California Health Information Exchange Strategic Plan

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Table of Contents

1. Introduction ... 4
2. Environmental Scan ... 7
2.1 HIE Readiness & Extent of HIE Adoption ... 7
2.2 Assessment of Current HIE Capacities ... 8
2.3 California Health IT Collaboratives ... 13
2.4 Statewide HIE Readiness Preparation ... 15
3. HIE Development and Adoption ... 17
3.1 Vision Statement ... 17
3.2 Goals of Health Information Exchange ... 17
3.3 Priority Objectives ... 17
3.4 Continuous Improvement ... 18
3.5 Patient Engagement ... 18
3.6 Health IT Adoption and Provider Connectivity ... 19
4. Governance ... 20
4.1 Overview ... 20
4.2 Role of the State ... 22
4.3 Role of the Governance Entity ... 24
4.4 Accountability and Transparency ... 27
5. Finance ... 29
5.1 Sustainability ... 29
6. Technical Infrastructure ... 32
6.1 Context ... 32
6.2 Approach ... 34
7. Legal Policy ... 38
7.1 Privacy and Security ... 38
7.2 Development of Policies and Rules ... 38
7.3 Contractual Framework for Enforcement of Privacy and Security Policy ... 39
8. Evaluation ... 41
8.1 Overview ... 41
8.2 Reporting Requirements ... 42
8.3 Performance Measures ... 44
9. Appendices ... 45
9.1 Appendix 9.1 - Definition of terms ... 45
9.2 Appendix 9.2 - List of Proposed Requirements for Governance Board ... 49

9.3 Appendix 9.3 - Interview Protocol and List of Interviewees 53
9.4 Appendix 9.4 - State Profiles IN, NY, TN 67
9.5 Appendix 9.5 - Web Information Collection Tool and Respondent Demographic Summary 117
9.6 Appendix 9.6 - HIE Advisory Board Members 121

1. Introduction

California is a beacon for technology innovation and health system transformation. Health providers in the State have long recognized the importance of health information technology ("health IT") and the vital role it plays in establishing and maintaining a safe, high quality, and efficient health care delivery system that is patient-focused. California is home to many of the most sophisticated health care institutions in the world and these providers have invested billions of dollars in health IT to support improvements in efficiency and quality. Emerging health information exchange organizations ("HIOs") are on the forefront of interoperability as they endeavor to support community health care and improve care for the underserved. State government also has significant investments in systems including Medi-Cal and various state registries that can be leveraged to create value in healthcare settings.

Health IT and health information exchange ("HIE") figured prominently in the Governor's comprehensive health care reform efforts and was a central plank (as it is now nationally) in the overall drive to reduce costs and improve outcomes. This commitment was initially demonstrated in Governor Arnold Schwarzenegger's Executive Order S-12-06[1], issued in July 2006, which resulted in the California Health Information Technology Study[2]. In March 2007, Governor Schwarzenegger issued Executive Order S-06-07[3] calling for the advancement of statewide health IT adoption to increase quality, strengthen transparency and promote accountability in the health care sector. The Order called for "100 percent electronic health data exchange" within ten years, and it identified key actions for the state to pursue, including providing state leadership, leveraging state purchasing power, developing a quality reporting mechanism through the Office of the Patient Advocate, and strengthening the ability of the Office of Statewide Health Planning and Development to collect, integrate and distribute data.

The American Recovery and Reinvestment Act ("ARRA") provides a tremendous opportunity to rapidly accelerate implementation of health IT and advance HIE in the state with a particular focus on Medicare and Medicaid providers. The Act commits more than $48 billion[4] in grants, loans, and incentives to Medicare and Medicaid providers to support meaningful use of health IT in a secure, patient-centric environment. California is well positioned to respond to ARRA.

[1] Executive Order S-12-06 by the Governor of the State of California, July 24, 2006. http://gov.ca.gov/executive-order/2616

[2] California Health Information Technology Study: Input to the California Health Data Exchange Roadmap, Accenture, January 2007. See http://www.hmohelp.ca.gov/library/reports/news/CA%20HIT%20Study%202007.pdf

[3] Executive Order S-06-07 by the Governor of the State of California, March 14, 2007. http://gov.ca.gov/index.php?/executive-order/5626/

[4] See estimate released May 2009 by the U.S. Department of Health and Human Services, available at http://www.hhs.gov/recovery/index.html. This includes an estimated $46.8 billion in Medicare and Medicaid electronic health record incentive payment funding and $2 billion to be distributed through the Office of the National Coordinator in a series of grants, loans, and technical assistance programs designed to support provider EHR use and to spur health information exchange. See also the CMS ARRA Implementation Plan, available at http://www.hhs.gov/recovery/reports/plans/hit_implementation.pdf and the ONC Implementation Plan, available at http://www.hhs.gov/recovery/reports/plans/onc_hit.pdf. Note that this estimate is significantly larger than the Congressional Budget Office's official score of the ARRA conference agreement, which was released February 13, 2009.

Soon after ARRA was enacted, the Governor's newly appointed a Deputy Secretary of Health IT within the Health and Human Services Agency ("CHHS") and the Secretary of Health and Human Services convened an HIE Advisory Board to provide guidance in the development of this and related strategic plans whose collective goal is to achieve statewide electronic health data exchange, uniform interoperability standards and adoption of health information technologies.

Over the course of four months, from April 2009 to August 2009, the state guided an open, inclusive, and transparent strategic planning effort described in Section 2.4. This planning effort involved input of over 600 stakeholders and resulted in this Strategic Plan. The planning process included:

- Monthly meetings with the HIE Advisory Board to obtain their input and guidance,
- An environmental scan of the State to assess the level of health IT adoption and use of HIE,
- Assessment of selected states' governance, technical, business and finance strategies,
- A review of how a statewide governance entity must be structured to comply with State law and create statewide policy guidance,
- Development and vetting of elements of HIE governance models that incorporate health outcome priorities and a statewide approach to technical infrastructure, privacy and security and financing, and
- Extensive public input through web-based surveys, public forums, and stakeholder teleconferences and a health IT and exchange summit.

As anticipated in such a large and complex state, the strategic planning effort uncovered differing opinions regarding how best to implement and operate statewide HIE services. However, there is agreement among stakeholders on:

- The value of health IT and HIE,
- The need for statewide governance to lead decision making and gain statewide efficiency,
- The principle that statewide technical infrastructure must build upon the many strengths and technical assets of existing provider and HIE organizations, and
- The desire to continually improve and foster innovation.

While there is much promising activity underway, California currently lacks an organizing and convening framework that will allow it to meet its vision for a patient-centric health system that is supported by health information exchange. This Strategic Plan addresses that shortcoming and charts a path to rapidly resolve it.

This Strategic Plan responds both to the requirements identified in the State's planning process and the requirements outlined by the Office of the National Coordinator in its "State Health Information Exchange Cooperative Agreement Program". Importantly, the Strategic Plan sets forth a set of immediate actions including:

1. Develop statewide HIE services, the goals of which are to address specified health outcomes that include individual and population health status elevation and that is governed by and implemented cooperatively by the public and private sectors.

2. Develop and enforce policy requiring all statewide HIE participants to comply with a common set of privacy and security guidelines and policies.

3. Develop and enforce vendor agnostic statewide technical guidance requiring all statewide HIE participants to comply with a common set of protocols and standards.

4. Develop an approach for sustainable financing that does not rely on federal, state, or private grant-based funds.

5. Coordinate an integrated approach with Medi-Cal and state public health programs to enable information exchange and support monitoring of provider participation in HIE as required for Medicaid meaningful use incentives.

6. Select a not-for-profit organization that can function as a statewide governance entity (the "HIE Governance Entity"). The HIE Governance Entity must 1) have a diverse board that accommodates broad stakeholder representation and State leadership, 2) engender trust and collaboration between and among all stakeholders, 3) convene stakeholders to generate statewide policy guidance but not operate HIE systems except as requested by and driven from the stakeholders, and 4) employ robust administrative and financial processes to support sustainability, transparency and accountability.

The State recognizes the need to play a continued leadership role in determining the path and optimizing the model for exchange of health information. The Strategic Plan will be implemented through the California HIE Operational Plan that will outline a corresponding and comprehensive set of activities to achieve statewide HIE and enable California's providers to demonstrate meaningful use and receive the maximum incentive reimbursement while avoiding future reimbursement penalties. The Strategic Plan envisions the completion of the California HIE Operational Plan by December 31, 2009.

2. Environmental Scan

2.1 HIE Readiness & Extent of HIE Adoption

The roadmap to build HIE capacity must begin with an assessment of the state and its providers' readiness to adopt and implement health IT to achieve meaningful use. California not only boasts the largest population of the 50 United States – approximately 37 million residents[5] - it is also the third largest state geographically, bordering Oregon, Nevada, Arizona and Mexico. Approximately 80% of California is rural, yet 85% of the population lives in urban areas, creating diverse scenarios around access to care in both rural and urban communities.

Health care services are delivered to Californians through 400 hospitals, over 60,000 active physicians, 100 federally qualified health centers (FQHCs) and 263 rural health clinics.[6] Several large health systems including Adventist, Catholic Healthcare West, Kaiser Permanente, Sutter Health and Tenet provide services in multiple regions around the state and many operate in more than one state.

Most insured Californians, 49%, receive health insurance through their employers, 16% are covered by Medi-Cal, 9% by Medicare, and 7% by individual plans.[7] The remaining 19% of the population is uninsured.[8]

Nationally, it is estimated that only 7.6% of non-federal hospitals and 13% of ambulatory providers have implemented "basic" EHRs that include certain clinical documentation but not clinical decision support.[9] California providers rank above the national estimate with 20% of medical groups and 13% of physician groups estimated to be using EHRs.[10] Similarly, among individual physicians, California physicians reported greater use of EHRs than the national average with 37% of physicians reporting EHR use in comparison to 28% nationally.[11] This uptake may in part be explained by the presence of large medical practices (10 or more physicians) in California as 57% of physicians in large practices report using EHRs, compared to 25% of physicians in small/medium practices and 13% of solo practitioners. However, two-thirds of physicians work in small and solo practices. Virtually all Kaiser Permanente physicians now use EHRs.

California's health care safety net facilities and providers in underserved communities generally face significant fiscal and resource challenges and these challenges impact their ability to

[5] 2009 Population Estimates, U.S. Census Bureau, Population Estimates Program.
[6] Id.
[7] "California: Health Insurance Coverage of the Total Populations, States (2006-2007), U.S. (2007." Kaiser Family Foundation. State Health Facts.org. Accessed on August 19, 2009.
[8] Id.
[9] *See* Jha, Ashish K., M.D., M.P.H., et. al. "Use of Electronic Health Records in U.S. Hospitals." *New England Journal of Medicine.* Published at NEJM.org on March 25, 2009 and C.M. DesRoches, et al, "Electronic Health Records in Ambulatory Care – A National Survey of Physicians," *New England Journal of Medicine.* 359, no. 1(2008): 50-60. Generally speaking, researchers in these two studies considered "basic" EHRs to be those that included certain clinical documentation but not clinical decision support and select other functions.
[10] The State of Health Information Technology in California. California HealthCare Foundation. 2008.
[11] Id.

implement EHRs. While less than a third of community clinics report they are actively pursuing EHRs, the majority of community clinics have some form of health IT in place, most commonly in the form of diabetes and immunization registries.[12]

2.2 Assessment of Current HIE Capacities

California's current HIE efforts fall broadly into two categories: (i) large health systems, affiliated providers and ancillary services implementing integrated EHRs, and (ii) community-driven efforts that aim to ensure ubiquitous availability of data within a region or across the State. Multiple uncoordinated HIE efforts have been spawned over the past 15 years as largely regional initiatives. Of these efforts only three today are exchanging clinical data. The remaining efforts are primarily focused on organizing, fundraising, and piloting their solutions and lack the resources and capital to make a meaningful impact.

Community HIE Efforts

California's HIE activity is characterized by a wide range of local initiatives that have remained largely independent. There are over 20 self-characterized HIEs throughout the state with informal jurisdictions largely based on a regional or geographic boundary. The efforts are predominantly overseen by Boards of Directors comprised of local stakeholders and health care leaders, and representatives of organizations who are or plan to be participating in the HIE.

Community HIE efforts have historically been driven and motivated by the perceived health care needs of their local communities. These efforts are often closely linked with the predominant provider organizations in the community who pay special attention to the community's unique health needs (e.g. diabetes, behavioral health, etc.). The majority of efforts have planned their initial implementation around a use case or specific health outcome priority identified through a collaborative process among both participating organizations and other community stakeholders.

While community HIE efforts often share a common mission to improve health care in their communities through HIE and health IT, the efforts do not all share a common technical approach and are in various stages of technical development. Some efforts are foundational, organizing stakeholders and developing an approach to HIE; others are pre-implementation, selecting vendor partners and obtaining the necessary agreements among participants to enable HIE; others are mid-implementation, pilot testing the exchange of limited administrative data among a small number of users; and only a few are operational and exchanging clinical data. Three efforts exchanging clinical data are: Eastern Kern County Information Technology Association (EKCITA), Redwood MedNet and Santa Cruz HIE. The majority of community HIE efforts are pursuing some variation of a federated technology model and are working to be compliant with anticipated federal standards to enable interoperability. Please see Table 1: Community HIE Efforts below outlining many of the state's community HIE efforts and their respective technology models.

In addition, several San Francisco Bay Area health organizations are exchanging clinical data including lab results, prescription information and clinical referrals. This exchange processes

[12] Id.

more than 500,000 per month, connecting 3,000 providers, 950,000 patients, two major national laboratory services providers and several major healthcare provider organizations.

Table 1: Community HIE Efforts

HIE	Year	Region	Org	Technology	Operational*	NHIN	Clinical Priorities	Financing to Date	Sustainability Model
Access El Dorado (ACCEL)	2004	El Dorado County	Unincorporated	Federated	Public health, mental health, 7 clinics, 2 hospitals	NA	Care coordination; public health, medical home	Grant, county, First 5, hospitals	In development
CalRHIO	2006	Statewide	501(c)3 (2009)	Regional overlays; HIE backbone	First ED in Orange County went live in October 2009	NA	ED	Grant, Loan	Shared savings
EKCITA	2004	Eastern Kern County	501(c)3 (2009)	Hybrid open source system	3 clinics; 2 private practices; 1 hospital	NA	Diabetes & Regional public health issues	Grant	Minimum volume of users
Health-e-LA	2004	Los Angeles County	Unincorporated	Federated	NA	NA	Safety net	Grant, private	In development
Long Beach Network for Health	2003	Long Beach	501(c)3 (2007)	Hybrid federated model	NA	Yes	ED & Patient safety	Grant	Minimum volume of users
OCPRHIO	2007	Orange County	Unincorporated	Federated	NA	NA	ED	Grant	In development
Redwood MedNet	2003	Mendocino, Sonoma, Lake Counties	501(c)3 (2005)	Federated with decentralized network	30 providers, 8 practices, 5k transactions/ month	Yes	Clinical data; Lab results, radiology, ePrescribing	Grant and private	Cooperative health data access service
Santa Cruz HIE	1995	Santa Cruz	IPA & hospital based	Push model; vendor outsourced	Local hospital; county clinics; IPA 90k transactions/ month	Yes	Clinical messaging; results delivery; eRx	IPA support	Hospital & IPA contributions

The majority of community HIE efforts operate as charitable organizations with 501(c)(3) or state-recognized non-profit status, and have traditionally been funded by philanthropic grants. The reliance on grant funding and lack of long-term funding commitments has limited the ability of many HIEs to hire and retain staff, relying on heavy use of volunteers' time and resources. The pursuit of ongoing funding and development of a sustainable business model is a priority of most, if not all, community HIEs that are operating or planning operations today. Many efforts assert that they will pursue some form of either a transaction-based or shared savings model once they are operational, and they articulate an upfront need to measure and document actual savings to potential participants. This approach faces some considerable challenges: First, the determination of where savings might be generated and to whom those savings might accrue is virtually impossible to determine absent a complex financial analysis that traces funding of all aspects of the health care system from the payor (including patient) to the plan (where one exists) to the numerous providers involved in an individual patient's care; second, such measurement is difficult without the active exchange of clinical data.

As highlighted in Table 1, several of California's HIE efforts have participated in the Nationwide Health Information Network (NHIN) demonstrations, successfully testing the exchange of clinical information using NHIN standards and protocols. Those organizations that have participated in NHIN demonstrations include Kaiser Permanente, Long Beach Network for Health (LBNH), ER Connect-Orange County, Redwood MedNet and Santa Cruz HIE. Some of these HIE efforts have not only demonstrated the capability to connect via the NHIN gateway to other California HIE efforts, but also to efforts outside of California. The ability of community HIE efforts to successfully participate in and test the NHIN gateway demonstrates their commitment to interoperability and national data exchange standards.

CalRHIO

The California Regional Health Information Organization (CalRHIO) was founded in 2006 as a collaborative effort to bring health care stakeholders together around the use of health IT to improve health care safety and efficiency in California. Planning efforts around the organization's structure and mission took place from 2005 – 2006 through collaborative stakeholder work groups. To date the CalRHIO Board of Directors has included representatives from California's hospitals, medical groups, consumers, privacy advocates, local and state government agencies, health plans, safety net providers, and regional health information efforts.

CalRHIO selected the improvement of patient care in the emergency department (ED) as the first phase of its statewide HIE. CalRHIO is currently engaged in a pilot with the Orange County Partnership Regional Health Information Organization (OCPRHIO) to aggregate data from CalOptima, a Medi-Cal provider, and 23 EDs. As part of the pilot, CalRHIO plans to provide various technical services including an MPI, RLS and patient consent.

CalRHIO has developed a sustainability plan based upon a shared savings model. In April 2009, UnitedHealthcare became the first national health plan in the country to agree to pay for HIE

services statewide when it entered into an agreement with CalRHIO.[13] However, questions remain as to the viability of the CaRHIO business model and with respect to how the details of the model will be implemented. The CalRHIO model does not require health plans to make upfront investment in the HIE services and places the total risk of performance on the HIE to produce savings. Furthermore, prior experiences with shared saving models have shown that measuring of savings is complicated to implement successfully. CalRHIO is seeking to address some of these issues; recently it contracted with RAND and the University of Southern California to measure cost savings resulting from the use of its statewide datasets deployed to hospital EDs as part of an effort to isolate savings that could be used to support itself.[14]

California Telehealth Network

The California Telehealth Network (CTN) was created in response to the Federal Communication Commission's (FCC) Rural Health Care Pilot Program. This program, tasked with significantly increasing access to acute, primary and preventive health care in rural America, awarded $22.1 million to California in 2007. Significant investment of additional capital has been made by other partners. The funds, to be spent over three years, will be leveraged to build upon existing telehealth investments and initiatives across the state. The CTN aims to create a statewide broadband network dedicated to health care, connecting public and non-profit health care providers in rural and urban locations.[15] The CTN project has received an overwhelming response and plans to connect over 300 sites to the nationwide broadband network.

Integrated Health Systems

Several of California's integrated health systems currently exchange data between and among their affiliated physicians and hospitals. Many of these systems have multiple locations and facilities spread across Northern and Southern California, with some systems extending into neighboring states. While many of these systems offer a suite of health IT applications and modalities to their hospital-based clinicians, health systems vary in their provision of health IT outside of the hospital walls. Over the past decade, these health systems have made significant investments in their health IT infrastructure and staff. While technical approaches and vendors vary among health systems, all of the health systems follow national standards and many participate in technical workgroups at the state and national levels. Today health systems vary in their interactions with and participation in community HIE efforts, ranging from no involvement to participation in collaborative activities.

Health systems largely operate as closed networks and their information will largely remain proprietary and locked within those networks unless addressed through statewide collaboration.

[13] Press release. "United Healthcare Partners with CalRHIO to expand electronic health information statewide." May 20, 2009. http://www.calrhio.org/crweb-files/press/20090520_FINAL_UHC-CalRHIO_RELEASE.pdf
[14] Press release. "CalRHIO Selects RAND-USC to Evaluate Savings Resulting from Use of Statewide Health Information Exchange". June 29, 2009. http://docs.google.com/gview?a=v&q=cache:mGAKSDKp5CYJ:www.calrhio.org/crweb-files/press/2009.06.29_CalRHIO_RAND_Savings_Evaluation.pdf+RAND+press+release&hl=en&gl=us
[15] The California Telehealth Network. Frequently Asked Questions. http://www.caltelehealth.org/ Accessed on 08/20/2009.

Their investments in these integrated systems should be leveraged as statewide HIE advances but their business interests must be protected at the same time. Their implementations should be considered and incorporated into state HIE efforts in a collaborative and opportunistic way to ensure interoperability across all of California's providers.

IPAs and Medical Groups

Of California's approximately 400 IPAs and Medical Groups, as many as 70 have begun to implement an EHR infrastructure and adoption program.[16] With few exceptions, EHR adoption has been incremental with only a portion of an IPAs or Medical Group's affiliated physicians fully operational on a system.

2.3 California Health IT Collaboratives

There are numerous existing collaborative efforts that have emerged through public and private sector funding and leadership to support the adoption of health IT and HIE in California. These collaboratives serve as a strong foundation for joint decision making and promulgation of best practices, policies, and guidance. Some of these efforts are profiled briefly below.

Accelerating Quality Improvement through Collaboration (AQIC). A statewide effort to spur the adoption of quality improvement methods and the use of electronic data by community clinics and health centers, AQIC implemented a common quality reporting system and processes for improving diabetes care across community clinics and health centers. It is coordinated by the California Primary Care Association (CPCA) and managed in collaboration with 14 regional health center consortia. It was funded by the California HealthCare Foundation (CHCF).[17]

Building Clinic Capacity for Quality (BCCQ). The BCCQ program is focused on creating learning opportunities and collaborations between safety net clinics in Southern California to enhance their delivery of high quality healthcare through the use of health IT and quality improvement strategies. The project helped 51 community clinics and health centers and three clinic consortia in five Southern California counties measure their capacity for implementing health IT. [18]

California Cooperative Healthcare Reporting Initiative (CCHRI). CCHRI, a collaborative of health care purchasers, plans and providers, was convened in 1993 by the Pacific Business Group on Health to help consumers and purchasers make informed health care purchasing decisions. CCHRI's mission is to collect and report comparable and reliable performance data for stakeholder use. The degree of cooperation among participants in CCHRI is unique. All participants adhere to pre-established rules for data collection and reporting and abide by an established framework for decision-making. Governance is provided by a 15 member executive committee comprised of equal representation from each of the stakeholder groups: purchasers,

[16] Source: California Association of Physician Groups. http://www.capg.org/home/index.asp?page=1
[17] Accelerating Quality Improvement through Collaboration. California HealthCare Foundation. http://www.chcf.org/topics/chronicdisease/index.cfm?itemID=133784 Accessed on 8/20/2009.
[18] SOUTHERN CALIFORNIA CLINICS, HEALTH CENTERS AND CONSORTIA BUILDING CLINIC CAPACITY FOR QUALITY (BCCQ). UniHealth Foundation. http://www.unihealthfoundation.org/highlight_2.html. Accessed 08/20/2009.

plans and providers. Decisions are made by majority vote. [19]

California eHealth Collaborative (CAeHC). CAeHC is a grass roots effort formed in February 2009 as an open collaboration to address emerging issues related to all eHealth technologies. Since its inception CAeHC has hosted a series of educational eHealth webinars and in-person town hall meetings to gather stakeholder input on eHealth.[20]

California E-Prescribing Consortium. The California E-Prescribing Consortium is an open stakeholder collaborative composed primarily of health care providers, payers and pharmacies dedicated to identifying and resolving issues related to e-prescribing in California. The Consortium plans to host a web-based E-Prescribing Information Center in August 2009 as a resource for e-prescribing stakeholders.

California Improvement Network (CIN). CIN was established as a social network to share ideas about improving care delivery. Since 2005, it has sponsored training for more than 600 health care professionals in specific quality improvement skills and has evolved into an organization of partners (see list below) who care for some 20 million Californians and actively work with more than 1 million patients with one or more chronic conditions. The CIN partner organizations work with clinicians from a broad range of outpatient settings in California. They include statewide organizations as well as regional groups, and represent private commercial medical groups, private community clinics, public hospital clinics, a county health department, and two Medi-Cal managed care health plans.[21]

California Privacy and Security Advisory Board (CalPSAB). CalPSAB operates under the auspices of the Secretary of the California Health and Human Services Agency and provides private and public collaboration to address and coordinate HIE privacy and security efforts in California. CalPSAB emerged out of the AHRQ and ONC funded Health Information Security and Privacy Collaboration (HISPC) efforts that brought many HIE stakeholders together beginning in 2006. CalPSAB prepares and submits privacy and security recommendations to the Secretary of the Health and Human Services Agency for review and approval. CalPSAB is a public-private advisory board and it oversees the recommendations and activities of four active committees that meet regularly to analyze issues and develop corresponding solutions: Privacy, IT Security, Legal and Education. A significant accomplishment that CalPSAB and CalOHII oversaw was the production of the California Health Information Law Identification (CHILI) search tool, a web-based tool that enables users to search HIPAA and California statutes and regulations for information pertinent to the privacy and security of patient health information.[22]

California Quality Collaborative (CQC). CQC is a healthcare improvement organization dedicated to advancing the quality and efficiency of patient care in California. CQC's expert quality improvement programs transform healthcare delivery across physician groups through collaboration. The organization is supported by a state-wide leadership alliance of healthcare purchasers, providers, and health plans, all working toward a shared goal of accelerating quality

[19] California Cooperative Healthcare Reporting Initiative, http://www.cchri.org/index.html. Accessed 8/23/2009,
[20] California eHealth Collaborative Introduction. http://caehc.org/. Accessed 08/20/2009.
[21] California Improvement Network. California HealthCare Foundation. http://www.chcf.org/topics/chronicdisease/index.cfm?itemID=112543. Accessed 08/20/2009.
[22] http://www.ohi.ca.gov/chili/index.php

improvement.[23]

Integrated Healthcare Association (IHA). IHA is a statewide leadership group that promotes quality improvement, accountability, and affordability of health care in California. IHA membership includes major health plans, physician groups, and hospital systems, plus academic, consumer, purchaser, pharmaceutical and technology representatives. The IHA's principal projects include pay-for-performance, medical technology assessment and purchasing, the measurement and reward of efficiency in health care, and prevention programs directed at obesity.[24]

Tools for Quality. Tools for Quality is a two-year effort to assist community clinics and health centers with their purchase of chronic disease management systems. The program is initially providing matching funds to 33 community clinics and health centers to support the facilities' software acquisition and training.[25]

2.4 Statewide HIE Readiness Preparation

California recognizes that it must demonstrate its ability to effectively use planning and implementation funds to advance HIE and meaningful use and in April 2009 embarked on a strategic planning process. The process tasks were designed to ensure stakeholder participation, including:

- Convening a public-private HIE Advisory Board to review and provide input on the process and deliverables associated with state implementation of HIE. The HIE Advisory Board was co-chaired by Health and Human Services Secretary Kim Belshe and Dr. Paul Tang, Vice President and Chief Medical Information Officer, Palo Alto Medical Foundation.[26]

- Interviews with eight HIEs, six health systems, and the California Telehealth Network to determine the stage of implementation of initiatives underway at these institutions (e.g. planning, preliminary implementation, operational), planned or current functionality (e.g. e-prescribing, clinical data exchange, administrative payment processing), technical architecture, key stakeholders and population served. Please see Appendix 9.3 for the HIE and health system interview protocols utilized during these interviews.

