Arizona Health Information Exchange (HIE)

Strategic Plan

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Strategic Plan General Components

Arizona Environmental Scan

The delivery and management of health care has extended beyond the walls of a single hospital or doctor's office resulting in health care information being located in a variety of institutions. Arizona recognizes that a statewide HIE to exchange health information electronically will improve the quality and reduce the cost of health care. Arizona is rich in geographic and cultural diversity that includes rural and urban areas, as well as diverse minority populations. The diverse populations set Arizona apart from much of the nation. The 2009 U.S. Census Bureau estimate of Arizona population is approximately 6.6 million. Of this 6.6 million, almost 40 percent of the population is identified within one of the socio-politically racial categories other than White/Caucasian. The State Medicaid Agency, Arizona Health Care Cost Containment System (AHCCCS) insures almost 1.3 million lives in the state. With a large underserved population, the implementation of HIE becomes more significant in managing transitions of care to achieve efficient and cost effective health care.

A historical timeline of Health Information Technology (HIT) in Arizona can be found in the Appendix (Appendix G).

Market Readiness

Arizona's health system is comprised of 86 hospitals (this number includes IHS, VA, Rehab and LTCS facilities), 16 Federally Qualified Health Center's (FQHC), 6 Regional Health Centers, and approximately 13,371 practitioners. EHR baseline adoption in Arizona considerably exceeds the results of national studies. Large number of physicians in group practices and medical school students, residents and fellows, drives the comparatively high adoption of EHR.

Forty-two percent of Arizona physicians are primary care providers (PCPs). While exceeding national study metrics, out of the reported 13,371 physician licensed in the state less than 50% use EHR technologies. EHR technology usage ranges from 71% in government organizations to 25% among solo practitioners. The use of EHR is not synonymous with participation in health information exchange; only slightly more than 9% of AZ physicians have EHR and exchange information with other entities electronically.

State Readiness

Arizona has implemented a number of programs to assist with the use of HIT. Key initiatives and programs to support the HIE infrastructure goals and strategies are:

- Executive Order that created non-profit organization, Arizona Health-e Connection, its Board and membership, and first state roadmap for HIT/HIE in 2006
- Medicaid Transformation Grant
- Arizona Medical Information Exchange (AMIE)
- Purchasing and Assistance Collaborative for Electronic Health Records (PACeHR)
- Transition of AMIE to nonprofit board
- Southern Arizona Health Information Exchange or SAHIE
- New joint AMIE-SAHIE organization - Health Information Network of Arizona (HINAz)
- Arizona Health-e Connection - Regional Extension Center

Current State Data and Gap Analysis

Pharmacies Accepting Electronic Prescribing and Refill Requests

In support of States' solutions for the 2011 meaningful use objectives set forth by the Center for Medicare and Medicaid Services (CMS), the Office of National Coordinator (ONC) requests that States also address and enable e-Prescribing as a key deliverable in that time period with their Health Information Exchange (HIE) solutions. According to CMS, e-Prescribing is the "transmission, using electronic media, of prescription or prescription-related information between a prescriber, dispenser, pharmacy benefit manager, or health plan, either directly or through an intermediary, including an e-prescribing network. E-prescribing includes, but is not limited to, two-way transmissions between the point of care and the dispenser."

The expectation in Stage 1 is that more than 40% of all permissible prescriptions written by eligible providers are transmitted electronically using certified electronic health record (EHR) technology. Therefore, the State of Arizona's HIE solution will need to enable users to electronically generate and transmit prescriptions and prescription-related information.

