focused around the areas of membership, activity reports and research reporting (e.g. – wellness studies).
- Notifications and Alerts – this would be similar to the consumer portal, but with content relevant to the stakeholder community.
- Targeted Content – this would be similar to the consumer portal, but with information relevant to the stakeholder.

Research Presentation Capabilities

LouHIE anticipates being able to provide data in support of approved research activities in a number of formats, including:

- Research-specific data stores – these would be temporary or long-term data marts with information extracted from the LouHIE research repository to allow researchers dedicated access for high-utilization purposes.
- Data extracts – these would be one-time or recurring custom extracts created to meet the specific needs of research projects where the creation of a data store were not appropriate. These would be created using various formats and media as requested by the researchers within parameters supported by LouHIE.
- Reports - These would be defined and provided on an as-needed basis to entities requiring data in aggregate or summarized rather than in the form of individual data records.

OTHER TECHNICAL TOPICS

Use of Open Source Software

There has been a trend in the last few years for software developers to build applications based on Open Source standards. These incorporate the concept of community (voluntary and

compensated) development and support of standardized software tools, functions and capabilities that can be used as the basis for application development – which would also be supported under Open Source concepts. There are significant advantages to such an approach – use of common tools and capabilities, shared accountability for software quality, reduced or no licensing costs, greater likelihood of interoperability when common routines and concepts are in use by different developers across similar or different applications – that could have potentially even greater benefit in the healthcare environment, which has traditionally been fragmented and proprietary in its approach to software development.

Community-based organizations like LouHIE have been at the forefront of both development and use of Open Source software and capabilities. Open Source is seen as a way to improve the quality and cost-effectiveness of software development. Software maintenance is more rapid with the large body of developers all supporting common code. Quality levels are high due to the use of peer review and other quality assurance practices by the developer community. Software component reuse is encouraged. Given the large number of community and commercial organizations that are supporting Open Source development activities, there is rapid response and great flexibility in the enhancement and maintenance of Open Source software.

On the other hand, Open Source software is not a mature capability in the healthcare space. Clinical software is extremely complex to develop and to refine – with leading commercial vendors taking 10-15 years to be able to create and install robust applications covering the primary clinical functionalities. While there are a few organizations offering Open Source-based applications for healthcare, this is a very small segment of the healthcare IT market. Consequently, healthcare Open Source software does not have a long track record, and many of the benefits that have been suggested as available through the use of Open Source software have not yet been proven to be true in healthcare.

It is important to note that the primary goal of LouHIE is to serve the community though the development and implementation of the health information exchange. There is a concern that LouHIE needs to be in the marketplace quickly – to benefit from the enthusiasm that has been cultivated in the Louisville community and to take advantage of the newness and novelty of the health record banking model of service delivery. Restrictions that LouHIE puts on the type of technology used in delivering their services could limit the options that are available to accomplish this primary goal.

Given that LouHIE also has a goal of reducing the costs of healthcare delivery and increasing interoperability within the context of LouHIE operations, the use of Open Source software in developing and delivering the services that LouHIE plans is seen as a potentially positive, though not yet proven, step towards those ends. In the CSV selection process, LouHIE should give additional consideration to those responders who are willing and able to incorporate Open Source software, approaches, and support into the technical solutions that they present, so long as the primary goal of going live in a timely, cost-effective and sustainable manner is met.

Standards

The use of standards is mandatory within the LouHIE technical environment. There is literally no way that data from diverse sources can be received, processed, managed, secured, or made

into useful information for presentation without recourse to various standards. Further, in order to meet one of the LouHIE goals of supporting interoperability with larger-scale efforts in healthcare (NHIN, Kentucky statewide initiatives), adherence to standards will be required. Among the areas where standards will be critical are:

- Messaging standards – formatting data for transmission between entities
- Content standards – imparting contextual meaning to the content of messages
- Technology standards – allowing interoperability at the hardware/networking level
- Security and Privacy standards – supporting compliance with regulatory requirements

While identifying the critical need for the use of standards, it is clear that there are multiple, often incomplete or immature, potentially conflicting standards from which to choose. Standards development by the various controlling organizations is continuing, with changes and additions being made constantly. The level of adoption of different standards varies widely within the healthcare application vendor community – with differences in how the standards have been incorporated into products further complicating the issue of interoperability in an environment where multiple software products are involved.

There are no easy answers to the problem of identifying the standards that should or should not be included in the development of LouHIE technical capabilities. While some are recommended (or required) as a means to meet external requirements (NHIN, for example), others will be entirely up to LouHIE and the CSV to determine. LouHIE will need to be able to adopt standards in a way that is flexible, to be able to adjust as needed as standards evolve and change. LouHIE will need to be able to support interactions with many partners who have adopted a variety of standards (or none at all) in their own internal operation. LouHIE will need to consistently apply standards within their own organization, to provide a consistent means of mapping, storing and presenting information. LouHIE will NOT mandate their partners to adhere to LouHIE-supported standards as a condition of participation.

Services for HIT Vendors

Part of the LouHIE business plan is the provision of Vendor Services – services for "non-core" services vendors, such as providers of wellness programs, EMRs, eRXs, or smart-cards. It will be important that the core technology infrastructure be flexible enough to incorporate such additional services within the framework of LouHIE. This places obligations on the CSV: to build such a flexible framework, to support the inclusion of premium services for vendors, to clearly define the requirements and limitations as they would apply to the providers of premium services, and to work with such providers to minimize the effort of participating in LouHIE. The HIT services providers will also be obligated to matching their capabilities and technology to the framework provided by the CSV and to working with the CSV to meet LouHIE requirements while still delivering the services in an efficient and cost-effective way to the LouHIE community.

3.7 RISK MANAGEMENT

RISK MANAGEMENT

For any new endeavor, it is important to identify potential risks that could effect a business plan, and develop appropriate strategies to manage those risks. LouHIE's plan considers and addresses five key risks: 1. Fragmentation Risk; 2. Community Trust Risk; 3. Political Risk; 4. Economic Risk; 5. Implementation Risk.

1. Fragmentation Risk

Given the movement into the personal health record market of several large national companies (Microsoft, Google, Dossia, etc.), there is a risk that if the Louisville community moves too slowly in launching this service, that there could be consumer and employer fragmentation across multiple PHR services. These services will make it more difficult to effectively integrate PHR systems with hospital and physician systems in the community.

- **LouHIE Response:**

  A.) LouHIE will seek to launch services as soon as is feasible, contingent on available of development funding for the start-up.

  B.) LouHIE will develop its technologies so that the health record bank can "link" to external PHR services, allowing consumers to use an external PHR, while also allowing LouHIE to share accurate information on a ubiquitous basis with area providers.

2. Community Trust Risk

Organizations and consumers involved in LouHIE's research identified trust, and trustworthiness, as the most important characteristics of LouHIE and a pre-requisite for health information exchange. This is unsurprising. Consumers expressed deep concerns about the risks to them and their families if their personal health information is accessed and used by unauthorized parties. For example, they were concerned about employers not hiring them, or firing them, based on their private health information. Organizations including employers, providers, physicians and payers all expressed related concerns about liability risks. These included concerns related to 1.) unauthorized or uncontrolled disclosures of their organizational information which could create liabilities for their organizations; 2.) competitor access to internal organizational information; and 3.) liabilities related to poorly designed or incomplete patient information, records and summaries, which could a.) require caregivers to read through and be responsible for a lot more medical information than they handle today, or b.) expose caregivers to new kinds of liabilities such as malpractice suits, if a consumer who was harmed by an adverse event could show that information was available through the health record bank, and that the caregiver failed to consider or use the information appropriately. To succeed, LouHIE must have an architecture that all parties can trust as trustworthy to protect all parties from these kinds of liabilities and risks.

LouHIE Response:

A. LouHIE Positioning as a neutral community-based nonprofit

By positioning itself as a nonprofit, neutral community-based organization, committed to meeting the needs of all consumers AND all organizations which serve them, including employers, government, payers, hospitals, pharmacies, public health, physicians and others, LouHIE will earn the trust of all parties to put the interests of the community above any individual stakeholder.

B. The Health Record Banking Alliance Framework

In order to provide a trusted, and trustworthy service for all parties, LouHIE will develop its operations in accordance with the privacy and security principles of the Health Record Banking Alliance (HRBA). These have been carefully developed by a group of over 100 experts from across the country, and are designed to comply with the most stringent consumer and healthcare laws at federal and state levels, in order to assure the highest level of trust and trustworthiness for health record banks. The basic model is simple:

1.) LouHIE only processes and stores information about consumers with their permission;

2.) LouHIE only stores consumer owned *copies* of selected information provided by data depositors. Once deposited, consumers are responsible for deciding where the information goes and for what purposes it is authorized to be used;

3.) Providers only receive information from consumers with consumer permission;

4.) Consumer information which is shared with providers for their use will be provided in a carefully designed, simple, standardized patient summary based on what physicians and nurses need to deliver care; standard summaries will be designed to avoid inclusion of sensitive competitive data.

5.) Consumers will have the power to review their information, and provide feedback or queries if there are any concerns about the information.

In addition to this, the HRBA principles require use of a highly secure and robust physical and logical security to protect the data from hacking or unauthorized access, a robust identity management system to ensure people are who they say they are, and have proved it; and an auditing trail that clearly identifies any party who accesses any part of consumer health record bank account for any reason.

C. Risk Management Methodologies

However, even with clear policies and procedures, best-in-class technologies, and consumer and physician review of information in the account, problems or misunderstandings may still occur. A number of methods will be used to protect LouHIE and those it serves from risks of these kinds. These include:

1.) having a full time compliance, privacy and security officer working for LouHIE, to manage compliance and and address any concerns which may arise;

2.) having a strong management team in place with the not-for-profit LouHIE, Inc. organization, providing oversight and management of the activities of any vendors which may be linked to the LouHIE system;

3.) investing in well defined legal agreements with consumers and organizations in which responsibilities of each party are clearly defined, risks identified, and appropriate limitations of liability and indemnifications agreed upon;

4.) having appropriate insurance policies in place.

Some of the types of privacy/security risks which will be identified and managed by the LouHIE, Inc. management team, addressed in the legal framework and covered by insurance policies include:

Disclaimers	Liabilities
Privacy/ Confidentiality (HIPAA and HRBA)	Personal information is collected, used, retained, and disclosed in conformity with the LouHIE's privacy notice
Security	Entities that can verify and secure the site must be in place in order to adhere to trust and privacy warranties.
Availability/Business interruption or failure to perform	Availability of information is operational and maintained to limit disruptions in service
Accessibility	Access to information through different sources internet, smartcard, etc.
Defamation, libel, slander	LouHIE will monitor system and may need to take action to maintain compliance with its defined policies.
Unauthorized access or use	Measures in place to prevent or maintain breech of information
Damage to data or systems related to hackers or viruses	Information is protected physically and logically
System Integrity	System processing is complete, accurate, timely, and authorized.
Direct or indirect punitive damages using information	LouHIE will monitor system and may need to take action to maintain compliance with its defined policies.
Utilization of information	Information should be utilized for information purposes only and should not be deemed as medical advice or diagnosis.
Partners and access to other sites	Information and products provided by partners is provided solely for consumer convenience and does not reflect LouHIE

3. Political Risks

Political risks relate to changes in Federal, state and local political leadership, which could create potential changes in policy or regulation. For example, certain types of state or Federal legislation could create undue burdens on an organization like LouHIE, or, even, render a LouHIE obsolete.

Response: LouHIE will manage this risk by 1.) staying flexible as new political agendas and directions are better understood; 2.) actively working with the Kentucky e-Health Network board and e-health leadership to build and maintain alignment with the state; 3.) working closely with the Health Record Banking Alliance and other national organizations to monitor and help shape legislation and approaches which favor the health record banking approach; 4.) working with other communities and states across the country to build and maintain a national presence in Washington; and 5.) putting a stake in the ground as soon as possible.

4. Economic Risks

There is increasing concern in the news about the potential for a US recession in 2008-2009. A recession could mean that some consumers, businesses and government entities have less funds available to contribute for LouHIE thus harming the ability for LouHIE and its Core Services Vendors to operate a financially viable business.

Response: LouHIE's conservative plan option is designed to allow it to weather the storm, if indeed purse-strings tighten so much that LouHIE cannot build and sustain operations at this stage.

5. Implementation Risks

There is a risk that as an early adopter, LouHIE and/or its Core Services Vendor(s) will stumble in the implementation process, delivering services that end up not satisfying consumers and/or organizations.

Response: LouHIE will seek a partnership with a Core Services Vendor that can mitigate this risk. Criteria LouHIE will use in selecting a vendor will include thorough knowledge of the industry, a track –record of excellence, ability to use proven technologies that work; careful use of market research and pilot testing prior to roll-outs. In addition, LouHIE and its vendor will work actively with other health record banking organizations around the country, to share best-practices and technologies to mitigate these risks. Finally, LouHIE will start simple – with medication data – and make that work, before trying to get overly complex.

3.8 MARKETING PLAN

OVERVIEW

There are many aspects to creating the vision, philosophy, capabilities and infrastructure that will allow LouHIE to deliver the planned benefits to the Greater Louisville area. The objective of the LouHIE marketing activities will be to present a compelling vision of those goals and benefits to the public in such a way that they will actively seek to participate. Only through this participation will there be sufficient financial support for LouHIE to meet the financial projections of this business plan. Only through participation will there be sufficient "critical mass" to deliver the benefits that LouHIE envisions.

The factors that will be critical to developing a sense of engagement among the desired participants in LouHIE are:

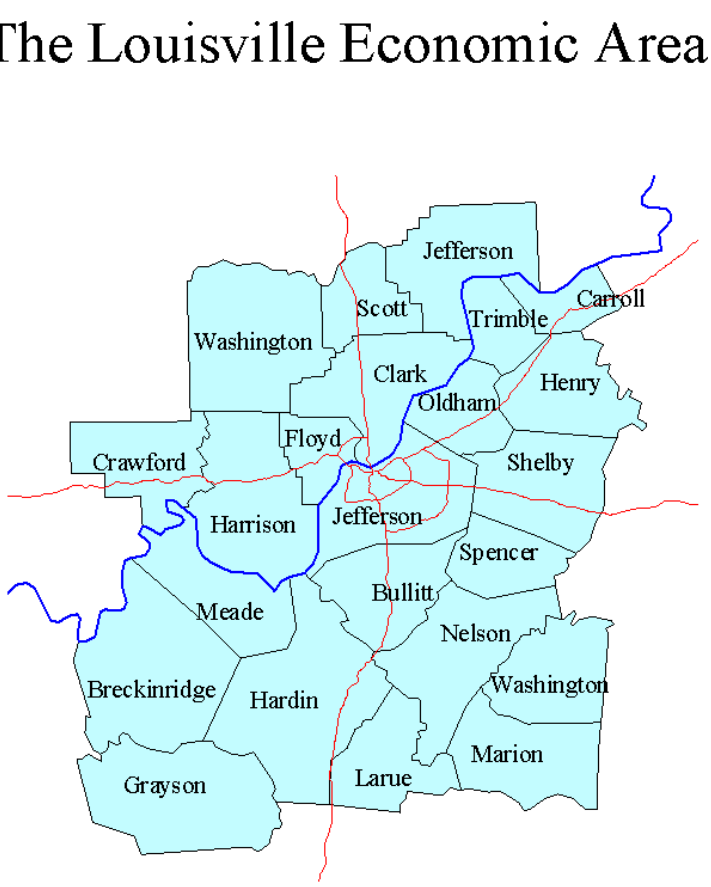
- Starting with a clear, simple service that adds value
- Clearly explaining the benefits to attract participation
- Establishing and sustaining participant growth within a reasonable timeframe
- Quickly gaining traction and credibility as an ongoing entity
- Educating key participants and participant groups on the cultural and procedural changes that will be necessary to enable LouHIE to deliver the ultimate benefits to the community

Marketing LouHIE to the community will be a multi-channel effort. It will require different activities for the various segments of the market. The marketing plan will need to encourage and sustain the interest of potential participants in using, and contributing financially to, the new electronic capabilities to coordinate, collaborate and utilize the new electronic data gathering and sharing capabilities to get the right information to the right person at the right time and enhance their ability to manage patient care and improve outcomes. These participants will include physicians, hospital groups, employers, health plans, laboratories, pharmacies, governmental agencies, and other entities such as safety net providers, research institutions and civic organizations

THE MARKET

LouHIE is a community-based service organization focused on the Greater Louisville metropolitan area. This area initially includes 10 counties that contain the city of Louisville and surrounding suburbs including those in Indiana, with a total population of over 1.2 million. Counties included at the launch are: Clark, Floyd, Jefferson, Bullitt, Hardin, Spencer, Shelby, Oldham, Henry and Trimble.