- An assessment of selected states' HIE governance, technical, business and finance strategies; the states selected include Indiana, New York and Tennessee. Please see Appendix 9.4 for profiles of the selected states.

- A review of State procurement laws pertinent to the selection and empowering of an HIE Governance Entity.

[23] California Quality Collaborative. http://www.calquality.org/. Accessed 8/23/2009.
[24] Integrated Healthcare Association. http://www.iha.org/. Accessed on 08/20/2009
[25] Press Release. "Better Chronic Disease Care Through Technology: Health Care Foundations Unveil $4.5 Million Program." California HealthCare Foundation. June 11, 2008.
[26] Please see Appendix 9.6 for HIE Advisory Board membership.

- Development of potential models for California HIE using information gathered in the assessment process, outlining options for governance, health outcomes, technical approach, privacy and security and financing.

- Convening three stakeholder meetings to obtain input around the potential models and the organizational and structural criteria for an HIE Governance Entity. More than 200 stakeholders attended these meetings in Sacramento, Los Angeles, and Fresno, representing hospitals, physician groups, privacy advocates, consumer advocates, health plans and insurers, employers, providers, clinics, public hospitals, long-term care facilities, allied health professionals, legislative staff, vendors and systems integrators.

- Hosting a Health IT & Exchange Summit attended by almost 200 people to participate in and support the strategic planning process.

- Development of a web-based information collection tool to facilitate additional public participation and feedback around HIE; over 135 responses have been submitted to date and reviewed for incorporation into the planning process. Please see Appendix 9.5 for the web information collection tool.

- Finalizing the California HIE Strategic Plan.

3. HIE Development and Adoption

3.1 Vision Statement

Health care in California is built on a solid foundation of health information exchange that provides safe and secure patient and provider access to personal and population health information dramatically improving the health and wellbeing, safety, efficiency, and quality of care for all Californians.

3.2 Goals of Health Information Exchange

To achieve the vision of Health Information Exchange in California, we have established the following goals:

1. To ensure patients have safe, secure access to their personal health information and the ability to share that information with others involved in their care

2. To engage in an open, inclusive, collaborative, public-private process that supports widespread EHR adoption and a robust, sustainable statewide health information exchange

3. To improve health care outcomes and reduce costs

4. To integrate and synchronize the planning and implementation of HIE, health IT, telehealth and provider incentive program components of the federal stimulus act

5. To ensure accountability in the expenditure of public funds

6. To improve public and population health through stronger public health program integration, bio-surveillance and emergency response capabilities

3.3 Priority Objectives

California must align its health information exchange implementation and priorities with the current federal definition of meaningful use to ensure that its eligible providers are able to demonstrate meaningful use and are positioned to receive the maximum incentive reimbursement and avoid future reimbursement penalties. With reaching meaningful use as an imperative, the following, immediate priorities are delineated to support Medicare and Medi-Cal providers:

- Electronic eligibility and claims transactions
- Electronic clinical laboratory ordering and results delivery
- Electronic prescribing and refill requests
- Electronic public health reporting
- Quality reporting
- Public and population health
- Children’s health and vulnerable populations

- Prescription fill status and/or medication fill history
- Clinical summary exchange for care coordination and patient engagement

3.4 Continuous Improvement

Against the backdrop of the immediate priorities defined above, it is important to define specific indicators of progress toward those priorities, but to recognize that these priorities and associated measures are only the first step. Priorities must be continually evaluated and re-set. As with any complex process, and particularly a complex technology issue, change and innovation will continue. Driven from a patient-centric perspective and embraced by consumers, HIE will radically transform all aspects of health care delivery so a continuous improvement system must be developed that can adapt to this as-yet-uncharted world. Beginning with Healthy California 2020, health outcomes targets will be developed and timelines for their achievement established. Using the data that will be available through the HIE, an assessment and evaluation process will be created. The HIE Governance Entity will have a specific evaluation and re-prioritizing function that focuses on ensuring that progress is being made toward the goals, that course corrections are implemented as needed and that issues that are beyond the purview of the HIE Governance Entity are raised to the attention of State government or other appropriate responsible parties.

3.5 Patient Engagement

Central to the long-term restructuring of the health care delivery system is actively engaging patients in their care. Physician dedication to patient engagement is centrally important in this effort and the physicians will be most able to influence patient behavior.

A critical early priority of the HIE Governance Entity will be to concretely define what specific patient engagement objectives can be accomplished as rapidly as possible and to define metrics and measurement tools to assess progress toward those objectives. As California refines its patient consent format based on state and federal law, California can make each point of care a point of patient engagement where the patient's physician guides the patient in understanding and participating in the promise of HIE. At the same time, the HIE Governance Entity's privacy and security function must maintain a focus on assuring safe and secure access to records by only authorized providers.

In addition to physician engagement to promote patient involvement, the HIE Governance Entity will develop a specific strategy that is focused on consumer engagement. Broad reach of consumers is a long-term effort that requires a multi-pronged outreach strategy. It must begin in advance of full implementation and be an integral part of physician engagement. In addition, the consumer education must specifically focus on how HIE increases integration of care for children and those with disabilities and improves outcomes, as well as issues such as guarding private data, information-sharing standards, and personal responsibility. Consumer education must also address how personal health records factor into overall health management, and the best ways to use personal health records to advance consumer empowerment and improvement of outcomes.

The HIE Governance Entity also needs to develop policy levers that incentivize information

exchange and create demand for HIE services. Encouraging entrepreneurship and a burgeoning competitive commercial marketplace for secure and sound HIE products and services will draw patients into the process of effective use of HIE and will likely motivate patient engagement more effectively than broad-based education programs.

3.6 Health IT Adoption and Provider Connectivity

The California Health and Human Services Agency (CHHS) serves as the lead agency on HIE and HIT issues for the State. CHHS works with the State Chief Information Officer (OCIO), the Business, Transportation and Housing Agency and the Department of Managed Health Care to oversee the State's HIE and HIT related efforts. To develop a coordinated approach to health IT adoption and provider connectivity across the state, CHHS initiated six workgroups involving stakeholders representing public and private entities. These workgroups include:

- EHR Loan Funds,
- Regional Health IT Extension Centers
- Research and New Technologies
- Workforce Training and Development
- Broadband/Telehealth, and
- Health Information Exchange

On July 20, 2009, CHHS hosted its first California Health IT and Exchange Summit. The summit was attended in person by almost 200 people; dozens also participated by phone and webcast. The summit reviewed draft strategic plans for each workgroup and discussed next steps to finalize and publish the plans for public comment. The final plans will provide an integrated approach and guide California's health IT and HIE operational plans.

4. Governance

4.1 Overview

To date, the California market has been characterized by multiple uncoordinated HIE initiatives. These initiatives have addressed specific regional needs or the needs of a specific health system and have resulted in valuable lessons learned. However, a coordinated statewide governance approach is required to meet California's vision and goals for HIE, to take advantage of significant federal investment in health IT, and to create a policy infrastructure that allows California's providers to meet the goals of meaningful use including the ability to exchange health information.

As part of the this strategic planning process, CHHS performed an extensive environmental scan of the California market place, surveyed approaches of multiple other states to leverage the lessons learned and experience, and has gone to great lengths to engage California stakeholders to relate the information gathered and to understand their interests and requirements. As described in Section 2, there is a lack of consensus with respect to how to many of the details of how best to pursue information exchange. However, there is agreement of a number of fundamental principles, including:

- There is value in health information exchange and it is important to harness and use well the meaningful use incentive program,
- There is a need for a state-wide approach with respect to privacy and security,
- The imperative to include rural areas and safety-net providers and their patients as full participants in the benefits of HIE,
- The importance of a technical architecture that uses standards-based protocols for interoperability based on federal standards and the NHIN implementation platform,
- The need to adopt an approach that leverages existing HIE and Health IT investments, and
- The importance of flexibility to permit some level of regional variation to accommodate California's size and diverse regional needs and priorities.

During this process, we considered multiple governance models along a continuum that included a market-driven approach, a state-run governance structure with collaborative stakeholder advisory process, and a statewide governance entity with strong state participation.

A market-driven approach was considered to be ill-suited to the realities of the HIE marketplace today. It is true that many vendors are investing significant amounts in developing EHR, EMR and PHR technology that is intended to satisfy evolving technical standards. However it is equally true that the health care economy is extraordinarily complex, and patients and providers have shown themselves to be reluctant to spend scarce resources on new health care information technology. We therefore concluded that absent a state-level, coordinated governance and policy initiative the trust among patients and providers that is an essential foundation for HIE will be slow to develop and may be haphazard (and likely to underserve more vulnerable

constituencies). Significantly, we also were uncertain how a market-based approach would participate in federal grants to states to promote health information technology.

We therefore concluded that a state-based policy and governance initiative is required to serve California's needs. We carefully examined the concept of a state-run governance entity with a collaborative stakeholder advisory component. We concluded that many of the key functions that we perceive for the state-level governance process simply are not appropriate government functions. For instance, we believe it will be important for the HIE Governance Entity to interact with physicians and other providers to develop common contract forms for the exchange of clinical information; to engage with the vendor community to evolve technical standards for products and services; to resolve disputes among stakeholders and determine how stakeholders that do not conform to collaboratively-developed business rules should be sanctioned.

We concluded that the preferred model for California is an HIE Governance Entity that is a not-for-profit organization with a diverse board and an open and transparent governance process and has strong state participation to ensure achievement of public policy goals. Stakeholders will be invited to participate in governance and working groups at many levels, and will be asked to bind themselves contractually to participate in governance and to observe and be bound by technical, business and legal rules for HIE that are adopted as statewide policy guidance through an inclusive, fair, transparent and collaborative decision-making structure. This approach seems to combine the critical elements of securing wide community participation while assuring the achievement of public health goals, thus meeting the needs of patients, providers, payors, government and other participants by involving all in the collaborative governance process.

The HIE Governance Entity will establish the roles, responsibilities, and relationships between parties to organize, promulgate and oversee activities among stakeholders and across state, regional, and local levels and implementation of associated accountability mechanisms. The HIE Governance entity will formally coordinate activities with both CalPSAB and regional extension centers to drive to timely and meaningful results.

In addition, the HIE Governance Entity will be responsible for ensuring that its activities, workgroups and actions reflect the needs of California's residents. California's residents are diverse in geographic distribution, linguistics, health status, ethnic and racial composition, education levels, abilities and age. The HIE Governance Entity will ensure that objectives, requirements, and structures of health information exchange incorporate these considerations to assure maximum consumer access and engagement.

The principal short-term tasks of the HIE Governance Entity will be to organize the statewide collaborative process, establish appropriate workgroups staffed with subject matter experts and to manage the process of developing an Operational Plan for HIE in California. This program will include tasks such as:

- Creating standards, certification requirements and a technical plan that builds off existing assets and allows for broad access to HIE services that will support meaningful use.
- Creating policy guidance for privacy and security that is uniform, coordinated with federal policy, consistent and widely supported by stakeholders.

- Developing cost estimates, staffing plans and schedules to enable statewide HIE services.
- Developing and implementing controls and reporting requirements.
- Considering which state-level shared services should be implemented and in what order of priority.

4.2 Role of the State

California state leadership anticipates fulfilling the roles and responsibilities outlined for states in the HIE Cooperative Agreement Program. The State has already taken an important step in that direction by appointing a Deputy Secretary of Health IT in the Spring of 2009 to coordinate HIE and Health IT activities across California. A key part of the Deputy Secretary's duties has been to facilitate an open, fair, inclusive and responsive process to encourage public engagement in the development of California's strategic plan for HIE and other areas of Health IT, including Regional Extension Centers. In addition to the Deputy Secretary's leadership, the state will use its authority, programs and resources to:

- Develop state level directories and enable technical services for HIE within and across states.
- Remove barriers and create enablers for HIE, particularly those related to interoperability across laboratories, hospitals, clinician offices, health plans and other health information trading partners.
- Convene health care stakeholders to ensure trust in and support for a statewide approach to HIE.
- Ensure that an effective model for HIE governance and accountability is in place.
- Coordinate an integrated approach with Medi-Cal and state public health programs to enable information exchange and support monitoring of provider participation in HIE as required for Medicaid meaningful use incentives.
- Develop or update privacy and security requirements for HIE within and across state borders.

While the HIE Governance Entity will lead the process of convening the statewide collaboration process to develop statewide HIE services, the State is committed to playing a strong role in the HIE Governance Entity through direct CHHS involvement in the HIE Governance Entity board and through coordinating activities across Medi-Cal and state and local public health programs.

Governance Entity Board. The California Secretary of Health and Human Services and the Deputy Secretary of Health IT will hold voting positions on the governance entity's board of directors. At the request of the Secretary of Health and Human Services, additional seats may be required for the State of California such as Medi-Cal and Public Health. This role on the board allows the state to:

- Directly monitor and guide progress of all HIE activities,

- Coordinate activities in conjunction with the governance entity across multiple diverse organizations including Medi-Cal and state public health programs in order to ensure integration and support of a unified approach to information exchange without

duplicating efforts,

- Ensure conformance with state priorities and principles, and
- Monitor the use of funds and administrative processes to support transparency and accountability.

Defining State Priorities The state priorities include the assurance that hospitals, clinics and other providers are able to demonstrate meaningful use in order to obtain the Medi-Cal and Medicare payment incentives. To achieve meaningful use it is critical that California's health information exchange capabilities are expanded rapidly and aligned with the specific elements and timeframes required to support meaningful use. The state is charged with keeping its plans and priorities consistent with and complimentary to the Medicaid and Medicare plans for the implementation of meaningful use as they are developed. The Deputy Secretary of Health IT will continue his current role with the HHS HIT Policy Committee Health Information Exchange Workgroup as well as actively monitor emerging HHS and Federal activity. In addition, the state will monitor other states and engage directly with their activities to ensure the ability to exchange information across state boarders. California's priorities for HIE are currently defined as:

- Electronic prescribing and refill requests, including prescription fill status /medication fill history
- Clinical laboratory ordering and results delivery
- Clinical summary exchange for care coordination and patient engagement
- Electronic public health reporting (i.e., immunizations, notifiable laboratory results)
- Electronic eligibility and claims submission
- Children's health and vulnerable populations
- Public and population health reporting

Coordination with Medi-Cal and Public Health. Medi-Cal is already engaged in a planning process to coordinate the role that HIE will play in improving health outcomes for its constituencies. The State will coordinate activities across Medi-Cal and state and local public health programs and to avoid duplication of efforts and to ensure the integration and support of a unified approach to bi-directional information exchange.

Participation with VA, DoD, SSA and IHS The Deputy Secretary of Health IT will work with the governance entity to engage directly with organizations, such as the Department of Veterans Affairs (VA), Department of Defense (DoD), The Social Security Administration and the Indian Health Service (IHS) to ensure that the state can meet the various federal requirements in order to engage in health information exchange with these federal delivery systems.

Identification, selection and contracting for a Statewide HIE Governance Entity Through the environmental scan that was conducted as part of this strategic planning process a number of regional and statewide organizations for HIE have been identified as documented in Section 2. However, no single organization, public or private, has been identified with the resources and stakeholder support required to be the governance entity that will develop and implement

statewide HIE services in California. In August of 2009, CHHS initiated an RFI process to identify the closest fit for a governance entity. Through this process the State expects to work closely with an organization to shape it into a governance entity that meets both federal requirements as well as the requirements identified by the state and detailed in the next section. California intends to select the governance entity by December 31, 2009. Once selected, California will contract directly with the governance entity to perform statewide HIE convening, coordinating, and management activities.

4.3 Role of the Governance Entity

The current HIE planning process is being carried out so as to align with emerging federal guidance. In addition, California is adding to the governance entity requirements based on state and stakeholder requirements defined through the planning process described in Section 2. As such the governance entity to be identified will be required to:

- Be a not-for-profit organization under California Law
- Be private-sector led with State government collaboration and representation on the board
- Have a diverse board composition from multiple types of organizations from regions throughout the state
- Be seen as a trusted, transparent, independent and collaborative organization for education, negotiation and decision-making among diverse stakeholders
- Have the ability to convene and coordinate a state-wide public-private collaborative process for Health Outcomes, Privacy and Security, Technical Approach, Sustainability, and Health IT Adoption
- Adopt a contractual model of adherence to legal, business and technical rules that are adopted through the collaboration process whereby stakeholders will agree to abide by these rules and to processes to enforce them
- Abstain from inserting itself into operations except as requested by and driven from the stakeholders.
- Have the ability to manage complex, integrated work streams across stakeholder and subject matter spectrums
- Have experience in the development and administration of grant-making processes, consistent with State and Federal guidelines
- Have the ability to define with Stakeholders and participating HIEs the need for shared services and the specific means by which those services will be delivered
- Have experience in raising funds from multiple sources – both public and private

- Employ robust administrative and financial processes to support transparency and accountability, including adherence to GAAP and all federal and state laws

The HIE Governance Entity will need to evolve its governance structure to become not only an organization that can accelerate development and adoption of HIE but also one that can play an on-going institutional role in supporting, monitoring and improving sustainable and self-supporting statewide HIE services in California. We expect that the HIE Governance Entity will evolve a multi-tiered organizational structure to accomplish its work, consisting of:

- A diverse board of directors that will be comprised of qualified thought leaders from a broad spectrum of stakeholder groups

- A working group or committee structure of subject-matter experts that can study and recommend policy decisions to the board

- A professional staff that can provide the necessary level of support to the board and working groups.

CHHS will work with the governance entity to coordinate activities across California and its many stakeholders, including Medi-Cal, State and local public health programs. The governance entity primary responsibilities would at a minimum include:

- Developing an operational plan that addresses the key components for statewide HIE services identified in this strategic plan and using this plan as the starting point. It is anticipated that these efforts are substantial and it will require consistent effort and coordination to avoid silos.

- Establishing a technical architecture that leverages California's information technology infrastructure (e.g., leveraging systems used in California hospitals, providers, health plans, health information organizations, etc.) to enable the rapid propagation of information exchange services across the state.

- Convening a broad array of providers and other stakeholders to agree to and support a set of shared services.

- Ensuring that the specific issues and needs of safety net providers are considered and addressed so that an equitable foundation for success is established.

- Determining the most efficient way to spend limited funding to support the identified priorities of lab data exchange, pharmacy / Rx history, continuity of care, and public health, and other priorities as identified by the institutions engaged in health information exchange.

- Perpetuating and supporting HIE beyond stimulus funding by identifying sustainable business models and implementing them through a business plan.

- Adhering to all Federal accountability and transparency requirements as well as the

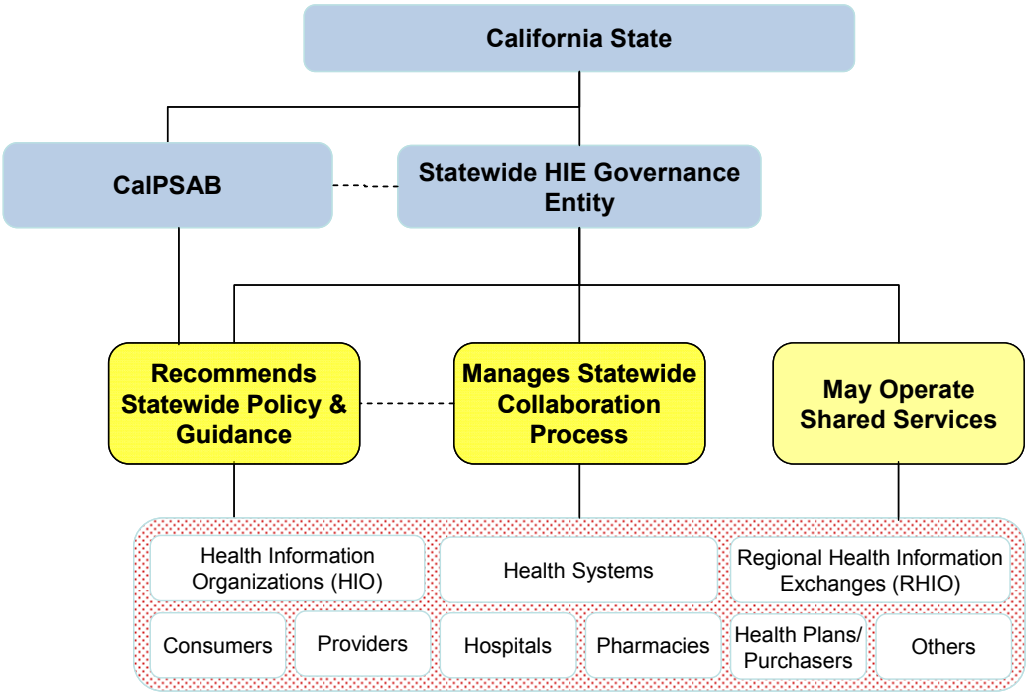
accountability and transparency requirements identified in Section 4.4.

The HIE Governance Entity's responsibilities fall into three primary areas:

Convene	Coordinate	Manage
• Provide neutral forum for all stakeholders • Educate constituents & inform HIE policy deliberations • Advocate for statewide HIE services • Serve as an information resource for local HIE and health IT activities • Track/assess national HIE and health IT efforts • Facilitate consumer input	• Develop and lead plan for implementation of statewide standards, rules and solutions for interoperability. • Facilitate alignment of statewide, interstate, & national HIE strategies, RECs, Medi-Cal, etc. • Coordinate with CalPSAB around privacy and security policies • Promote consistency and effectiveness of statewide HIE policies and practices • Support integration of HIE efforts with other healthcare goals, objectives, & initiatives	• Issue and manage grants • Develop legal analyses • Oversee accounting and budgeting • Enforce state policy guidance • Possibly contract for statewide shared services such as master patient index • Evaluate and assess progress • Develop accountability measures • Develop sustainable business models for HIE

The diagram below presents the conceptual view of the relationship between the State, the HIE Governance Entity, CalPSAB and stakeholders.

Figure 1: HIE Governance Relationship Model



4.4 Accountability and Transparency

Through this plan, a number of measures will be put into place to ensure accountability and transparency of the governance entity, its use of federal, state and private funds, as well as HIE operations. These include:

- Contract between the state and the governance entity.
- CHHS participation on the board of governance entity.
- A governance structure whereby directors and officers are responsible for working with management to set strategy and adopt policies for HIE operation and subsequent oversight.
- Documented financial and operational policies and procedures that include reporting mechanisms to track expenditure and activities of the governance entity as well as from any entity to which it grants funding.
    - To maximize the transparency and accountability of funds authorized under the American Recovery and Reinvestment Act of 2009 (Public Law 111-5) (ARRA) as required by Congress and in accordance with 45 CFR 74.21 and

92.20 “Uniform Administrative Requirements for Grants and Agreements”, as applicable, and OMB A-102 Common Rules provisions, recipients agree to maintain records that identify adequately the source and application of ARRA funds.

- Inclusion of all data elements required to comply with the Federal Funding Accountability and Transparency Act of 2006 (Public Law 109-282).

- Documentation of organization activities that are open to the public and described in an annual activities report. This is also important to ensure trust and buy-in of all stakeholders.

5. Finance

5.1 Sustainability

The creation of a robust health information exchange infrastructure in California will depend on its ability to secure the financial capital to build infrastructure capabilities and develop ongoing revenue streams to maintain operations. Designing, piloting and implementing interoperable HIE is a complex, multi-year process requiring a long-term commitment of funds. In addition to this complexity, there are a few entrenched tensions that must be reconciled. First, conventional wisdom is that while the burden of interoperability falls on providers, the anticipated benefit of cost efficiencies accrues to the payers. Second, it will be some time before the savings that are enabled through HIE are demonstrable and defensible. It is critical that all stakeholders realistically understand the timeline and are committed to that timeline.

The HIE Governance Entity will play a critical role in developing sustainable business models for HIE in California by undertaking activities such as:

- Incentivizing information exchange among the "trading partners" of providers (labs, pharmacies, radiology, etc.) and thus in helping to create demand for HIE products and services.
- Creating and implementing shared directories and technical services to facilitate statewide HIE services.
- Convening stakeholders and developing policy recommendations for business models that may require State legislative or regulatory action.

The HIE Governance Entity will have a critical role in considering and recommending how ARRA administrative matching funds and Medicaid and Medicare "meaningful use" incentive payments can be used to support development of sustainable business models for HIE.

5.1.1 Start up Capital

ARRA grant programs authorized in HITECH represent significant funding streams to jumpstart state upfront capital programs. In addition to the ONC State HIE Cooperative Agreement Program, HITECH includes $46.8 billion or more in incentive payments to eligible professionals for adoption of meaningful use through certified EHR technology. The legislation establishes connectivity to an HIE as one of the criteria for a provider to be treated as a meaningful user. HITECH also includes the creation and support of regional health information technology centers ("RHITECs") to provide technical assistance and accelerate HIE connectivity. Careful consideration has been given on how best to coordinate HITECH grant resources and maximize available efficiencies.

In addition to the HITECH grant funds, HITECH authorizes a 90 percent federal match for

expenditures incurred by states in administering the EHR payments and enabling the Medicaid technical architecture to accommodate statewide HIE services and health IT adoption.[27] Medi-Cal will work closely with state leadership to explore both start up capital and ongoing funding options through these funds.

Recognizing that federal funds through ARRA are inadequate to meet upfront capital requirements for statewide HIE services, California may choose to explore other options that have been effectively utilized by other states including capital budgeting, special purpose funds, and special assessments.

- Capital funding through bonds has been successfully used by several states to support statewide health IT projects. In Rhode Island, the state established a $20 million revenue bond to create the state's HIE. The revenue bond is contingent on contributions from other stakeholders such as health plans. The state will pay for the share of costs for public program populations. Given California's current fiscal situation, General Obligation bonds are not likely feasible. An analysis of the potential to use lease-revenue bonds should be undertaken.

- Special purpose funds refer to funding sources that are not subject to traditional legislative appropriation processes, such as settlements derived from legal cases or federal Medicaid waivers. In June 2007, Connecticut allocated the transfer of a total of $1 million over a two year period from the Tobacco and Health Trust Fund for the Connecticut Health Information Network (CHIN).