Over the last decade, the State of Arizona has experienced considerable growth (especially in the Phoenix and Tucson metropolitan areas, Maricopa and Pima Counties respectively) in almost every statistical area and e-Prescribing is no exception. The State's overall growth can be attributed to the fact that it is a relatively new State with many services and providers having just recently established themselves within the State. This fact is not lost on the high percentage, 95%, of community pharmacies where e-Prescribing is activated. The State of Arizona is 10% above the national average of 85% (Source: Surescripts). This high percentage can be related to the high number of chain community pharmacies, 875, compared to independent ones, 142, within the State (Source: Arizona State Board of Pharmacy). Again, this fact is due to the relatively young nature of the State of Arizona. Also, within the last two years there has been an increase of 10% in physicians routing prescriptions electronically, from 8% in 2007 to 18% in 2009. This two-year increase correlates to an 8% growth during that same time period in eligible prescriptions routed electronically from 3% to 11% (Source: Surescripts).

County	Total Population of County	% of Arizona Population	# of Chain Pharmacies	# of Independent Pharmacies	Pharmacies: Population (Ratio)	% Chain Pharmacies (State)	% Independent Pharmacies (State)	% Chain Pharmacies (County)	% Independent Pharmacies (County)
Maricopa	3,954,598	61%	609	79	5,747.96	66.92%	52.67%	88.52%	11.48%
Pima	1,012,018	16%	142	21	6,208.70	15.60%	14.00%	87.12%	12.88%
Pinal	327,301	5%	33	2	9,351.46	3.63%	1.33%	94.29%	5.71%
Yavapai	215,503	3%	30	8	5,671.13	3.30%	5.33%	78.95%	21.05%
Mohave	196,281	3%	27	7	5,772.97	2.97%	4.67%	79.41%	20.59%
Yuma	194,322	3%	17	8	7,772.88	1.87%	5.33%	68.00%	32.00%
Cochise	129,006	2%	14	6	6,450.30	1.54%	4.00%	70.00%	30.00%
Coconino	128,558	2%	15	4	6,766.21	1.65%	2.67%	78.95%	21.05%
Navajo	112,757	2%	8	4	9,396.42	0.88%	2.67%	66.67%	33.33%
Apache	70,207	1%	0	2	35,103.50	0.00%	1.33%	0.00%	100.00%
Gila	52,166	1%	6	2	6,520.75	0.66%	1.33%	75.00%	25.00%
Santa Cruz	42,923	1%	4	2	7,153.83	0.44%	1.33%	66.67%	33.33%
Graham	36,452	1%	3	2	7,290.40	0.33%	1.33%	60.00%	40.00%
La Paz	20,086	0%	2	2	5,021.50	0.22%	1.33%	50.00%	50.00%
Greenlee	8,002	0%	0	1	8,002.00	0.00%	0.67%	0.00%	100.00%
Total	6,500,180		910	150					
Market Share			85.85%	14.15%					