Figure 3 – LouHIE Geographical Area



Some of the key demographic features of the community served by LouHIE include:

- Population – 1.2 million in 10 counties
- Approximately 20% of households include one or more persons being served by Medicare
- Approximately 20% of households include one or more persons receiving Medicaid benefits
- Approximately 2500 physicians
- 14 acute care hospitals (and over 50 in-patient facilities)
- Approximately 45,000 employers
- Approximately 600,000 employees
- Major employers include:

- State of Kentucky (~50,000 covered lives)
- City of Louisville (~11,000 covered lives)
- University of Louisville (~9,000 covered lives)
- Humana
- UPS
- Major area hospital systems (Norton, Jewish, Baptist)

The primary focus of services and of the marketing of those services will be in the Greater Louisville area.

MARKET SEGMENTS, CHANNELS AND APPROACHES

Target Customers and Segments

LouHIE's customers are the ~1.2 million consumers living in the greater Louisville area and the 12 types of organizations working to deliver quality healthcare services to them. As the ***Health Record Bank of Greater Louisville,*** LouHIE will provide ***free health record banking services for all,*** beginning with ***medications and medication reconciliation,*** along with demographics and allergies. Since organizations and individuals may approach LouHIE through multiple channels for multiple purposes, a "many to many" marketing strategy is appropriate. Several channels are defined, each of which may help market to others. This strategy is appropriate for internet based services like LouHIE, which require different marketing efforts than traditional retail operations. The sections below describe different customer segments and channels and the marketing approaches to be used.

Consumers

The prime innovation that LouHIE brings to the development of a sustainable organization to deliver healthcare data sharing is a focus on bringing value to the individual consumers. Most RHIO/HIE organizations so far have focused on delivering services to providers, and revenue streams have been generated primarily from those providers as well as government and grant funding. LouHIE's focus on the general consumer presents the opportunity to generate revenue from a number of new or expanded sources. This approach to seeking revenue from the general consumer population is validated by the research conducted by LouHIE. In that research, consumers found value in the services that LouHIE proposes to offer, and a significant percentage of those consumers felt that the services were worth paying for.

In marketing to individual consumers (actually the households that contain one or more individual participating consumers), the focus will be on the set of services and capabilities that will better enable consumers to:

- track their own health information – initially focused on medications and allergies.
- enable multiple providers to access consumer information to better collaborate care
- reduce the number of appointments necessary to replicate missing or misplaced results
- receive access to tailored and relevant health information
- have limits placed on the presentation of less-tailored health information
- eventually reduce costs to the consumers through overall reduction in healthcare costs in the community

The other key marketing point to all market segments – but especially to individual consumers - will be to focus on the confidentiality and control that all LouHIE participants will have regarding the security and access to personal health information.

Two approaches will be used to reach individual consumers. The first is public relations activities and marketing focused on general publicity and exposure to LouHIE services, capabilities and results. Through this approach, consumers will become familiarized with the

LouHIE concept, and early adopters will be able to go online, register for the free service and begin using it. However, this approach is not initially expected to generate large numbers of contributing users of LouHIE services directly. The second approach to consumers is through the various organizations which serve them, especially their physicians and hospitals, but also through benefits sponsors, payers, technology providers and research organizations.

Providers

Providers are healthcare organizations that offer healthcare services to consumers. This group includes:

- Physicians and other providers
- Hospitals
- Ambulatory care centers
- Ancillary service providers
- Pharmacies

This group will be offered free basic services, including a provider portal, with a standardized patient clinical summary that initially includes medications history and demographics. Enrolled providers will be able offer all incoming patients free access to the service once it is fully operational (after provider workflow study and pilot). Enrollment will be part of the paperwork for patient registration. Thus providers will serve as a key distribution channel to consumers. Benefits to be gained by providers include:

- Improved ability to care for patients
- Increased efficiency in medication reconciliation
- Streamlined ability to access current patient data profiles.

Sponsors (Employers, Payers, Government)

This channel is expected to provide the largest number of paid individual participants in LouHIE. The concept is that an entity such as an employer or insurance carrier will sponsor employees and their households to participate in the service. In return for sponsorship, the sponsoring organization will receive special services plus recognition. Employer sponsors would most likely present LouHIE services as a component of a benefit package to their members or employees. As a benefit, the costs could be absorbed by the sponsoring entity, or passed through to the members or employees through increases in the total cost of benefits. Government sponsors would sponsor participation for their populations through grants or contracts. Payers would sponsor participation as a value-added service through their portals or linked to their HSA type cards. Initial LouHIE activity will focus on obtaining sponsorships from large employers and payers.

A key component of sponsor implementation will be converting sponsored individuals into active users of the system. Since LouHIE services will only begin when a user (representing their household) has both registered and established the permissions for data collection and access, getting sponsored individuals to complete the registration process will require additional follow-up and education – particularly with support from providers.

Payers

Payers includes any payer network processing claims for patients in the greater Louisville area. This includes private insured payers, third party administrators, payers handling senior citizen medicare supplement plans, and payers handling Medicaid at the Passport or State levels. Payers stand to benefit from services directly, and in terms of increased satisfaction by their members and clients. LouHIE will offer payers:

- Ability to offer LouHIE service to payer's members and providers through the payer portal
- Integrated identity services;
- Financial savings
- Integration of identity and enrollment services.

Payers will be contacted directly by LouHIE, and will be encouraged by employer sponsors to support LouHIE.

Health Information Product/Service (HIPS) Vendors

LouHIE is committed to creating a vibrant market of health information product and service vendors who can link their services to the Health Record Bank of Greater Louisville. Vendors may offer products like EMRs, e-prescribing, medical devices, monitoring devices, smartcards, and much more, all of which could have added value by being linked to LouHIE. LouHIE will approach these vendors as potential clients, seeking to help them develop new markets, test products and increase their sales. In some cases, LouHIE will create an "oligopoly" market, offering 2-3 winning vendors an opportunity to be integrated with LouHIE, and have a favored position in the Louisville area marketplace for a period of time. Some of these vendors are likely to seek LouHIE out; in other cases, LouHIE will seek out national vendors and offer them opportunities to come to Louisville. As the LouHIE vendor segment develops new markets in the Louisville area, they will also be helping to "market" LouHIE to the consumers, providers and other organizations which they serve. Once linked, these vendors will promote LouHIE services when they promote their own.

Personalized Messages and Content Senders

Many types of organizations may wish to send notifications and personalized content to selected consumers. These could include health product advertisers, wellness programs, physicians or nurses, public health, family members, employers, payers or others. A standardized notification and personalized content system, perhaps running on top of a search engine, will be deployed.

Research Clients

Research Clients may include universities, pharmaceuticals, public health, state and federal agencies and programs, and hospitals and physicians. Beginning in year two, research clients will be approached and developed, after the initial health record banking system is operational. Integrated research activities will be developed to add increasing value to the various other

consumer and organizational customers of LouHIE. Research will help increase awareness of the value of LouHIE, and increase the perceived value of LouHIE's services.

Grant Providers

There are a number of federal agencies and sources (CDC, AHRQ, CMS, FDC, Congress) state agencies and sources (Public Health, Cabinet for Health and Family Service, state legislature) and non-government organizations (Robert Woods Johnson, Markle Foundation, Kellogg, James Graham Brown Foundation) which provide grants and contracts for programs which benefit individuals and communities. LouHIE will develop an active program for applying for grants and contracts to support e-health related initiatives with potential to benefit the community. Both "development" and "services" grants will be sought.

Donors

LouHIE will generate start-up and operating funds through a community-wide fund-raising effort. Donations will be sought from all individuals and organizations in the greater Louisville area. Potential donors would include:

- Employers (also potential sponsors)
- Foundations
- Government Entities
- Charitable and Non-Profit organizations
- Public Service organizations
- Community groups
- Individuals

It is anticipated that donors will help spread the word to community consumers and organizations about the LouHIE service.

TOOLS AND METHODS

LouHIE will use the following tools and methods to reach out to targeted individuals and organizations in the community.

Public Relations and Community Events

As a community nonprofit, LouHIE will be able to draw significantly on the use of public relations tools, community events, and word-of-mouth to spread the word about LouHIE. LouHIE will maintain an active public relations presence with support from professional public relations firms and marketers as required. Community events such as town meetings, TV and Radio shows, and other forums will be an active part of LouHIE's development approach.

Community Outreach

LouHIE's chief marketing officer and other team members will set-up meetings with employers, payers, and government entities, to set-up consumer sponsorships. In addition, meetings will be held to set-up hospitals and physicians as free distribution points for the service.

"Health Record Bank of Greater Louisville" Access Cards (HRB-GL)

LouHIE branded Health Record Bank of Greater Louisville Access Cards may be developed and offered through sponsoring organizations. Several versions of these cards may be made available – ranging from simple cards with a bar code and mag-stripe, to future "smart cards" with chips. Various organizations will have the option of "sponsoring" access cards. These cards will be available in doctors' offices, pharmacies, hospitals, or via mail. Health plans may wish to create "HRB-GL" enhanced benefits cards – so that consumers only need one card. It is also possible that special enhanced cards could be developed for retail distribution.

PARTICIPATION PROJECTIONS

Based on the marketing approach, the following "expected case" participation levels are anticipated:

Community Participation Summary	Year 1	Year 2	Year 3	Year 4	Year 5
Consumers					
Households (2.2 people per household)	549,224	553,618	558,047	562,511	567,011
% Who Would Consider Participating (from phone survey)	59%	62%	66%	72%	75%
# Households Targeted	324,042	343,243	368,311	405,008	425,258
% Targeted Households Who Participate (free or paid)	0%	4%	8%	20%	45%
# Households Who Participate (free or paid)	-	13,730	29,465	81,002	191,366
Organizations					
Organizations (all 12 categories)	47,229	48,160	49,110	50,079	51,068
% participating	NA	6%	13%	21%	35%
# Participating	95	3,103	6,283	10,589	17,645
Average # of staff per organization using service	2.0	3.0	3.8	4.5	5.4
# of individual staff users within all organizations	189	9,308	23,563	47,650	95,285

Detailed participation projections, by consumer category, and for the 12 different organization types, are provided in the appendix.

CONCLUSION

By using a multi-channel approach to reach the community, LouHIE will make it easy for consumers to access the service when and where they need it, while facilitating more rapid adoption by consumers, providers, employers, health plans, government and other entities.

3.9 BENEFITS – STAKEHOLDER

STAKEHOLDER BENEFITS

Today's systems for recording and maintaining health records are nonstandard, partitioned, and do not support consumer access to integrated healthcare data. A community based, interoperable health information infrastructure can help transform the current situation.[1] LouHIE has a unique opportunity to facilitate healthcare improvements by increasing the quality of care, decreasing the cost of healthcare, and encouraging consumers to take an active role in their health.

In principle, most healthcare professionals recognize the potential clinical and administrative benefits which can occur through the implementation and use of electronic health record technologies. However, they also recognize the challenges of exchanging electronic information across different platforms. Therefore, it is understood that in order to ensure successful health information exchange, the interests and benefits for all stakeholders need to be aligned around a common platform for electronic health information storage and exchange. In September, Noblis worked with 26 different focus and functional groups designed to identify the understanding, interest, benefits and barriers e.g. (perspectives) for each stakeholder group related to electronic health information in Louisville.

Every group identified medication data as the most valuable information to gather first. Consumers saw value in having medication data in a health record bank, accessible by their physician, in the emergency room, and when they travel. Caretakers of chronically ill children, elderly parents and relatives saw high value in an online system for keeping track of multiple medications and dosages. Physicians and hospitals saw high value in having a "medication reconciliation" capability, as part of a ***patient clinical summary***, to verify which medications a patient is on. Pharmacies would value ability to reduce administrative costs of verifying medications. Employers and health plans saw benefit in helping consumers and physicians make better choices about medications, such as encouraging use of generics and in avoiding duplications and errors. Thus, the first benefit LouHIE will deliver is ***medications and medication reconciliation,*** accessed by providers through the ***patient clinical summary*** and by consumers through their ***health record bank account*** or a ***linked portal.***

Hospitals and physicians estimate that medication reconciliation services could save them 5-8 minutes of time per patient. Studies have shown that up to 1% of hospitalizations could be avoided if current, accurate medication information were available. Finally, more accurate medication records linked to medication management systems and formularies have potential to reduce prescription costs.

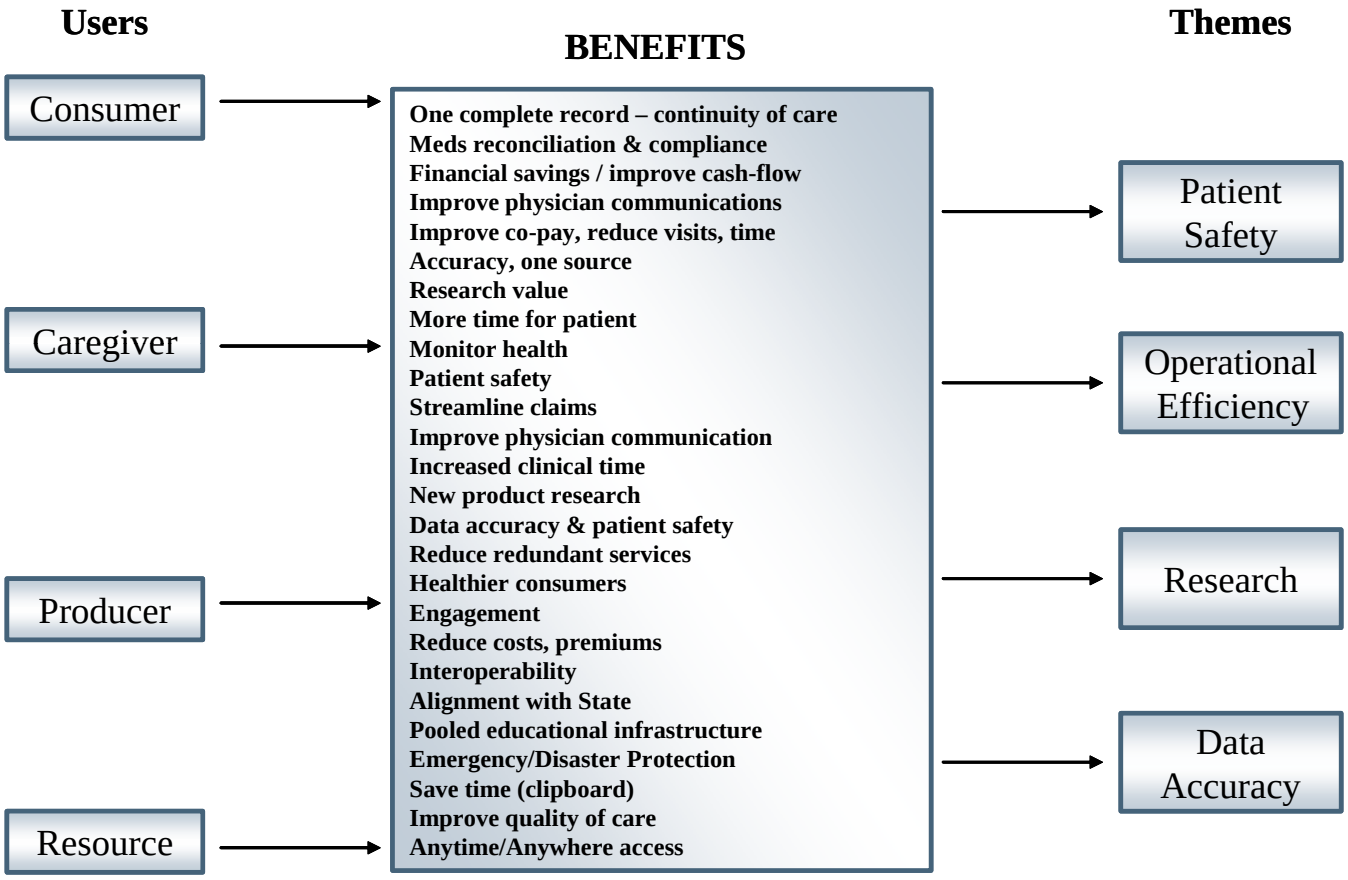
After LouHIE develops the community-wide medication information service, it will focus on bringing together other types of data for the community, including problem lists, allergies, labs and tests, immunizations, and other clinical data which can be captured electronically. In addition, LouHIE will support integration with existing electronic medical record systems, e-prescribing systems, and other clinical support technologies. Over time, the result of these activities is anticipated to be a community-wide service that delivers increasingly valuable benefits to all stakeholders: consumers, employers, government, payers, health IT firms,

[1]Gold & Ball, The Health Record Banking Imperative: A conceptual model, IBM systems journal, Vol. 46, No. 1, 2007

healthcare educators, researchers, pharmaceuticals, hospitals and institutions, pharmacies and retailers, public health, physicians and nurses.