- Special assessments. The primary objective of a special assessment is to advance a benefit that is targeted in nature. The Lifeline assessment charged by telephone companies to consumers to support low cost services for the very poor is an example of a special assessment. In order to support its state-level HIE efforts, Vermont used a special assessment to create the Vermont Health IT Fund. Beginning October 1, 2008, each health insurer operating in Vermont began paying a quarterly fee into the fund. [28]

5.1.2 Ongoing Operations

The goal of achieving statewide interoperability does not end with implementation. In order to remain viable over the long-term, users of HIE must determine that it delivers value and are thus willing to support it. To do so, HIE participants must participate in its development to support the prioritization of HIE components and the HIE development and implementation process. This participation provides an opportunity to leverage the participants' infrastructure and

[27]Department of Health and Human Services. American Recovery and Reinvestment Act - Improving Accountability and Information Technology Security." Centers for Medicare & Medicaid Services: Medicare and Medicaid Incentives and Administrative Funding". May 19, 2009, page 3. http://www.hhs.gov/recovery/reports/plans/hit_implementation.pdf

[28] Vermont Information Technology Leaders. "Press Release: Vermont's Legislature Establishes Health IT Fund." May 18, 2008.

expertise, and allows all stakeholders to articulate their expected HIE value proposition. As with the identification of capital mechanisms, states typically identify a set of core principles to guide the identification and selection of sustainability options. Clearly how HIE services are paid for by providers and payors will be a vital issue for the State and HIE Governance Entity to tackle – it is imperative that the cost of these services to be equitably spread and shared among all stakeholders who will benefit both directly and indirectly from ARRA incentives.

New models are being tested that leverage HIE to complete transactions electronically that are traditionally processed by paper, such as Social Security Administration's recently announced grant program to process disability claims requests through the connection to the NHIN. As robust statewide HIE service infrastructure develops, it is anticipated that additional administrative, clinical, and other viable business models will emerge.

The HIE Governance Entity will need to quickly establish a workgroup focused on sustainability of all efforts (including local and regional efforts), the California Telehealth Network and public health reporting. [29]

[29] https://www.fbo.gov/index?s=opportunity&mode=form&id=df343db1bf298ef9336bb8da0e723863&tab=core&cck=1&au=&ck=. Accessed 8/23/2009

6. Technical Infrastructure

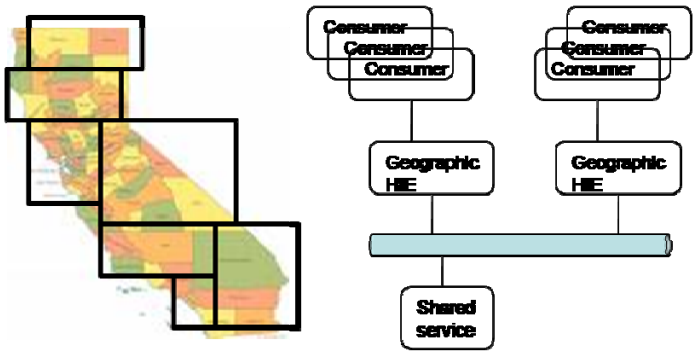
California is committed to a statewide technical architecture that leverages the existing investments of community HIEs and health care providers and allows for regional flexibility while maintaining overall statewide standards and protocols. These existing efforts have produced outstanding results within their institutional foci. In order to take these efforts to the next level, California must work to create a technical architecture that will integrate these independent efforts for the benefit of both state level and community efforts. By adopting a standards-based approach to interoperability, California can create an environment that enables the development of shared services based on existing capabilities where possible. In addition, California can align these efforts to satisfy the requirements for ARRA funding, especially by creating services that fulfill meaningful use criteria.

6.1 Context

While California has a strong point of view about its approach to statewide technical architecture, there were divergent opinions among stakeholders about some important issues. There was broad agreement that the state should identify and enforce standards-based protocols for interoperability based on federal standards and the NHIN implementation platform. There was also broad agreement that there were significant advantages to developing shared services that could be made available statewide.

However, there were divergent opinions about the connectivity model to achieve these broad objectives. Some favored a geographic exclusivity model whereby the state would create geographical regions, and access to shared services would have to proceed through a single designated entity within each region.

Figure 2: Exclusive HIE Geographies

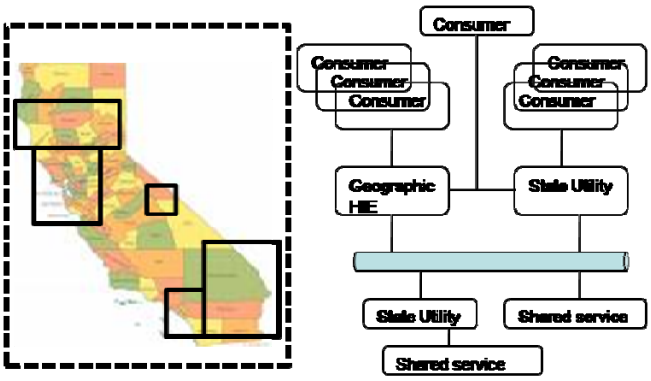


Exclusive geographic entities provide connectivity to state services or other geographies

Proponents argued that this hierarchical connectivity model would promote more rapid assimilation of information sources by preventing competition that confuses providers of information with limited resources to connect to an HIE, improving liquidity of HIE in California. Further, it would eliminate "white spaces", ensuring that all Californians have access to HIE resources.

A second approach articulated is a state-supported utility provider model.

Figure 3: State Supported Utility

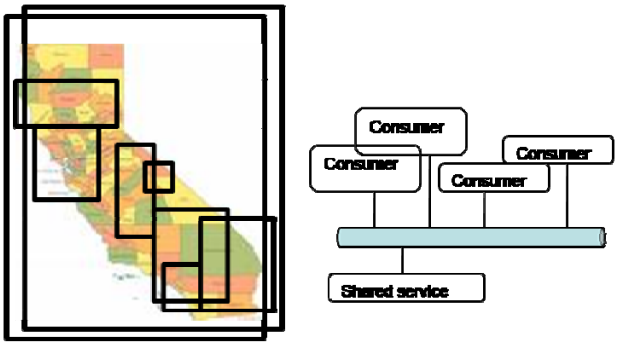


Various geographic exchanges exist and the utility provider overlaps, enhancing geographic exchanges and filling in "white spaces"

The state government designates a preferred provider of certain services that can also serve as a provider of last resort to institutions without the resources or availability of a regional HIE to which they can connect. The utility provider would have significant economies of scale, lowering costs and making services more rapidly available.

A third point of view was expressed in favor of a neutral connectivity model, a direct peer-to-peer connection approach. Under this model no discrimination is made between entities exchanging information. Any entity that meets the criteria established can connect and be both a provider and consumer of services.

Figure 4: Neutral Connectivity Model



Any entity that complies with the statewide technical architecture and policies can connect, either to request services or to be a provider of services, or both

The argument in favor of this model was that it has the most flexibility to adapt to California's complex healthcare ecosystem, where many large institutions have significant geographic distribution across California. A further advantage was that any entity can be a shared service provider, making it easier to leverage existing capabilities.

California favors this neutral connectivity model for the above reasons and because further:

- It pushes operations and deployment away from a centralized model and emphasizes governance and coordination at the state level.

- It enables new shared services to be more innovative and more rapidly deployed since any entity is capable of being a shared service provider.

6.2 Approach

The statewide technical architecture to implement the neutral connectivity model is defined by principles, patterns and processes as described below.

6.2.1 Principles

The principles listed below will be followed to achieve a statewide technical architecture that is both flexible and adaptable:

- The process for defining the statewide technical architecture will be open and inclusive, and will emphasize the precise identification of the needs of the community (patients, providers, payors, vendors, government, etc.), the identification of priorities and a clear statement of the value proposition of HIE.

- Aggressively identify and deploy shared services in alignment with "meaningful use" as defined by the federal government. California has substantial capabilities based on the enormous investments already made, and these investments should be leveraged into shared services available on a state wide basis. Priority should be given to those services identified in the ONC State HIE Cooperative Agreement Program: eligibility and claims, electronic prescribing and medication history, lab orders and results delivery, public health reporting, quality reporting, summary exchange. The program further encourages the development of shared infrastructure services such as: MPIs (providers, labs, radiology providers and health plans), patient matching, provider matching, consent management, secure routing, advance directives, and clinical messaging.

- Build upon federal standards and implementation efforts including NHIN and the ONC HIT Standards Committee. These standards are rapidly being adopted by vendors, institutions, and other states, and basing California's approach on these standards will accelerate adoption of the statewide technical architecture. Further, support of these protocols is a requirement to receive ARRA funds.

- Adoption of protocols based on open standards. The statewide technical architecture will adopt a set of protocols at both the system level (e. g. TCP/IP, HTTP, HTML, WS-Security) and in healthcare specific contexts (e. g. HITSP TP13, HITSP C32, HL7 2.5). The use of protocols enables 'loose coupling' so that different systems can proceed with independent development and yet interoperate through the adopted protocols.

- Adopt a set of shared services that manage integration with legacy systems rather than demanding that the integration be placed into the legacy systems.

- Use the latest binding possible. Protocols in healthcare are typically not stable, and to ameliorate this problem the statewide technical architecture will apply the late binding principle at the protocol level to insulate underlying implementation shifts. Late binding allows for flexibility of a system by delaying binding a specific implementation until there is sufficient information to make a precise choice.

- NHIN and federal standards adopted by the ONC HIT Standards Committee and adopted by HHS are necessary but not sufficient to implement a functional network. Policy decisions with technical implications must be addressed, for example: who controls the issuance and revocation of digital certificates used for authentication, and who specifies what models of authentication are implemented within the standards frameworks defined through the ONC HIT Standards Committee and adopted by HHS and implemented in the NHIN. The consent framework specified by the ONC HIT Standards Committee and adopted by HHS and implemented in the NHIN platform will also need to be closely examined and possibly supplemented in order to properly implement California's legal and regulatory requirements for consent and authorization. Many similar issues must be addressed; the essential principle is to recognize the importance of this effort and tackle it through the establishment of appropriate processes.

- Vendor and technology neutrality. This principle is somewhat redundant because the use of open protocols and standards-based approaches assures a large measure of vendor and technology neutrality. It is stated here to emphasize the importance of being diligent around these issues given the dynamism in the marketplace.

6.2.2 Patterns

Architectural patterns describe coherent frameworks that help guide implementations that adhere to the architectural principles. California will base its statewide technical architecture on these patterns:

- Service Oriented Architecture (SOA). SOA is a well understood architectural pattern that defines services implemented by service providers and utilized by service consumers. Interactions between providers and consumers of services are standardized through messaging protocols, enabling widespread interoperability among distributed systems.

- Enterprise Service Bus (ESB). An ESB is an architectural pattern often used to implement SOA. It provides a mediation layer that has advantages when implementing an SOA, including translating various lower-level messaging formats so that service providers and consumers are less dependent upon specific formats, and the use of a service registry to enable late binding between service providers and consumers. These patterns improve interoperability of an SOA.

- A Peer to peer services topology will be considered. This pattern specifies that there are no constraints on the connectivity allowed between service providers and consumers. This is the most flexible connectivity pattern, enabling any service consumer to connect to any service provider. Note that more constrained connection topologies (for example a hierarchical connectivity topology that forces all service consumers to connect through a specified set of network nodes) can be imposed through policy.

6.2.3 Processes

The HIE Governance Entity will bring together California's state and private technical leaders to pursue the following activities:

- Develop a collaborative process with strong technical representation from stakeholders so that the technical architecture is consensus-based and practical.

- Develop use cases that span multiple systems as well as multiple entities to link the statewide technical architecture to the delivery of value in the healthcare environment. Patient-centric use cases must be developed to ensure that implementation maintains a focus on patient involvement and inclusion.

- Prioritize implementation activities to correspond to meaningful use objectives to maximize ARRA funding opportunities.

- Develop the policy guidance for the minimum necessary statewide technical architecture to enable practical implementations based on the architectural patterns, for example specifying service level agreements for service providers.

- Ensure access to Medi-Cal data and other state health IT resources by collaborating with CHHS to create interfaces to these assets that are interoperable through the statewide technical architecture.

- Develop the enforcement mechanisms to ensure adherence with technical and policy guidance.

- Incorporation of universal design principles to ensure access for people with disabilities.

- Identify and prioritize candidate shared services, and coordinate implementation.

- Leverage the collective power of the collaborative to create favorable arrangements with service providers.

- Work with other states that are engaging in similar efforts and incorporate applicable best practices.

7. Legal Policy

7.1 Privacy and Security

California originally adopted state statutes that establish standards for confidentiality of individual health information in 1979 which were significantly amended in 1981. As described in Section 2.4, the California Privacy and Security Advisory Board (CalPSAB) has been established under the auspices of the Secretary of the California Health and Human Services Agency as a platform for collaboration between government and the private sector to develop and propose HIE privacy and security policies for California.

CalOHII has conducted a detailed inventory and analysis of the existing state laws in California that apply to privacy and security of personal health information. , CalPSAB is finalizing a set of initial priority targets to harmonize existing policies and requirements that may be interpreted differently, are not consistent with one another, and may not be uniformly applied. CalPSAB has established a committee structure with a flexible multi-year agenda of tasks to endeavor to resolve the issues being identified.

California believes that it is imperative to develop widely-accepted legal and business rules with uniform consent forms and procedures that will enable the exchange of health information for clinical treatment purposes while assuring confidentiality and security of the information. The conflicting understanding of the law impacts the existing mechanisms and procedures in California and put at risk the efficient and effective exchange of health information.

CalPSAB will address these policy issues by engendering and fostering its statewide collaborative process that will initially result in a set of guidelines to which participants in HIE in California will agree to adhere . CalPSAB will continue to benefit from the experiences in other states where multi-stakeholder collaborative processes have also developed legal rules for the implementation of privacy and security principles in the actual exchange of clinical data, and where contractual mechanisms are being developed to enforce adherence to those rules. The HIE Governance Entity will provide support to the CalPSAB to enhance its collaborative process and, where appropriate, augment its knowledge of other states' efforts.

7.2 Development of Policies and Rules

CalPSAB will utilize its statewide process for further development of statewide privacy and security policy guidance. The HIE Governance Entity will establish a statewide process for development of state HIE policy guidance for legal, technical and business rules, other than privacy and security, such as, but not limited to software/hardware compatibility, data standards, data format, network connectivity, sustainability, fee limitations, disclaimers, user liability not related to privacy and security, indemnifications, insurance, etc . The HIE Governance Entity will oversee the process to develop a contractual framework for assuring adherence to the legal, business and technical rules that are developed through this process and CalPSAB process.

Consistent with the neutral connectivity technical model that California proposes to adopt (see Section 6.1), the HIE Governance Entity is expected to require that participants in the statewide

collaborative process bind themselves by contract to participate in the HIE Governance Entity's processes and to adhere to the statewide policy guidance that is adopted through the two processes described above.

The board of directors of the HIE Governance Entity will have specific "dotted-line" reporting authority to its HIE Policy Process to ensure full coordination of the working group's activities with the regulatory role and agenda of CalPSAB and the Secretary of the Health and Human Services Agency. The HIE Governance Entity's HIE Policy Process working group will be charged with coordinating their work so that CalPSAB's work to date can be leveraged and inform its the statewide collaboration process.

The HIE Policy Process will identify priorities and objectives that will need to be informed by and coordinated through the HIE Governance Entity. When issues of legal conflict or disharmony are identified, the HIE Governance Entity in conjunction with its HIE Policy Process working group will need to collaboratively identify a pathway for resolution, including recommending legislation to CHHS, if necessary. The HIE Policy Process and CalPSAB shall collaborate when priorities and objectives overlap or intertwine.

The objective of this joint work will be to achieve the following:

- Ensure the flow of individual health information to improve the quality of health care while safeguarding the privacy of the information,
- Achieve clarity and uniformity in the application of privacy and security rules,
- Assure security in the exchange of clinical data,
- Harmonize California law, court orders, regulations, guidelines, and federal law,
- Coordinate California's requirements with evolving rules at the federal level, and
- Strive to harmonize disparate requirements of neighboring states to enable efficient administration.

For the CalPSAB, initially the goal is to develop trust and consensus around basic privacy and security principles, propose resolution to current statutory disincentives to permitting data exchange, and advance policies and forms for patient consent. More complex issues such as consumer access and secondary uses of data will then be addressed as part of a set of uniform statewide policies regarding purposes for use and disclosure, authentication, authorization, access. and audit. For the HIE Policy Process, initially the goal will be to develop the contractual framework which will be utilized between entities participating in the HIE.

7.3 Contractual Framework for Enforcement of Privacy and Security Policy

An essential element of a comprehensive and uniform statewide policy framework for the exchange of health information is the foundation of trust that must exist between patients on the one hand and providers and users of data on the other, and among the providers and users of data themselves. California has concluded that the most effective way to establish this level of trust is

to provide an opportunity for participants in HIE to have an open and transparent process for development of policy and to agree to adhere to the policies that result.

California has examined the experience of other states where adherence to common and uniform state policies has been sought to be enforced through the terms of grant agreements governing state funding provisions or as a condition of participation in the use of state resources such as technology platforms. California has concluded that each of those models has deficiencies that can be initially addressed through a contractual model of participation and adherence.

In the contractual model, participants will be invited to participate in the statewide collaboration process to develop legal, business, and technical rules that will govern health information exchange in California. The resulting agreement will require the HIE participants to adhere to the rules that are adopted through this process. A component of the contractual framework may be a common data use and reciprocal services agreement (a "DURSA") so that each HIE participant will know exactly the legal, business, and technical rules, including privacy and security guidelines to which each participant is bound.

The HIE Governance Entity will ensure that appropriate oversight and enforcement mechanisms are established. Mechanisms could include an arbitration forum in which disputes can be resolved, and authority to withdraw access to statewide shared services for a non-conforming data requester, provider, or user.

8. Evaluation

8.1 Overview

Health IT is a potentially transformative yet its value is still largely unproven. Achieving statewide HIE goals is a systems-focused effort, involving multiple stakeholders, and incremental processes. Additional work needs to be done to define the measures and mechanisms that will be used to assess the near term effects and systemic impact of statewide HIE development efforts. The ARRA highlights the importance of supporting health care system improvements e.g., the quality of health care, such as promoting care coordination and improving public health.

California is dedicated to demonstrating that progress has been made toward these ends by employing a robust evaluation program. The goal of the evaluation effort is to demonstrate the economic and quality value of health IT investments and the effects of investments on providers and consumers, determine what is working and what needs to be improved, disseminate these lessons learned broadly within the state as well as at a regional and national level, and iteratively refine health IT in the state.

California will allocate a portion of the funding received through the State Health Information Exchange Cooperative Agreement Program to an independent evaluation process. Likewise, as the long-term funding model is defined, it will include a mechanism to fund on-going evaluation and analysis.

The state and the Governance Entity will work jointly together to define the details of the evaluation process as part of the Operational Plan. In addition, California will leverage technical assistance offered from the federal government. At a minimum, the evaluation process will include:

- Continuous evaluation, reassessment and revision of the state strategic and operational plans.
- An annual evaluation that will be coordinated with the national program evaluation.
- Reporting requirements specified in the State HIE Cooperative Agreement program plus additional reporting requirement identified during the development of the operational plan.
- Performance metrics specified in the State HIE Cooperative Agreement program plus additional performance metrics identified during the development of the operational plan.
- Coordinate with national program evaluation and leverage technical assistance from the federal government for the California evaluation in an effort to implement lessons learned that will ensure appropriate and secure HIE resulting in improvement in quality and efficiency.

8.2 Reporting Requirements

Specific reporting requirements required by the ONC State HIE Cooperative Agreement program are included below. This list will be augmented with additional criteria developed in support of the operational planning effort.

- Governance
  - What proportion of the governing organization is represented by public stakeholders?
  - What proportion of the governing organization is represented by private sector stakeholders?
  - Does the governing organization represent government, public health, hospitals, employers, providers, payers and consumers?
  - Does the state Medicaid agency have a designated governance role in the organization?
  - Has the governing organization adopted a strategic plan for statewide HIT?
  - Has the governing organization approved and started implementation of an operational plan for statewide HIT?
  - Are governing organization meetings posted and open to the public?
  - Do regional HIE initiatives have a designated governance role in the organization?
- Finance
  - Has the organization developed and implemented financial policies and procedures consistent with state and federal requirements?
  - Does organization receive revenue from both public and private organizations?
  - What proportion of the sources of funding to advance statewide HIE services are obtained from federal assistance, state assistance, other charitable contributions, and revenue from HIE services?
  - Of other charitable contributions listed above, what proportion of funding comes from health care providers, employers, health plans, and others (please specify)?
  - Has the organization developed a business plan that includes a financial sustainability plan?

    - Does the governance organization review the budget with the oversight board on a quarterly basis?
    - Does the recipient comply with the Single Audit requirements of OMB?
    - Is there a secure revenue stream to support sustainable business operations throughout and beyond the performance period?
- Technical Infrastructure
    - Is the statewide technical architecture for HIE developed and ready for implementation according to HIE model(s) chosen by the governance organization?
    - Does statewide technical infrastructure integrate state-specific Medicaid management information systems?
    - Does statewide technical infrastructure integrate regional HIE?
    - What proportion of healthcare providers in the state are able to send electronic health information using components of the statewide HIE Technical infrastructure?
    - What proportion of healthcare providers in the state are able to receive electronic health information using components of the statewide HIE Technical infrastructure?
- Business and Technical Operations
    - Is technical assistance available to those developing HIE services?
    - Is the statewide governance organization monitoring and planning for remediation of HIE as necessary throughout the state?
    - What percent of health care providers have access to broadband?
    - What statewide shared services or other statewide technical resources are developed and implemented to address business and technical operations?
- Legal/Policy
    - Has the governance organization developed and implemented privacy policies and procedures consistent with state and federal requirements?
    - How many trust agreements have been signed?
    - Do privacy policies, procedures and trust agreements incorporate provisions allowing for public health data use?

8.3 Performance Measures

Performance measurement is a critical element of continual improvement, particularly in a situation like this where implementation will span several years. As such, the measures will necessarily evolve over time, so that forward progress is accurately identified and charged. This section defines some preliminary measures applicable to the implementation phase of the cooperative agreement. Additional performance measures will be identified as part of the development of the operational plan. This initial set of measures is intended to establish state-specific and national perspectives on the degree of provider participation in HIE enabled state level technical services and the degree to which pharmacies and clinical laboratories are active trading partners in HIE. E-prescribing and laboratory results reporting are two of the most common types of HIE within and across states.

- Percent of providers participating in HIE services enabled by statewide directories or shared services. ONC will negotiate with each state to determine best way to further specify this measure based on the statewide directories and shared services pursued within each state under this program.

- Percent of pharmacies actively supporting electronic prescribing and refill requests.

- Percent of clinical laboratories actively supporting electronic ordering and results reporting.

Recipients will also be required to report on additional measures that will indicate the degree of provider participation in different types of HIE particularly those required for meaningful use. Future areas for performance measures that will be specified in program guidance will include but are not limited to providers' use of electronic prescribing, exchange of clinical summaries among treating providers, immunization, quality and other public health reporting and eligibility checking.

9. Appendices

9.1 Appendix 9.1 - Definition of terms

American Recovery and Reinvestment Act of 2009 (ARRA): is a $787.2 billion stimulus measure, signed by President Obama on February 17, 2009, that provides aid to states and cities, funding for transportation and infrastructure projects, expansion of the Medicaid program to cover more unemployed workers, health IT funding, and personal and business tax breaks, among other provisions designed to "stimulate" the economy.

Centers for Medicare and Medicaid Services (CMS): is a federal agency within the United States Department of Health and Human Services that administers the Medicare program and works in partnership with state governments to administer Medicaid, the State Children's Health Insurance Program (SCHIP), and health insurance portability standards.

Certification Commission for Healthcare IT (CCHIT): is a recognized certification body (RCB) for electronic health records and their networks. It is an independent, voluntary, private-sector initiative, established by the American Health Information Management Association (AHIMA), the Healthcare Information and Management Systems Society (HIMSS), and The National Alliance for Health Information Technology.

Consent: The Health Insurance Portability and Accountability Act Privacy Rule sets out two types of permission that are used to permit a covered entity to use or disclose protected health information: consent and authorization. A written "authorization" is required in certain circumstances, including for most disclosures of psychotherapy notes; to disclose health information for "marketing"; and for uses and disclosures that are not otherwise required or permitted by the privacy regulation. The Privacy Rule, however, generally permits a covered entity to use and disclose protected health information without an individual's authorization for treatment, payment and health care operations, and certain other specified purposes.

The Privacy Rule includes detailed requirements for the authorization form that must be used to obtain authorization when required. All authorization forms must contain certain core elements, including:

- A specific description of the information to be used or disclosed and the purposes of the use or disclosure;
- The identity of the person or class of persons authorized to make the requested use or disclosure;
- The identity of the person or class of persons to whom the covered entity may make the requested use or disclosure;
- A statement of the person's right to revoke the authorization; and
- The signature and date of the authorization.

A general "consent" is permitted but not required for use or disclosure of information for treatment, payment, and health care operations. Covered entities that choose to obtain a patient's consent for use or disclosure of information for treatment, payment, and health care operations have complete discretion in designing their consent form and process. The regulation does not define the term "consent" and does not specify any requirements for the content of consent forms.

Electronic Health Record (EHR): As defined in the ARRA, an Electronic Health Record (EHR) means an electronic record of health-related information on an individual that includes patient demographic and clinical health information, such as medical histories and problem lists; and has the capacity to provide clinical decision support; to support physician order entry; to capture and query information relevant to health care quality; and to exchange electronic health information with, and integrate such information from other sources.

Electronic Prescribing (ePrescribing): A type of computer technology whereby physicians use handheld or personal computer devices to review drug and formulary coverage and to transmit prescriptions to a printer or to a local pharmacy. E-prescribing software can be integrated into existing clinical information systems to allow physician access to patient-specific information to screen for drug interactions and allergies.

Federal Communications Commission (FCC): is the United States government agency charged with regulating interstate and international communications by radio, television, wire, satellite and cable.

Federally-Qualified Health Centers (FQHCs): are "safety net" providers such as community health centers, public housing centers, outpatient health programs funded by the Indian Health Service, and programs serving migrants and the homeless. FQHCs provide their services to all persons regardless of ability to pay, and charge for services on a community board approved sliding-fee scale that is based on patients' family income and size. FQHCs are funded by the federal government under Section 330 of the Public Health Service Act.

Health Information Exchange (HIE): As defined by the Office of the National Coordinator and the National Alliance for Health Information Technology (NAHIT), Health Information Exchange means the electronic movement of health-related information among organizations according to nationally recognized standards.

Health Information Technology (Health IT): As defined in the ARRA, Health Information Technology means hardware, software, integrated technologies or related licenses, intellectual property, upgrades, or packaged solutions sold as services that are designed for or support the use by health care entities or patients for the electronic creation, maintenance, access, or exchange of health information.

Health Information for Economic and Clinical Health (HITECH) Act: collectively refers to the health information technology provisions included at Title XIII of Division A and Title IV of Division B of the ARRA.

Health Insurance Portability and Accountability Act (HIPAA): was enacted by Congress in 1996. Title I of HIPAA protects health insurance coverage for workers and their families when

they change or lose their jobs. Title II of HIPAA, known as the Administrative Simplification (AS) provisions, requires the establishment of national standards for electronic health care transactions and national identifiers for providers, health insurance plans, and employers. The Administration Simplification provisions also address the security and privacy of health data. The standards are meant to improve the efficiency and effectiveness of the nation's health care system by encouraging the widespread use of electronic data interchange in the U.S. health care system.