Last Modified: 3/3/2011
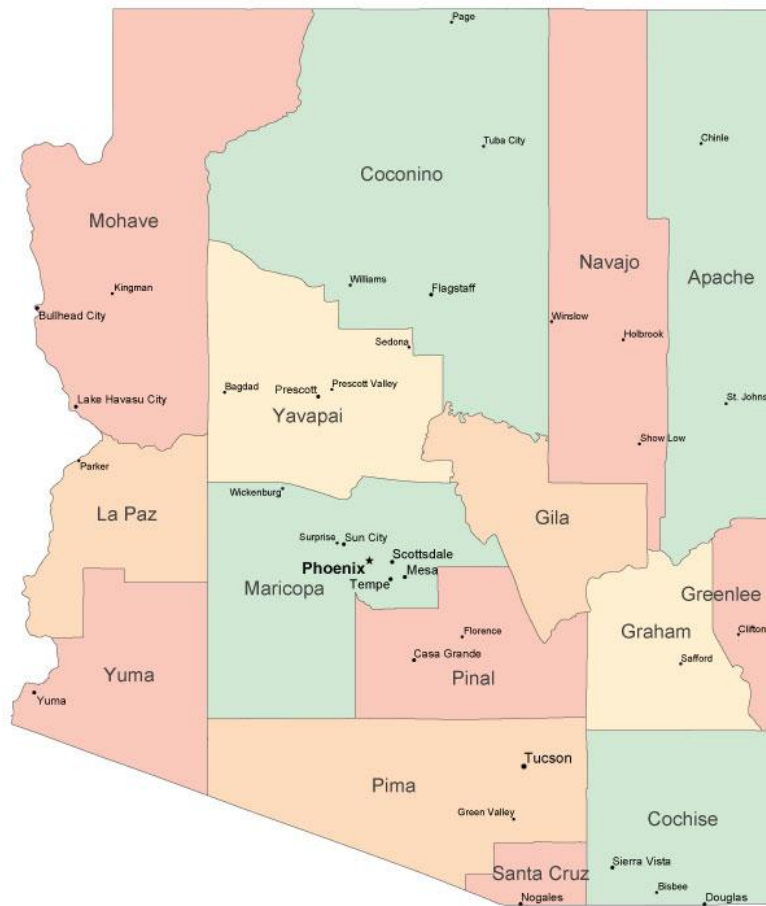
Given the high total of chain pharmacies and there relative abundance throughout the State, along with the State's concentrated population in two metropolitan areas, the Governor's Office of Health Information Exchange (GOHIE) feels that there are robust capabilities for both the prescribing medical provider to use and pharmacy to accept electronic prescriptions and refill requests. GOHIE did perform a telephone survey of those Counties that have 100,000 residents or less as they would appear to be more reliant on independent pharmacies given the higher percentage of those pharmacies compared to chain ones then in the other Counties. The survey results indicated that 82% (9 of the 11 independent pharmacies) have and are using e-Prescribing technology with one of the two none users currently in the process of purchasing a new computer and software which will have e-Prescribing capability.

Therefore, GOHIE's focus with filling any gaps will be connections to the chosen HIE technology solution and its core messaging system. Entities participating in Arizona's HIE can leverage the chosen vendor's relationship with Surescripts to provide connectivity and support services to them. The focal point of this work will be to deliver comprehensive authentication and credentialing services so that providers and pharmacies can meet the requirements of meaningful use with regards to e-Prescribing. This will also take a coordinated effort with the Regional Extension Center grantee, Arizona Health-e Connection (AzHeC), to help providers understand MU requirements and incentives. GOHIE already has a strong relationship with AzHeC, as it is a participant in the State HIE Coordination meetings. Furthermore, AzHeC has an e-Prescribing Committee and a Consumer Advisory Group, both could be used to help educate the general public and promote the usage of e-Prescribing between consumers' pharmacies and their medical providers. Also, an e-Prescribing work group mirroring a similar ONC-sponsored Community of Practice is being formed. Membership will initially consist of AzHeC, the Arizona State Board of Pharmacy, Arizona Pharmacy Alliance, and the National Council for Prescription Drug Programs which is based in Scottsdale, AZ, and practicing pharmacist from throughout the state. This work group will not only focus on the continued promotion and education of e-Prescribing but will also identify technical assistance needs and state policies that GOHIE and/or AzHeC could assist with addressing in the State. There will be focus on those pharmacies and areas of the state which are not enabled for this functionality and continued monitoring of their progression. A further option is for GOHIE to purchase a subscription to Surescripts medication history and offer it to those using e-Prescribing. This would further the efforts of both the overall HIE and e-Prescribing in Arizona while at the same time possibly allow for pharmacists to participate more fully in clinical support decisions.

 All of this does not mean that there are not answers to those providers and/or consumers that are in areas of limited or none e-Prescribing functionality currently. In addition to the independent and chain pharmacies, there are about 200 pharmacies that are classified as Government, Limited/Full Service, and Hospital. The Arizona State Board of Pharmacy also recognizes 395 non-Arizona licensed pharmacies doing business in the State. These pharmacies range from specialist to chains in other States that conduct business via non-traditional means such as mail-order, internet, etc. and is considered a viable option. GOHIE will leverage its NW-HIN Direct pilot which will be further defined and addressed in a later section as an option for these pharmacies to connect to providers. Also, as part of Arizona's core services, the HIE will include a provider directory which could be leveraged by providers to route prescriptions to the appropriate destinations.