To provide ability to measure these longer-range benefits, the following benefits model was developed by Noblis. It reflects potentially achievable benefits identified by the consumers, the twelve stakeholder groups, and the selected functional groups who provided input during the Greater Louisville e-Health Research 2007 project. More details about the benefits model, including explanations of the benefits modeling tool developed by Noblis, are in the appendix.

Benefits Model



4.0 FINANCIAL PLAN

4.1 FINANCIAL PLAN OVERVIEW

4.1 FINANCIAL PLAN OVERVIEW

LouHIE's financial model consists of several spreadsheets (the "pro forma") that project future years' financial performance in several views. These views all interlock, such that changes in one number may result in different outcomes across several spreadsheets.

LouHIE's financial plan shown reflects the "expected" case for the organization. This involves an 18 month start-up period, requiring gift and grant contributions of $1.89 million in the first year, and $2.46 million in year two. If these development fund raising goals are not achieved, it will be a signal that the market is not yet ready for a community health record bank. A more conservative start-up will then occur. If LouHIE raises more money more quickly, the "best case" scenario could occur, resulting in a launch within as little as 12 months.

4.1 INCOME STATEMENT

INCOME STATEMENT

LouHIE's income statement shows the expected case for participation, income and expenses.

Income Statement – Summary: Expected Case					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Participation Rates					
Participating Households	-	13,730	29,465	81,002	191,366
Participating Organizations	96	3,104	6,284	10,590	17,652
Income					
Start-up Contributions	1,898,000	2,460,000	2,392,000	1,460,000	648,000
Services Contributions					
Consumer Contributions	-	40,778	178,446	707,887	2,015,035
Grants and Contracts	-	500,000	1,000,000	1,500,000	2,000,000
Employer Contributions	-	259,909	769,955	2,623,761	6,998,141
Other Contributions & Rev	37,004	547,048	1,420,727	3,173,606	7,074,496
Total	**1,935,004**	**4,057,735**	**5,761,128**	**9,465,254**	**18,735,672**
Expenses					
Total Salaries	530,232	1,244,500	1,314,736	1,328,279	1,341,959
Benefits	132,558	311,125	328,684	332,070	335,490
Supplies	58,000	116,000	116,000	130,000	130,000
Contracted Services (PR, Misc)	250,000	400,000	600,000	800,000	1,000,000
Marketing	250,000	400,000	600,000	800,000	1,200,000
Insurance	25,000	25,000	25,000	25,000	25,000
Core Services Vendor	18,502	573,868	1,484,564	3,702,627	8,643,836
Research Services Vendor	-	100,000	200,000	300,000	400,000
Travel	15,000	50,000	60,000	70,000	80,000
Legal Fees	170,000	200,000	120,000	120,000	120,000
Other	100,000	250,000	500,000	600,000	700,000
Total Expenses	**1,549,292**	**3,807,793**	**5,643,634**	**9,017,996**	**15,889,945**
NET INCOME	**385,712**	**249,942**	**117,494**	**447,258**	**2,845,727**

INCOME MODEL

Two types of income are considered. Start-up contributions will be generated to cover LouHIE's start-up costs for developing a management team, legal framework, community communications, and base technologies. Services contributions will be generated from delivery of services to the community.

Start-up Contributions

Start-up contributions consist of three types of contributions: large gifts from individual or organizational philanthropy, development grants from government and nonprofit organizations, and community contributions from a fund-raising campaign in which area employers and individuals may be asked for contributions to support the effort. For example, area employers may be asked to contribute an average of $10.00 per employee to fund start-up costs. These funds will be used to finance the following activities:

- Start-up management team costs
- Development and release of an RFI for a core services vendor
- Provider workflow study, to be conducted from August – November, 2008
- Launch of the first non-core service by the 4th quarter of 2008. Non-core services are external services which can link with LouHIE (ie., such as e-prescribing)
- Pilot of patient clinical summary containing medications, medication reconciliation and demographic data, targeted for the 1st quarter of 2009

Service Contributions

Once the service is up and running, the following types of service contributions are anticipated.

Grants and Contracts will be sought from state and federal governments and non-governmental organizations to support participation by Medicaid, Medicare, safety-net and other population groups. A variety of grant sources have been identified.

Employer Contributions will be sought from all employers in the Greater Louisville area to support the costs of operating the LouHIE core service. Employers may be requested to provide up to $2.00 per employee per month until such time that other revenues become available to reduce the need for or to eliminate the need for ongoing employer contributions.

Consumer Contributions may come from households who are using the service. For example, consumers may be sent a personalized letter and "courtesy invoice," recommending a contribution based on their household's use of the service. Contribution amounts are estimated based on the telephone research, and range from $5.00 to $100.00 per year, with an average contribution of $60 per year per family (growing 2% per year for inflation). Only a small % of consumers are expected to contribute.

Other Contributions includes 1.) contributions for special health information management services developed for different types of organizational users (for example a special information management service); 2.) contributions from external parties for Personalized Messaging and Content services, 3.) contributions for Non-Core Vendor Services from external vendors such as

EMR or eRX vendors; 4.) Contributions for Special Projects requested by an organization and 5.) contributions for Research Services from research groups.

It is intended that LouHIE will actively and aggressively seek sources of ongoing sustainable funding for core services from grants, tax based revenues, research fees, vendor sponsorships, personalized communications services, and other sources in order to reduce or even, if possible, eliminate funding from employer and consumer contributions over time.

EXPENSE MODEL

An expense model provides a clear understanding of the expenses and investments required to operate an organization. LouHIE's pro-forma expense model anticipates the major sources of expenses for LouHIE during the first five years of operation. Key expense categories include:

- Total Salaries
- Benefits
- Supplies
- Contracted Services
- Marketing
- Insurance
- Core Services Vendor Outsourcing
- Research Services Vendor Outsourcing
- Access Card Production
- Travel
- Legal Fees

Some key assumptions for these expense categories include:

Total Salaries: LouHIE expects to pay salaries for the following positions:

- CEO
- Executive Assistant
- CFO
- Marketing Officer
- Chief Information Officer
- Security and Privacy Officer
- Chief Medical Officer
- Benefits Realization

In year 1, LouHIE will operate with the help of volunteer and loaned executives for the first 3-6 months, shifting to paid executives in the second half of the year. As a result, the pro-forma assumed only half the number of FTEs (4). From year 2 on, LouHIE will operate will one FTE for each of the positions listed, resulting in a total of 8 FTEs. Finally, the pro-forma assumes that performance bonuses amounting to 25 percent of the total salaries will be paid out each year

starting in year 2. Salaries are calculated by taking a national average, discounted by 20% to reflect Louisville level wages.

Benefits: Benefits are assumed to be 25 percent of total salaries.

Supplies: the supplies expenses are based upon an assumption of a fixed overhead plus a monthly cost per FTE. The supply costs include: office space rental, leased computer, phone, and office equipment, services contract, and miscellaneous supplies.

Contracted Services: The pro-forma takes into consideration expenses for services LouHIE will contract out to outside organizations. The model assumes the following expenses:

- Independent Accounting and Auditing – $3,000 per month
- Billing Services – $1,000 per month

Marketing: The marketing expenses include all activities that will promote LouHIE. This expense includes the cost of hiring a PR and marketing firm. As the revenue increases and LouHIE continues to establish itself in the community, the pro-forma assumes that the amount of money devoted to fund-raising, marketing and public relations will increase.

Insurance: This is the basic D&O and comprehensive liability insurance required to operate a business of this type, based on comparable quotes for similar organizations.

Core Services Vendor: A core services vendor or vendors will provide a variety of services for LouHIE. In a conventional business agreement, LouHIE would pay the core services vendor(s) a fixed amount of money for their services. However, in light of the fact that LouHIE is a start up, it will be unlikely that it will be able to pay for the vendor services upfront. Instead, the model assumes vendors will be paid based upon the amount of operating income that is generated. In other words, a portion of LouHIE's operating income will go to the vendors.

Travel: LouHIE will incur travel expenses for employees. Most of these travel expenses will come from attending and speaking at conferences, seminars, etc. in an effort to promote the efforts of LouHIE.

Legal Fees: LouHIE will have annual expenses to ensure all legal matters are in order. Additional legal investments in the health record bank privacy, security and indemnity framework will be made in the first two years.

Additional information is provided in the appendix.

4.2 BALANCE SHEET

BALANCE SHEET

A balance sheet helps an organization develop plans which can support ongoing financially solvency and health. The pro-forma balance sheet for LouHIE is as follows:

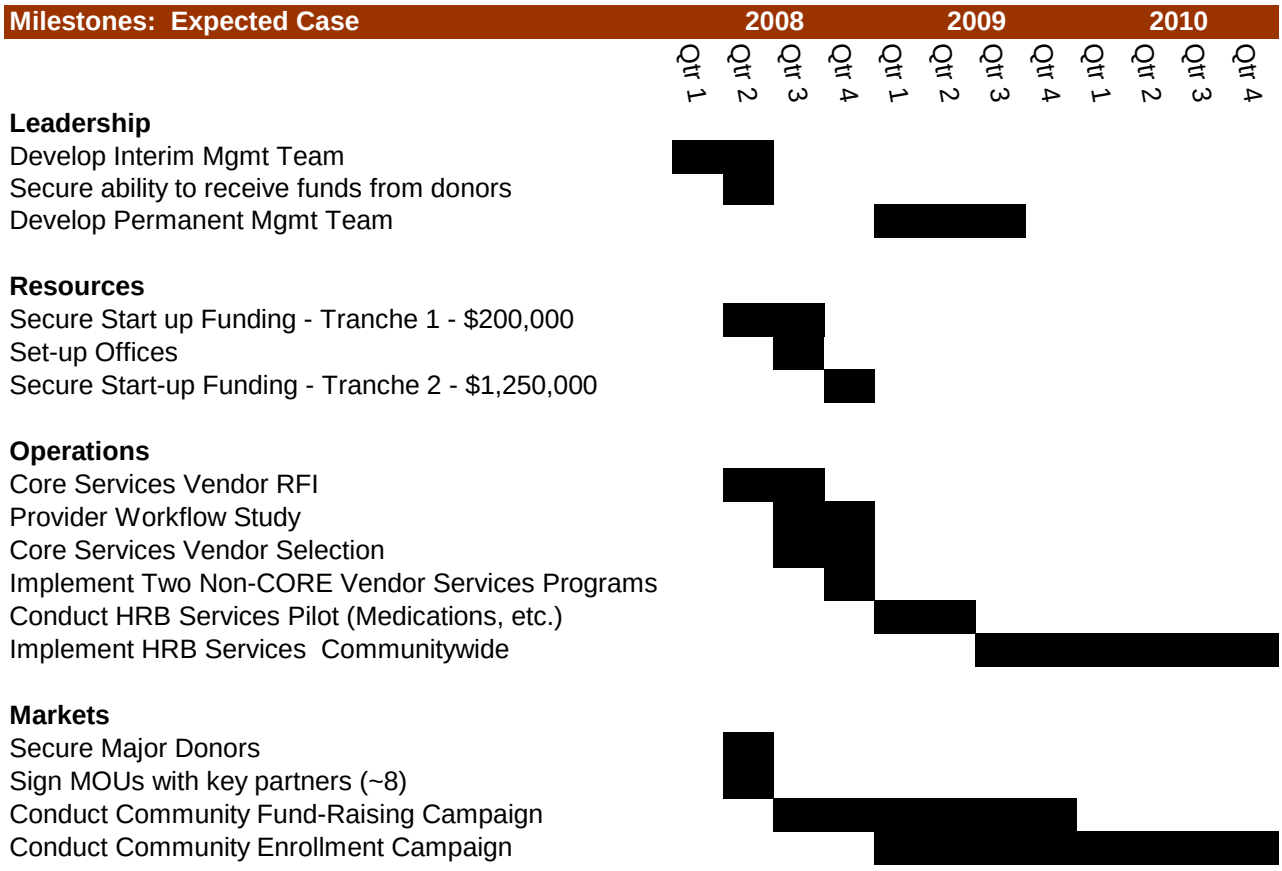
Balance Sheet - Expected Case					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Assets					
Current Assets					
Cash	168,374	187,547	120,182	156,992	1,953,926
Accounts Receivable	238,562	500,269	710,276	1,166,949	2,309,877
Inventory	-	-	-	-	-
Prepaid Expenses	42,446	104,323	154,620	247,068	435,341
Total Current Assets	**449,382**	**792,139**	**985,078**	**1,571,009**	**4,699,144**
Liabilities and Equity					
Current Liabilities					
Accounts Payable	63,670	156,485	231,930	370,603	653,011
Short-term Debt					
Other Current Liabilities					
Total Current Liabilities	**63,670**	**156,485**	**231,930**	**370,603**	**653,011**
Long-Term Debt					
Total Liabilities	**63,670**	**156,485**	**231,930**	**370,603**	**653,011**
Total Net Assets	**385,712**	**635,654**	**753,148**	**1,200,406**	**4,046,133**
Total Liabilities & Net Assets	**449,382**	**792,139**	**985,078**	**1,571,009**	**4,699,144**

It shows that cash-flow remains positive through the five year plan, with an increase in cash in year five. Other key metrics such as accounts receivable and accounts payable are modeled assuming standard assumptions for organizations of this type.

4.5 TIMELINE AND MILESTONES

TIMELINE AND MILESTONES

A timeline with key milestones is important for managing an organization's development, particularly considering the dependencies of different tasks on one another. The Milestones: Expected Case figure lays out key tasks and milestones for establishing the LouHIE organization, developing funding, building service operations, and developing marketing and communications activities.



1. Leadership

The Leadership category includes development and management of the board and committees, strategic planning and organizational development. The board is already established but will need to be maintained and strengthened over time. Three key additional milestones are listed:

- ***Develop Interim Management Team:*** This task involves developing an interim team to manage the organization for the first 12 – 18 months, until funding is in place to support a permanent team. This task is already in progress, with 3 members of the interim management team in place (Judah Thornewill, Kenny Zegart and Lyle Graham). Additional members are being sought currently as executives on loan from area healthcare organizations.