Health Information Organization: An organization that oversees and governs the exchange of health-related information among organizations according to nationally recognized standards.

Healthcare Information Technology Standards Panel (HITSP): A multi-stakeholder coordinating body designed to provide the process within which stakeholders identify, select, and harmonize standards for communicating and encouraging broad deployment and exchange of healthcare information throughout the healthcare spectrum. The Panel's processes are business process and use-case driven, with decision making based on the needs of all NHIN stakeholders. The Panel's activities are led by the American National Standards Institute (ANSI), a not-for-profit organization that has been coordinating the U.S. voluntary standardization system since 1918.

Interface: A means of interaction between two devices or systems that handle data.

Interoperability: Interoperability means the ability of health information systems to work together within and across organizational boundaries in order to advance the effective delivery of healthcare for individuals and communities.

Meaningful EHR User: As set out in the ARRA, a Meaningful EHR user meets the following requirements: (i) use of a certified EHR technology in a meaningful manner, which includes the use of electronic prescribing; (ii) use of a certified EHR technology that is connected in a manner that provides for the electronic exchange of health information to improve the quality of health care; and (iii) use of a certified EHR technology to submit information on clinical quality and other measures as selected by the Secretary of HHS.

Nationwide Health Information Network (NHIN): A national effort to establish a network to improve the quality and safety of care, reduce errors, increase the speed and accuracy of treatment, improve efficiency, and reduce healthcare costs.

Notification: While the term notification is not directly contemplated in Health Insurance Portability and Accountability Act, the concept of providing notice of privacy practices is. The Privacy Rule requires a covered entity to provide individuals with a written notice describing the entity's privacy practices. Health plans are required to give notice at enrollment and to notify individuals every three years that the privacy practices notice is available. Providers that have a direct treatment relationship with an individual are only required to give notice at the date of the first service delivery; and except in emergency circumstances, must make a good faith effort to obtain a written acknowledgment from the individual of receipt of the notice. Providers must also have notice posted on the premises. Both plans and providers have special notice requirements if their privacy practices change. Clearinghouses acting as business associates of

another covered entity are not required to give notice to patients. The notice must include:

- A description of an individual's rights with respect to protected health information and how the individual may exercise those rights;
- The legal duties of the covered entity;
- A description of the types of uses and disclosures of information that are permitted, including those that are permitted or required without the individual's written authorization;
- How an individual can file complaints with the covered entity and the Secretary of HHS;
- How the covered entity will provide the individual with a revised notice if the notice is changed;
- A contact person for additional information; and
- The date on which the notice is in effect.

Office of the National Coordinator (ONC): serves as principal advisor to the Secretary of HHS on the development, application, and use of health information technology; coordinates HHS's health information technology policies and programs internally and with other relevant executive branch agencies; develops, maintains, and directs the implementation of HHS' strategic plan to guide the nationwide implementation of interoperable health information technology in both the public and private health care sectors, to the extent permitted by law; and provides comments and advice at the request of OMB regarding specific Federal health information technology programs. ONC was established within the Office of the Secretary of HHS in 2004 by Executive Order 13335.

Privacy: In December 2008, the Office of the National Coordinator for Health IT released its "Nationwide Privacy and Security Framework For Electronic Exchange of Individually Identifiable Health Information," ("Framework") in which it defined privacy as, "An individual's interest in protecting his or her individually identifiable health information and the corresponding obligation of those persons and entities that participate in a network for the purposes of electronic exchange of such information, to respect those interests through fair information practices." This language contrasts with the definition of privacy included in the National Committee on Vital and Health Statistics' ("NCVHS") June 2006 report, entitled, "Privacy and Confidentiality in the Nationwide Health Information Network." In its report, NCVHS recommended the following definition for "privacy": "Health information 'privacy' is an individual's right to control the acquisition, uses, or disclosures of his or her identifiable health data."

Regional Health Information Organization (RHIO): A health information organization that brings together healthcare stakeholders within a defined geographic area and governs health information exchange among them for the purpose of improving health and care in that

community.

Regional Health Information Technology Extension Centers (RHITECs): As set out in the ARRA, Regional Health Information Technology Extension Centers will be established and may qualify for funding under ARRA to provide technical assistance and disseminate best practices and other information learned from the Health Information Technology Research Center to aid health care providers with the adoption of health information technology.

State-Designated Entities (SDEs): As defined in the ARRA, State-Designated Entities (SDEs) may be designated by a State as eligible to receive grants under Section 3013 of the ARRA. To qualify as an SDE, an entity must be a not-for-profit entity with broad stakeholder representation on its governing board; demonstrate that one of its principal goals is to use information technology to improve health care quality and efficiency through the authorized and secure electronic exchange and use of health information; adopt nondiscrimination and conflict of interest policies that demonstrate a commitment to open, fair, and nondiscriminatory participation by stakeholders; and conform to other requirements as specified by HHS.

Security: The Health Insurance Portability and Accountability Act Security rule defines "Security or Security measures" as "encompass[ing] all of the administrative, physical, and technical safeguards in an information system.

U.S. Department of Health and Human Services (HHS): is the federal government agency responsible for protecting the health of all Americans and providing essential human services. HHS, through CMS, administers the Medicare (health insurance for elderly and disabled Americans) and Medicaid (health insurance for low-income people) programs, among others.

9.2 Appendix 9.2 - List of Proposed Requirements for Governance Board

- Organizational
    - Not-for-profit organization under California law
    - Diverse board composition from multiple types of organizations from multiple regions throughout the state
    - Board must include: Secretary of HHSA, the Deputy Secretary of HIT and representatives from the Senate and the Assembly as voting members of the HIE Governance Entity
    - Experienced and qualified executive management team and staff, who act under the direction of the Organization's Board of Directors to address privacy and security, technical approach and health IT adoption
    - Adequate workgroups and subcommittees to reasonably accomplish the goals established in the State's Strategic Plan on for HIT/HIE.
    - Demonstration that one of its principle goals is to use information technology to improve health care quality and efficiency through the authorized and secure

electronic exchange and use of health information

- Commitment to protect the public's interests and ensure accountability of HIEs in the state
- Nondiscrimination and conflict of interest policies that demonstrate a commitment to open, fair and nondiscriminatory participation by stakeholders
- Does not directly operate a HIE or have any financial stake in a HIE or HIE vendor.
- Articles of Incorporation and Bylaws will clearly describe who the members are, how members are selected, and the powers that members will have.
- Appropriate insurance
- Trusted, independent voice that can reflect a diverse array of interests and perspectives on key policies and standards
- Ability to convene and facilitate multiple collaborative workgroups, including:
  - Health Outcomes
  - Privacy and Security
  - Technical Approach
  - Sustainability

- Health IT Adoption
  - Ability to convene workgroups that include membership from all regions of California
  - Experience with outreach and advocacy, specifically the advocacy of HIE
  - Recognized as an educator and information resource for HIE and health IT efforts
  - Commitment to implementation of transparent workgroup and convening efforts
- Health Outcomes
  - Support the integration of HIE efforts with other healthcare goals, objectives and initiatives
  - Ensure that entity activities support California's 2010 and 2020 health outcome goals
  - Ensure that entity activities incorporate regional variation

    - Assess candidate services and use cases and develop strategy that best meets the needs of the most patients.

- Privacy and Security
    - Coordinate with CalPSAB to define privacy and security policy and guidance
    - Ability to monitor implementation of California's privacy and security policy and guidance and, if appropriate, enforce them
    - Demonstrated knowledge and experience of existing privacy and security issues
    - Ability to manage policy monitoring and development on an ongoing basis

- Management
    - Demonstrated ability to acquire and train appropriate resources
    - Experience in issuing and managing multiple grants in excess of $1,000,000 each.
    - Experience in managing contracts for various types of services including:
        - Technology
        - Legal
        - Administrative
        - Professional
    - Appropriate strategies to facilitate the alignment of statewide, interstate and national HIE strategies
    - Appropriate strategies to facilitate the alignment of statewide, interstate and national HIE strategies
    - Appropriate strategies to coordinate HIE efforts with other CA health IT efforts, including Medi-Cal, public health, RECs, workforce, etc.
    - Implement a dispute resolution mechanism to adequately and appropriately reconcile divergent opinions and perspectives

- Evaluation and Assessment
    - Evaluation and assessment experience in complex programmatic and fiscal environments focused on health improvement.
    - Assess the quality improvement benefits created through HIE efforts within the state

- Develop evaluation and accountability measures and framework for HIE implementation and health IT initiatives
- Continually track and report on progress of HIE and health IT initiatives
- Track, assess and maintain inventory of stakeholder activities

- Financial
  - Experience in development and administration of grant-making processes consistent with state and Federal Guidelines
  - Proven experience with raising funds from multiple sources – both public and private
  - Robust administrative and financial process, including adherence to GAAP and all federal and state laws

- Technical
  - Ability to track, assess and align California efforts with national HIE and health IT efforts
  - Experience in developing complex use cases that span multiple systems as well as multiple entities
  - Ability to enforce technology policies and practices
  - Ability to define, prioritize, select, leverage and manage shared health it services across a wide range of stakeholders
  - Recognized technical expertise on staff

9.3 Appendix 9.3 - Interview Protocol and List of Interviewees

Hospital/Health Systems

Project Purpose

The State is partnering with the California HealthCare Foundation (CHCF) to undertake a time-limited process that will strengthen California's ability to maximize federal HIE/HIT funding. The product of this collaborative effort will be a plan that describes the state role in the operation and governance of health information exchange (HIE), either through direct management or through the use of a "State Designated Entity". Our goal is to maximize the state's competitiveness in applying for HIE implementation funding from the ARRA's Health Information Technology for Economic and Clinical Health Act (HITECH). CHCF has selected Manatt Health Solutions, a division of Manatt, Phelps and Philips, to facilitate the project.

As a Health System and healthcare stakeholder your perspective is critical.

(1) Learn more about your current and planned activities;

(2) Understand your perspectives on statewide initiatives; and

(3) Understand what role you believe the State should play in supporting local exchanges now, and during the implementation process (assuming Federal HITECH implementation funding is obtained)

A. Organization Information

Current Organization Structure

A1. How are you structurally organized? How are your physician relationships managed. Please describe other relationships with third party organizations / affiliated groups.

A2. Where are your head-quarters and primary offices located? Where are your facilities located and what is your general footprint in CA / outside of CA?

A3. Please describe in general how decisions regarding health IT (financial, strategic, resources, etc) are made collectively as a system versus at an individual facility level.

Stimulus and HIE

A4. How do you believe your organization will benefit from Medicare and Medi-Cal payment incentives for EHR adoption? Is your organization assisting providers with preparation for meaningful use? If so, how? Is participation mandatory for providers? What is the current level of adoption?

A5. How is your organization participating in health information exchange (HIE) activities? What organizations, if any, are you exchanging information? How is your interaction with other initiatives at the regional and state level governed?

A6. Within your organization what enforcement procedures for compliance with HIE rules or agreements do you have? How has your organization managed compliance with State and Federal privacy statutes and regulations?

A7. Do you anticipate undergoing significant changes with respect to HITECH and if so what specifically are you doing to prepare?

State

A8. What should the State's role be in determining statewide or regional governance for health information exchange? How can the State ensure that the needs of local HIE initiatives have adequate representation in funding decisions and priorities?

A9. Should the governance of State HIE be vested in a State agency, in a statewide not-for-profit that is designated by the State (a "State Designated Entity" or "SDE"), in a combination or hybrid of the two or in none of the above? What should the Governance Board for this HIE look like? Please explain.

A10. Should there be an Advisory Board that serves as a forum for stakeholders to express their views and coalesce around recommendations? What should be the State's role on

such an Advisory Body? Are there other mechanisms that could be used to get input from other stakeholders?

A11. What do you see happening in other states in which you operate? What components would you like to see in CA? What components would you want CA to do differently?

B. Technology Approach

Technical Approach to HIE

B1. Does your organization have a role in providing technical services to providers? If so, please describe type of services and organizations to whom you provide technical services

B2. How many organizations/users do you currently electronically exchange health information? Do you electronically send data to county health department or to the state? Please describe the type of data and how it is exchanged?

B3. What is your average daily volume of data exchanged with outside organizations?

B4. What data is currently being shared electronically? What do you expect to be shared within the next six months?

a. What networks are you a part of (e.g. SureScripts, direct connections, clearinghouses, etc)? What has your experience with connectivity and exchange been?
b. What networks would you consider participating in?

B5. What technical approaches are you using to implement your architecture? (e.g., WS-Security, SAML tokens), HITSP messaging formats – your 'technology stack')

c. What standards do you use for data?
d. What standards do you use for messaging?
e. How do these standards address interoperability?
f. Do you currently support interfaces with community-based EHR enabled providers? If so are those interfaces bi-directional?
g. What are the requirements for organizations/providers to provide information into your HIE?
h. What is the current state of your technical architecture? Which components do you have implemented? When were they implemented / or planned to be implemented?

B6. Which vendors are providing the various components of your HIE service?

i. What product version are you using?
j. Are the vendor/products CCHIT certified? SureScripts certified?

B7. What other care coordination or data sharing projects or initiatives are you participating in currently? In the past? Plan to participate in? (e.g. broadband and telehealth)

C. Clinical Priorities

HIE Clinical Priorities

C1. What are your organizations primary clinical objectives for HIE? How were these selected? What other clinical objectives were considered?

State

C2. What should the State's role be in determining clinical priorities for the state and at a regional level?

C3. What clinical priorities should be addressed at the state level? Regional level? Facility level? How should these be prioritized and implemented?

D. Privacy and Security

D1. Should patients have a right to entirely exclude their data from being exchanged? Should there be an opt-in our opt-out strategy in place? Should there be a break-the-glass clause? Can patients access their own data electronically? If so is there a mechanism for them to control and/or request/require incorrect data to be corrected?

D2. For what purposes can patient information currently be accessed? Are there permitted uses beyond diagnosis and treatment? What policy/mechanism exists as to assuring the "minimum necessary" standard?

D3. Do you have a process for using de-identified data for research purposes? For the development of best practices or other policy decisions?

D4. What do you see at the biggest issues in privacy and security around HIE in a hospital setting?

State

D5. What privacy policies and security procedures should be established and governed at a state-level?

D6. What privacy policies and security procedures should be established and governed at the local level?

D7. Is there a role for "safe harbors" clauses to aid HIE?

D8. What should the State's role be in addressing privacy and security policies for health information exchange at a statewide and regional level?

D9. To what extent have you or members of your organization participated in the California Privacy and Security Advisory Board (CalPSAB)? If yes, what role do you see the PSAB playing going forward that would best support health information exchange across the State?

E. Financing

F1. What is the ballpark of dollars that you have spent to implement Health IT such as EMR/EHR, CPOE, Etc.?

F2. What were the capital build cost that were incurred, or are expected to be incurred, in order to share health information outside of your organization?

F3. What are the costs, or expected costs, of ongoing operations associated with sharing health information outside of your organization?

F4. How do you believe your organization will benefit from Medicare and Medi-Cal payment incentives for EHR adoption?

F5. Do you see your organization benefiting from HIE and having broader access to patient information? Where do you see the benefit accruing? How?

State

F6. What should the State's role be in determining a statewide or regional HIE financing model?

F7. What is the role of the State in ensuring access to stimulus funds?

F8. What is the role of the State in a statewide HIE sustainability model?

G. Wrap Up/Overall Recommendations

G1. What recommendations would you provide the State as it considers how to approach stimulus funding?

Local Initiatives

Project Purpose

The State is partnering with the California HealthCare Foundation (CHCF) to undertake a time-limited process that will strengthen California's ability to maximize federal HIE/HIT funding. The product of this collaborative effort will be a plan that describes the state role in the operation and governance of health information exchange (HIE), either through direct management or through the use of a "State Designated Entity". Our goal is to maximize the state's competitiveness in applying for HIE implementation funding from the ARRA's Health Information Technology for Economic and Clinical Health Act (HITECH). CHCF has selected Manatt Health Solutions, a division of Manatt, Phelps and Philips, to facilitate the project.

A critical element of this process is ensuring that we fully understand the current state and future plans of significant HIE implementation projects currently underway in California. We are particularly interested in learning about the stage of implementation of each project and specific functionality such as: e-prescribing, EHR adoption, electronic laboratory results reporting, clinical data exchange, administrative payment processing, as well as technical architecture, involvement of key stakeholders, number of people, and regions served.

As a local HIE initiative your perspective is critical.

On today's call we would like to:

(1) Learn more about your current and planned activities;

(2) Understand your perspectives on statewide initiatives; and

(3) Discuss your challenges, and suggestions for moving forward.

(4) Understand what role you believe the State should play in supporting local exchanges now, and during the implementation process (assuming Federal HITECH implementation funding is obtained)

A. Governance

Current Organization Structure

A1. Within your organization what is the process for decision-making? What authority/control does the organization have over its participants? What is the relationship between the operating exchange (and if there's a separate organization, that entity) and the participants (i.e., the data providers)?

A2. Who are the key stakeholder organizations/participants in your organization? How do you incorporate stakeholder feedback into your process? How are consumers engaged in your process, if at all?

A3. What is the composition of your Board of Directors? How is that composition determined?

A4. Within your organization what enforcement procedures for compliance with HIE rules or agreements do you have? How has your organization managed to comply with State and Federal privacy statutes and regulations, enforce those policies, and assure participants of their liability concerns with respect to potential privacy and security breaches?

A5. Does your organization maintain business associate agreements or contracts with other organizations? If so, with what organizations? Is your organization always the business associate?

A6. How is your interaction with other initiatives at the regional and state level governed?

A7. Is your organization preparing for significant changes with respect to HITECH and if so what specifically are you doing to prepare? Are there restrictions or limitations on your structure?

A8. Have you assessed your members' qualifications for meaningful use (e.g. Medicare and Medi-Cal)?

A9. Does your organization carry insurance? If yes, can you provide us with coverage information and your insurer's name?

State

A10. What should the State's role be in determining statewide or regional governance for health information exchange? How can the State ensure that the needs of local HIE initiatives (yours and others not yet operational) have adequate representation in funding decisions and priorities?

A11. What is the natural jurisdiction around which an HIE should be organized (e.g., nation, state, region, etc)? What form of jurisdiction will best position an HIE to benefit from federal and other available grant funding?

A12. Should the governance of the State HIE be vested in a State agency, in a statewide not-for-profit that is designated by the State (a "State Designated Entity" or "SDE"), in a combination or hybrid of the two or in none of the above? What should the Governance Board for this HIE look like? Please explain.

A13. Should there be an Advisory Board that serves as a forum for stakeholders to express their views and coalesce around recommendations? What should be the State's role on such an Advisory Body? Are there other mechanisms that could be used to get input from other stakeholders?

B. Clinical, Financial and Administrative Priorities

Clinical Priorities

B1. What are the primary clinical objectives of your HIE? How were these selected? What other clinical objectives were considered? (e.g. medication management, emergency room results viewing, medical home)

B2. Please describe your clinical use cases. What is the timeline around their implementation? What stakeholders will participate in their implementation?

B3. What factors influenced your selection and sequencing of use cases? Have these changed or been influenced by HITECH?

B4. Have you created an evaluation plan? How will you measure and monitor outcomes?

Financial and Administrative

B5. Does your support financial or administrative transactions? If so what types currently, or are planned/future (e.g., claims, eligibility, enrollment, etc.)

B6. Has there been any evaluation of operational/financial gains attributable to the exchanges supporting financial/administrative transactions?

State

B7. What should the State's role be in determining clinical priorities for the state and at a regional level?

B8. What clinical priorities should be addressed at the state level? Regional level? How should these be prioritized and implemented?

C. Technology Approach

Technical Approach

C1. What is the architectural model for your health information exchange? What are the most important motivations for choosing this model? What other approaches or models did you consider?

C2. What functionalities/services are you currently providing through your initiative? What do you expect to provide within the next six months? 12 months? What functionalities are most critical to your participants?

C3. How many organizations/users are connected to your exchange? What is your average daily transaction volume? What is the on-boarding process for organizations and providers?

C4. What data is currently being shared electronically through your health information exchange? What do you expect to be shared within the next six months?

k. What networks are you a part of (e.g. SureScripts, direct connections, clearinghouses, etc)? What has your experience with connectivity and exchange been?
l. What networks would you consider participating in?

C5. What technical approaches are you using to implement your architecture? (e.g., WS-Security, SAML tokens), HITSP messaging formats – your 'technology stack')

m. What standards do you use for data?
n. What standards do you use for messaging?
o. How do these standards address interoperability?
p. Do you currently support interfaces with community-based EHR enabled providers? If so are those interfaces bi-directional?
q. What are the requirements for organizations/providers to provide information into your HIE?

C6. Which vendors are providing the various components of your HIE service?

r. What product version are you using?
s. Are the vendor/products CCHIT certified? SureScripts certified?

C7. What other technical projects or initiatives are you participating in currently? In the past? Plan to participate in? (e.g. broadband and telehealth)

C8. What are you doing to prepare your members to achieve EHR meaningful use?

C9. Do you currently connect to or plan to connect to other initiatives/HIEs? If so, what is your technical approach? Have you successfully tested connections to the NHIN gateway?

C10. Please describe your architecture's ability to scale without degradation of services.

State

C11. What is the State's role in determining architectural principles and data exchange requirements?

C12. Does the State have a role in providing technical services? How do you envision such services being leveraged at a regional level?

C13. How do you envision the State interacting with regional deployments?

D. Privacy and Security

Privacy and Security

This section addresses privacy and security policies. If possible, please provide us with a copy of your current privacy and security policies in advance of our call. Please note that we cannot guarantee the confidentiality of documents should you provide them.

D10. In developing your privacy and security policies, did you refer to or model any of your policies on existing policies or available guidance?

D11. Do your protocols require affirmative patient consent for data suppliers to make available (i.e., upload) patient data, demographic or clinical, to the exchange?

D12. Do your protocols require affirmative patient consent for providers to access patient data, demographic or clinical, that has been made available to the exchange?

D13. Do patients have a right to entirely exclude their data from the exchange? Is there an opt-in our opt-out strategy in place? in development? If yes, why did you select this model? Is there a break-the-glass clause? Can patients access their own data? If so is there a mechanism for them to control and/or request/require incorrect data to be corrected?

D14. What policies do you have regarding authentication and authorization?

D15. What are your audit policies internally? What audit policies do you require business associates or partners to comply with?

D16. Does the HIE provide for role-based access?

D17. Do you filter data? If so, what data is filtered and on what criteria? Why do you filter data?

D18. Which categories of individuals/entities are eligible for access to the HIE?

D19. What policies are in place regarding dissemination of patient information beyond the local HIE?

D20. What policies do you have with respect to the dissemination of patient information across state borders? Have you established any protocols with providers in neighboring states? How do you handle differing state laws and policies?

D21. For what purposes can patient information currently be accessed? Are there permitted uses beyond diagnosis and treatment? What policy/mechanism exists as to assuring the "minimum necessary" standard?

D22. Have you established a de-identification policy/mechanism?

D23. Do you have any policies related to data use for researchers?

D24. What are your "security incident"/breach procedures? Remedies?

D25. Do you have a process for using de-identified data for research purposes? For the development of best practices or other policy decisions?

State

D26. What privacy policies and security procedures should be established and governed at a state-level?

D27. What privacy policies and security procedures should be established and governed at the local level?

D28. Is there a role for "safe harbors" clauses to aid HIE?

D29. What should the State's role be in addressing privacy and security policies for health information exchange at a statewide and regional level?

D30. To what extent have you or members of your organization participated in the California Privacy and Security Advisory Board (CalPSAB)? If yes, what role do you see the PSAB playing going forward that would best support health information exchange across the State?

E. Financing

E1. Do you have a current business plan and financial model that you can share with us?

E2. What is the estimated amount of funding required for the "capital" build of your HIE? What is the estimated amount of funding required to support HIE growth? Do you anticipate accessing HITECH funds for any of your planned capital and ongoing expenses?

E3. What have been the primary sources of funding for the "capital" build?

E4. What is the estimated amount of funding required for ongoing operations?

E5. What are the anticipated sources of funding for ongoing operations?

E6. When do you anticipate your organization will be financially sustainable? What will sustainability require? What is the scalability of your model?

E7. Are you providing or planning to provide incentives or requirements for: Adoption? Implementation? Ongoing maintenance? How do you expect these incentives to be allocated?

E8. Have you performed an ROI analysis? Do you employ a shared-savings model? How would you account for and measure ROI/shared savings in a manner that would satisfy a third party?

State

E9. What should the State's role be in determining a statewide or regional HIE financing model?

E10. How do you believe your organization will benefit from Medicare and Medi-Cal payment incentives for EHR adoption?

E11. What is the role of the State in ensuring access to stimulus funds?

E12. What is the role of the State in a statewide HIE sustainability model?

F. Wrap Up/Overall Recommendations

F1. What recommendations would you provide the State as it considers how to approach stimulus funding?

Organization	Name, Title
Health Information Exchanges (HIEs)	
Access El Dorado (ACCEL)	Sandra Dunn, Project Manager
California Telehealth Network	Cathryn Nation, Co-Chair David Harry, Associate Project Coordinator
CalRHIO	Molly Coye, Board Chair Melanie Allison, CTO
EKCITA	Kiki Nocella, Principle Investigator Jami Young, Assistant Administrator
Health-e-LA	Jim Crawford, Board Chair Katherine Johnson, Project Director
Long Beach Network for Health	Laura Landry, Executive Director Mark Danziger, CTO
OCPRHIO	Nova Stewart, Board Chair
Redwood MedNet	Will Ross, COO
Santa Cruz RHIO	Bob Keet, Member Bill Beighe, CIO, Physicians Medical Group
Health Systems	
Adventist	Greg McGovern, CTO
Catholic Healthcare West	Wade Rose, Vice President for External and Government Relations Ben Williams, Senior Vice President & CIO
Kaiser	Jamie Ferguson, Executive Director of Health IT Strategy Lori Potter, Counsel
St. Joseph's	Larry Stofko, CIO
SutterHealth	Pat Fry, President & CEO
Tenet HealthSystem	Steve Brown, Executive Vice President & CIO

9.4 Appendix 9.4 - State Profiles IN, NY, TN

1. Tennessee's Healthcare Landscape

Tennessee's population in July of 2005 was 5,962,959, up 4.8 percent from the 2000 Census. During the 1990s, the population in Tennessee increased by 16.7 percent.[30] More than half of the state's population resides in rural areas (95 counties, 67 are rural).

Tennessee ranked 47th in healthcare in 2008; it was 46th in 2007.[31] Strengths include moderate immunization coverage with 80.5 percent of children ages 19 to 35 months receiving complete immunizations, moderate public health funding at $81 per person, ready access to primary care with 121.6 primary care physicians per 100,000 population and a moderate rate of uninsured population at 14.0 percent.

Challenges include a high prevalence of smoking at 24.3 percent of the population, a high prevalence of obesity at 30.7 percent of the population, many preventable hospitalizations with 97.8 discharges per 1,000 Medicare enrollees, high levels of air pollution at 14.7 micrograms of fine particulate per cubic meter, a high violent crime rate at 753 offenses per 100,000 population and a high infant mortality rate at 9.5 deaths per 1,000 live births.