Lastly, GOHIE will work with the State Medicaid provider, Arizona Health Care Cost Containment System (AHCCCS), to assess the volume of its claims that are from pharmacies that do not accept electronic prescriptions and if significant, GOHIE will consider measures to help increase e-Prescribing adoption.

Clinical Laboratories Sending Results Electronically
In 2011, it is an ONC objective that providers and hospitals electronically receive and display clinical laboratory test results in a structured format to specifications such that those results are in a human readable format. To achieve

meaningful use, a provider and/or hospital must have more than 40% of all clinical lab tests results ordered incorporated into a certified EHR technology as structured data. This adoption and effective utilization is seen as a significant enabler to better, safer and more cost effective health care.

A 2007 federal Medicaid Transformation Grant provided $11.7 million for HIE development and implementation through the end of 2009. As a result, the Arizona Medical Information Exchange (AMIE) Proof of Concept was launched on September 29, 2008. This proof of concept included, among other transactions, Laboratory Test Results from Sonora Quest Laboratories. At the end of 2009, AMIE contained about 7.6 million records for more than 3.1 million patients (about 40 percent of the state's total population). About 150 medical practice personnel, representing about 400 physicians, used the AMIE. Of the 7.6 Million records accessible in the AMIE system, 6.35 Million (84%) of all records were provided by Sonora Quest Laboratories.

County	Total Number of Labs
APACHE	7
COCHISE	12
COCONINO	14
GILA	6
GRAHAM	4
GREENLEE	1
LA PAZ	3
MARICOPA	357
MOHAVE	27
NAVAJO	12
PIMA	88
PINAL	15
SANTA CRUZ	3
YAVAPAI	19
YUMA	16
Grand Total	584

The Clinical Laboratory Improvement Amendments (CLIA) provides the federal regulations that apply to all clinical laboratories that perform tests on humans. In Arizona, there are 584 CLIA accredited and compliant laboratories. These labs are considered to be capable of providing structured electronic results, and will be the focus of effort in terms of meaningful use. The majority of these laboratories are supported either by contracts with or as their parent company:

- Sonora Quest Laboratories (SQL)
- LabCorp

Sonora Quest Laboratories is dedicated to high standards therefore it used a very restrictive definition with regards to currently "sending results electronically." As a result, only those instances that were delivered to laboratory clients via HL7 methodology was counted as electronically delivered results. Thus, results that were delivered solely by fax, modem driven teleprinter, or printed in the lab and delivered in hardcopy to laboratory clients were excluded. Under this scenario, SQL sent 63.6% of its results electronically.   GOHIE is currently in conversations with LabCorp to obtain similar data as provided by SQL.

GOHIE's focus with filling any gaps will be connections to the chosen HIE technology solution and its core messaging system. Entities participating in Arizona's HIE can leverage the chosen vendor's relationship with Sonora Quest Laboratories and LabCorp to provide connectivity and support services to them. The focal point of this work will be to deliver comprehensive authentication and credentialing services so that providers can meet the requirements of meaningful use with regards to receipt of structured lab results. This will also take a coordinated effort with the Regional Extension Center grantee, Arizona Health-e Connection (AzHeC), and the Arizona Department of Health Services' Office of Laboratory Services, which is the Clinical Laboratory Improvement Amendments (CLIA) contact for Arizona, to help providers understand MU requirements and incentives. GOHIE already has a strong relationship with both entities as they both are participating in GOHIE's State coordination meetings. Also, as part of Arizona's core services, the HIE will include a provider directory which could be leveraged by providers to route laboratory orders to the appropriate destinations. Lastly, GOHIE will leverage its NW-HIN Direct pilot which will be further defined and addressed in a later section as an option for connecting laboratories and providers. Assuming the success of the pilot, GOHIE feels this would provide a viable option for both providers and laboratories to send and receive structured laboratory results in those "white space" areas of Arizona.