- ***Secure ability to receive funds from donors:*** This task involves securing the 501(c)(3) nonprofit designation from the federal government as soon as possible. As an interim step, opportunities will be explored to have another nonprofit with an aligned mission process contributions until LouHIE receives its designation from the Federal government. LouHIE is currently able to receive contributions from organizations and corporations which do not require a personal tax-deduction capability.

- ***Develop Permanent Management Team:*** In the second year, once funding is in place, and multi-year positions can be offered, a permanent management team will be sought. The interim team will transition off.

2. Resources

The resources category includes development of financial and physical/technical infrastructure resources for the organization. Key tasks and milestones in this category are

- ***Secure Start up Funding - Tranche 1 - $200,000:*** $200,000 of start-up funding needs to be raised by the end of 2nd quarter, 2008. This will allow offices to be secured and interim management team members and vendors to be paid, so that the organization can move forward.

- ***Set-up Offices:*** Offices – probably in the downtown Louisville area – will need to be secured sufficient to accommodate the needs of the organization.

- ***Secure Start-up Funding - Tranche 2 - $1,250,000:*** a set of major contributions or donations totaling $1,250,000 will need to be raised by end of 4th quarter, 2008 in order for the plan to move forward with the expected case. Obtaining this funding will signal ability for LouHIE to move forward with the expected case plan.

3. Operations

Operations involves development of services, and the technologies which support them. Key operations tasks and milestones for operations are:

- ***Vendor RFI:*** A vendor request for information (RFI) will be conducted in 2nd and 3rd quarters. This RFI will be designed to gain current knowledge of technologies that are available, and anticipated costs of those technologies.

- ***Provider Workflow Studies:*** a "process-mapping" research activity will be conducted, to determine how to implement the health record bank services for providers in the most efficient way possible, while delivering maximum value to consumers. The "workflow" study will be used to design the processes for patient registration and information access. Outside funding will be sought for this project.

- ***Vendor Selection:*** Based on the RFI responses, a request for proposal will be issued, leading to selection of a vendor or vendor group. It is possible that a vendor will be

identified in the RFI process with such a compelling solution that LouHIE decides to move forward without a formal RFP.

- ***Implement Two Vendor Services Programs:*** LouHIE will seek to develop and implement two or more non-core services programs, such as a community-wide e-prescribing or wellness program. These programs will allow LouHIE to have a market success in 2008.

- ***Conduct HRB Services Pilot (Medications, etc.):*** a Health Record Banking Services pilot, with Medications information, will be conducted in early year 2, prior to rolling out the community-wide service.

- ***Implement Health Record Banking Services Communitywide:*** based on the success of the pilot, the HRB services will be implemented across the community.

4. Markets

The markets category involves marketing, communications, public relations and other tasks needed to develop the market. Tasks to develop the markets, as further described in the marketing portion are:

- ***Secure Major Donors:*** Major donors will be approached and secured who can provide the levels of funding required to implement the plan.

- ***Sign MOUs with key partners (~8):*** At least 8 memorandums of understanding (MOUs) will be signed to secure participation of key organizational participants, including the Kentucky Medicaid, UHC/Passport, major area payers (Humana, Anthem), and major hospital systems.

- ***Conduct Community Fund-Raising Campaign:*** A community-wide fund raising campaign will be conducted asking every organization and individual to contribute $10.00 per head to cover the start-up costs of the system.

- ***Conduct Community Enrollment Campaign:*** starting in year 2, 1st quarter, a community enrollment campaign will be conducted, to enroll organizations and households in the service.

LouHIE will review and revise the implementation plan timeline and milestones every six months. A formal review and revision is necessary as elements may change and the changes should be reflected in the implementation plan. The financial plan takes into consideration the costs of the actual start up efforts as described above in the various stages of implementation.

5.0 GLOSSARY OF TERMINOLOGY

GLOSSARY OF TERMINOLOGY

AHIC – American Health Information Community: Federally-chartered organization working to create the NHIN.[1]

CCHIT – Certification Commission for Health Information Technology: CCHIT establishes interoperability standards for EHR software[1]

CSV – Core Services Vendor: a vendor providing core health record banking services to a community or state HRB organization.

EHR – Electronic Health Record: Electronic patient records software[1]

ePPIK – ePrescribing Partnerships in Kentucky: A grant program that encourages adoption of electronic end-to-end prescription processing[1]

HHS – United States Department of Health and Human Services: Executive Agency that oversees federal health initiatives and programs[1]

HISPC – Health Information Security and Privacy Collaboration: Federally-funded study to identify and address barriers to HIE[1]

HIE – Health information exchange: defined as the mobilization of healthcare information electronically across organizations within a region or community[2]

HIE stages of development:[3]***:***

- **Stage 1** – Identify Need:
  - Recognition of the need for HIE among multiple stakeholders in your state, region or community
- **Stage 2** – Organize:
  - Getting organized
  - Defining shared vision, goals & objectives
  - Identifying funding sources
  - Setting up legal and governance structures
- **Stage 3** – Plan, Fund:
  - Transferring vision, goals & objectives to tactical and business plans
  - Defining needs and requirements
  - Securing funding
- **Stage 4** – Implement:
  - Well underway with implementation of technical, financial and legal
- **Stage 5** – Operate:
  - Fully operational health information organization
  - Transferring data that is being used by healthcare stakeholders
  - Sustainable business model
- **Stage 6** – Extend

[1] The Annual Report of the Kentucky e-Health Network Board and the Kentucky Healthcare Infrastructure Authority, October 2006
[2] eHealth Initiative
[3] eHealth Initiative

- Demonstration of expansion of organization to encompass a broader coalition of stakeholders than present in the initial model

HIT – Health Information Technology: Software that facilitates HIE[1]

HITSP – Health Information Technology Standards Panel: A public and private sector partnership created to develop relevant and widely-accepted standards to facilitate interoperability among health IT software products[1]

HRB – Health Record Bank – an organization providing health record banking services using a centralized repository architecture with deposits and withdrawals controlled by consumers, in accordance with standards and principles provided by the health record banking alliance (www.healthbanking.org).

Interoperability – the ability of two or more systems to exchange information, and to use the information that has been exchanged[1]

KEHN – Kentucky e-Health Network: Statewide e-Health Network Authorized by Senate Bill 2[1]

KHIA – Kentucky Healthcare Information Authority: A partnership between the University of Kentucky and the University of Louisville established by Senate Bill 2 to improve the cost and quality of health care in the Commonwealth through research, recommendations, education, pilot projects, grant initiatives, and support of the KeHNB's efforts[1]

K-HIP– Kentucky Health Information Partnership: Public and private partnership in Kentucky to make a claims-based patient health summary available to physicians[1]

NHIN– National Health Information Network: Envisioned national network for HIE[1]

ONC – Office for the National Coordinator for Health Information Technology: Federal entity overseeing national HIE efforts[1]

RHIO – Regional Health Information Organization: electronic networks intended to help multiple healthcare organizations such as hospitals, labs, radiology centers, etc., in a given area exchange health and patient data. The federal government is encouraging statewide RHIOs to organize and serve as an umbrella organization for local ones.[2]

[1] The Annual Report of the Kentucky e-Health Network Board and the Kentucky Healthcare Infrastructure Authority, October 2006

[2] Certification Commission for Healthcare Information Technology (CCHIT)

APPENDIX I:
GOVERNANCE FAQ'S

GOVERNANCE FAQ'S

- Who is LouHIE's attorney?
  - John Johnson, Stites and Harbison. Approved in the July 2006 board meeting.
- What are LouHIE's bylaws at present?
  - Stakeholder governance
    - Technically stakeholders become "members" of LouHIE, representing their individual/organizational sector.
    - Membership managed by board (no fees for membership at present).
  - Uses "4 Quadrant" method to create a balance of power, and checks and balances regarding the interest of any stakeholder group.
  - Method, based on "complexity science" was developed at University of Louisville under research funding (Kentucky Science and Engineering Foundation).
  - General bylaws developed at UofL under research.
  - As LouHIE develops, bylaws can be refined.
  - Updates of bylaws will be posted on the website.
- How is the Board organized (see board structure – attached)?
  - 16 Board Seats.
  - 4 seats for each of 4 Stakeholder Quadrants (Purchasers, Resource Providers, Producers, Caregivers).
  - Each quadrant has three stakeholder committees plus a quadrant committee.
  - Functional committees are comprised of multiple stakeholders and do not have a vote on the board.
    - Finance/Ethics Committee
    - Business Model Committee
    - Etc.
- How are directors selected?
  - Directors are nominated by their committee and approved by the board (2/3 vote).
  - Committees can recommend to the board the removal of directors they feel are not serving their interests
- Who are the Board Chairs/Executive Officers and how are they selected?
  - Each quadrant nominates 1 officer of the board who also serves as the quadrant committee chair:
    - Consumer Quadrant nominates Chairperson of the board
    - Resource Quadrant nominates Vice Chair of Resources and Treasurer

  - Production Quadrant nominates Vice Chair of Production, who serves as Chair when Chair is absent.
  - Connections Quadrant nominates Vice-Chair of Connections and Secretary.

- What is the Executive Committee?
  - Committee comprised of the 4 Officers, handles business of the board between board meetings.
- How are committees formed and managed?
  - Board approves formation of committees.
  - Stakeholder Committees initially "led" by a "natural leader" of best fit for each stakeholder group (e.g. Kentucky Hospital Association for hospitals).
  - Members are invited to join the committee.
  - Committees meet and elect a "chair" (and or co-chair")
  - Chairs are also proposed to serve as Directors on the board, representing their committee.
- Can committees have sub-committees?
  - Yes. In fact, many committees will end up with several distinct sub-groups of stakeholders. For example, dentists, osteopaths and physician practice managers may also want to be represented in the physician committee.
  - We recommend sub-committee structures be "designed" in a manageable structure.
- What if there are too many members wanting to participate in a committee for it to be practical (e.g. more than 15-18 people can become unmanageable)?
  - The bylaws allow the formation of "membership forums" (e.g. we could have a physician forum with 200 members). The forums would then elect committee members to represent them.
- What are the responsibilities of Officers, Directors and Committee Chairs:
  - Maintain up to date committee charges (on www.louhie.org website).
  - Organize and chair committee meetings.
  - Record/report results of committee meetings into online information system (with staff support as required).
  - Report committee input at board meetings
  - Keep all records/information up to date.
  - Other duties/responsibilities as required.
  - Rough estimate of time required:
    - Functional Committee Chairs: 2-6 hours per month
    - Stakeholder chairs: 4-8 hours per month
    - Officers/Executive Committee Members: 8-24 hours per month.

- How do director proxy's work (for example if a committee co-chair is able to attend, because the "director" is not available?):
  - We believe this can be done. We are working on the "procedure" that makes this legally binding. For example, it may require that the board "accepts" a motion to recognize so and so as a proxy
- Electronic Meetings/Information Sharing:
  - The board has approved e-mail or telephone board meetings if/as required.
  - The board structure involves, potentially, a lot of different stakeholders needing to have private committee meetings (at times), and needing to have high transparency of information (at times).
  - UofL has worked with VisPlex Association, Inc. (a not-for-profit set-up for this purpose) to develop a web-based software system and service to support these board communications. This is currently being used to drive the www.louhie.org website, intranet, mailing system, document library and etc.

APPENDIX II:
LOUHIE BYLAWS

LOUHIE BYLAWS

BYLAWS

OF

LOUISVILLE HEALTH INFORMATION EXCHANGE, INC.

A Kentucky nonprofit, nonstock corporation

Article I

Membership

Section 1. *Qualifications*. Any person, firm, or corporation, may become a member of this Corporation.

Section 2. *Election of members*. A person, firm, or corporation may become a member by applying for membership online through www.louhie.org, and being accepted through the then established process for accepting members. No applicant shall be denied membership based upon race, gender, creed, sexual orientation or national origin. The Board of Directors shall be provided an opportunity at each quarterly board meeting to review all new members and to approve or disapprove memberships by vote of three quarters or more of the directors present.

Section 3. *Resignation*. Any member may withdraw from the Corporation after fulfilling all obligations to it by providing notice through the online website, at www.louhie.org, which resignations shall be presented to the Board of Directors or Executive Committee by the Secretary on the first quarterly meeting after its receipt.

Section 4. *Suspension*. A member may be suspended for a period or expelled for cause such as violation of any of the bylaws or rules of the Corporation, or for conduct prejudicial to the best interests of the Corporation at the sole discretion of the Corporation. Suspension or expulsion shall be by a two-thirds vote of the membership of the Board of Directors, provided that a statement of the charges shall have been mailed by registered mail or secure e-mail to the member at his/her last recorded address at least 15 days before final action is taken thereon.

Section 5. *Member Forums*. A person, firm or corporation can apply to be members of one or more of four "member forums," defined as online forums where members can interact and exchange information in a secure and private environment. The member forums shall consist of a consumer forum, resource forum, producer forum and a connector forum. Each forum may also contain "sub-forums". All members shall be members of the consumer forum. Additionally, all members shall be subject to the current provisions of the VisPlex Association Membership Agreement, most recently amended on January 1, 2006.

Article II

Fiscal Year

The fiscal year of the Corporation shall end on the 31st day of December of each year.

Article III

Dues

Section 6. *Annual dues*. The Board of Directors may determine from time to time the amount of initiation fee, if any, payable to the Corporation by members. Annual dues may be charged for membership in the consumer forum and additional dues may be applicable for membership in the resource forum, producer forum or connector forum.

Section 7. *Payment of dues*. Dues shall be payable in advance on a monthly, quarterly or annual basis, based on the date membership starts.

Section 8. *Default and termination of membership*. When any member shall be in default in the payment of dues for a period of three months from the beginning of the period for which such dues became payable, his/her membership may thereupon be terminated by the Board of Directors in the manner provided in Article I, Section 4, of these Bylaws.

Article IV

Meetings

Section 9. *Annual meetings*. There shall be an annual meeting on the second Tuesday in January each year for election of members of the Board of Directors and for receiving the annual reports of officers, directors, and committees, and the transaction of other business. If the day designated falls upon a legal holiday, the meeting shall be held on the next succeeding secular day not a holiday. Notice of the meeting, signed by the Secretary, shall be mailed or e-mailed, except as herein or by statute otherwise provided, to the last recorded address of each member at least ten days and not more than 35 days before the time appointed for the meeting. All notices of meetings shall set forth the place, date, time, and purpose of the meeting.

Section 10. *Special meetings*. Special meetings may be called by the Board of Directors or the Executive Committee at their discretion. Notice for any special meeting is to be given in the same manner as for the annual meeting. Special meetings may include member meetings, conducted by telephone or electronic forum, for the purpose of obtaining member feedback about the performance of the Corporation. These meetings shall be set-up at the sole discretion of the Board of Directors.

Section 11. *Order of business*. The order of business shall be as follows at all the meetings of the Corporation, Board of Directors and Executive Committee:

(a) Calling of the roll.

(b) Proof of notice of meeting or waiver of notice.

(c) Reading of the minutes.

(d) Receiving communications.

(e) Election of officers and new members.

(f) Reports of officers.

(g) Reports of committees.

(h) Unfinished business.

(i) New business.

Any question as to priority of business shall be decided by the Chair without debate.

This order of business may be altered or suspended at any meeting by a majority vote of the members present.

Section 12. *Online member meeting.* On a quarterly or annual basis, the members may have an online meeting in which the members will provide the Board of Directors with feedback and input regarding the effectiveness of the Board and the Corporation. A survey for each member forum will be provided to solicit the feedback.