Tennessee has three distinct geographic regions – eastern, central, and western – with very different cultures and populations. Another important feature with respect to Tennessee's healthcare landscape is that it borders eight states, and consequently patients, providers, and financing flows across jurisdictional lines.

Providers

There are 127 hospitals in Tennessee, 55 of which are located in rural areas.[32] The state has 16 hospitals currently identified by the Flex Monitoring Team as Critical Access Hospitals.

In 2004, the hospital ownership breakdown was:

- 19% owned by State/Local Government
- 50% non-Profit
- 31% for-Profit

In 2004, there were 5,763 primary care providers in Tennessee.

There are 61 Rural Health Clinics in Tennessee (CMS, 2008), and 23 Federally Qualified Health Centers provide services at 127 sites in the state (Kaiser, 2006).

[30] Nationally, population increased 13.1 percent during the 1990s and 5.3 percent from April 2000 to July 2005.
[31] Source: America's Health Rankings. http://www.americashealthrankings.org/2008/overview.html.
[32] North Carolina Rural Health Research and Policy Analysis Center, 2007

Payers

Approximately 14% of Tennesseans are uninsured, and approximately one-third are enrolled in public health insurance programs.[33]

In 2004, the private payer profile was:[34]

- 43% BlueCross BlueShield of Tennessee
- 11% United Health Group
- 8% Aetna
- 8% Cigna

2. Tennessee's Statewide Health Information Exchange Activities

Overview and Status

Tennessee is a leader in advancing efforts to use health information technology (IT) to improve the quality, efficiency, safety and effectiveness of healthcare. Tennessee's progress has been built on: (1) a strong commitment to protect patient privacy; (2) a financing approach that leverages competitive interests, builds opportunities for collaboration, and blends public and private funding; (3) a diverse portfolio of established and emerging local health information exchange (HIE) initiatives; and (4) financial support for providers to acquire and integrate advanced health information technology (IT) into their practices.

Tennessee's commitment to eHealth was officially launched in Governor Bredesen's inaugural speech in 2003, when he announced his intentions to reform healthcare through the use of IT. The State's eHealth efforts have been guided by the Department of Finance and Administration, though the Office of e-Health Initiatives. Since 2006, the Department of Finance and Administration has been advised by Tennessee's eHealth Advisory Council.[35]

Over the last four years, the State has made substantial investments, matched by local financial and volunteer contributions, to develop the policy and technical foundation for Tennessee's eHealth efforts. Significant milestones are noted below.

- In 2004, Tennessee formally began this process when the MidSouth eHealth Alliance (MSeHA), a Memphis-area RHIO, was created with a multiyear grant of $4.8 million federal from the federal Agency for Healthcare Research and Quality, $7.2 million in state funding, and in-kind contributions from Vanderbilt University.

- In 2005, Tennessee's Medicaid program, TennCare, contracted with Shared Health, a wholly owned subsidiary of BlueCross BlueShield of Tennessee, to provide clinical

[33] (Kaiser, 2005-2006).
[34] Source: Health Affairs, Volume 23, Number 6; Health Plan Consolidation and Competition; Data from Goldman Sachs Global Equity Research; InterStudy HMO Directory; InterStudy PPO Performance Report; and company data. November/December 2004.
[35] Details on the are available online at http://www.tennesseeanytime.org/ehealth/advisoryCouncil.html.

health records based on claims data for all TennCare enrollees. Sharing data among practitioners since June 2006, Shared Health has now amassed records for almost 2 million Tennesseans, or one-third of the state's population.

- In 2006, Governor Bredesen issued Executive Order 35 to create Tennessee's eHealth Advisory Council.[36] The eHealth Advisory Council serves as an educational forum and advisory body to the Department of Finance and Administration. The eHealth Advisory Council includes public and private stakeholders from across the state, representing payers, employers, providers, and HIEs. The inaugural meeting took place on June 26, 2006 and was chaired by Governor Bredesen and Department of Finance and Administration Commissioner David Goetz.

- In 2007, eHealth Initiatives partnered with the Department of Health and the Community Health Network, using $1.6 million in state funds and $364,000 in United States Department of Agriculture funds, to establish the Tennessee TeleHealth Network and provide secure high-speed broadband connectivity to Tennessee's 45 federally qualified health centers. This same team of partners also secured $1.6 million from HRSA to develop the Middle Tennessee Rural Health Information Network connecting four rural hospitals and a community clinic for data exchange.

- In 2008, eHealth Initiatives began disbursing $10 million in state funds to physician practices and clinics statewide to drive adoption and use of the "Tennessee eHealth Exchange Zone." These grants include connectivity via the state's secure, private broadband network, as well as seed money for eprescribing or EMR applications.

Governance Framework

State government, through the Department of Finance and Administration and its Office of eHealth Initiatives, serves as the single coordinating authority for the exchange of eHealth information across the State of Tennessee in the public and private sectors.

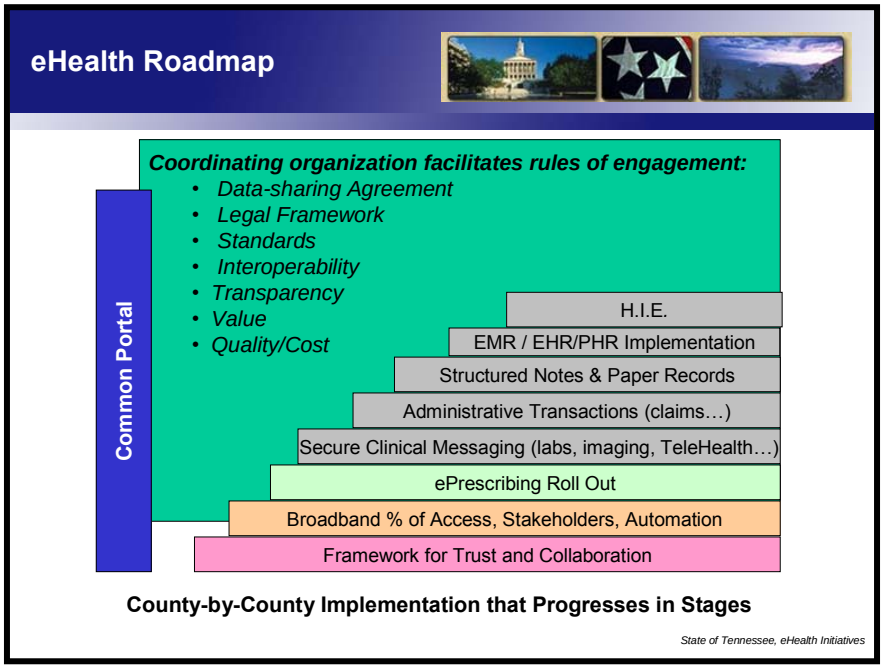
The Office of eHealth Initiatives also serves as a central coordinating point among Tennessee Departments through its authority to review all healthcare contracts to ensure their continuity with the broader eHealth agenda. Operational responsibility for the State's technical resources and contracts is through the Department of Finance and Administration's Office of Information Resources.

The State government is supported by a private and public sector healthcare stakeholders through the eHealth Advisory Council, established in 2006 by Executive Order. The eHealth Advisory Council is chaired by the Commissioner of Finance and Administration and includes 16 additional members appointed by the Governor. The eHealth Advisory Council is charged with advising and supporting the State of Tennessee as it develops and implements an overall strategy for the adoption and use of electronic medical records and shall create a plan to promote their use by all healthcare stakeholders. The eHealth Advisory Council acts by a vote of the majority of its members, which include members of the Tennessee provider community, employers, regional

[36] Available online at http://www.tennesseeanytime.org/ehealth/documents/ExecutiveOrder35.pdf.

healthcare information organizations, payers, and consumer groups. The eHealth Advisory Council does not have fixed categories of membership.

In 2008, the Tennessee's eHealth Council established the following road map to guide stepwise progression toward the ultimate goal of having longitudinal EHRs for all Tennesseans.



Governance Within Other HIE Efforts

Tennessee has two well-developed and operational regional initiatives, the MidSouth eHealth Alliance and CareSpark, and a number of other less-developed efforts below the State level.

MidSouth and CareSpark both have well developed governance structures including operating committees or working groups that have subject matter mandates. Both also emphasize the importance of serving "natural marketplaces" of patients which often cross state lines. Both have devoted significant efforts to their respective initiatives and, while they seek additional governmental support for their efforts, they would not favor the imposition of State policy that would undercut their existing structures and relationships or that would artificially limit their ability to develop across State lines. MidSouth and CareSpark view themselves less as building blocks in a larger "network of networks" than as independent solutions that could expand to serve larger populations. Neither views itself as having any geographic limitations. MidSouth in particular views itself as having built a low-cost technology solution (which it estimates costs approximately $2.50 per patient per year) that needs a few additional components (such as access to Medicaid clinical data) to be self sufficient.

CareSpark and MidSouth serve opposite ends of a very large state and have almost no connection one with the other (in a digital sense or any other). Many geographic areas of the State that lie between the areas served by these two organizations are not served by developing HIE organizations. Considerable effort and investment has been dedicated to the Innovation

Health Information Network ("IVhin") based in Knoxville. IVhin is currently facing challenges of self-definition and sustainable financing and is considering affiliating itself with another organization.

Privacy and Security

Tennessee has few laws directly addressing Privacy and Security, HIPAA provides the basic framework. Extensive review of State laws has identified those laws and regulations that might prevent, hinder or clarify the exchange of health care information. Generically, the categories of information receiving special protection include: AIDS/HIV, Alcohol/Drug Use, Family Planning/Minor Abortions, Genetic Testing, STDs, Mental Health, and Child Rape.

Each of the three operational HIEs (i.e., CareSpark, MidSouth eHealth Alliance, and Shared Health) have each independently derived Privacy and Security guidelines, which vary on certain key issues reflecting the organizations' differing perspectives. Core issues on which these HIEs policies diverge include:

- ***Opt In/Opt Out*** – While two of the exchanges have Opt Out policies, a third offers its participants the option to choose either an Opt In or an Opt Out approach.

- ***Standard Form Documents for Consent and Notification*** – While some entities have standardized these documents, others leave the forms to be determined by its participants based on general guidelines.

- ***"Break the Glass" procedures*** – At least one exchange has elected not to implement such procedures.

- ***Authorized Use of Shared Data*** – Degree of permitted use varies among three leading RHIOs, ranging from treatment only, to full range of HIPAA sanctioned uses for treatment, payment or operations.

- ***Patient Access to EMR*** – One exchange allows direct patient access, the others require access to be obtained by request to participants.

- ***Nature of Data collected*** – Ranges from full set of clinical data to solely claims-based data.

- ***Role-based Access*** – One of the operational HIE has not embraced role-based access, while others have.

- ***Consent and Notification*** – There are no consent or notification documents common to the three operational HIEs.

Given Tennessee's eight bordering states and cross-border RHIO service areas, the development of State-wide Privacy policies will need to recognize the importance of interstate agreements and

coordination. Both CareSpark and MidSouth have had to address cross-border issues in formulating Privacy policies because of multi-state service areas.

The State of Tennessee is in the process of developing statewide privacy and security policies. At this time, TennCare, the State Medicaid Agency, has an opt out policy. Details on TennCare's privacy policies and documents are available at:

- TennCare has an opt-out notice: http://state.tn.us/tenncare/forms/tn246sh.pdf
- TennCare Notice of Privacy Practices: http://state.tn.us/tenncare/forms/notice.pdf
- Privacy policies http://state.tn.us/tenncare/leg-policies.html
- Sanctions http://tennessee.gov/tenncare/forms/hip06004.pdf

Statewide Technical Approach to HIE

The Tennessee State government also supports the development of the network infrastructure to support the growth and use of health IT. In 2006, the State negotiated a renewal of its agreement with AT&T for the provision of the Tennessee Information Infrastructure (TNII), the secure, statewide broadband infrastructure that connects hundreds of state agencies, local governments and educational institutions in Tennessee.

Tennessee eHealth Network

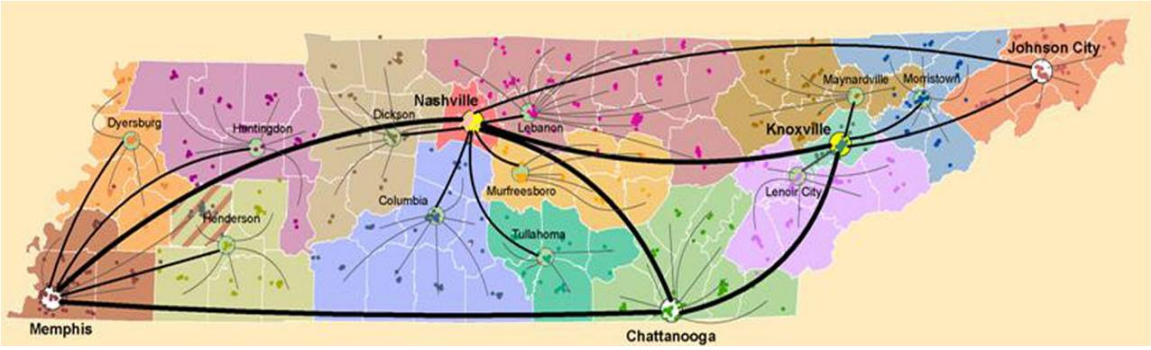
In 2007, in an effort to ensure ubiquitous access to broadband telecommunications, the State negotiated a renewal of its agreement with AT&T for the provision of its statewide production network, NetTN. NetTN provides a secure, statewide broadband infrastructure to hundreds of state agencies, local governments and educational institutions in Tennessee.

Through the renegotiated NetTN contract, Tennessee is developing a secure private network for authorized physicians called the "Tennessee eHealth Network." The Tennessee eHealth Network offers high-speed broadband capabilities with security protocols and service performance level guarantees to practitioners at State negotiated rates. Working with stakeholders across the State, the Department of Finance and Administration is developing plans to expand the eHealth Network to provide enhanced information services, including the ability to access State registries.

With respect to its technical design, the Tennessee eHealth Network is closed network and will provide services to enable HIE. State government assets will be available over the eHealth Network for authorized users. For users coming from another exchange, integration using credential passing via security assertion markup language ("SAML") tokens will be supported. A portal will also be available for those not able to connect through another exchange. Plans are under consideration to enable remote access via a VPN connection for authorized users.
A statewide index will be offered as service on the eHealth Network consisting of three distinct indexes for patients, providers and facilities. This statewide index will be used to facilitate access across state government information sources and across institutions and exchanges throughout Tennessee as well as supporting secure messaging. The State plans to purchase a license to accommodate all Tennesseans within a MPI, and institutions can make use of this license to create their own MPI. This is expected to be very helpful for the many institutions

without any MPI. Those with existing MPIs may elect to keep their own and integrate or to migrate and take advantage of the state MPI license if they wish to for cost advantage or other purposes.

The eHealth Network will also provide a document registry service to enable linking of documents from institutions and exchanges, and managing documents for those without such infrastructure if they find it useful. The service is designed to make it easier to find and manage comprehensive patient centered information.



Financing

The State Government has made significant investments to develop network infrastructure that can support the growth and use of health IT. Over the last five years, significant investments have been made in Tennessee's eHealth infrastructure which includes organizations' internal investments in health IT systems, funding for local and regional HIE efforts, and funding for the components that will facilitate statewide interoperability.

While a calculation of the investments made by physicians, clinics, hospitals, and state agencies acquisition of EHRs and other health IT tools hasn't been calculated, the table below provides a sense of the magnitude and source of funding for Tennessee's HIE projects at both the regional and state levels.

Funders	TN	Comments
Federal Gov't	**$9,954,204**	
AHRQ SRD	*$5,000,000*	
CMS Medicaid Transform	*$674,204*	
NHIN Trial Implementation	*$2,680,000*	
Others:	*$1,600,000*	$1.6 million HRSA grant to the MTRHIN
State Gov't	**$29,050,000**	
Operating budget	*$29,050,000*	$9.0 million to local HIEs and approximately $20 million for Shared Health services.
Capital budget	*$0*	
Special assessment	*$0*	
Special purpose funds	*$0*	
Payers	**$25,000,000**	Estimated investment by BlueCross BlueShield of

Funders	TN	Comments
		Tennessee's investment in Shared Health[37]
Providers and Employers	**$1,350,000**	Estimated $750,000 in technical support provided by Vanderbilt to MidSouth eHealth Alliance and $600,000 from Eastman Chemical to CareSpark
Total	**$65,354,204**	

Figure 1: Estimated Investments in HIE Capabilities (2004-2008)

3. Tennessee's Regional Health Information Organizations (RHIOs)

Overview and Status

The table below provides a high-level overview of Tennessee RHIOs.

Name (Date Launched)	**Location**	**Scope-Participation**	**Stage**[38]
CareSpark (2005)	17 counties in upper east TN & southwest VA	2 Hospitals Local physicians Health plan	6
Davidson County HIE (unknown)	Davidson County	4 hospital systems	2
Innovation Valley Health Information Network (2003)	Knoxville region	4 hospitals	3
MidSouth eHealth Alliance (2004)	Nashville region	15 hospitals, 16 clinics, 1 med group, 1 Medicaid managed care organization	6
Middle Tennessee Rural Health Information Network (2007)	Upper Cumberland region of Middle Tennessee	3 critical access hospitals 1 tertiary referral hospital	2

Brief overviews and relevant details of key RHIO efforts are noted below.

[37] Bregel, Emily. "Shared Health money cut in early TennCare budget." *The Chattanooga Times Free Press*. April 4, 2009.

[38] This analysis utilizes the eHealth Initiative's RHIO and HIE implementation scale. Relevant stages include:
Stage 2: Getting organized; defining shared vision, goals, and objectives
Stage 3: Transferring vision, goals and objectives to tactics and business plan
Stage 4: Well under way with implementation -technical, financial and legal
Stage 5: Fully operational; transmitting data
Stage 6: Fully operational; transmitting data and have a sustainable business model
Stage 7: Expansion to encompass a broader coalition of stakeholders

CareSpark	Website: http://www.carespark.com

Project Summary and Objectives

Pioneering health information exchange across state lines, CareSpark serves an area in central Appalachia that includes 34 counties spanning east Tennessee and southwest Virginia. Their model is based on significant grassroots support from local health care providers, purchasers, technology companies and policymakers at state and national levels.

In 2008, CareSpark launched their regional clinical health information exchange, and are now actively exchanging demographic and clinical data in a standards-based format. As one of only 9 national recipients of the National Health Information Network (NHIN) contract for Trial Implementation, CareSpark has tested and demonstrated the ability to securely exchange demographic and clinical data, including a summary medical document that includes medications, allergies, problems, lab and imaging reports, immunizations and consumer consent directives.

As of June 2009, CareSpark had approximately 200,000 patient records in system, 200 clinician users.

Key Stakeholders

Provider community includes:

- 18 hospitals
- 7 organizations operating 25 federally-qualified health clinics
- 3 community clinics serving the uninsured
- 3,000 physicians
- 25 radiology centers
- 18 laboratories
- 9 regional health departments, 2 state

CareSpark also includes local employers (Eastman Chemical Company) and payers.

Key contact(s): Liesa Jenkins, Executive Director CareSpark

Technical Architecture, Approach and Current Status

CareSpark has committed to use modular components that are “plug and play” so that different organizations can use different systems to communicate about patients. CareSpark plans to further develop the infrastructure so that the system can also de-identify data for use in aggregate form to monitor health outcomes for the region and to develop targeted interventions that help improve regional health status.

Privacy and Security Framework

Access to patient information is determined by enrollment status. The enrollment system encourages participation by all patients and providers in the region while preserving individual autonomy

Enrollment is initially by provider enrollment of a patient. CareSpark’s Master Patient Option Preference allows providers to enroll patients who have been notified (passive enrollment) or as the patient gives express consent for their records to be exchanged (active enrollment). The majority of provider organizations participating in CareSpark have elected “passive” enrollment of patients.

CareSpark	Website: http://www.carespark.com	
Financing Model Fair proportion of financial savings for all stakeholders: physician, patient, and purchasers (employers, taxpayers, insurers). Using a fee-based revenue model • Contracts with insurers and employers (per member, per month fee for covered lives) • Transaction fees for data providers (labs, hospitals, large practices) • Service fees (to non-regional organizations requesting services from CareSpark) • Contributions (cash and in-kind) Funding as of April 2009: $562,000 for planning; $5.5 million for development, deployment and operations.		
Use Cases Continuity of Care Clinical Decision Support Public Health Consumer Empowerment Medication Management / Medication Reconciliation	**Data Types** CCD (summary document listing medications, allergies, problem list, lab / diagnostic reports, immunizations, other clinical information) Claims-based records HL7	**Vendors** CGI (lead integrator and open source development) • ActiveHealth (clinical decision support) • Anakam (two-factor authentication) • BCTI / Cisco (security) • Deliberare (security audit) • Holston Technology (Oracle database) • Initiate (MPI, provider directory) • Healthvision / LucentGlow (Cloverleaf interface) • Sun (web services tools) • TecAccess (508 compliance) • Wellogic (clinician portal)

Innovation Valley Health Information Network	Website: http://www.ivhin.org/

Project Summary and Objectives
IVhin, based in Knoxville, serves a 17-county area in east Tennessee including 1 million people; 2 thousand physicians; 4,500 hospital beds and 16 hospital systems. This regional health information organization began as a community initiative from Knoxville's four major health systems and the Technology 2020 development initiative.

IVhin has most recently expanded their reach to area physician practices while administering a portion of the state's Physician Connectivity grant program. Next on IVhin's agenda is the rapid implementation of a community-wide health information exchange capability. Full deployment and/or integration with other HIE efforts in Tennessee is expected by the end of 2009.

Key Stakeholders
Four hospitals (Baptist Health System/Mercy Health Partners, Covenant Health, St. Mary's Health System/Mercy Health Partners, and University Health System) and a local public-private partnership (Technology 2020) have been foundational partners.

Key contact(s): Mike Ward, the CIO of Covenant Health.

Technical Architecture, Approach and Current Status
IVhin's initial plans were to design and develop a repository of clinical information that could be provisioned to the point of care and could also be serve as a platform for clinical decision support and other analytics to drive care improvements.

As of April 2009, radiology images are being exchanged amongst three hospital systems (11 to 12 hospitals).

Privacy and Security Framework
Initial framework has been developed, but will need to be updated once funding for implementation is secured.

Financing Model
The initial model, developed by the Patient Safety Institute, was to secure capital from the private sector. Owing to economic conditions, private sector equity hasn't been available, and as a result, IVhin has explored other sources of capital, including grants from the State of Tennessee.

Use Cases	**Data Types**	**Vendors**
Imaging	Radiology images	Initial vendor for the pilot demonstration was FCG-Patient Safety Institute. A new HIE vendor is being sought.

Middle Tennessee eHealth Connect	**Website:** http://www.regionalinformatics.org

Project Summary and Objectives

In June 2007, the CEOs of the four health systems in the Nashville area (Nashville General Hospital, Vanderbilt University Medical Center, St. Thomas Health Services and TriStar Health) began meeting to discuss a Regional Health Information Organization in the Nashville area. On December 21, 2007 the four executives operating on behalf of their respective organizations signed an MOU to work together on forming a HIE. Vanderbilt's Regional Informatics team was asked to facilitate and lead the effort in its start up phase.

Work groups (Clinical, Technical, and Privacy and Security) were convened in the first two quarters of 2008 to focus on whether or not Nashville should adapt, adopt or replicate the "Memphis Model" as well as make recommendations for components of the infrastructure necessary for an implementation.

In May 2008, the work groups collectively delivered a recommendation to the leadership that noted there were many things that should be adapted and adopted from Memphis; however, Middle Tennessee should have its own governance model that would focus on the Nashville market. In this meeting, a projected budget was presented and it was determined that the $1.5 million from the state would not cover the entire cost of start-up (estimated to be $2.0 - $2.5 million over 18 – 24 months).

Over the summer, the leadership group identified the need for a business plan focused on the long term sustainability of the organization. In late fall of 2008 AHRQ released an RFP to study the transitions in care which would accelerate the vision of a patient centered medical home. Leadership agreed to support the AHRQ application which would focus on the safety net population.

Key Points on Middle Tennessee eHealth Connect Today:

- Regional Informatics continues to support the building of the Middle Tennessee infrastructure including working with the Board and work groups.
- Expect to hear in August/September about the AHRQ grant funding. Have started designing the infrastructure for this project.
- Incorporated as a non-profit with the name Middle Tennessee eHealth Connect.
- Bylaws have been written and approved. The founding Board members are representatives from VUMC, Tri-Star, STHS, and NGH. Additional board members have also been named. There are still vacant seats on the board to broaden the group to include additional stakeholders (e.g., other providers, purchasers, community, etc.)

Key Stakeholders

Executive board members include:

- VUMC – Dr. Martin Sandler, Associate Vice Chancellor
- Tri-Star Health System – Larry Kloess, CEO
- Nashville General Hospital – Dr. Reginald Coopwood, CEO (Chair)
- STHS – Wes Littrell, Interim CEO
- THA – Craig Becker, CEO
- Safety Net – Dr. Cliff Meador, Executive Director
- Physicians – Kasey Dread – Executive Director of Nashville Academy of Medicine
- State – Melissa Hargiss (non-voting member), Director of eHealth

Key contact(s):
Vicki Estrin, Program Manager of Regional Informatics, Vanderbilt Center for Better Health
Dr. Reginald Coopwood, CEO of Nashville General Hospital

Technical Architecture, Approach and Current Status

A work group is expected to deliver to the board a recommendation on technical approach in July 2009 with an RFI to be released by the end of July. Goal is to have a vendor contract complete by the end of 2009 and a start on the detailed implementation plan.