Article V

Directors

Section 13. *Number*. The property, affairs, activities and concerns of the Corporation shall be vested in a Board of Directors, consisting of no less than four (4) and no more than thirty-two (32) directors. The number of directors shall be equally balanced among board members representing the interests of the four member forums. The board membership within each member forum shall be equally balanced among the sub-forums within that particular member forum. The members of the Board shall, upon election, immediately enter upon the performance of their duties and shall continue in office until their successors shall be duly elected and qualified.

Section 14. *Election of directors and term*. When new directors are elected, they shall be given a term of either 1, 2 or 3 years. The term shall be selected so that the term ending dates shall be as randomly distributed as possible among the directors. At the expiration of any term, any director may be reelected. No director may serve more than 2 consecutive three year terms without at least one year break in service.

Section 15. *Duties of directors*. The Board of Directors may: (1) hold meetings at such times and places as it thinks proper; (2) admit members and suspend or expel them by ballot; (3) appoint committees on particular subjects from the members of the Board, or from

other members of the Corporation; (4) audit bills and set policy and/or approve disbursement of the funds of the Corporation; (5) print and circulate documents and publish articles; (6) carry on correspondence and communicate with other organizations interested in health information exchange; (7) employ agents; and (8) devise and carry into execution such other measures as it deems proper and expedient to promote the objects of the Corporation and to best protect the interests and welfare of the members.

Section 16. *Meetings of board*. Regular meetings of the Board of Directors shall be held in January, April, July and October. Notice of the meeting, signed by the Secretary, shall be mailed to the last recorded address of each member at least ten days before the time appointed for the meeting. The Chairperson may, when s/he deems necessary, or the Secretary shall, at the request in writing of two-thirds of the members of the Board, issue a call for a special meeting of the Board, and only five days notice shall be required for such special meetings.

Section 17. *Quorum*. One (1) director per member forum shall constitute a quorum for the transaction of business. In the absence of the Chairperson and Officers, the quorum present may choose a Chair for the meeting. If a quorum is not present, a lesser number may adjourn the meeting to a later day, not more than 10 days later. The Secretary shall give written notice of the adjourned date to all members of the Board of Directors.

Section 18. *Absence*. Should any member of the Board of Directors absent him/herself unreasonably from three consecutive meetings of the Board without sending a communication to the Chairperson or Secretary stating his/her reason for so doing, and if his/her excuse should not be accepted by the members of the Board, his/her seat on the Board may be declared vacant. The seat shall be filled as set forth in Section 20.

Section 19. *Vacancies*. Whenever any vacancy occurs in the Board of Directors by death, resignation, or otherwise, it shall be filled without undue delay by a majority vote by ballot of the remaining members of the Board at a special meeting which shall be called for that purpose. The election shall be held within 60 days after the occurrence of the vacancy. The person so chosen shall hold office until the next annual meeting.

Section 20. *Removal of directors*. Any one or more of the directors may be removed either with or without cause, at any time, by a vote of three-fourths of the directors present at any special meeting called for that purpose.

Article VI

Officers

Section 21. *Number and Method of Election*. The officers of this Corporation shall be elected by the Board of Directors and shall consist of a Chairperson, a Vice-Chair of Resources/Treasurer, Vice-Chair of Production, and Vice-Chair of Connections/Secretary.

Section 22. *Selection of Additional Officers/Agents*. The Board of Directors may appoint other officers or agents, including at its discretion, a President, a Vice-President of Resources, Vice President of Operations and Vice-President of Connections, each of whom shall hold office for such period, have such authority and perform such duties as the Board of

Directors may determine. The Board of Directors may delegate to any officer the power to appoint any such subordinate officers or agents and to prescribe their respective authorities and duties.

Section 23. *Duties of officers*. The duties and powers of the officers of the Corporation shall be as follows:

Chairperson

The Chairperson shall be the chairperson of the Board of Directors. The Chairperson shall, when present, preside at all meetings of the Board of Directors and shall perform such duties as may be prescribed by the Board of Directors from time to time. The chairperson shall represent the interests and perspectives of stakeholders in the consumer stakeholder quadrant.

Vice Chair of Resources

The Vice Chair of Resources shall represent the interests of the stakeholders in the resources quadrant of the board. The Vice President shall, when the Chairperson and Vice-Chair are not present, preside at the meeting of the Board of Directors. When possible, the individual who is Vice Chair of Resources shall also serve as Treasurer.

Treasurer

The Treasurer shall keep an account of all moneys received and expended for the use of the Corporation, and shall make a report at the annual meeting or when called upon by the Chairperson. The Treasurer shall authorize the President and/or Vice President of Resources to deposit all sums received in a bank, or banks, or trust company approved by the Executive Committee, and funds may be drawn only upon the signature of the President or Vice President of Resources, who shall report all deposits and disbursements to the Treasurer on a monthly or quarterly basis as requested by the Treasurer. The funds, books, and vouchers in the Treasurer's hands shall at all times be under the supervision of the Executive Committee and subject to its inspection and control. At the expiration of his/her term of office, s/he shall deliver over to his/her successor all books, moneys, and other property, or, in the absence of a treasurer-elect, to the Chairperson. In case of the absence or disability of the Treasurer, the Executive Committee may appoint a treasurer pro tem. The Treasurer shall, when the Chairperson and Vice-Chair are not present, preside at the meeting of the Board of Directors.

Vice-Chair of Production

The Vice-Chair of Production shall be the vice chairperson of the Board of Directors. The Vice Chair of Production shall, when the Chairperson is not present, preside at the meeting of the Board of Directors and shall perform such other duties as may be prescribed by the Board of Directors from time to time. The Vice-Chair of Production shall represent the interests of the stakeholders in the production quadrant of the board.

Vice-Chair of Connections

The Vice-Chair of Connections shall, when the Chairperson is not present, preside at the meeting of the Board of Directors and shall perform such other duties as may be prescribed by the Board of Directors from time to time. The Vice-Chair of Connections shall represent the interests of the stakeholders in the connections quadrant of the board. When possible, the individual who is Vice Chair of Connections shall also serve as Secretary.

Secretary

It shall be the duty of the Secretary to: (1) give notice of and attend all meetings of the Corporation and its several divisions and all committees and keep a record of their doings; (2) conduct all correspondence and to carry into execution all orders, votes, and resolutions not otherwise committed; (3) keep a list of the members of the Corporation; (4) collect the fees, annual dues, and subscriptions; (5) notify the officers and members of the Corporation of their election; (6) notify members of their appointment on committees; (7) furnish the Chair of each committee with a copy of the vote under which the committee is appointed, and at his/her request give notice of the meetings of the committee; (8) prepare, under the direction of the Board of Directors, an annual report of the transactions and condition of the Corporation; and (9) generally devote his/her best efforts to forwarding the business and advancing the interests of the Corporation. In case of absence or disability of the Secretary, the Executive Committee may appoint a Secretary pro tem. The Secretary shall be the keeper of the Corporation's seal. The Secretary shall, when the Chairperson, Vice-Chair and Treasurer are not present, preside at the meeting of the Board of Directors.

President

The President shall be present at the meetings of the Corporation and of the Board of Directors and of the Executive Committee, and shall be an ex officio board member of all committees except the Nominating Committee. The President shall also, at the annual meeting of the Corporation and such other times as s/he deems proper, communicate to the Corporation or to the Board of Directors such matters and make such suggestions as may in his/her opinion tend to promote the prosperity and welfare and increase the usefulness of the Corporation and shall perform such other duties as are necessarily incident to the office of the President.

Vice-President Resources

The Vice-President Resources shall perform all duties as prescribed by the Board of Directors from time to time and be a member ex officio of all committees. The Vice-President Resources shall be present at the meetings of the Corporation and of the Board of Directors.

Vice-President Operations

The Vice-President Operations shall perform all duties as prescribed by the Board of Directors from time to time and be a member ex officio of all committees. The Vice-President Operations shall be present at the meetings of the Corporation and of the Board of Directors.

Vice-President Connections

The Vice-President Connections shall perform all duties as prescribed by the Board of Directors from time to time and be a member ex officio of all committees. The Vice-President Connections shall be present at the meetings of the Corporation and of the Board of Directors.

Section 24. *Removal of Officer/Agent*. Any officer or agent of the Corporation may be removed by the vote of a two-thirds majority of the Board of Directors present at a duly constituted meeting whenever in the Board of Directors' judgment the best interest of the Corporation will be served by such removal.

Section 25. *Vacancies*. All vacancies in any office shall be filled by the Board of Directors without undue delay, at its regular meeting, or at a meeting specially called for that purpose.

Section 26. *Compensation of officers*. The Board of Directors may in its sole discretion determine a reasonable annual compensation amount to be paid to any officer or agent of the Corporation for the officer's or agent's service to the Corporation.

Article VII

Committees

Section 27. *Executive committee*. The Board of Directors may appoint an Executive Committee consisting of four (4) directors, comprised of one (1) director from each member forum. The Executive Committee shall have and exercise the authority of the Board of Directors in the management of the Corporation, except as otherwise provided by law. The Executive Committee shall appoint such employees as may be necessary to conduct the business of the Corporation; they may act on behalf of the Corporation in any matter when the Board of Directors is not in session, reporting to the Board of Directors for its ratification of their actions at each regular or special meeting called for the purpose. The designation thereto of authority shall not operate to relieve the Board of Directors, or any individual director, of any responsibility imposed on it or him, by law. The Executive Committee shall have the accounts audited at least once each year by a certified public accountant and report thereon to the Board of Directors, provided financial resources are available to support such an audit.

Section 28. *Committee on nominations*. During the month of December in each year, the Board of Directors shall appoint a Nominating Committee comprised of one director representing each of the four forum areas, whose duty it shall be to nominate candidates for directors to be elected at the next annual election. They shall notify the Secretary in writing, at least 20 days before the date of the annual meeting, of the names of such candidates, and the Secretary, except as herein otherwise provided, shall mail a copy thereof to the last recorded address of each member simultaneously with the notice of the meeting.

Section 29. *Independent nominations*. Nominations for directors may also be made, endorsed with the names of not less than ten members of the Corporation, if forwarded to the Secretary at least five days prior to the annual meeting of the Corporation for immediate transmittal by him/her to the directors. Licensed research organizations of the Corporation may

also make nominations for directors under the same terms as stated in the preceding sentence, except for the requirement of ten member endorsements.

Section 30. *Other committees*. At the first meeting of the Board of Directors after their election, or as soon thereafter as practicable, the Chairperson shall, subject to its approval, appoint the following committees to consist of as many members as seems advisable:

i) Leadership Committee

ii) Resource Committee

iii) Operations Committee

iv) Connections Committee

The members of such committees shall hold office until the appointment of their successors.

Section 31. *Special committees*. The Chairperson may, at any time, appoint other committees on any subject for which there are no standing committees.

Section 32. *Committee quorum*. A majority of any committee of the Corporation shall constitute a quorum for the transaction of business, unless any committee shall by a majority vote of its entire membership decide otherwise.

Section 33. *Committee vacancies*. The various committees shall have the power to fill vacancies in their membership.

Article VIII

Resignation

Any director, officer, or committee member may resign his/her office at any time, such resignation to be made in writing, delivered by mail or secure e-mail, and to take effect from the time of its acceptance by the Corporation.

Article IX

Seal

The corporate seal, if any, shall be in such form as adopted by resolution of the Board of Directors. Such seal may be used by causing it or a facsimile thereof to be impressed or affixed or in any other manner reproduced, provided, however, that the use of the seal is not required to validate any writing or document to which the Corporation is a signatory or party.

Article X

Amendments

These Bylaws may contain any provision for the regulation and management of the affairs of the Corporation not inconsistent with law or the Articles of Incorporation. These Bylaws may be amended, repealed, or altered in whole or in part by a majority vote at any duly organized Board of Directors meeting. The proposed change shall be mailed to the last recorded address of each member at least ten days before the time of the meeting which is to consider the change.

Article XI

Books and Records

Section 34. *Retention of Books and Records*. The Corporation shall keep correct and complete books and records of accounts and minutes of the meetings of the Board of Directors.

Section 35. *Right to Inspect*. Any director or officer of the Corporation shall have the right to examine, in person, or by agent or attorney, at any reasonable time or times, for any proper purpose, the Corporation's relevant books and records of accounts and minutes and to make extracts therefrom all as permitted and subject to the limitations of Kentucky Revised Statutes 273.233 as now stated and as hereafter amended.

Article XII

Protection from Liability

The Corporation shall to the extent economically feasible maintain in full force and effect standard policies of directors and officers liability insurance and comprehensive business insurance covering all directors and officers of the Corporation, insuring them against liability for any action taken or not taken by them in their capacity as directors and officers to the extent set forth in the policies.

APPENDIX III:
NHIN REQUIREMENTS

NHIN REQUIREMENTS

Nationwide Health Information Network (NHIN)
Health Information Exchange (HIE)
Required Services

The following is a list of services that Nationwide Health Information Network (NHIN) Health Information Exchanges (HIEs) must provide, or contract for, in order to participate in the NHIN. Other networks and organizations that do not provide these NHIN services will be able to use the NHIN, but most will need to connect through an entity that is fulfilling the role of a NHIN Health Information Exchange (NHIE).

The term "connected through" refers to consumers, providers, organizations and networks that achieve primary connection to the NHIN through a particular HIE vs. being an HIE themselves or being "connected through" a different HIE. Eventually, a reduced set of services may be identified for specialty networks that do not support full health information exchange, but seek to connect directly to the NHIN.

The term "user" refers to an individual or organization that takes advantage of NHIN Health Information Exchange services directly or though a connected network or system. The term "subject" refers to the consumer (or patient), provider, or organization to which data and/or services refer.

NHIN Health Information Exchange
Basic services

Data Services

- Secure data delivery, and confirmation of delivery, to EHRs, PHRs, other systems and networks
- Data look - up, retrieval and data location registries
- Support for notification of the availability of new or updated data
- Subject - data matching capabilities
- Summary patient record exchange
- Data integrity and non-repudiation checking
- Audit Logging and error handling for data access and exchange
- Support for secondary use of clinical data including data provisioning and distribution of data transmission parameters
- Data anonymization and re-identification as well as HIPAA de-identification

[Translation of user code sets and data elements into the requirements of standards used for the exchanges]

Consumer Services

- Management of consumer identified locations for the storage of their personal health records
- Support of consumer information location requests and data routing to consumer identified personal health records
- Management of consumer-controlled providers of care and access permissions information
- Management of consumer choices to not participate in network services
- Consumer access to audit logging and disclosure information for PHR and HIE data
- Routing of consumer requests for data corrections

User and Subject Identity Management Services

- User identity proofing, and/or attestation of third party identity proofing for those connected through that HIE
- User authentication, and/or attestation of third party authentication for those connected through that HIE
- Subject and user identity arbitration with like identities from other HIEs
- Management of user credentialing information (including medical credentials as needed to inform network roles)
- Support of a HIE-level, non-redundant methodology for managed identities

Management Services

- Management of available capabilities and services information for connected user organizations and other HIEs
- HIE system security including perimeter protection, system management and timely cross – HIE issue resolution
- Temporary and permanent de-authorization of direct and third party users when necessary
- Emergency access capabilities to support appropriate individual and population emergency access needs

APPENDIX IV:
HRBA PRINCIPLES AND RECOMMENDATIONS

HRBA PRINCIPLES AND RECOMMENDATIONS

Principles[1]

Consumer Ownership and Control of Health Records

1. Health record banks protect the individual consumer's right to health information privacy and confidentiality by acting as trusted legal custodians of consumers' health records.
2. Health record banks are repositories for trustworthy copies of health information selected or submitted by the consumer from various sources.
3. Health information in a health record bank is owned by the consumer and is not an asset of the health record bank.
4. Consumers may authorize someone else to manage their health record bank account.
5. Health record banks provide consumers and others they authorize with immediate electronic access to their health information.
6. Consumers control all disclosures of their health information by a health record bank unless otherwise required by law.
7. With consumer consent based on advance disclosure appropriate to the circumstances, health record banks enable secondary use of health information, such as for public health and research purposes.

Operation of Health Record Banks

1. Health record banks are governed in an open, accountable, and transparent manner.
2. All access and updates to information in health record banks are recorded as they occur in an appropriately detailed audit trail database, and each health record bank shall maintain those unaltered audit records at least during the time that a consumer's health record is kept at the bank and make those audit records immediately accessible to consumers.
3. Health record banks have established processes for correcting errors by updating, amending, and sequestering data, including mechanisms for notification of parties who have received such data.
4. Health record banks promptly disclose breaches of privacy, confidentiality, or security to consumers.

Principles[2]

The National Committee on Vital and Health Statistics (NCVHS) Report to Secretary Leavitt, U.S. Department of Health and Human Services provided the following recommended actions regarding "Privacy and Confidentiality in the Nationwide Health Information Network."[3] The

[1] Health Record Banking Alliance, 2007 – http://www.healthbanking.org/docs/HRBAPrinciplesMay07.pdf
[2] Health Record Banking Alliance, 2007 – http://www.healthbanking.org/docs/HRBAPrinciplesMay07.pdf
[3] Letter to the Secretary; Recommendations regarding Privacy and Confidentiality in the Nationwide Health Information Network - National Committee on Vital and Health Statistics Report - June 22, 2006, http://www.ncvhs.hhs.gov/060622lt.htm

Subcommittee on Privacy and Confidentiality held three hearings in Washington, D.C., one in Chicago, and one in San Francisco. At each hearing, witnesses representing different constituencies concerned about the privacy and confidentiality of health information testified, including hospitals, providers, payers, medical informatics experts, ethicists, integrated health systems, Regional Health Information Organizations (RHIOs), and consumer and patient advocacy groups. Testimony was also heard from representatives of nationwide health networks in Australia, Canada, and Denmark.

The report covers several topics central to the challenges for safeguarding health privacy in the NHIN environment: the role of individuals in making decisions about the use of their personal health information, policies for controlling disclosures across the NHIN, regulatory issues such as jurisdiction and enforcement, use of information by non-health care entities, and establishing and maintaining the public trust that is necessary to ensure NHIN is a success.

- PRIVACY AND CONFIDENTIALITY IN THE NATIONWIDE HEALTH INFORMATION NETWORK
  - Definitions:
    - Health information privacy is an individual's right to control the acquisition, uses, or disclosures of his or her identifiable health data.
    - Confidentiality refers to the obligations of those who receive information to respect the privacy interests of those to whom the data relate.
    - Security refers to physical, technological, or administrative safeguards or tools used to protect identifiable health data from unwarranted access or disclosure.
  - Role of individuals:
    - Recommendation 1: The method by which personal health information is stored by health care providers should be left to the health care providers.
  - Mandatory or voluntary participation:
    - Recommendation 2: Individuals should have the right to decide whether they want to have their personally identifiable electronic health records accessible via the NHIN. This recommendation is not intended to disturb traditional principles of public health reporting or other established legal requirements that might or might not be achieved via NHIN.
    - Recommendation 3: Providers should not be able to condition treatment on an individual's agreement to have his or her health records accessible via the NHIN.
    - Recommendation 4: HHS should monitor the development of opt-in/opt-out approaches; consider local, regional, and provider variations; collect evidence on the health, economic, social, and other implications; and continue to evaluate in an open, transparent, and public process, whether a national policy on opt-in or opt-out is appropriate.

- Recommendation 5: HHS should require that individuals be provided with understandable and culturally sensitive information and education to ensure that they realize the implications of their decisions as to whether to participate in the NHIN.

– Nature of individual control, degree of control, methods of individual control:

- Recommendation 6: HHS should assess the desirability and feasibility of allowing individuals to control access to the specific content of their health records via the NHIN, and, if so, by what appropriate means. Decisions about whether individuals should have this right should be based on an open, transparent, and public process.
- Recommendation 7: If individuals are given the right to control access to the specific content of their health records via the NHIN, the right should be limited, such as by being based on the age of the information, the nature of the condition or treatment, or the type of provider.

– Controlled Disclosure of Personal Health Information:

- Recommendation 8: Role-based access should be employed as a means to limit the personal health information accessible via the NHIN and its components.
- Recommendation 9: HHS should investigate the feasibility of applying contextual access criteria to EHRs and the NHIN, enabling personal information disclosed beyond the health care setting on the basis of an authorization to be limited to the information reasonably necessary to achieve the purpose of the disclosure.
- Recommendation 10: HHS should support research and technology to develop contextual access criteria appropriate for application to EHRs and inclusion in the architecture of the NHIN.
- Recommendation 11: HHS should convene or support efforts to convene a diversity of interested parties to design, define, and develop role-based access criteria and contextual access criteria appropriate for application to EHRs and the NHIN.

– Regulatory Issues:

- Jurisdiction, scope, and relationship with other laws:
- Recommendation 12: HHS should work with other federal agencies and the Congress to ensure that privacy and confidentiality rules apply to all individuals and entities that create, compile, store, transmit, or use personal health information in any form and in any setting, including employers, insurers, financial institutions, commercial data providers, application service providers, and schools.
- Recommendation 13: HHS should explore ways to preserve some degree of state variation in health privacy law without losing systemic interoperability and essential protections for privacy and confidentiality.
- Recommendation 14: HHS should harmonize the rules governing the NHIN with the HIPAA Privacy Rule, as well as other relevant federal regulations, including those regulating substance abuse treatment records.

– Procedures

- Recommendation 15: HHS should incorporate fair information practices into the architecture of the NHIN.
- Recommendation 16: HHS should use an open, transparent, and public process for developing the rules applicable to the NHIN, and it should solicit the active participation of affected individuals, groups, and organizations, including medically vulnerable and minority populations.

– Enforcement

- Recommendation 17: HHS should develop a set of strong enforcement measures that produces high levels of compliance with the rules applicable to the NHIN on the part of custodians of personal health information, but does not impose an excessive level of complexity or cost.
- Recommendation 18: HHS should ensure that policies requiring a high level of compliance are built into the architecture of the NHIN.
- Recommendation 19: HHS should adopt a rule providing that continued participation in the NHIN by an organization is contingent on compliance with the NHIN's privacy, confidentiality, and security rules.
- Recommendation 20: HHS should ensure that appropriate penalties be imposed for egregious privacy, confidentiality, or security violations committed by any individual or entity.
- Recommendation 21: HHS should seek to ensure through legislative, regulatory, or other means that individuals whose privacy, confidentiality, or security is breached are entitled to reasonable compensation.

– Secondary Uses

- Recommendation 22: HHS should support legislative or regulatory measures to eliminate or reduce as much as possible the potential harmful discriminatory effects of personal health information disclosure.

– Relationship to the HIPAA Privacy Rule

- Recommendation 23: NCVHS endorses strong enforcement of the HIPAA Privacy Rule with regard to business associates, and, if necessary, HHS should amend the Rule to increase the responsibility of covered entities to control the privacy, confidentiality, and security practices of business associates.

– Establishing and Maintaining Public Trust:

- Recommendation 24: Public and professional education should be a top priority for HHS and all other entities of the NHIN.
- Recommendation 25: Meaningful numbers of consumers should be appointed to serve on all national, regional, and local boards governing the NHIN.
- Recommendation 26: HHS should establish and support ongoing research to assess the effectiveness and public confidence in the privacy, confidentiality, and security of the NHIN and its components.

APPENDIX V:
RHIO'S INCLUDED IN INDUSTRY ANALYSIS

RHIO'S INCLUDED IN INDUSTRY ANALYSIS

- **IHIE – Indiana Health Information Exchange: Indiana**[1]
  - **Mission and Vision**:
    - The Indiana Health Information Exchange has been formed to provide clinical data and quality standards to assist providers and other relevant parties in achieving the highest quality patient care. It will achieve this vision through the use and continued development of its two services, DOCS4DOCS® service and the Quality Health FirstSM program. IHIE also is a national "best-practice" and participates in several federally-funded initiatives along with housing the Indianapolis Coalition for Patient Safety.
  - **Estimated Total Funding:** $11,300,000
  - **Service Area**: State level, Indiana
  - **Status:** Active, formed in 2004
  - **Lead Organization:** Regenstrief Institute, Inc.
  - **Goals of Organization**: Unknown
  - **Stage of Development:** Stage 6
    - Expansion of organization to encompass a broader coalition of stakeholders than present in the initial operational model
  - **Demographics**:
    - 1.5 million patients
    - 5,000 physicians
    - 27 hospitals
  - ***Messaging Capabilities:***
    - *The first major project of IHIE was community-wide clinical messaging, which provides physicians with a single source for clinical results, transcriptions, ED and hospital encounter information from all participating central Indiana hospitals.*
    - *Following completion of this project, every provider in Central Indiana will have a single IHIE electronic mailbox through which they will access clinical results for their patients via the DOCS4DOCS ® Clinical Messaging system, regardless of which hospital or lab their patient has gone to.*
    - *The IHIE will be soon launching its new project Quality Health First, which will increase access to medical information for Indiana healthcare providers by pulling claims data from various sources including the Indiana Network for Patient Care, a health information network.*

[1] HIMSS State Dashboard

- **HealthBridge: Ohio**[1]
  - **Mission and Vision**:
    - The mission is to improve the quality and efficiency of healthcare in its community. To connect all participants in Healthcare through technology and improve the community's health through collaboration.
  - **Estimated Total Funding:** $1,959,000
  - **Service Area**: Multi-State, regional level – Ohio, Kentucky, Indiana
  - **Status:** Active, formed in 1997
  - **Lead Organization:** HealthBridge
  - **Goals of Organization**:
    - Connecting key data providers,
    - Improve community health including medication history,
    - ED community wide data search,
    - Connecting Physician EMR's back to the RHIO and
    - Public health reporting improvements.
  - **Stage of Development:** Stage 6
    - Expansion of organization to encompass a broader coalition of stakeholders than present in the initial operational model
  - **Demographics**:
    - In November 2005, HealthBridge sent 1.3 million test results from 17 hospitals to 3,989 physicians.
    - Eighty-nine percent of results were accessed electronically through the HealthBridge portal; the company printed and mailed, faxed or e-mailed the others.
  - ***Messaging Capabilities:***
    - The initiative features a clinical messaging system that allows laboratory and other provider systems to push results out to physicians and other health care providers. A simple interface gives physicians and their agent's one point of access to hospital information systems.

[1] HIMSS State Dashboard, eHealth Initiative

- **Healthe: Kansas**[1]
  - **Mission and Vision**:
    - Seeks to help reduce error, variance and waste from the healthcare process, while improving quality and efficiency of care for local residents.
  - **Estimated Total Funding:** Unknown
  - **Service Area**: State level, Kansas City
  - **Status:** Active, formed in 2005
  - **Lead Organization:** Cerner Corporation
  - **Goals of Organization**:
    - Healthe was created by several employers who united to create the first employer driven RHIO, the only such organization in the country. The organization would reduce medical errors and waste through an electronic community health record (CHR). The community health record would offer data on health information, demographics, claims, medications, and other reports. The system could prevent adverse drug interaction and medication overdoses while reducing redundant tests.
  - **Stage of Development:** Unknown
  - **Demographics**: Unknown
  - ***Messaging Capabilities:***
    - *With a computer and a high-speed Internet connection, authorized physicians may log on to the community health record and get the vital information they need at the point of care.*
    - *The CHR collects and organizes medical records, lab data and pharmaceutical information for the benefit of consumers, physicians, insurers and employers. Employee participation in CHR will be voluntary with each person deciding which provider can access health information.*

[1] HIMSS State Dashboard

- **Connecting Healthcare in Central Appalachia: Kentucky**[1]
  - **Mission and Vision**:
    - To improve health and promote the well-being of all people in Central Appalachia in partnership with its communities. To earn the confidence and trust of the diverse communities we serve by offering healthcare excellence, delivered with compassion in a timely manner.
  - **Estimated Total Funding:** $1,500,000
  - **Service Area**: Multi-State, regional level, eastern Kentucky, southern West Virginia
  - **Status:** Active, formed in 2007
  - **Lead Organization:** Appalachian Regional Healthcare, Inc and McKesson Inc.
  - **Goals of Organization**: Unknown
  - **Stage of Development:** Unknown
  - **Demographics**:
    - Approximately 20 counties throughout Eastern Kentucky and Southern West Virginia
  - ***Messaging Capabilities:***
    - To implement and train staff on the use of an EMR system in a rural integrated health care delivery system. The initiative is proposing to develop a web-based, centralized patient information repository and portal for providers.

[1] HIMSS State Dashboard

- ***MA-SHARE Clinical Data Exchange: Waltham, Mass.***[1]
  - **Mission and Vision**:
    - MA-SHARE (Simplifying Healthcare Among Regional Entities) is a collaborative regional health information organization (RHIO) operated by the Massachusetts Health Data Consortium. MA-SHARE seeks to promote the inter-organizational exchange of healthcare data using information technology, standards and administrative simplification, to make accurate clinical information available wherever needed in an efficient, cost-effective and safe manner. MA-SHARE seeks to foster improvements in community clinical connectivity, allowing appropriate sharing of inter-organizational healthcare data among the various participants in the healthcare system – including patients, doctors and other practitioners, hospitals, government, insurers, HMOs and other payers.
  - **Estimated Total Funding:** Unknown
  - **Service Area**: State level
  - **Status:** Active
  - **Lead Organization:** *Massachusetts Health Data Consortium*
  - **Goals of Organization**:
    - Develop a sustainable business model.
    - Expand participation of healthcare entities to move toward sustainability.
    - Develop and implement community utility services to support expansion of participation.
    - Implement a fully operational service model.
  - **Stage of Development:** Stage 4
    - Includes an implementation effort (technical, financial and legal) that has a multi-year budget.
  - **Demographics**:
    - 5 million patients,
    - unknown number of physicians
  - ***Messaging Capabilities:***
    - The initiative is planning to promote the inter-organizational exchange of healthcare data using information technology, standards and administrative simplification, to make accurate clinical information available wherever needed.