Middle Tennessee eHealth Connect	**Website:** http://www.regionalinformatics.org	
Privacy and Security Framework Privacy and security principles are being revised to reflect the state's vision of privacy and security as well as incorporating requirements from ARRA. Data sharing agreements and policies are the next step for this group.		
Financing Model Write the business plan for the Middle Tennessee eHealth Connect to "bake" sustainability into the organization in the first year.		
Use Cases Patient Centered Medical Home Emergency department	**Data Types** • Patient demographics • Encounter information • PCP • Labs • Radiology reports/results • EKG • ICD-9 codes • Dictated reports • Electronic documentation notes related to patient care • Medications • Allergies • Problem lists (ambulatory) • Procedure lists (ambulatory)	**Vendors** TBD

Middle Tennessee Rural Health Information Network (MTRHIN)		
Project Summary and Objectives In 2007, Tennessee was awarded a $1.6 million HRSA grant to pilot Tennessee's first rural eHealth initiative. MTRHIN will connect 3 Critical Access Hospitals in the upper Cumberland region of Middle Tennessee with their tertiary referral hospital. • Trousdale Medical Center (a United Neighborhood Health Services facility) • Macon County General Hospital • Riverview Regional Medical Center South • Sumner Regional Medical Center. The Tennessee Department of Health will work with the Tennessee Hospital Association (THA) and the Community Health Network (CHN) to develop and manage MTRHIN. CHN is a not-for-profit corporation that provides telehealth technology to health care providers in rural Tennessee communities. Ultimately, the hospitals in MTRHIN will also connect to the regional health care clinics in CHN's Telehealth Network, allowing for broader collaboration among health care providers in upper Middle Tennessee. These facilities are expected to have an operational health information exchange before the end of 2008.		
Key Stakeholders 4 hospitals noted above. Key contact(s): Keith Williams, CEO of the Community Health Network.		
Technical Architecture, Approach and Current Status In conjunction with this project, the State of Tennessee has contracted with the CHN to purchase, install and host a health information exchange solution for sending and receiving electronic health data between the target systems below: • Meditech – used by Sumner Regional, Trousdale and Riverview hospitals • CPSI Healthcare Information and Patient Care System – used by Macon County General Hospital • QS Technologies Patient Tracking Billing System – used by the Tennessee Department of Health • NextGen Ambulatory System – used by CHN (Community Health Network) member clinics In addition, CHN will be working with the State of Tennessee for providing high speed broadband access to the participating healthcare providers that will include utilization of funds from a FCC Telehealth grant.		
Privacy and Security Framework Unknown		
Financing Model $1.6 million HRSA grant		
Use Cases Continuity of Care	**Data Types** Unknown	**Vendors** EHRs (Meditech, NextGen)

MidSouth eHealth Alliance	**Website:** http://www.midsoutheha.org/

Project Summary and Objectives

In 2004, the MidSouth eHealth Alliance (Alliance), a Memphis-area RHIO, was created with a multiyear grant of $4.8 million federal from the AHRQ, $7.2 million in state funding, and in-kind contributions from Vanderbilt University. The Alliance is focused on: improving patient care, decreasing use of emergency departments for primary care, reducing hospital stays, reducing redundant tests, and controlling costs.

Actively exchanging clinical data since May 2006, the Alliance serves member facilities in three counties surrounding Memphis. Originating in Memphis emergency rooms, the system has now expanded for use in safety net clinics and among hospitalists. The Alliance is currently extending access to area physicians.

Key Stakeholders

Executive board members include:

- Donna Abney, Executive Vice President of Methodist Healthcare;
- David Archer, President and Chief Executive Officer of Saint Francis Hospital
- Bob Gordon, Executive VP and Chief Administrative Officer of Baptist Memorial Health Care
- Steve Burkett, CEO of UT Medical Group

Other Board members are

- Burt Waller, CEO at Christ Community Health Services
- Yvonne Madlock, Director of Memphis and Shelby County Health Department
- Dr. Bob Riikola, Pediatrician at Memphis Children's Clinic
- Dr. Jerry Shenep, Chief Medical Information Officer at St. Jude Children's Research Hospital
- Robert Frank, Privacy Officer at The Regional Medical Center
- Melissa Hargiss, Director of eHealth for Tennessee

Key contact(s): Bob Gordon the Executive VP and Chief Admin Officer for Baptist Memorial Health Care.

Technical Architecture, Approach and Current Status

The Alliance brings clinical patient encounter data from 15 area hospitals, 16 clinics, and one university medical group, to bear at the point of care. This initiative began with access to the clinical data by hospital emergency providers and has since expanded to include access to safety net clinics and hospitalists. Alliance clinical information includes admissions and discharge information, laboratory results, radiology results, transcriptions, and other clinical and demographic encounter information.

Data exchange began in May 2006, and as of March 2009, all of the emergency departments continue to access the system including those in Fayette and Tipton counties and one in Southaven, MS. Also, 15 ambulatory clinics have access to the system. The number of active users was 18 hospitalists, 131 nurses, and 222 physicians.

As of April, 2009, the system contained 4,704,000 encounter records, representing 1.28 million patients. Approximately 30,000 records are added daily.

Privacy and Security Framework

A Board Committee reviews and recommends policy to the Alliance including the privacy and security framework. In the Alliance a patient is assumed to be in the system until the patient "opts out." Patients are notified their data will be shared through the MidSouth eHealth Alliance with other providers. Providers implement the notification and opt out processes as best fits their workflow.

MidSouth eHealth Alliance	**Website:** http://www.midsoutheha.org/	
Patients opt out at the organizational level. Most organizations have a "real time" flag that is sent to the Alliance. Once the flag is set, the data from that facility for that patient is no longer viewable. Several organizations do not have the capability of sending a flag. Those organizations have worked through a secure communication processes with the Alliance to have the flag manually set as soon as possible. The Alliance doesn't receive psycho therapy notes from behavioral health or substance abuse facilities/units. However if a patient is at an emergency room and NOT admitted to a behavioral or substance abuse facility/unit the diagnosis codes are viewable.		
Financing Model Mainly funded by grants: $7.2M over 5 years from state and $5.0M from AHRQ over 5 years. Current operating costs are approximately $3.0 million per year. The Alliance is evaluating a per person served model (i.e. if you have 1M population it would cost $3 per person to sustain the HIO).		
Use Cases Transitions in care/medical home Medication Management	**Data Types** • Patient ID/demographics • Lab results • ICD-9 discharge codes • Encounter data • Med Hx through claims • Allergies (test) • Transcribed Reports (includes Imaging and Discharge Summaries	**Vendors** Initial build by Vanderbilt; it is now running "stand alone" on a secure platform through Informatics Corporation of America (ICA). The Alliance is not tied to this platform upon expiration of the AHRQ contract.

1. New York's Healthcare Landscape

New York's total population is 19 million, making it the third most populous state in the United States. Nearly 8 percent of New Yorkers live in a rural area. Approximately 2.6 million New Yorkers are uninsured, and 23 percent are enrolled in public health insurance programs.

New York has approximately 37 commercial health maintenance organizations of which 16 participate in Medicare advantage and 23 offer Medicaid managed care.

The provider landscape includes 231 hospitals and 131 community health centers; New York State has 21 general practitioners per 100,000 people compared with 339 specialists per 100,000. According to the Medical Society of the State of New York, the 2006 adoption rate for EHRs was 18 percent for all physicians and 8 percent for physicians in small groups or in solo practices.

2. New York's Statewide Health Information Exchange Activities

Background

In March 2005, HHS Secretary Mike Leavitt and New York Governor George Pataki announced a reform plan for New York's Medicaid program that would include, among other focus areas, investing in e-prescribing, EHRs, and RHIO activities. This waiver program is known as the Federal-State Health Reform Partnership and will reinvest $1.5 billion of savings in federal funding for these and other purposes.

In the Fall of 2005, the New York State Department of Health announced the availability of funds under the Health Care Efficiency and Affordability Law for New Yorkers (HEAL NY) Grant Program. HEAL NY is a multiyear, multi-phased program that supports development and investment in health IT initiatives on a regional level. The HEAL NY phase 1 grant process provided $52 million to 26 grantees for health IT and HIE efforts.

In the Fall of 2006, the New York eHealth Collaborative (NYeC) was incorporated as a public-private partnership to serve as a leader and point of convergence for healthcare stakeholders across the state to build consensus on health IT policy priorities and to collaborate on implementation efforts. In January 2007, the Office of Health Information Technology Transformation (OHITT) was created to provide guidance to state and private-sector efforts to improve healthcare quality, accountability, and efficiency through widespread deployment of health IT. OHITT also oversees the HEAL NY grantees.

A central strategic focus of New York State's efforts has been to advance interoperability through the development and implementation of a shared health information infrastructure based on a community-driven model available to all providers, payers, and patients. The HIE will evolve in two layers: a statewide framework of rules and policies that facilitates exchange between multiple networks at the local level. In this two-layer model, NYeC, with state funding, will support the creation and deployment of common policies, technical standards, and protocols, as well as regional bottom-up approaches that allow local communities to structure their own efforts on the basis of clinical and patient priorities.

HEAL NY phase 5 grants, which provided an additional $105 million to support RHIOs and other electronic health information exchange activities, were released in spring 2008. Over a two year grant period from August 2008 – August 2010, HEAL 5 will establish and expand the organizational, clinical and technical building blocks to produce an initial flow of information among providers who are the early health IT adopters and to ensure information tools are being used effectively. Providers are expected to demonstrate the use of an interoperable EHR, a web portal or other tools with the ability to share information across settings as well as initial quality and efficiency gains. Approximately 1,500 physicians, 96 hospitals and 56 long term care facilities will benefit from HEAL 5 funding to 19 projects. Specific evaluation and progress based on clinical goals and metrics is being evaluated by HITEC.

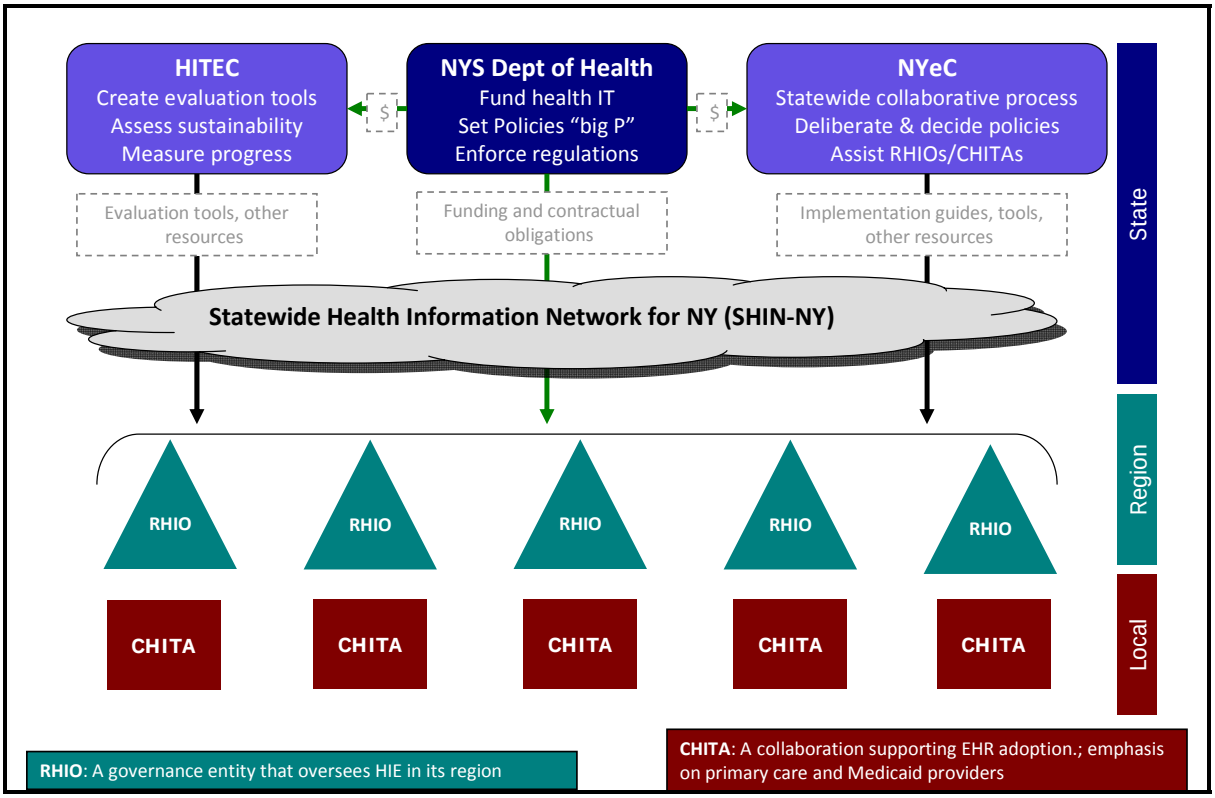
Finally, in 2005, the State in collaboration with Cornell University, Columbia University, the University of Rochester, the University of Buffalo and the State University of New York at Albany launched the New York Health Information Technology Evaluation Collaborative (HITEC). HITEC serves in a research and evaluative role with respect to health IT initiatives in

New York State. HITEC was formed to evaluate and develop evaluation instruments for health IT initiatives, including interoperable health information exchange and EHR adoption across the State. HITEC has been charged with providing evaluation services for HEAL NY Phase 5 grantees in a consistent and objective manner across all funded projects. The State of New York has committed $5 million to HITEC over the next two years.

On April 9, 2009, the State released an RFP for HEAL 10 for $60 million to advance New York's health information infrastructure, based on clinical and programmatic priorities and specific goals for improving quality, affordability and outcomes. The grant sets a foundation for health information infrastructure for a new care delivery and reimbursement model – Patient Centered Medical Home. Applications are due June 15, 2009.

This policy alignment will not only advance and sustain the technical building blocks of New York's health information infrastructure, but will also ensure that the clinical capacity is established for providers and patients to be prepared and held accountable for new reimbursement models based on quality based outcomes and care coordination and management.

The chart below illustrates the statewide structure of New York's eHealth infrastructure.



Governance Framework
The New York State Department of Health, through its Office of Health Information Technology Transformation, coordinates HIE activities across the public and private sectors.

A central strategic focus of New York State's efforts is to advance interoperability through the development and implementation of a shared health information infrastructure based on a community-driven model available to all providers, payers, and patients. The HIE will evolve in two layers: a statewide framework of rules and policies that facilitates exchange between multiple networks at the local level.

New York State Office of Health Information Technology Transformation (OHITT)
In January 2007, the New York State Department of Health created the OHITT. OHITT is charged with coordinating health IT programs and policies across the public and private health-care sectors to enable improvements in health care quality, affordability and outcomes for all New Yorkers. These programs and policies help establish the health IT infrastructure and capacity to support clinicians in quality and population health improvement, quality-based reimbursement programs, new models of care delivery and prevention and wellness initiatives. The health IT transformation program is a part of the state's agenda to advance patient-centered care and enable improvements in health care quality, affordability and outcomes for each person, family and business in New York.

New York eHealth Collaborative (NYeC)
The NYeC is a statewide public-private partnership and governance body playing an integral role in advancing New York State's health IT strategy. NYeC's key responsibilities include (1) convening, educating and engaging key constituencies, including health care and health IT leaders across the state; (2) facilitating a two-tiered governance structure for interoperable health information exchange through the SHIN-NY that includes: at the state level setting health information policies, standards and technical approaches, and at the regional and local level implementing such policies by RHIOs and CHITAs and (3) evaluating and establishing accountability measures for New York State's health IT strategy. NYeC is a State-designated Entity for the purposes of health information exchange infrastructure as defined in the American Recovery and Reinvestment Act 2009.

Regional Health Information Exchanges (RHIOs)
Underlying New York's Health Information Infrastructure and central to its successful implementation are RHIOs. RHIOs, working with their stakeholders and constituents, must create an environment that assures effective health information exchange both organizationally and technically through a sound governance structure. Serving as trusted brokers, RHIOs are multi-stakeholder collaborations that enable the secure and interoperable exchange of health information with a mission of governing its use in the public's interest and for the public good by supporting improvements in health care quality, affordability and outcomes. RHIOs will oversee the development of connections between local healthcare providers and ensure they conform to the SHIN-NY policy, privacy, and technical framework.

Currently, there are nine state designated RHIOs sharing health information exchange services over the next two years. By virtue of fulfilling their obligations, RHIOs will be conferred

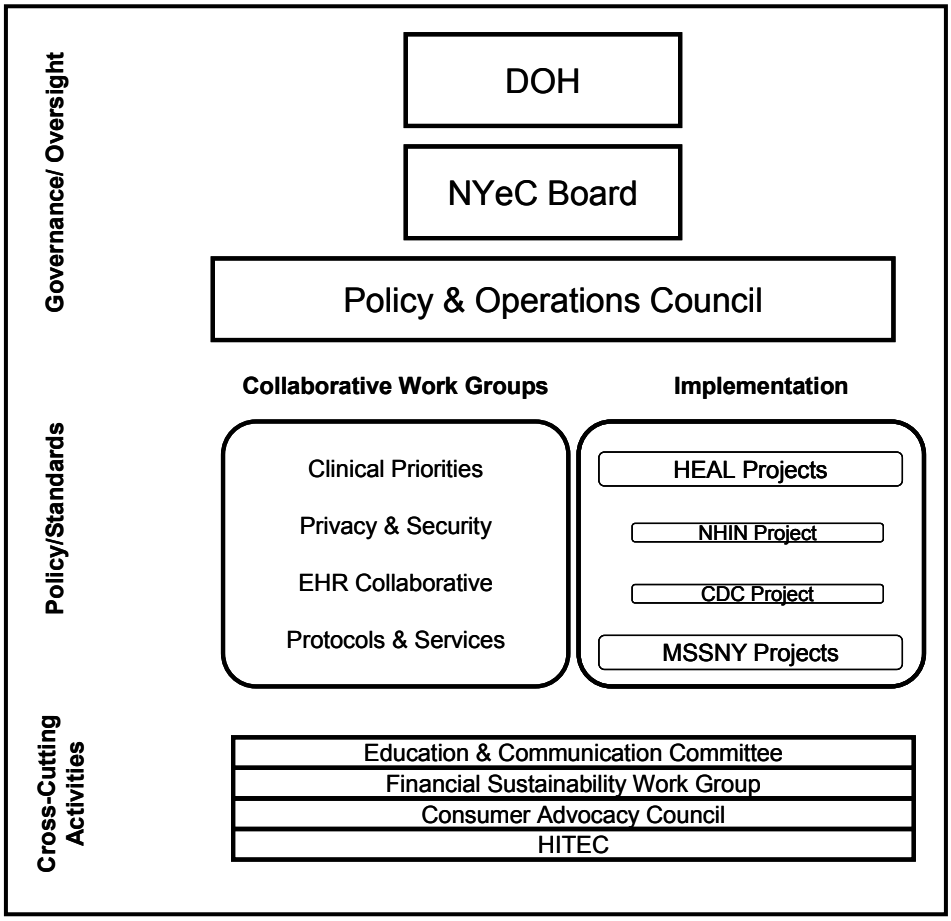
benefits in terms of eligibility for grants, contracts for services, and access to various data sources, both public and private.

Statewide Collaboration Process

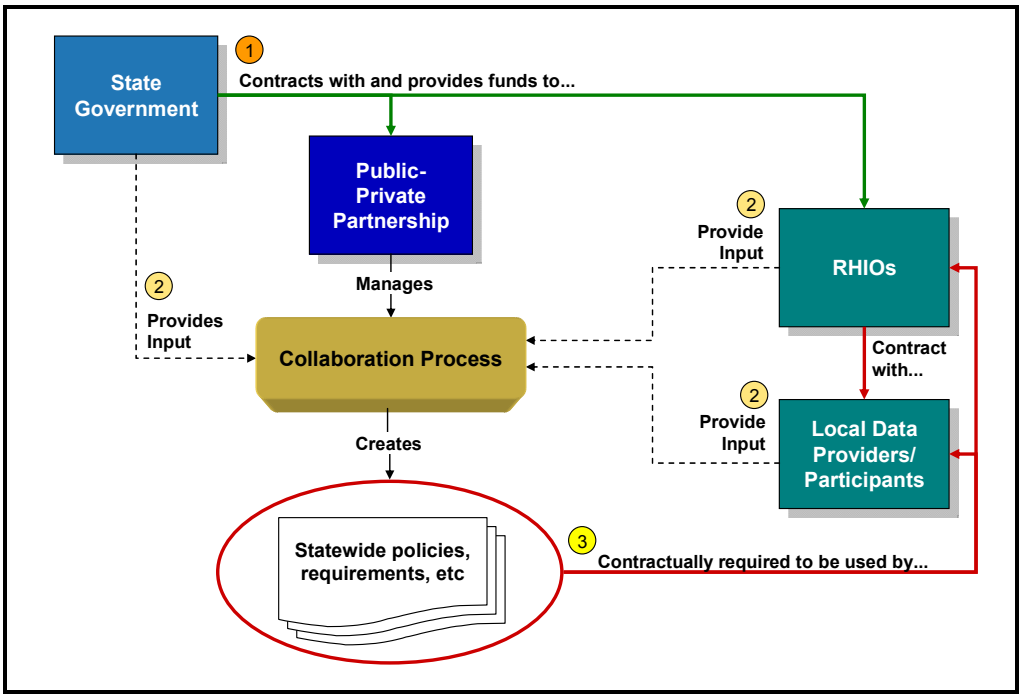
New York is developing health information policies, standards and protocols and other technical approaches governing the health IT infrastructure – collectively referred to as Statewide Policy Guidance. NYeC, in partnership with the DOH, is leading the development of Statewide Policy Guidance through an open, transparent, and consensus driven process to which all contribute to ensure a comprehensive policy framework to advance health IT in the public's interest.

To date, the Statewide Collaborative Process (SCP) is driven by the efforts of four workgroups which recommend Statewide Policy Guidance to the NYeC Policy and Operations Council, the NYeC Board and the Department of Health. The four workgroups are: (1) Clinical Priorities (2) Privacy and Security; (3) Technical Protocols and Services; and (4) EHR Collaborative. The State of New York has committed $5 million to NYeC over the next two years to manage the SCP. Ultimately, the Department of Health has final authority over the development and implementation of the Statewide Policy Guidance. Adherence to the policy guidance has been achieved throughout the state by incorporating the policies in contracts between the State and the HEAL-NY recipients.

The picture below illustrates the components of the SCP to date.



The chart on the following page illustrates the contracting relationship between the State and the various entities involved in health information exchange in New York State.



Privacy and Security Approach

The NYeC Privacy and Security workgroup was charged to develop policies that protect privacy, strengthen security, ensure affirmative and informed consent and support the right of New Yorkers to have greater control over and access to their personal health information as foundational requirements for interoperable Health IT.

Currently, the privacy and security policies and procedures for New York's health information infrastructure include procedures governing interoperable health information exchange via the SHIN-NY as well as interoperable EHRs. The scope includes the full range of privacy and security policies for interoperable health information exchange, including: authorization, authentication, consent, access, audit, breach and patient engagement policies. The privacy and security policies and procedures are part of the Statewide Policy Guidance.

These policies and procedures represent the minimum standards with which projects – currently RHIOs and providers participating in a CHITA – must comply and must require their participants to satisfy. All projects funded under the HEAL NY Health IT grant programs are required to comply with the privacy and security policies and procedures. In addition, all projects must require their participants to comply with the most recent version of of these policies and procedures. Where appropriate, or where required by the operational models and/or governance structures of the RHIO, a RHIO may delegate certain responsibilities set forth in the privacy and security policies and procedures to its participants. However, RHIOs and providers participating in a CHITA remain responsible for requiring their participants to comply with the minimum policies set forth herein.

New York State law requires that hospitals, physicians, other health care providers and HMOs obtain consumer consent before disclosing personal health information for non-emergency

treatment. Unlike HIPAA, New York State law provides no exception to this requirement for treatment, payment or health care operations. While consent may be verbal or even implied for most types of health information, this is not the case for certain classes of specially protected health care information, including information related to HIV status, mental health and genetic testing, the disclosure of which require written consent. These laws reflect a desire to ensure that consumers are protected from unauthorized uses of personal health information and provide both a legal and normative guidepost for developing consent policies for health information exchange via the SHIN-NY governed by RHIOs and interoperable EHR adoption in New York.

Accordingly, affirmative consent must be obtained by each provider and payer organization before accessing health information through the SHIN-NY governed by the RHIO. Consent may be obtained at an organizational level (ie., medical practice, hospital) and need not be at the individual clinician level. Once a provider or payer organization obtains consumer consent, it may access the information of all RHIO data suppliers unless the RHIO has voluntarily established additional restrictions on disclosures. NYS established a statewide standardized model consent form whereby patients may authorize provider organizations to access all of their protected health information including sensitive health information.

Consumers must be able to prevent any or all provider and payer organizations from accessing their personal health information via SHIN-NY governed by a RHIO without being refused treatment or coverage. Provider or payer organizations may not condition treatment or coverage on the consumer's willingness to provide access to the consumer's information through a RHIO.

Existing New York law does not require providers to obtain consumer consent to upload or convert information to a RHIO's HIE or SHIN-NY sub network as long as the RHIO does not make the information accessible to other entities without consumer consent.

Statewide Technical Approach to HIE

New York's technical model is best categorized as a virtual federated model called the Statewide Health Information Network for New York (SHIN-NY). Serving as the statewide health information exchange architecture, the SHIN-NY will be built and operated using common and consistent protocol and mutually-agreed upon and consistently-applied rules and standards called the Common Health Information Exchange Protocols (CHIxP). Regional Health Information Organizations (RHIOs) will participate in the development of and ensure conformance to the technical standards, security processes and privacy policies of the SHIN-NY in their designated regions.

The SHIN-NY will also include state-level services through which the regional HIEs communicate and share services, governed by RHIOs and NYeC. The regional sub-networks or HIEs and the state-level services will communicate through a service-oriented architecture using web services and common health information exchange protocols. Enterprise Service Bus (ESB) platforms will be utilized as state-level services to facilitate a public registry of SHIN-NY services. ESB platforms will also be utilized at the regional sub-network or HIE level to support communication with the public registry among many possible providers and consumers of services and data.

Financing
To date, New York's statewide HIE infrastructure has relied on significant public sector financing. Since 2005, the New York State government has committed more than $200 million to the New York Information Infrastructure. It is anticipated that the State of New York's investment in health IT will continue over the next two years. Despite the dire fiscal situation of the New York State budget, the funding for HEAL, which is through an authorized bond issue, will likely remain safe from rescission or other legislative action.

While it is anticipated that health care reimbursement reform will be used to sustain HIE operations, discussions remain in preliminary stages. In addition, the state-level HIE leadership is exploring the viability of leveraging Health Care Reform Act (HCRA) funding pools to support health IT and HIE.[39]

New York is also pursing statewide strategies to implement Pay-for-Performance. In June 2007, the New York State Department of Health awarded a total of $9.5 million in contracts to four regional pay for performance demonstration projects. The two-year projects are designed to test various ways of rewarding physicians, hospitals and clinics that provide high quality care to their patients. Partnering with health plans, the awardees are designing incentives that promote system changes and improve health service delivery. Performance will be assessed using standardized measures created by organizations such as the National Committee for Quality Assurance (NCQA) and the National Quality Forum (NQF).

In 2008, the four awardees selected ViPS to serve as the data aggregator for their projects. ViPS will work with the New York State Department of Health and its designated reporting entity for the demonstration, IPRO, to refine the data collection and reporting parameters. Descriptions of the four P4P awardees' projects are below.

- **Independent Health Association, Inc.** - this Western New York Health Plan intends to partner with two other major Health Plans in the region, HealthNow and Univera, to implement a pay for performance program that involves local physicians and hospitals. Grant funding will support the development of regional infrastructure and provide physicians a nominal fee for their initial participation in the project. The project will measure provider performance in the following areas: acute myocardial infarction, diabetes management, antibiotic utilization and infection control. The project will also look at performance on a number of ambulatory preventive health measures such as appropriate medications for persons with asthma, anti-depressant medication and post-partum visits.