[1] HIMSS State Dashboard, eHealth Initiative

- ***PeaceHealth: Oregon1***
  - **Mission and Vision**:
    - The vision of the organization is to create not just a hospital-based record or a physician practice-based record, but a true CHR that would encompass every location where care is delivered, including affiliated specialist practices and even the individual's home.
  - **Estimated Total Funding:** $100,000,000
  - **Service Area**:
    - Multi-State, PeaceHealth operates six hospitals, medical groups, a chemical dependency program, health care joint ventures, and other services in Southeast Alaska, Northwest Washington, Southwest Washington/Northwest Oregon, and Oregon's Willamette Valley.
  - **Status:** Active, formed in 1996
  - **Lead Organization:** PeaceHealth
  - **Goals of Organization**:
    - PeaceHealth, a six-hospital network based in Washington State, for the last 10 years has been developing a community health record (CHR) that will allow independent medical groups in a three-state network to access patient data. The organization established a subsidiary known as EHI Works that leases CHR access to independent community physicians who have recognized the value of having the CHR in delivering care to all their patients and not just those treated at PeaceHealth.
  - **Stage of Development:** Unknown
  - **Demographics**: Unknown
  - ***Messaging Capabilities:***
    - ***Community health record (CHR) are developed that will allow independent medical groups in a three-state network to access patient data. At PeaceHealth's hospitals and clinics, nearly everything is available online, with the exception of physicians' daily progress notes and orders. Clinicians are assured of access to complete, accurate, and real-time information about a patient 24 hours a day.***

[1] HIMSS State Dashboard

- ***CalRHIO: California***[1]
  - **Mission and Vision**:
    - CalRHIO is a collaborative statewide initiative whose mission is to improve the safety, quality, and efficiency of health care through the use of information technology and the secure exchange of health information. Health care that is safe, high quality, and efficient, delivered in an information-rich environment that meets the needs of consumers, patients, providers, and others in California's communities.
  - **Estimated Total Funding:** $4,450,000
  - **Service Area**: State level
  - **Status:** Active, formed in 2005
  - **Lead Organization:** Health Technology Center (HealthTech)
  - **Goals of Organization**: Statewide eMPI, record locator.
  - **Stages of Development:**
    - Includes an implementation effort (technical, financial and legal) that has a multi-year budget. Pilots: Emergency Departments, Medication Management, and Personal Health Records, Data Exchange Interoperability throughout the state. The following initiatives are spread across the northern, central, and southern parts of the state:
      - Mendocino SHARE – stage 3
      - Northern Sierra Rural Health Network – stage 3
      - Marin Medical Practice Concepts, Inc. – stage 6
      - Santa Cruz RHIO – stage 6
      - Community Chronic Care Network – stage 4
      - SmartHealth – stage 3
      - ACCEL Health Information Technology Program – stage 4
      - Loma Linda Univ. Southern California Telehealth Network Hub – stage 4
      - Long Beach Network for Health – stage 3
      - San Diego Medical Information Network Exchange – stage 3
      - Health-e-LA – stage 3
      - Orange County Partners for RHIO's – stage 2
      - Greater Valley Regional Health Information Exchange – stage 2
      - Riverside Regional Health – stage 1
  - **Demographics**:
    - 36 million patients,
    - 95,000 physicians
  - ***Messaging Capabilities:***

[1] HIMSS State Dashboard

- The initiative facilitates statewide health data exchange through infrastructure development

APPENDIX VI:
RHIO'S & HIE'S INCLUDED IN STATE ENVIRONMENT ANALYSIS

RHIO'S AND HIE'S INCLUDED IN STATE ENVIRONMENT ANALYSIS

Louisville Health Information Exchange (LouHIE): Kentucky[1]

- **Mission and Vision**:
  - The mission of the organization is to create a Health Information Exchange which delivers new value to all participating individuals and organizations in the Louisville area. Its vision is to improve quality and contain rising costs of healthcare in the Louisville area by providing consumers and their providers anytime, anywhere access to complete healthcare information and decision-support.
- **Estimated Total Funding:** $580,000
- **Service Area:** Greater Louisville Area (Louisville MSA).
- **Status:** Active
- **Lead Organization:** University of Louisville School of Public Health
- **Goals of Organization:**
  - The organization is planning to establish a Louisville-area "health record bank" that would store and sort data provided by doctors, hospitals, health insurers, laboratories and other sources.
- **Stage of Development:** Stage 3
- **Demographics**:
  - Number of covered lives in the coverage area: 1.0 million population estimate.
  - Number of total patients in the coverage area: 1.2 million population (2005 estimate).
- ***Messaging Capabilities:***
  - The organization seeks to establish a Louisville-area "health record bank" that would store and sort data provided by doctors, hospitals, health insurers, laboratories and other sources. Patients would have access to their records and could control their use.

[1] HIMSS State Dashboard, eHealth Initiative

Kentucky e-Health Network: Kentucky[1]

- **Mission and Vision**:
  - The vision for the Kentucky e-Health Network is to:
    - Improve the quality of patient care and the public health of all Kentuckians
    - Support clinician and caregiver decision making through health information technology and exchange
    - Increase the safety and efficiency of Kentucky's health care system
    - Lower costs and increase value for consumers and stakeholders
    - Protect all citizens through enhanced research opportunities and public health capacity
    - Enhance economic development opportunities within the Commonwealth through increased investment and job creation in health information technology, more competitive health care marketplace, and a healthier and more productive workforce.
- **Estimated Total Funding:** $350,000
- **Service Area:** State level, Commonwealth of Kentucky
- **Status:** Active
- **Lead Organization:** Kentucky State Government
- **Goals of Organization:**
  - Kentucky e-Health Network Board will champion the development of a secure, interoperable electronic health network with the goal of improving the quality and cost-effectiveness of health care and providing access to useful, timely and accurate health information.
  - MAJOR STATEWIDE e-HEALTH PROJECTS
    - Health Information Security and Privacy Collaboration (HISPC) Project
    - Steering Committee
    - Variations Work Group
    - Legal Work Group
    - Solutions Work Group
    - e-Prescribing Partnership Grant Program
    - Multi-payer e-Health Collaboration
  - ADDITIONAL STATEWIDE PROJECTS & PLANS
    - e-Health Inventory & Needs Assessment
    - e-Health Summit
    - e-Health Business Plan
- **Stage of Development:** Stage 2
- **Demographics**: Not Applicable

[1] HIMSS State Dashboard, eHealth Initiative

- ***Messaging Capabilities:*** Not Applicable

Connecting Healthcare in Central Appalachia: Kentucky[1]

- **Mission and Vision**:
  - To improve health and promote the well-being of all people in Central Appalachia in partnership with its communities. To earn the confidence and trust of the diverse communities we serve by offering healthcare excellence, delivered with compassion in a timely manner.
- **Estimated Total Funding:** $1,500,000
- **Service Area**: Multi-State, regional level, eastern Kentucky, southern West Virginia
- **Status:** Active, formed in 2007
- **Lead Organization:** Appalachian Regional Healthcare, Inc and McKesson Inc.
- **Goals of Organization**: Unknown
- **Stage of Development:** Unknown
- **Demographics**:
  - Approximately 20 counties throughout Eastern Kentucky and Southern West Virginia
- ***Messaging Capabilities:***
  - To implement and train staff on the use of an EMR system in a rural integrated health care delivery system. The initiative is proposing to develop a web-based, centralized patient information repository and portal for providers. Information proposed to be collected and stored in the repository includes encounter, demographic, and financial data.
- **Stage of Development:** Unknown
- **Demographics**: Unknown
- ***Messaging Capabilities:*** Unknown

[1] HIMSS State Dashboard

ED Information Systems - Kentucky & Indiana Hospitals: Kentucky[1]

- **Mission and Vision:**
  - The initiative's objective is to successfully implement and formally evaluate a contemporary, web-browser-based electronic record system called the Ibex PulseCheck emergency department information system at two small, county-owned, community hospitals and one medium-sized community hospital in southern Indiana, one rural hospital in central Kentucky, and three private primary care physician practices in Indiana.
- **Estimated Total Funding:** $1,302,554
- **Service Area:** Multi-State, Southern Indiana and Central Kentucky
- **Status:** Active
- **Lead Organization:** Jewish Hospital Health Care
- **Goals of Organization:**
  - The Jewish Hospital Emergency Department (ED) has already implemented the Ibex ED information system and has the institutional experience to diffuse this technology to the small community hospitals to create a network for ED data sharing. The four specific aims are to: implement the Ibex ED information systems and train users at four hospitals and three physician groups during three years; evaluate the reduction in medical errors (improper discharges) and waiting time in the EDs; evaluate the reduction in costs through improved diagnostic coding and billing and fewer repeat tests; and evaluate patient and physician satisfaction. Data gathering will be sequential to ensure a large sample size before (paper) and after (paperless) Ibex implementation. The lead partner, the four unconnected, paper-based emergency departments, and the three physician offices will no longer be islands of information but will be connected into an integrated, eight-facility, bi-state, urban-rural, data- sharing ED health information network.
- **Stage of Development:** Unknown
- **Demographics**: Unknown
- ***Messaging Capabilities:*** Unknown

[1] HIMSS State Dashboard

Meeting Information Needs of Referrals Electronically: Kentucky[1]

- **Mission and Vision:**
  - The program was to identify essential technological needs to facilitate the access and sharing of data and information between patients and health care providers. Its focus was to develop and expand the transmission of referral information electronically in a closed health system to an open system.
- **Estimated Total Funding:** $197,528
- **Service Area:** State
- **Status:** Expired
- **Lead Organization:** University of Kentucky Research Foundation
- **Goals of Organization:** Unknown
- **Stage of Development:** Not Applicable
- **Demographics**: Not Applicable
- ***Messaging Capabilities:*** Not Applicable

[1] HIMSS State Dashboard

Northeast Kentucky Regional Health Information Organization (NEKY-RHIO): Kentucky[1]

- **Mission and Vision:**
  - To improve the quality, efficiency, and cost-effectiveness of health care, and empower consumers to more effectively manage their healthcare needs.
- **Estimated Total Funding:** Unknown
- **Service Area:** Northeast Kentucky
- **Status:** Proposed
- **Lead Organization:** Morehead State University, St. Claire Regional Medical Center
- **Goals of Organization:**
  - NEKY-RHIO is to support adoption of electronic medical records by healthcare providers and develop and offer a secure, interoperable regional e-health network for exchange of health information.
- **Stage of Development:** Not Applicable
- **Demographics**: Not Applicable
- ***Messaging Capabilities:*** Not Applicable

[1] HIMSS State Dashboard

HealthBridge: Kentucky, Indiana, Ohio[1]

- **Mission and Vision**:
  - The mission is to improve the quality and efficiency of healthcare in its community. To connect all participants in Healthcare through technology and improve the community's health through collaboration.
- **Estimated Total Funding:** $1,959,000
- **Service Area**: Multi-State, regional level – Ohio, Kentucky, Indiana
- **Status:** Active, formed in 1997
- **Lead Organization:** HealthBridge
- **Goals of Organization**:
  - Connecting key data providers,
  - Improve community health including medication history,
  - ED community wide data search,
  - Connecting Physician EMR's back to the RHIO and
  - Public health reporting improvements.
- **Stage of Development:** Stage 6
- **Demographics**:
  - In November 2005, HealthBridge sent 1.3 million test results from 17 hospitals to 3,989 physicians.
  - Eighty-nine percent of results were accessed electronically through the HealthBridge portal; the company printed and mailed, faxed or e-mailed the others.
- ***Messaging Capabilities:***

The initiative features a clinical messaging system that allows laboratory and other provider systems to push results out to physicians and other health care providers.

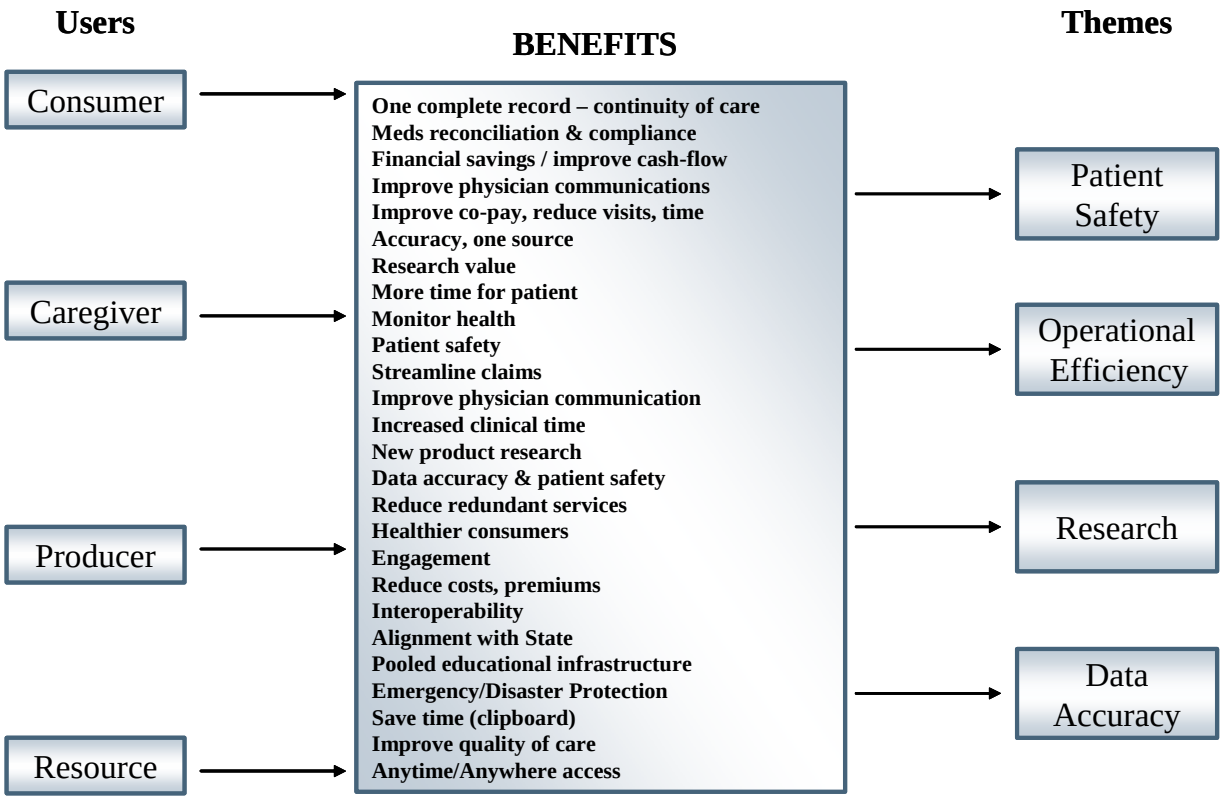
[1] HIMSS State Dashboard, eHealth Initiative

APPENDIX VII:
BENEFITS MODEL

BENEFITS MODEL

The benefits model was developed by Noblis to reflect potentially achievable benefits identified by the consumers, the twelve stakeholder groups, and the selected functional groups who provided input during the Greater Louisville e-Health Research 2007 project.

Figure VII-1: Benefits Model



The left column of the benefits model shows the stakeholders broken into the four quadrant categories reflecting the organization of the LouHIE board: Consumers, Resource providers, Producers, and Caregivers. The middle column identifies key services and benefits identified by the various groups in the focus groups and telephone research. The right column summarizes these benefits into four types of quantifiable benefits, Patient Safety, Operational Efficiency, Research and Data Accuracy. Here are details about these benefits.

Patient Safety

Technology has been identified as providing an important role in patient safety initiatives. The deployment of Web technology indicates that easy access to patient information is

critical part of patient safety initiatives and an important "early win" in an organization's progression toward more advanced clinical decision support solutions.

Operational Efficiency

The difficulty faced by healthcare professionals in accessing data has led to a struggle in improving healthcare, patient safety and containing cost. In healthcare immediate, accurate information can impact outcomes. Facilitating workflow and enhancing operational efficiency can alleviate some of these difficulties.

Research

A 1983 Harris poll found that 82 percent of those surveyed believe that "even if it brings no immediate benefits, scientific research is an endeavor worth supporting." New information is continuously being amassed about life processes. PHR can enable this process by providing a human data pool. The Louisville research community sees opportunities for using LouHIE to create a "Louisville as Framingham" research environment. As in Framingham, Massachusetts, LouHIE can bring research stakeholders to the forefront of clinical studies by providing a portal that can support research in a long term longitudinal method by establishing a channel for human data to enable recruitment and participation of clinical studies that can be utilized by the community.

Data Accuracy

By connecting various stakeholders together, the ability for information transparency is greatly improved. More easily organizations can securely transfer information, cross-checking of information can occur, consumers can verify information, and duplication of services can be reduced all leading to insure that claims abuse is minimized.

A financial benefits modeling tool was developed based on this model. It provides ability to calculate various benefits per stakeholder, based on various assumptions in the literature. This benefits model will be used to calculate and estimate potential benefits for the entire community for each program that is developed, beginning with the medications services.

As a sample of possible benefits the overall LouHIE project could deliver, the following projections were developed for years 4-5. These are for ILLUSTRATION PURPOSES ONLY. But they illustrate the kinds of possibilities that could be achieved through the successful operation of the Health Record Bank of Greater Louisville.

Figure 1 shows estimates of POSSIBLE benefits which could be obtained by participants in years 3-5 of a five year plan under expected case plan assumptions. It should be noted that these are provided for ILLUSTRATION PURPOSES ONLY. More details about benefits will be developed on a case by case basis as the plan progresses.

	Year 3	Year 4	Year 5
Consumers	9,987,612	13,982,657	19,575,720
Employers	13,474,262	18,863,966	26,409,552
Government	22,485,499	31,479,698	44,071,577
Medicaid / Safetynet	-	-	-
Seniors and Medicare	-	-	-
Health Plans	13,263,481	18,568,873	25,996,422
Health IT Products	-	-	-
Health Educator	26,216	36,702	51,383
Health Products	26,216	36,702	51,383
Hospitals	602,035	842,849	1,179,989
Retail Services	-	-	-
Public Health	26,216	36,702	51,383
Physicians / Clinicians	1,618,460	2,265,844	3,172,182
Nursing & Other			
Total	**$ 61,509,997**	**$ 86,113,993**	**$ 120,559,591**

Summary of Benefits:

In addition to the quantitative benefits modeling tool, a 2-3 page "value proposition" with targeted benefits was created for each stakeholder category and verified by the group's committee. These are available on the website and upon request. Some of the key points from these value propositions include:

- *Consumers* were interested in time-savings, streamlined registration, tracking their own records, safer emergency care, improved care quality and reduced duplicate services. They were deeply concerned about privacy and security of their information. They felt that consumer consent for deposits and withdrawals was essential. Service should be offered to families – not just individuals.

- *Consumer Sponsors* including employers, Medicaid, Medicare and safety-net sponsors were interested in cost-savings and quality improvements, with initial focus on medications, wellness, and enhancing the ability of their organizations to serve employees/members.

- *Health plans* were interested in improving quality of care and containing costs for their members and clients, and want their consumers to access the service through their portals.

- *Health Information Technology vendors* were interested in linking with LouHIE, and thereby developing new market opportunities for their products and services in Louisville. Economic Developmetn people, including Health Enterprises Network, were interested in economic growth opportunities.

- Universities were interested in the potential of leveraging the LouHIE data-management system for healthcare research purposes, and were interested in an "e-health learning laboratory" for students.

- *Pharmaceuticals and Medical Products firms* were interested in potential to conduct improved product and clinical research using the LouHIE system.

- *Hospitals* were interested in having standard patient information available in the ED and other departments. Medication, allergies, problem lists, tests and demographic information were priorities. Ubiquity was extremely important.

- *Pharmacies* were interested in streamlining prescription processes, particularly related to verifying prescriptions, and were interested in new money-making opportunities in return for participation.

- *Public health* was interested in gaining additional data sources to measure population health factors, and in participating in community health research opportunities.

- *Physicians* saw value in a *patient clinical summary* containing a "snapshot" of key information about the patient, one that could be printed out for each patient, made a standard part of the workflow and linked to EMRs that were in place.

- *Nurses and other pracitioners* saw value in a service provided it fit into existing workflow; double entry of data should be avoided; there was the potential to significantly reduce paperwork and inefficiencies and improve quality of care for patient.

APPENDIX VIII:
FINANCIAL PLAN DETAIL

Consumer Participation

This model shows consumer participation rates in general, and in four tiers: tier 0 – view only; tier 1, free service; tier 2; contributing and/or being sponsored at $60.00 per year per family; and tier 3; contributing and/or being sponsored at ~$90 per family.

	Year 1	Year 2	Year 3	Year 4	Year 5
Participation Rates					
Consumer Participation					
Households (2.2 people per household)	549,224	553,618	558,047	562,511	567,011
% Who Would Consider Participating (from phone survey)	59%	62%	66%	72%	75%
# Households Targeted	324,042	343,243	368,311	405,008	425,258
% Targeted Households Who Participate (free or paid)	0%	4%	8%	20%	45%
# Households Who Participate (free or paid)	-	13,730	29,465	81,002	191,366
Consumer Services					
Tier 0 (LouHIE.org visitors)					
% households in tier 0	20%	30%	40%	50%	60%
Number of Households (1 user per household)	64,808	102,973	147,324	202,504	255,155
Tier 1: Consumer Services					
% of activated non paying households in tier 1	10%	30%	40%	50%	60%
Number of Households in Tier 1	-	4,119	11,786	40,501	114,820
% of Households in Tier 1 giving additional contributions	0%	0%	0%	0%	0%
Number of Households Providing additional contributions	-	-	-	-	-
Tier 2 Consumer Services (Paid by sponsors or consumers)					
% of Households in Tier 2	10%	15%	30%	40%	45%
Number of Households in Tier 2	-	2,059	8,839	32,401	86,115
% of Households in Tier 2 giving additional contributions	2%	2%	2%	2%	2%
Number of Households providing additional contributions	-	41	177	648	1,722
Tier 3 Consumers Services (Paid by sponsors or consumers)					
% of Households in Tier 3	0%	0.5%	1%	3%	5%
Number of Consumers in Tier 3	-	69	295	2,430	9,568
% of Households in Tier 3 giving additional contributions	1%	1%	1%	1%	1%
Number of Households providing additional contributions	-	1	3	24	96

Organizational Participation

This model shows participation of 12 organizational types. It also shows the number of users. It shows tiers 1-4, representing different levels of "contribution per user" by organizations, to fund their services.

	Year 1	Year 2	Year 3	Year 4	Year 5
Organizational Participation					
1. Health Benefits Purchasers					
1.2 Medicaid/SafetyNet					
Total # of Organizations (est.)	10	10	10	11	11
% willing to participate	40%	60%	70%	80%	90%
Number of Participating Medicaid/SafetyNet Org's	4	6	7	8	10
Prioriy Target Groups- UHC/Passport, State Medicaid	5	5	5	5	5
1.3 Employers					
Total # of Employers (est.)	45,000	45,900	46,818	47,754	48,709
% willing to participate	0.10%	6%	12%	20%	33%
Number of Participating Employers	45	2,754	5,618	9,551	16,074
Priority Target Groups - Large Employers	250	250	250	250	250
1.4 Seniors and Special Populations					
Total # of organizations (est)	50	52	53	55	56
% willing to participate	5%	40%	60%	80%	90%
Number Participating	3	21	32	44	51
Priority Target Groups - AARP KY, Senior Advocacy Grou	5	5	5	5	5
2. Resource Organizations					
2.2 Health Plans / Payors					
Total # of Plans and Payors (Est. incl. Medicare, TPA)	40	40	40	40	40
% willing to participate	8%	12%	20%	33%	50%
Number Participating	3	5	8	13	20
Priority Target Groups (Anthem, Humana, United etc.)	6	6	6	6	6
2.3 Health Information Products Services Firms (nat'l)					
Total # (US firms marketing to Louisville area)	250	263	276	289	304
% willing to participate	1%	2%	4%	7%	12%
Number Participating	3	5	11	20	36
Priority Target Groups - e.g. communitywide eRX vendor	20	20	20	20	20
2.4 Universities/Educators					
Total # Organizations (est)	15	15	15	15	15
% willing to participate	20%	30%	50%	80%	90%
Number Participating	3	5	8	12	14
Priority Target Groups (UofL, Bellarmine etc.)	5	5	5	5	5

	Year 1	Year 2	Year 3	Year 4	Year 5
3. Healthcare Product/Service Producers					
3.2 Medical Products/Pharmaceuticals					
Total Organizations (US firms mktg to Louisville area)	50	50	50	50	50
% willing to participate	1%	5%	5%	5%	5%
Number Participating	1	3	3	3	3
Priority Target Groups - major pharmaceuticals	10	10	10	10	10
3.3 Hospitals and other Facilities					
Total # (est. incl. hospitals, LTACs, In-Patient Facilities)	50	50	50	50	50
% willing to participate	10%	50%	70%	90%	90%
Number Participating	5	25	35	45	45
Priority Target Groups - major area hospital systems	5	5	5	5	5
3.4 Retail Services/Pharmacies					
Total # (in Louisville area)	950	950	950	950	950
% willing to participate	1%	10%	30%	50%	80%
Number Participating	10	95	285	475	760
Priority Target Groups - major pharmacy chains, e.g. Krog	5	5	5	5	5
4 Caregivers (Public Health, Physicians, Nurses)					
4.2 Public Health					
Total # (10 Counties plus State)	11	11	11	11	11
% willing to participate	100%	100%	100%	100%	100%
Number Participating	11	11	11	11	11
Priority Target Groups (State plus Louisville H&W Dept)	2	2	2	2	2
4.3 Physicians & Other Order-Writers					
Total # Practices (est. 2500 docs & 3 docs per practice	833	850	867	884	902
% willing to participate	1%	20%	30%	45%	68%
Number Participating	8	170	260	398	609
Priority Target Groups - Largest practice groups	30	30	30	30	30
4.4 Nursing and Other Practitioner Organizations					
Total # Organizations TBD - prelim est.	20	20	20	20	20
% willing to participate	1%	20%	30%	45%	68%
Number Participating	0	4	6	9	14
Priority Target Groups - Nursing assoc & prof. groups	5	5	5	5	5
Organization Totals					
Organizations (all 12 categories)	47,229	48,160	49,110	50,079	51,068
% participating	0%	6%	13%	21%	35%
# Participating	95	3,103	6,283	10,589	17,645
Average # of staff per organization using service	2	3	3.75	4.5	5.4
# of individual staff users within all organizations	189.4666667	9308.31	23562.7305	47650.41982	95284.83945
# Priority Target Groups	346	346	346	346	346

Organizational Tiers					
Tier 1 (using service, no contributions)					
% of Organizations in Tier 1	90%	85%	80%	75%	70%
Number of Organizations in Tier 1	171	2,341	4,495	7,163	11,252
Number of users for Organizations in Tier 1	341	7,023	16,854	32,234	60,760
% of Organizations in Tier 1 giving additional contributions	5%	5%	5%	5%	5%
Number of Organizations Providing additional contribution	9	117	225	358	563
Tier 2 (standard contributions)					
% of Organizations in Tier 2	8%	12%	16%	20%	24%
Number of Organizations in Tier 2	4	330	899	1,910	3,858
Number of users for Organizations in Tier 2	7	991	3,371	8,596	20,832
% of Organizations in Tier 2 giving additional contributions	5%	5%	5%	5%	5%
Number of Organizations Providing additional contribution	0	17	45	96	193
Tier 3 (premium contributions)					
% of Organizations in Tier 3	2%	3%	4%	5%	6%
Number of Organizations in Tier 3	1	83	225	478	964
Number of users for Organizations in Tier 3	2	248	843	2,149	5,208
% of Organizations in Tier 3 giving additional contributions	0%	0%	0%	0%	0%
Number of Organizations Providing additional contribution	0	0	0	0	0

Revenue assumptions for participation levels

	Year 1	Year 2	Year 3	Year 4	Year 5
Annual Income per Unit					
Household - Tier 1 Additional contribution	$5.10	$5.20	$5.31	$5.41	$5.52
Household - Tier 2 Base contribution	$61.20	$62.42	$63.67	$64.95	$66.24
Household - Tier 2 Additional contribution	$15.30	$15.61	$15.92	$16.24	$16.56
Household - Tier 3 Base contribution	$94.49	$96.38	$98.31	$100.28	$102.28
Household - Tier 3 Additional contribution	$10.20	$10.40	$10.61	$10.82	$11.04
Organizations - Tier 1 Additional contribution	$10.20	$10.40	$10.61	$10.82	$11.04
Organization - Tier 2 Base contribution /user	$122.40	$124.85	$127.34	$129.89	$132.49
Organizations - Tier 2 Additional contribution	$25.50	$26.01	$26.53	$27.06	$27.60

Income Detail

Income

Start-up Contributions					
Underwriting (Major Gifts)	1,000,000	1,500,000	1,000,000	500,000	-
Development Grants	250,000	250,000	-	-	-
Start-up Donations from Organizations	600,000	840,000	1,200,000	840,000	600,000
Start-up Donations from Consumers	48,000	120,000	192,000	120,000	48,000
Services Contributions					
Consumer Contributions					
Consumer Services Contributions - from Consumers	-	40,756	178,430	707,941	2,015,140
Government/NGO Services Grants and Contracts					
Grants and Contracts	-	500,000	1,000,000	1,500,000	2,000,000
Employer Contributions					
Employer Contributions for Employees	-	95,098	416,337	1,651,861	4,701,993
HRB Card Sponsorships	-	164,757	353,578	972,019	2,296,394
Other Contributions and Revenues					
Other Organizational Service Contributions	760	206,585	679,374	1,720,013	4,183,352
Reminders and Personalized Information	6,196	89,970	227,263	635,411	1,668,925
External Vendor Services	25,000	52,500	110,250	202,584	364,652
Research Program Contributions	-	200,000	400,000	600,000	800,000
Total	**1,929,956**	**4,059,666**	**5,757,233**	**9,449,830**	**18,678,457**

Messaging Revenue

Messaging and personalized content revenue is based on the # of users (consumers and organizations) in each tier, multiplied by a # of clicks per active user. This revenue is not significant until years 3-5.

Messaging participation:

	Year 1	Year 2	Year 3	Year 4	Year 5
Total Participants for Reminders/Personalized Info					
Tier 0	64,808	102,973	147,324	202,504	255,155
Tier 1	341	11,142	28,640	72,735	175,580
Tier 2	7	3,051	12,210	40,996	106,947
Tier 3	2	317	1,137	4,579	14,776
% of users who click in Tier 0	2%	2%	2%	2%	2%
% of users who click in Tier 1	10%	10%	10%	10%	10%
% of users who click in Tier 2	15%	15%	17%	18%	20%
% of users who click in Tier 3	10%	20%	22%	24%	27%
# clicks per year Tier 0	36	36	36	36	36
# clicks per year Tier 1	36	36	36	36	36
# clicks per year Tier 2	36	36	36	36	36
# clicks per year Tier 3	36	36	36	36	36
Tier 0 Clicks	46,662	74,140	106,073	145,803	183,712
Tier 1 Clicks	1,228	40,110	103,106	261,846	632,088
Tier 2 Clicks	39	16,475	72,529	267,871	768,670
Tier 3 Clicks	6	2,279	9,008	39,892	141,604

Revenue per Message (Click)

This is based on industry averages generated through research.

Messaging $ per Tier 0 Click	$0.51	$0.52	$0.53	$0.54	$0.55
Messaging $ per Tier 1 Click	$0.77	$0.78	$0.80	$0.81	$0.83
Messaging $ per Tier 2 Click	$1.02	$1.04	$1.06	$1.08	$1.10
Messaging $ per Tier 3 Click	$1.28	$1.30	$1.33	$1.35	$1.38

Messaging Revenue Totals

Messaging Revenue Tier 0	23,798	38,568	56,283	78,911	101,416
Messaging Revenue Tier 1	939	31,298	82,062	212,573	523,407
Messaging Revenue Tier 2	40	17,140	76,969	289,952	848,674
Messaging Revenue Tier 3	8	2,964	11,949	53,976	195,428
Total Messaging Revenue	**6,196**	**89,970**	**227,263**	**635,411**	**1,668,925**

Salary Schedule

	Year 1	Year 2	Year 3	Year 4	Year 5
Total Salaries					
Executive Director/CEO	79,997	161,642	163,306	164,988	166,688
Executive Assistant	25,002	50,518	51,039	51,564	52,095
CFO	72,001	145,486	146,984	148,498	150,028
Benefits/Realization Person	46,800	94,564	95,538	96,522	97,516
Marketing Officer	120,008	121,244	122,493	123,754	125,029
Marketing/Sales Staff	36,400	73,550	74,307	75,073	75,846
COO	60,004	121,244	122,493	123,754	125,029
Compliance and Privacy Officer	30,002	106,088	153,116	154,693	156,286
Chief Medical Officer	60,004	121,244	122,493	123,754	125,029

Note: LouHIE's web-services staff-person will be funded under contract out of LouHIE's marketing budget ($250,000 year 1).