- **Montefiore Medical Center** - this major provider of health services in the Bronx will partner with Aetna, Affinity Empire Blue Cross and Blue Shield, HealthFirst, HealthNet, 1199 SEIU Benefit and Pension Funds and Oxford health plans as well as, a network of

[39] HCRA was initially enacted in 1996 to replace the then existing collection of provisions of the Public Health Law (PHL) applicable to State payment or reimbursement for health care services known as NYPHRM. HCRA also consists of a number of separate sections of the PHL under which a variety of payments and reimbursements to hospitals and other health care providers are made. HCRA includes the statutory scheme under which hospitals are assessed a fee on patient discharges that is collected by the Commissioner and held in funds know as "pools."

community-based providers to improve both inpatient and outpatient care to adult residents with heart disease and those with associated risk factors such as smoking and obesity. In addition, the project will look to reduce the incidence of hospital acquired infections.

- **NY Health Plan Association (HPA)** – NY [Quality Alliance]- The HPA-sponsored demonstration project is a statewide collaborative involving twelve health plans (Aetna, Affinity, CDPHP, Elderplan, GHI HMO, HealthNet, HealthNow, HIP, Hudson Health Plan, Independent Health Association, MVP and Oxford). The HPA will partner with a number of physician, business and consumer groups, Capital District hospitals and RHIOs. The project will look to improve performance on a number of ambulatory care measures statewide, acute myocardial infarction measures in the Albany/Schenectady area and diabetes measures in the Hudson Valley.

- **THINC RHIO** – The Taconic Health Information Network and Communities Regional Health Information Organization (THINC RHIO) will oversee a pay-for-performance/Medical Home (p4p/MH) project in New York's Hudson Valley. The project will be multi-payer and is anticipated to run from 2007 through 2011. Eligible physicians for the initial phase of the project, which adheres to the two year THINC RHIO/NYSDOH p4p grant, will include Family Practice, Internal Medicine and Pediatric physicians practicing in the Hudson Valley. During the initial phase, up to 500 physicians will be enrolled in the project. Incentive payments will include two components: 1) an outcomes component based on process and outcomes measures derived from aggregated administrative data received from all health plans participating in the project and 2) a structural component determined by achieving Level II Medical Home recognition using the NCQA PPC-MH assessment tool.

3. New York's Regional Health Information Organizations (RHIOs)

Overview and Status

In New York, RHIOs serve as governance entities that oversee and enable the exchange of health information within designated geographic regions. They are multi-stakeholder collaborations with a mission of governing its use in the public's interest and for the public good by supporting improvements in health care quality, affordability and outcomes. As stewards of health information exchanged through the SHIN-NY, RHIOs will be accountable to the common policies and standards that govern health information exchange.

Working under the NYeC umbrella and with their stakeholders and constituents, New York's RHIOs are responsible for health information exchange both organizationally and technically through a sound governance structure. RHIOs are a part of the Statewide Collaboration Process managed by NYeC and are required to participate in setting Statewide Policy Guidance and then implement and ensure adherence to such guidance. By virtue of fulfilling their obligations to the State, RHIOs can benefit in terms of eligibility for grants, contracts for services, and access to various data sources, both public and private.

The table below provides a high-level overview of New York RHIOs.

Name	Location	Stage[40]
Bronx Regional Health Info Organization (Bx RHIO)	New York City	5
Brooklyn Health Information eXchange (BHIX)	New York City	5
Rochester RHIO	Rochester	4
Health Info Exchange of New York (HIXNY)	Albany	4
Long Island Patient Info Exchange (LIPIX)	Long Island	4
New York Clinical Info Exchange (NYCLIX)	New York City	4
Southern Tier HealthLink (STHL)	Binghamton	4
Taconic Health Info Network & Community (THINC)	Hudson Valley	6
Western New York Clinical Information Exchange (WNYCIE)	Buffalo	4

[40] This analysis utilizes the eHealth Initiative's RHIO and HIE implementation scale. Relevant stages include:
Stage 2: Getting organized; defining shared vision, goals, and objectives
Stage 3: Transferring vision, goals and objectives to tactics and business plan
Stage 4: Well under way with implementation -technical, financial and legal
Stage 5: Fully operational; transmitting data
Stage 6: Fully operational; transmitting data and have a sustainable business model
Stage 7: Expansion to encompass a broader coalition of stakeholders

Bronx Regional Health Information Organization	Website: http://www.bronxrhio.org/

Project Summary and Objectives

The Bronx Regional Health Information Organization (Bronx RHIO) is a not-for-profit organization established by the borough's leading healthcare organizations. Participants include hospitals, health systems, ambulatory care centers, individual physician offices, long-term care and home care services. Collectively, these providers deliver the vast majority of the healthcare received by the borough's 1.36 million residents, including over 95% of the borough's annual hospital discharges, over 600,000 annual Emergency Department visits and 4.5 million annual ambulatory care visits.

As part of its HEAL 5 project the Bronx RHIO will increase the breadth and depth of data available through the RHIO and extend its reach into the community of healthcare providers in the Bronx. The specific enrichments of the clinical data in the RHIO and expansion of the RHIO to include data from small physician practices and Federally Qualified Health Centers serving Medicaid beneficiaries will make the Bronx RHIO a much more robust HIE and better able to realize the full value of interoperable health IT.

Key Stakeholders

As of April 2009, the board leadership consisted of Don Ashkenase, Board Chair (Montefiore Medical Center); Jose Sanchez (Senior Vice President of HHC - Generations Plus/Northern Manhattan Health Network); Verona Greenland (President, Morris Heights Health Center); Kenneth Sherman (Administrator/Senior Vice-President, Jewish Home and Hospital Lifecare System); and Steven Anderman (Chief Operating Officer Bronx Lebanon Hospital Center).

Key contact(s): Charles Scaglione, Executive Director[41]

Privacy and Security Framework

Consistent with the policy and procedures established through the statewide collaborative process.

Technical Architecture, Approach and Current Status

As part of their HEAL 5 project, the Bronx RHIO is soliciting proposals to enhance its federated HIE approach.

Use Cases	**Data Types**	**Vendors**
HEAL 5 SHIN-NY Use Cases: (1) Quality Reporting for Outcomes (2) Interoperable EHR for Medicaid	TBD through collaborative process	- dbMotion - Healthvision - Allscripts - Cerner - Initiate

[41] In April 2009, Charles Scaglione was named to succeed Barbara Radin as executive director. Scaglione, was previously executive vice president of Partners in Care Corp., a for-profit physician office and health plan management company based in East Brunswick, N.J.

Brooklyn Health Information eXchange (BHIX)	Website: http://www.bhix.org/

Project Summary and Objectives
Founded by several of Brooklyn's healthcare organizations, including hospitals, long-term care providers, home-health providers and health insurers, the Brooklyn Health Information Exchange (BHIX) was incorporated in July 2007, as an independent, not-for-profit corporation devoted to facilitating patient-centric care and promoting improved healthcare quality, affordability and outcomes for New Yorkers.

Authorized individuals at participating health plans and payers, currently Elderplan and 1199 SEIU Benefit and Pension Funds, will be able to view members' clinical data in order to provide their members with better disease management services. BHIX policy prohibits plans and payers from using data gleaned through BHIX for eligibility and underwriting purposes.

BHIX's HEAL 5 project will focus on a couple of areas. It will make available a comprehensive personal health record filled with clinical information, so that patients can control their own information, and enable and manage provider access to that information. Its second focus will be on making Medicaid medication available to providers at the point of care (integrated with other clinical data) to enable their care management and clinical decision-making.

Key Stakeholders
As of April 2009, the board leadership consisted of:
Board Chair: Pamela S. Brier (President and CEO, Maimonides Medical Center)
Vice-Chair: Eli Feldman (President and CEO, Metropolitan Jewish Health Systems, Inc.)
Secretary: Carol Raphael (President and CEO, Visiting Nursing Service of New York, Inc.)
Treasurer: Michael New (Executive Director, Sephardic Skilled Nursing and Rehabilitation Center)

Key contact(s): Irene Koch, Executive Director

Privacy and Security Framework
Consistent with the policy and procedures established through the statewide collaborative process.

Technical Architecture, Approach and Current Status
Information accessed through BHIX comes from a variety of Health Information Sources. These Health Information Sources may include Participants, other health care providers (such as doctors, pharmacies and clinical laboratories), health insurers, the New York State Medicaid program and, over time, other health information exchanges, RHIOs and personal health records.

As part of their HEAL 5 project, the BHIX is soliciting proposals to enhance its federated HIE approach.

Use Cases	**Data Types**	**Vendors**
HEAL 5 SHIN-NY Use Cases: (1) Connecting New Yorkers & Clinicians (2) Interoperable EHR for Medicaid	TBD through collaborative process	- MedPlus - Initiate - Valco - ActiveHealth Management - InterSystems - eClinicalWorks

Rochester Regional Health Information Organization	Website: http://grrhio.org/

Project Summary and Objectives

Beginning in 2004, Excellus, Eastman Kodak and the Rochester Health Commission launched a community-wide health information exchange effort. By 2006, the effort had matured into the Rochester RHIO, a secure online resource developed for doctors, hospital systems, health insurers and privacy officers in the nine-county Greater Rochester area.

In November 2007, the Rochester RHIO enabled local physicians to query test results through Axolotl's clinical messaging system and receive results through the an EHR-lite technology and other physician EHR systems. With support of HEAL 1 funding, the Rochester RHIO's data exchange also includes lab and radiology data, medication history, and insurance eligibility information. By 2008, the Rochester RHIO's ePrescribing function will be linked to the region's most common formularies.

Rochester RHIO's HEAL 5 project includes several additions to their existing services, including:

- Patients access to data through a patient portal where patients can set consent for access to their medical information by physician group, link to and exchange data with the personal health record (PHR) of their choice, and annotate their medication history data available through the HIE.
- Emergency care provider access, by developing systems that enable 9-1-1, Emergency Medical Services (EMS), Emergency Departments (ED), and definitive care providers access to and/or update of HIE patient-centric medical information.
- Inter-RHIO Interoperability, by demonstrating exchange of patient-centric information between RHIOs (Buffalo and GRIPA)
- Medically complicated patient data, by developing systems to enable Point of Entry (POE), Medical Orders for Life-Sustaining Treatment (MOLST), and Advanced Directives (AD) systems to exchange patient health information among disparate clinicians, other authorized entities and patients in real time while ensuring security and privacy.
- Medicaid and underserved data: Rochester will also provide Medicaid medical history to Medicaid providers to enable them to provide coordinated care.

Key Stakeholders

As of April 2009, the board leadership consisted of:

Larry Becker, Xerox
William Clarke, Urban League of Rochester
Tom Combs, Preferred Cared
Dan DeLucia, Aetna
Andy Doniger, MD, Monroe County
Warren Hern, Unity Health
Bryan Hetherington, Empire Justice Center
Martin Hickey, MD, Excellus
David Kamowski, Via Health
Alice Loveys, MD, Monroe County Medical Society
Carlos Ortiz, MD, Thompson Health
Sandy Parker, Chairperson, Rochester Business Alliance
Peter Robinson, University of Rochester Medical Center

Key contact(s): Ted Kremer, Executive Director

Privacy and Security Framework

Consistent with the policy and procedures established through the statewide collaborative process.

Technical Architecture, Approach and Current Status

Federated.

Rochester Regional Health Information Organization		Website: http://grrhio.org/
Use Cases HEAL 5 SHIN-NY Use Cases: (1) Connecting New Yorkers and Clinicians (2) Interoperable EHR for Medicaid	**Data Types** TBD through collaborative process	**Vendors** - Axolotl - Carestream Health

Health Information Exchange of New York (HIXNY)	Website: http://www.hixny.org/

Project Summary and Objectives

The Health Information Xchange of New York (HIXNY) was jointly created by the Iroquois Healthcare Alliance (IHA) on behalf of their 59 hospitals and the New York Health Plan Association (HPA) representing 30 health plans statewide to promote collaboration among providers and payers designed to reduce health care costs and promote high quality clinical care in upstate New York. Created through a unique collaboration of health care providers and insurers, the primary mission of HIXNY is to reduce health care costs and promote high quality clinical care. HIXNY will achieve this dual mission by providing a technology infrastructure and services to enable physicians, hospitals and other health care providers and insurers to interact, share information resources, and conduct business using a standardized, HIPAA compliant approach to administrative transactions. The primary task of the HIXNY initiative involves the sharing of patient medication history, intended to improve clinical decision-making at the point of care. Using the HEAL-NY funds, a data exchange infrastructure will be built that will ultimately enable the sharing of all clinical data, including prescription history, problem lists, coverage information, laboratory tests and medical imaging results.

As part of its HEAL 5 project HIXNY is collaborating with another RHIO, ARCHIE, to give Medicaid providers for the first time the ability to access all the clinical data needed to ensure these patients receive efficient, quality care. HIXNY is also participating in NYeC's federal Nationwide Health Information Network (NHIN) project to demonstrate medication management within a national context as part of the evolving NHIN.

Key Stakeholders

As of April 2009, the board officers consisted of:

- Louis Snitkoff, MD, CapitalCare Medical Group (Chairperson)
- William Young, Ellis Hospital (Vice-Chair)
- Gary Fitzgerald, Iroquois Healthcare Alliance (Treasurer)
- Jerry Salkowe, MD, MVP Healthcare (Secretary)

Key contact(s): Dominick Bizzarro, CEO, HIXNY

Privacy and Security Framework

Consistent with the policy and procedures established through the statewide collaborative process.

Technical Architecture, Approach and Current Status

The Heal 5 grant will be used primarily to expand the functionality of the online health information exchange HIXNY is building with the previous HEAL 1 grant, as well add important new offerings including a Personal Health Record, secure clinician to clinician messaging, and a single source eligibility system. The initial functionality of the health information exchange will offer patient medication history, patient demographics, allergy status, e-prescribing capability, as well as elements that indicate where the patient sought treatment, why they did so, and when. Other improvements planned with the HEAL 5 grant are the ability to include information from the Medicaid database, the NYS immunization registry, and additional data elements including lab results, progress notes, radiology reports, and hospital/ER discharge summaries. HIXNY will also be integrating with the Adirondack Regional Community Health Information Exchange (ARCHIE) for the benefit of members and patients across Northern NYS. The system testing of the HEAL 1 health information exchange has been pushed back until on or about June 30, 2008 due to delays in some of the major technical efforts. These include calibrating the Master Patient Index (MPI), installing interfaces on member systems, testing patient consent rules, and integration of the MedPlus user interface with the e-prescribing capability offered by InstantDX.

On Oct. 31, 2008, the Health Information Exchange of New York, or HIXNY, will start transmitting patients' records and prescriptions between three Troy health care operations — Samaritan Hospital, Seton Health and Community Care Physicians.

Health Information Exchange of New York (HIXNY)		Website: http://www.hixny.org/
Use Cases HEAL 5 SHIN-NY Use Cases: (1) Connecting New Yorkers and Clinicians & (2) Interoperable EHR for Medicaid	**Data Types** TBD through collaborative process	**Vendors** - FCG - Initiate - MedPlus - OnCallData

Long Island Patient Information Exchange	Website:

Project Summary and Objectives

Long Island Patient Information Exchange (LPIX) objectives are: (a) to implement a meta-master patient index to support regional data interchange and provide patient identification services to participating organizations; and (b) to share patient-centric data through a web based clinical data exchange to support transitions in care. LIPIX is thereby seeking to foster collaboration amongst disparate health care entities; promote interoperability using nationally defined standards; enable regional public health initiatives; and create evaluation tools to measure improvements in clinical quality and reductions in inappropriate utilization.

As part of its HEAL 5 project LIPIX will expand coverage in its primary service area (Nassau and Suffolk Counties) from 29 percent of licensed inpatient beds to 81 percent and in its secondary service area (Queens), LIPIX will expand coverage from 19 percent to 39 percent of licensed inpatient beds. Additionally the LIPIX network will grow to include 15 nursing homes, several ambulatory practices, two large homecare agencies and an EMS agency. The size of the LIPIX network will not only enable more clinicians to treat their patients with the benefit of access to the right historical patient information at the right time, but will also deliver greater cost benefits of HIE, which include reduced duplicate testing, decreased unnecessary admissions, fewer medical errors and improved coordination of care.

LIPIX is also participating in NYeC's federal Nationwide Health Information Network (NHIN) project to demonstrate exchange of a patient health record with another New York RHIO, NYCLIX, as well as with RHIOs in other parts of the country as part of the evolving NHIN.

Key Stakeholders

As of April 2009, the board leadership was not listed on the LIPIX website. Project partners include: North Shore - Long Island Jewish Health Care, Inc.; Nassau Health Care Corporation, Inc.; Nassau County DOH; North Shore University Hospital Medical Center; South Nassau Medical Center; Cold Spring Hills Nursing Home; Suffolk County DOH.

Key contact(s): Ben Stein, MD, CEO LIPIX

Privacy and Security Framework

Consistent with the policy and procedures established through the statewide collaborative process.

Technical Architecture, Approach and Current Status

Not publicly available at this time.

Use Cases	Data Types	Vendors
HEAL 5 SHIN-NY Use Cases: (1) Connecting New Yorkers and Clinicians (2) Health Information Exchange for Public Health	TBD through collaborative process	- InterSystems - Initiate - Eclipsys - MedRecordsAlert - HealthShare

New York Clinical Information Exchange	Website: http://www.nyclix.org/

Project Summary and Objectives
NYCLIX is an HIE project involving 12 competing hospitals, including the largest voluntary and municipal hospitals in New York City, the nation's largest not-for-profit home healthcare provider, and a multisite community health center. NYCLIX is developing a clinical data exchange in which the first use case is to give the Emergency Department (ED) clinician on-line access to patient data maintained by any of the participating institutions, to improve ED care and reduce complications and unnecessary hospitalizations. It will also standardize and increase the efficiency of disease surveillance and public health reporting, and evaluate the impact of the data exchange capability on the cost, quality and safety of patient care, as well as patient and provider satisfaction.

NYCLIX is also participating in NYeC's federal Nationwide Health Information Network (NHIN) project to demonstrate exchange of a patient health record with another New York RHIO, LIPIX, as well as with RHIOs in other parts of the country as part of the evolving NHIN.

Key Stakeholders
As of April 2009, the board leadership consisted of:

Gilad Kuperman, MD, PhD, NewYork-Presbyterian Hospital (Board Chair)
Thomas Check, Visiting Nurse Service of New York (Vice Chair)
Bert Robles, SUNY Downstate Medical Center (Secretary)

Key contact(s): Gil Kuperman, Executive Director

Privacy and Security Framework
Consistent with the policy and procedures established through the statewide collaborative process.

Technical Architecture, Approach and Current Status
Not publicly available at this time.

Use Cases	**Data Types**	**Vendors**
Did not receive HEAL 5 funding for SHIN-NY	TBD through collaborative process	- FCG

Southern Tier HealthLink	Website: http://www.sthlny.com/

Project Summary and Objectives
STHL in its HEAL 1 project has been developing a regional portal that gives clinicians access to comprehensive, shared, real-time electronic patient records, containing patient-centric information including: demographics, medications, allergies, immunizations, PACS images and problem lists. Its project goals also include consumer empowerment and the development of an interoperable personal health record, through which consumers can access their own medical records.

For its HEAL 5 project, STHL is partnering with the Health Advancement Collaborative of Central New York (HACCNY), to create an interoperable regional clinical HIE linking hospitals, physicians, patients, employers, pharmacies, radiology centers, payers and laboratories that will support increased efficiency and improved quality of health care across Central New York.

The project will build on STHL's existing technology platform to create an expanded Central New York (CNY) HealthLink HIE with a broad regional reach and greater technical support capacity. A total of additional 255 stakeholders will be linked into CNY HealthLink including: 10 existing stakeholders within HACCNY's initiative; (4 hospitals, 5 physician practices, 1 Lab Alliance), 3 rural hospitals 1 county health clinic, 1 community health center, 240 physicians with existing EHRs; (300 additional providers via EHRs funded in our Category 3 application) and a connection to the Suffolk County RHIO.

Key Stakeholders
As of April 2009, the board leadership consisted of:

Rajesh Dave, MD (President)
Christina Boyd, (Vice President)
Mark McManus (Treasurer)
Michael Rusnak (Secretary)

Key contact(s): Christina Galanis, Executive Director

Privacy and Security Framework
Consistent with the policy and procedures established through the statewide collaborative process.

Technical Architecture, Approach and Current Status
Not publicly available at this time.

Use Cases	**Data Types**	**Vendors**
HEAL 5 SHIN-NY Use Cases: (1) Connecting New Yorkers & Clinicians (2) Interoperable EHR for Medicaid	TBD through collaborative process	- HealthVision - WebMD - NextGen - Cerner - CapMed

Taconic Health Information Network and Community	Website: http://www.thincrhio.org/

Project Summary and Objectives
Taconic Health Information Network and Community (THINC RHIO) is dedicated to improving the quality, safety and efficiency of healthcare for the benefit of the people of the Hudson Valley region of New York State. The primary purpose of the THINC RHIO is to advance the use of health IT through the sponsorship of a secure HIE network, the adoption and use of interoperable EHRs and the implementation of population health improvement activities, including public health surveillance and reporting, pay for performance, public reporting and other quality improvement initiatives.

For its HEAL 5 project THINC RHIO will work with a team of technical partners to implement a Quality Reporting Service in the Hudson Valley. THINC RHIO's Quality Reporting Service will facilitate automated transmission and aggregation of quality performance measures directly from physicians' EHRs and hospital information systems. As a component of the Hudson Valley Health Information Exchange, the Quality Reporting Service will connect with multiple certified-EHR systems and collect, analyze, aggregate, generate reports, and submit quality performance measures across providers, practices, and care delivery organizations to enable community-wide benchmarking of health care delivery.

THINC is also participating in NYeC's federal Nationwide Health Information Network (NHIN) project to demonstrate exchange of summary quality measures from EHR systems as part of the evolving NHIN.

Key Stakeholders
As of April 2009, the board leadership consisted of:

Michael Duffy (Chair)
Mark Foster, MD, Physician, Hudson Valley Primary Care (Vice Chair)
Paul Kaye, MD Medical Director, Hudson River Community Health (Treasurer)
Arthur Levin Director, Center for Medical Consumers (Secretary)

Key contact(s): Susan Stuard, Executive Director

Privacy and Security Framework
Consistent with the policy and procedures established through the statewide collaborative process.

Technical Architecture, Approach and Current Status
Not publicly available at this time.

Use Cases	Data Types	Vendors
HEAL 5 SHIN-NY Use Cases: (1) HIE for Public Health (2) Interoperable EHR for Medicaid	TBD through collaborative process	- MedAllies - HealthVision - eClinicalWorks - NextGen - GSI

Western New York Clinical Information Exchange	Website: http://wnyhealthelink.com/index.asp

Project Summary and Objectives

HealtheLink, The Western New York Clinical Information Exchange, based in Buffalo, is a unique collaboration among physician, hospital, and insurance organizations to share clinical information in efficient and meaningful ways to improve the delivery of care, enhance clinical outcomes, and control healthcare costs throughout the region.

HealtheLink brings to the project a large breadth of community involvement with strong, independent physician leadership and four years of history and planning for this regional HIE collaboration. HealtheLink will be enabling physicians to access patient medication histories and use e-prescribing tools in a variety of technology access points.

HealtheLink plans to use HEAL 5 funds to accelerate the expansion of the integrated HIE platform in Western New York. HealtheLink will use this HIE to drive widespread adoption of interoperable EHRs connected through HealtheLink to Medicaid (especially important given that Western New York has the highest Medicaid penetration in New York) as well as commercial payers. There will be embedded analytics for quality and pay-for-performance.

Key Stakeholders

As of April 2009, the board leadership was not listed on its website. Project participants include: Catholic Health System; Erie County Medical Center; Kaleida Health; Roswell Park Cancer Institute; HealthNow NY; Independent Health Association, Inc.; Univera Healthcare; Buffalo Academy of Medicine; Buffalo Medical Group; Erie County DOH; SUNY Buffalo; Upstate NY Professional Health Care Information and Demonstration Project.

Key contact(s): Dan Porreca, Executive Director

Privacy and Security Framework

Consistent with the policy and procedures established through the statewide collaborative process.

Technical Architecture, Approach and Current Status

Not publicly available at this time.

Use Cases	**Data Types**	**Vendors**
HEAL 5 SHIN-NY Use Cases: (1) HIE for Public Health (2) Interoperable EHR for Medicaid (3) Quality Reporting for Outcomes	TBD through collaborative process	- Axolotl

1. Indiana's Healthcare Landscape

Indiana's total population is 6.4 million, making it the 16th most populous state in the United States. Approximately 730,000 Indianans are uninsured, and 23.6 percent are enrolled in public health insurance programs.

Indiana has 12 commercial health maintenance organizations offering coverage. 72% of Medicaid beneficiaries receive their care through either a Medicaid-only HMO or a primary care case manager called PrimeStep health plan. 14% of all Medicare beneficiaries are enrolled in a Medicare Advantage plan.

The provider landscape includes 114 hospitals, 57 rural community health centers, and 18 FQHCs. Indiana has 37.7 general practitioners per 100,000 people compared with 162.8 specialists per 100,000.

2. Indiana's Statewide Health Information Exchange Activities

Background

Local data exchanges preceded statewide activities which only recently became active. In 1994, the Indiana Network for Patient Care (INPC) was formed through a multi-party data sharing agreement, forming what we would now call a virtual HIE initiative. This agreement permits the use of the data submitted by participants to be used for treatment, research and some public health uses. There are certain minimum data that must be submitted to be a participant; that is, the participant has to give data to be able to take advantage of receiving data. Regenstrief Institute, a not-for-profit research organization affiliated with Indiana University, was the proponent of the INPC, developed the software and maintains the network, and serves as the custodian of the data.

The Indiana Health Information Exchange, Inc. was formed in February 2004 to build upon Regenstrief's INPC network. While Regenstrief's mission is research and improving clinical care, IHIE's mission is focused on the expansion of HIE throughout the state of Indiana. IHIE would not exist but for the efforts of Regenstrief in developing the INPC. IHIE's Board has the following stakeholders: Indiana State Department of Health, Marion County Health Department, Mayor of Indianapolis, five large hospital systems in Central Indiana, Regenstrief, Indiana University School of Medicine, the two Indiana medical societies, one community foundation, and some ad hoc members.

In 2004, the Governor and Legislature created the Medical Informatics Commission (MIC) to begin dialogue around state HIE.[42] This 15-member commission, which existed until December 31, 2006, published a final report that outlined vision, goals, guiding principles, and recommendations for state health information exchange. The Commission offered recommendations in six categories: (1) Clinical Information Set; (2) Organizational Structure;

[42] Senate Bill 566. July 1, 2005. Available online at http://www.in.gov/legislative/bills/2005/PDF/SB/SB0566.3.pdf.

(3) Funding for Information Technology Infrastructure; ("Pay-for-Value/Quality/Performance" Programs; (5) Privacy & Confidentiality; and (6) Ownership of Data. One of the MIC's recommendations was to create a public-private successor organization.

On May 2, 2007, the State of Indiana passed legislation which established the Indiana Health Informatics Corporation, "for the purpose of ensuring and improving the health of the citizens of Indiana by encouraging, facilitating, and assisting in the development and operation of a statewide system for the electronic exchange of health care information and other health informatics functions in Indiana."[43]

Statewide Governance Framework

The Indiana Health Informatics Corporation (IHIC) was established in 2007 via Indiana Senate Enrolled Act No. 551. IHIC is responsible for ongoing leadership, guidance, and maintenance of health information efforts. The partnership will cease to exist in 2015 if not re-chartered by the Legislature.[44]

IHIC's board of directors was constituted in the summer of 2007, with the first board meeting in November 2007. The Board has been meeting bi-monthly since its incorporation. The Board consists of the Secretary of Family and Social Services, or designee, the State Health Commissioner, or designee; and seven individuals appointed by the Governor, of which at least one individual must be a licensed physician who is actively engaged in the practice of medicine and one individual must be engaged in the administration of a hospital. The seven individuals appointed by the Governor must be employed in or retired from the private or nonprofit sector or academia. In making these appointments, the governor must consider an individual's knowledge of and experience in matters related to health informatics and health care; and attempt to provide representation to the various geographical areas of Indiana.

As of June 2009, the IHIC's published accomplishments were:

- Performed an environmental scan of HIE activities and considerations
- Held a strategic planning retreat to determine the roles and areas of focus of the corporation
- Educating the board on selected topics related to HIE
- Defined vision statements for HIE in Indiana
- Currently documenting goals and defining a structure of working groups to define action plans

In 2009, the IHIC is working to support the four IHIC Board-approved targeted visions related to supporting enhanced healthcare information exchange in Indiana. Workgroups comprised of subject matter experts from Indiana stakeholder organizations are being mobilized to define, by

[43] State of Indiana, SB0551. Indiana Health Informatics Corporation. May 2, 2007. Available online at http://www.in.gov/legislative/bills/2007/PDF/SB/SB0551.1.pdf.
[44] Indiana HIMSS Chapter. "Origin and Overview of the Indiana Health Informatics Corporation." September 9, 2008.

July 2009, action plans to meet IHIC Board goals for each vision. The four visions, associated goals, and projected workgroup compositions are presented below.[45]

1. **Value-Based Reimbursement Program in Indiana**
    - ***Vision***: By 2010, 75% of the insured population of Indiana will be members of commercial or government payors who are participants in the Quality Health First (QHF) program with publicly available outcomes-based reporting.
    - ***Goals***:
        - IHIC will facilitate expanding participation among payors and physicians across the state through employer and other stakeholder education and advocacy.
        - IHIC will identify barriers to physician participation and advocate for needed policy changes including Medicaid reimbursement or legislative changes.
        - IHIC will work with the Indiana Congressional delegation to advocate for legislation which enables Medicare data sharing statewide.

2. **Medication List Availability**
    - ***Vision***: By 2010, current medication lists for all citizens of Indiana will be available to providers at the point of care/prescribing.
    - ***Goals***:
        - IHIC will investigate the feasibility of using incentives to compel pharmacies and others in the medication supply chain to report dispensing event data to the state. If necessary, IHIC will define and advocate for a policy change requiring this reporting. The resulting data would be made available to HIEs to enable the delivery of medication lists to clinicians.
        - IHIC will research other data gaps in the availability of medication lists and advocate for improved data capture.

3. **Community Health Record in Indiana**
    - ***Vision***: By 2011, all healthcare markets in Indiana greater than 50,000 people will have a community health record (CHR) system with aggregated clinical data available to providers for treatment of patients.
    - ***Goals***:
        - IHIC will use available data sources to define each "market" and the relevant providers present.
        - IHIC will execute an awareness campaign for patients, providers, and other stakeholders in each of those markets.
        - IHIC will advocate to data sources in the selected markets to urge participation in the CHR system serving their market.
        - IHIC will work to ensure that the community health record(s) referenced in this vision conform to applicable national standards.
        - IHIC will identify barriers to participation and advocate for policy changes including legislation, incentives, or regulation.

[45] https://myshare.in.gov/FSSA/ihic/Pages/IHICVision.aspx

4. **Clinical Information Supporting Coordination of Care**
    - ***Vision***: By 2010, 30% of all physicians in all healthcare markets in Indiana greater than 50,000 people will have:
        - (1) access to relevant, high-priority electronic clinical information to address needs of patient being served (including those referred for care)
        - (2) a mechanism for electronic asynchronous physician-to-physician communication to enable the exchange of necessary supplemental information to coordinate care on co-managed patients
    - ***Goals***:
        - IHIC will research the needs of physicians across the state in these markets and current barriers to the execution of the vision.

The federal stimulus legislation know as the American Recovery and Reinvestment Act (ARRA) includes funding specifically focused on supporting and expanding HIE and EHRs. IHIC will play a key role in defining Indiana initiatives, convening partners, and coordinating Indiana's pursuit of ARRA funding for HIE and EHR.[46]

Statewide Approach to Privacy and Security

Broadly speaking, Indiana does not impose laws more restrictive than HIPAA regarding privacy. With respect to local HIEs, the INPC agreement and IHIE's agreements similarly do not impose any extra restrictions, with the exception of research. The INPC agreement goes beyond HIPAA in that it requires IRB approval or waiver for all research and inviting the participant's own investigators to participate in the study. In addition, it does not allow research that would compare the participants themselves (e.g., data cannot be used to compare patient outcomes, financial information, charges to patients, etc. on a participant-by-participant basis).

Statewide Technical Approach to HIE

Though the State of Indiana hasn't developed a statewide technical architecture, the State has worked with local HIEs to support the deployment of state services. The Regenstrief Institute has been closely involved with the Indiana State Dept of Health (ISDH) on a number of fronts:

- Public health labs feed data into INPC (e.g., immunizations, lead tests, newborn screenings).
- ISDH is a clinical messaging customer of IHIE/Regenstrief for delivery of its lab results to its clinics (e.g., HIV results).
- Regenstrief functions as the business associate of the hospitals for the purpose of reporting certain communicable disease lab results to ISDH.
- ISDH has engaged Regenstrief to establish connectivity and receive admission data feeds (e.g., chief complaint) from all hospitals in the state (funded out of a CDC grant to support biosurveillance).

Financing for Statewide Activities

[46] https://myshare.in.gov/FSSA/ihic/Pages/IHICToday.aspx

With respect to governance activities, the State of Indiana did not appropriate funds for IHIC operations in 2008. The IHIC is supported by staff from the Indiana government and volunteer board members.

With respect to HIE technical operations, the State of Indiana has yet to fund the provision of statewide HIE. While the State of Indiana has contracted with local HIEs for a few services, the State has not provided grants in the manner other states have.

With respect to financing, the State has focused on supporting quality initiatives that will provide incentives for quality care that are built upon information technology. For example, the Indiana Health Information Exchange's Quality Health First program helps physicians and patients achieve better health outcomes. It allows physicians to track in real-time those patients who are due for preventive screenings and chronic disease follow-up care for conditions like diabetes and heart disease, along with screenings like mammography and well-child visits. helps physicians and patients achieve better health outcomes. It allows physicians to track in real-time those patients who are due for preventive screenings and chronic disease follow-up care for conditions like diabetes and heart disease, along with screenings like mammography and well-child visits.

In Sept 2008, Anthem Blue Cross and Blue Shield agreed to participate in the Quality Health First program and provide bonus payments to physicians based on the program. Under the program, primary-care physicians in Anthem's network who participate will receive a 10% reimbursement bonus for the most commonly billed medical services if they perform in the top 20% based on the quality metrics. Anthem is the first commercial insurer to offer the bonuses through the quality program. The quality program aggregates patient information from a range of sources—including laboratory results, medical reports, and medication and treatment histories—which can be exchanged across physicians through the Indiana Health Information Exchange.

3. Indiana's Regional Health Information Organizations (RHIOs)

Overview and Status

Indiana has well-developed HIE initiatives in Central Indiana area, a small group in Michiana area (South Bend) in northern part of state, and evolving HIEs across the state.

The table below provides a high-level overview of Indiana's most advanced RHIOs.

Name (Date Launched)	**Location**	**Stage**[47]
Indiana Health Information Exchange (2004)	Central Indiana	6
Indiana Network for Patient Care (1994)	Central Indiana	6
Michiana Health Information Network (1998)	Northern Indiana	5
South Central Indiana Regional Health Care Network (2006)	Bloomington Region	4

Brief overviews and relevant details of key RHIO efforts are noted below.

[47] This analysis utilizes the eHealth Initiative's RHIO and HIE implementation scale. Relevant stages include:
Stage 2: Getting organized; defining shared vision, goals, and objectives
Stage 3: Transferring vision, goals and objectives to tactics and business plan
Stage 4: Well under way with implementation -technical, financial and legal
Stage 5: Fully operational; transmitting data
Stage 6: Fully operational; transmitting data and have a sustainable business model
Stage 7: Expansion to encompass a broader coalition of stakeholders

Indiana Health Information Exchange (IHIE)	Website: http://www.ihie.org/

Project Summary and Objectives

The Indiana Health Information Exchange, Inc. was formed in February 2004 to build upon Regenstrief's INPC network. While Regenstrief's mission is research and improving clinical care, IHIE's mission is focused on customer services and the expansion of HIE throughout the state of Indiana. IHIE would not exist but for the efforts of Regenstrief in developing the INPC.

For the clinical messaging project, IHIE serves as the face to the customers and trains and does first-tier support of end users, while Regenstrief provides second-tier technical support. As of April 2009, IHIE featured two services:

- The Indiana Health Information Exchange's Quality Health First program helps physicians and patients achieve better health outcomes. It allows physicians to track in real-time those patients who are due for preventive screenings and chronic disease follow-up care for conditions like diabetes and heart disease, along with screenings like mammography and well-child visits.

- The Indiana Health Information Exchange's DOCS4DOCS clinical messaging service provides health information where and when it needs to be for patient care. The service provides delivery flexibility, higher reliability and consistent result formats. Clinical results include laboratory, radiology reports, transcriptions, pathology and admission, discharge and transfer information.

Key Stakeholders

IHIE's Board has the following stakeholders: Indiana State Dept. of Health, Marion County Health Dept., Mayor of Indianapolis, the 5 large hospital systems in Central Indiana, Regenstrief, Indiana University School of Medicine, the two Indiana medical societies, one community foundation, and some ad hoc members. Each Board member has an equal vote, however, the by-laws specify that any matter directly addressing the functionality or implementation of IHIE's clinical messaging project must reflect a concurrence of at least a majority of the hospital Board members. This special voting carve-out was negotiated at IHIE's formation due to the importance of the project to the hospital members.

Key contact(s): Marc Overhage, Executive Director

Privacy and Security Framework

Indiana does not impose laws more restrictive than HIPAA regarding privacy. The INPC agreement and IHIE's agreements similarly do not impose any extra restrictions, with the exception of research. The INPC agreement goes beyond HIPAA in that it requires IRB approval or waiver for all research and inviting the participant's own investigators to participate in the study. In addition, it does not allow research that would compare the participants themselves (e.g., data cannot be used to compare patient outcomes, financial information, charges to patients, etc. on a participant-by-participant basis).

Regenstrief and IHIE are business associates of the covered entities that participate in the HIE.

Indiana Health Information Exchange (IHIE)	Website: http://www.ihie.org/

Technical Architecture, Approach and Current Status

IHIE enables clinical data (e.g., lab, radiology, transcription, admission/discharge/transfer information, and EKG) to be provided to physicians for treatment at the point of care. Regenstrief receives over 95 data feeds from various sources. Most recently, Medicaid gave Regenstrief access to all of its claims data, which includes medication claims, for INPC uses. Regenstrief also has an agreement with RxHub to receive medication claims history.

Production data feeds in HL7 format from the INPC participants and others come in to Regenstrief's system and are processed (mapped to LOINC standard codes) and stored in separate "vaults" by data provider (e.g., lab and other data from Hospital A are stored in Hospital A's vault). A Master Patient Index and common Concepts Dictionary are utilized across all the data.

With respect to public health, ISDH is a clinical messaging customer of IHIE/Regenstrief for delivery of its lab results to its clinics (e.g., HIV results).

Financing

Initial funding (2004) came from grants and a partial pre-payment of the first year's clinical messaging subscription fees by 4 out of the 5 hospital systems.

A patchwork of funding sources has sustained INPC/IHIE over time. These include: grants and contracts from various sources, contracts from Indiana State Dept of Health, subscription fees for services provided (e.g., clinical messaging), and software license and support fees.

IHIE is already self-sustaining from the funding for its first project, clinical messaging. IHIE is looking to continue to add services that are of value to stakeholders and that will be self-sustaining business lines, such as the clinical quality project (a pay-for-performance reporting project that is currently in development). IHIE may also be involved in some grants in coordination with Regenstrief; however, IHIE's business model will not depend on grants for sustainability.

Use Cases	Data Types	Vendors
Clinical results delivery Quality reporting	Test results and other clinical information	- Developed by Regenstrief

Indiana Network for Patient Care (INPC)	Website: http://www.regenstrief.org/medinformatics/inpc

Project Summary and Objectives
In 1997, the Indiana Network for Patient Care (INPC) was formed through a multi-party data sharing agreement, forming what we would now call a virtual HIE initiative. This agreement permits the use of the data submitted by participants to be used for treatment, research and some public health uses. There are certain minimum data that must be submitted to be a participant; that is, the participant has to give data to be able to take advantage of receiving data. Regenstrief Institute, a not-for-profit research organization affiliated with Indiana University, was the proponent of the INPC, developed the software and maintains the network, and serves as the custodian of the data. The agreement established a management committee to make decisions, however if there is a new use of the data not specified within the scope of the INPC agreement, then a formal amendment to the INPC agreement must be signed by all participants. There are newer uses of the data being contemplated, and amendments to the INPC agreement are currently being discussed.

Key Stakeholders
INPC consists of five major hospital systems: Community Health Network, St. Vincent Health, Sisters of St. Francis Health Services, Clarian Health, and Wishard Health Services. The INPC management committee consists mainly of hospital systems, physician groups, and Regenstrief. The management committee can vote on changes in use of the network, but cannot go beyond what's in the INPC agreement without consent of all participants.

Key contact(s): None listed on website.

Privacy and Security Framework
Indiana does not impose laws more restrictive than HIPAA regarding privacy. The INPC agreement and IHIE's agreements similarly do not impose any extra restrictions, with the exception of research. The INPC agreement goes beyond HIPAA in that it requires IRB approval or waiver for all research and inviting the participant's own investigators to participate in the study. In addition, it does not allow research that would compare the participants themselves (e.g., data cannot be used to compare patient outcomes, financial information, charges to patients, etc. on a participant-by-participant basis).

In INPC, sensitive data, such as psychotherapy notes and alcohol and drug abuse treatment center data, are specifically restricted from being sent to the INPC network.

Technical Architecture, Approach and Current Status
INPC enables clinical data (e.g., lab, radiology, transcription, admission/discharge/transfer information, and EKG) to be provided to physicians for treatment at the point of care. Regenstrief receives over 95 data feeds from various sources. Most recently, Medicaid gave Regenstrief access to all of its claims data, which includes medication claims, for INPC uses. Regenstrief also has an agreement with RxHub to receive medication claims history.

Production data feeds in HL7 format from the INPC participants and others come in to Regenstrief's system and are processed (mapped to LOINC standard codes) and stored in separate "vaults" by data provider (e.g., lab and other data from Hospital A are stored in Hospital A's vault). A Master Patient Index and common Concepts Dictionary are utilized across all the data.

***Financing**
Initial funding (1997) came from grants from a wide variety of sources. A patchwork of funding sources has sustained INPC/IHIE over time. These include: grants and contracts from various sources, contracts from Indiana State Dept of Health, subscription fees for services provided (e.g., clinical messaging), and software license and support fees.

Indiana Network for Patient Care (INPC)	Website: http://www.regenstrief.org/medinformatics/inpc	
Use Cases Clinical results delivery Comprehensive record of care	**Data Types** Test results and other clinical information	**Vendors** - Developed by Regenstrief

Michiana Health Information Network	Website: http://www.mhin.com/

Project Summary and Objectives
Michiana Health Information Network (MHIN) was formed within the South Bend Medical Foundation (SBMF) in concert with the Healthy Communities Initiative of St. Joseph County, IN to offer integrated community information architecture and to be the technical foundation needed to accomplish community health care objectives such as quality, patient safety, and efficiency through a patient-centric clinical data repository. In 1998 MHIN was formally set up by SBMF, a 501(c3), as an Indiana LLC based on the recommendation from lawyers considering Medicare and IRS regulations on private benefit and inurement.

In April, 2009, CMS selected MHIN as one of nine national vendors to participate in CMS's Physician Quality Reporting Initiative. MHIN and the other vendors, which include eClinicalWorks, NextGen, Allscripts, and Epic, will submit blinded clinical data to test whether it is feasible to allow clinical systems to submit clinical data directly to CMS. MHIN is the only health information exchange to be included in this testing program, which began early in April and will continue through 2009.

Key Stakeholders
As of June 2009, the MHIN system reportedly included 630 physicians in the South Bend market. A full list of participants is available online at http://www.mhin.net/web_participants/index.asp.

Key contact(s): Tom Liddell, Executive Director

Privacy and Security Framework
MHIN has established safeguards to make all information as secure as possible. The MHIN secure network utilizes firewalls, encryption, and Public Key Infrastructure to protect patient identifiable data and system user information in accordance with anticipated HIPAA regulations. Patient identifiable information on the MHIN system is stored in a clinical data repository (CDR) located on equipment that is not connected to the Internet. The CDR and the firewall-protected internet servers reside in a fully redundant data center with controlled access, backup power generators, and other security measures.

Technical Architecture, Approach and Current Status
MHIN offers a multi-tiered set of services for physicians and all healthcare entities in the community. MHIN clinical access provides a community repository view of disparate health data sources throughout the community. Groups from Emergency Departments to Hospice providers are beneficiaries. MHIN messenger offers clinical messaging and result distribution for medical results from over 85 data sources. MHIN interface is a robust set of interoperable connections through one pipe to the provider practice. As of June 2009, the MHIN system supported 1.35 million transaction per month with data on 500,000 patients.

Financing
Self-financed through participant fees.

Use Cases	Data Types	Vendors
Clinical results delivery	• ADT • Lab Results • Radiology Reports • Transcription • Lab results	- Cerner (the initial central repository) - Axolotl (clinical exchange)

South Central Indiana Regional Health Care Network	Website: http://www.scirhn.org/

Project Summary and Objectives
The South Central Indiana Regional Health Care Network (SCIRHN) is an "integrated health network" that includes Bloomington Hospital, Bloomington Hospital of Orange County, the Bloomington E-Health Collaborative, Southern Indiana Community Health Care and Southern Hills Counseling.

SCIRHN's network mission to improve the health status of rural residents in the South Central Indiana Regional Health Care Network service area. SCIRHN's primary program goals are: (1) to increase patient safety and quality of care in the South Central Indiana Regional Health Care Network service area; (2) to increase access to health care services among rural residents in the South Central Indiana Regional Health Care Network service area.

In order to enhance stakeholder engagement, SCIRHN works with each group to estimate and then demonstrate return on value. SCIRHN's vendor, HealthBridge, assists the hospital, lab, radiology, and medical records departments with projected return. The HIE has been operational since February 2008.

Key Stakeholders
Stakeholders include the Bloomington Hospital, Indiana Rural Health Association, South Hills Counseling Center, and Southern Indiana Community Health Care.

Key contact(s): Todd Rowland

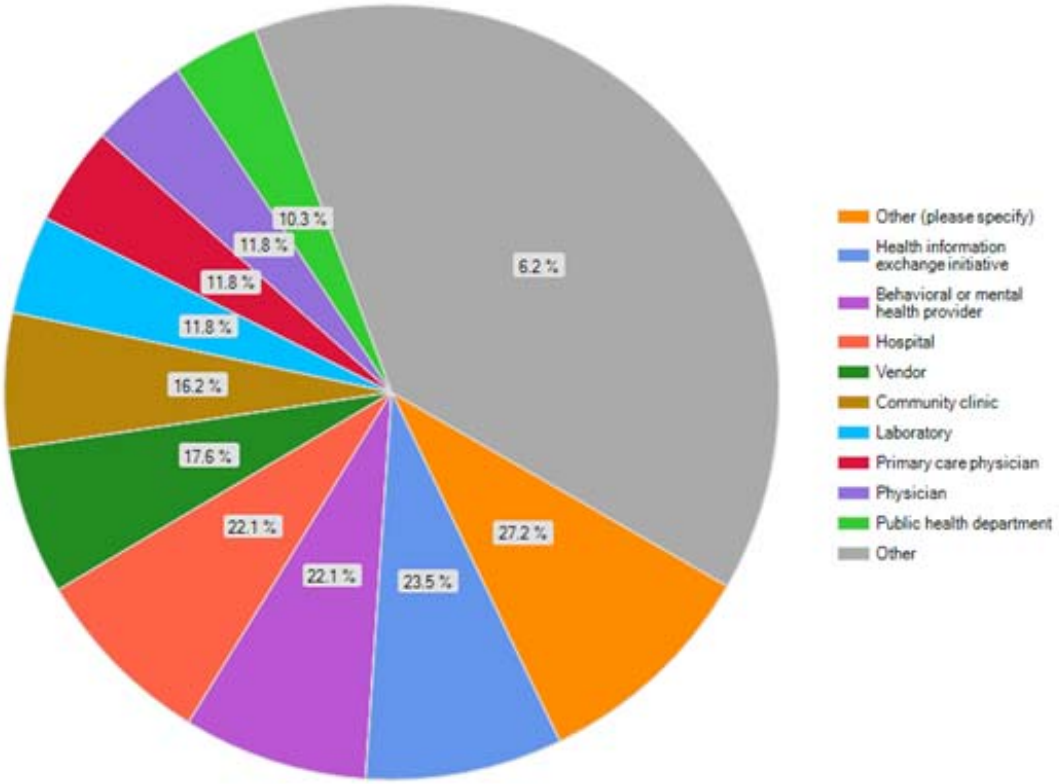
Privacy and Security Framework
Unknown at time of publication.

Technical Architecture, Approach and Current Status
The HIE primarily works at the community level via Clinical Messaging. The Clinical Messaging service enables rapid, reliable, and secure delivery of greater than 100,000 diagnostic results and reports each month.

Financing
A three-year, $540,000 grant from the Health Resources Services Administration helped create the South Central Indiana Regional Health Care Network.

Use Cases	Data Types	Vendors
Clinical Results Delivery	• ADT • Lab Results • Radiology Reports • Transcription • Lab results	- Axolotl (clinical exchange)

9.5 Appendix 9.5 - Web Information Collection Tool and Respondent Demographic Summary



Introduction

The State is partnering with the California HealthCare Foundation (CHCF) to undertake a time-limited process that will strengthen California's ability to maximize federal HIE/HIT funding. The product of this collaborative effort will be a plan that describes the state role in the operation and governance of health information exchange (HIE), either through direct management or through the use of a "State Designated Entity". Our goal is to maximize the state's competitiveness in applying for HIE implementation funding from the ARRA's Health Information Technology for Economic and Clinical Health Act (HITECH).

As a healthcare stakeholder your perspective is critical.

This survey is intended to inform the HIE planning process through

- Learning more about your current and planned activities; and
- Understanding what role you believe the State should play in supporting local exchanges now, and during the implementation process (assuming Federal HITECH implementation funding is obtained)

Contact & Organization Information

Please complete the following information about yourself and the organization you represent.

1. First Name
2. Last Name
3. Title
4. Organization
5. Phone
6. Email
7. Address
8. City
9. State
10. Zip
11. Web address/URL for your organization
12. What stakeholder category do you represent (please select all that apply):
    - Behavioral or mental health provider
    - Community clinic
    - Consumer
    - Employer or health care purchaser
    - Health plan
    - Health information exchange initiative
    - Hospital
    - Laboratory
    - Radiology provider
    - Public health department
    - Medicare
    - Medi-Cal
    - Military and/or VA medical facility
    - Outpatient/Ambulatory surgery center
    - Patient or consumer group
    - Pharmacy benefit manager (PBM)
    - Pharmacy
    - Primary care physician

- Physician
- Surgeon
- Registered Nurse
- Nurse Practitioner
- Allied health professional
- Quality improvement organization
- Skilled nursing facility
- State agency
- Vendor
- Other: Please describe_____

Organization Information

- How is your organization participating in health information exchange (HIE) activities?

Governance

- Please describe how you believe health information exchange should be governed and managed in the State of California.

Clinical Priorities

- What clinical priorities should be addressed at the state level? Regional level? How should these be prioritized and implemented?

Technology Approach

- Does the State have a role in providing technical services? How do you envision such services being leveraged at a regional level?

Privacy and Security

- How should privacy and security issues be addressed to best allow and encourage health information exchange?

Financing

- Do you have ideas for ensuring financial sustainability for health information exchange? Please describe.

Overall

- What are the best ways to engage consumers in the use of health information?

- What input or feedback would you like to provide into the current process?
- Other comments

Input Mechanism

- If you have materials or overview documents that you would like to share as an input into this process please send them to insert email address here

9.6 Appendix 9.6 - HIE Advisory Board Members

ARNOLD SCHWARZENEGGER
GOVERNOR

KIMBERLY BELSHÉ
SECRETARY

Aging

Alcohol and Drug Programs

Child Support Services

Community Services and Development

Developmental Services

Emergency Medical Services Authority

Health Care Services

Managed Risk Medical Insurance Board

Mental Health

Public Health

Rehabilitation

Social Services

Statewide Health Planning and Development

State of California
HEALTH AND HUMAN SERVICES AGENCY

HEALTH INFORMATION EXCHANGE (HIE) ADVISORY BOARD

CO-CHAIRS

Kim Belshé	**Secretary** **California Health and Human Services Agency**
Paul Tang, MD	**Vice President and Chief Medical Information Officer** **Palo Alto Medical Foundation**

MEMBERS

Elaine Alquist	**Chair** **Senate Committee on Health**
Charles Bacchi	**Interim President and CEO** **California Association of Health Plans**
Karen Bass	**Speaker of the Assembly**
Dale Bonner	**Secretary** **Business, Transportation and Housing Agency**
Rachelle Chong	**Commissioner** **California Public Utilities Commission**
Donald Crane	**President and CEO** **California Association of Physician Groups**
Duane Dauner	**President** **California Hospital Association**
Joe Dunn	**Chief Executive Officer** **California Medical Association**
Carmela Castellano Garcia	**President and CEO** **California Primary Care Association**
Karen Hatfield	**President** **California Clinical Laboratory Association**
Melissa Stafford Jones	**President and CEO** **California Association of Public Hospitals**
Sam Karp	**Vice President of Programs** **California HealthCare Foundation**
David Lansky, PhD	**President and CEO** **Pacific Business Group on Health**
Ken McEldowney	**Executive Director** **Consumer Action**
Lynn Rolston	**Chief Executive Officer** **California Pharmacists Association**
Teri Takai	**State Chief Information Officer** **Office of the State Chief Information Officer**
Ben Wilson	**Director of Healthcare IT** **Intel Digital Health Group**

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