Sharing Patient Care Summaries across Unaffiliated Organizations

As part of the core measure set for Stage 1 meaningful use requirements, eligible providers and eligible hospitals and critical access hospitals must perform at least one test of certified EHR technology's capacity to electronically exchange key clinical information (for example, problem list, medication list, medication allergies, diagnostic test results), among providers of care and patient authorized entities.

As a part of the menu measure set for Stage 1 meaningful use requirements, the eligible provider, eligible hospital or critical access hospitals who transitions their patient to another setting of care or provider of care must provide a summary of care record for more than 50% of transitions of care and referrals.

Today, Phoenix and Tucson metropolitan areas represent nearly three-quarters of Arizona's entire population. Arizona's health system is comprised of 86 hospitals (this number includes IHS, VA, Rehab and LTCS facilities), 16 Federally Qualified Health Center's (FQHC), 6 Regional Health Centers, and approximately 13,371 practitioners. EHR baseline adoption in Arizona considerably exceeds the results of national studies. Large number of physicians in group practices and medical school students, residents and fellows, drives the comparatively high adoption of EHR.

Forty-two percent of Arizona physicians are primary care providers (PCPs). While exceeding national study metrics, out of the reported 13,371 physician licensed in the state less than 50% use EHR technologies. EHR technology usage ranges from 71% in government organizations to 25% among solo practitioners. The use of EHR is not synonymous with participation in health information exchange; only slightly more than 9% of AZ physicians have EHR and exchange information with other entities electronically.

As stated earlier, the Arizona Medical Information Exchange (AMIE) Proof of Concept was launched on September 29, 2008. This pilot incorporated statewide medication history, statewide lab data and discharge summaries hospital systems for Medicaid recipients. It offered a web-based viewer for physicians and clinics, the only active HIE in the state. At the end of 2009, AMIE contained about 7.6 million records from nine organizations:

Organization	Total
Banner Baywood Medical Center	58,334
Banner Desert Medical Center	73,095
Banner Estrella Medical Center	34,014
Banner Gateway Medical Center	22,077
Banner Heart Hospital	16,135
Managed Care Pharmacy Consultants, Inc	1,031,172
MIHS	11,936
SJHMC	27,247
Sonora Quest	6,349,858
Grand Total	7,623,868

In early 2010, AMIE merged with Southern Arizona Health Information Exchange (SAHIE) to form a consolidated nonprofit Health Information Organization called Health Information Network of Arizona (HINAz). The new combined HIO organization represents over 70% of the insured and state supported lives, and over 70% of the licensed beds in the state.

Many of the organizations and hospitals mentioned above are actively participating, managing, and exchanging information within a localized health information exchange network. Currently, there is no centralized, state-level HIE network operating within Arizona.

GOHIE's focus with filling this gap will be connections to the chosen HIE technology solution and its core messaging system including summary exchange of patient information using the CCD standard. These capabilities will enable providers and hospitals to meet the requirements of meaningful use with regards to sharing of patient care summaries across unaffiliated organizations. Also, as part of Arizona's core services, the HIE will include a provider directory which could be leveraged by providers to route patient care summaries to the appropriate destinations.

GOHIE will coordinate with the Regional Extension Center grantee, Arizona Health-e Connection (AzHeC), to provide, document, and issue standards to support existing EHR connectivity among unaffiliated hospitals, health systems, and individual providers as a mechanism to achieve exchange. As mentioned above, AzHeC participates in the State coordination meetings.

Lastly, GOHIE will evaluate and create a strategy for potential offerings of NW-HIN Direct-based solutions enabling eligible providers and hospitals to exchange. This strategy will be established as part of the pilot since one of the main objectives of that project is the flow of data across unaffiliated providers/organizations. If successful, this will re-enforce the viability of NW-HIN Direct as a state option for those "white space" areas within Arizona.

Supporting Key 2011 HIE Deliverables and Objectives
GOHIE completed an environmental scan and gap analysis of current HIE capabilities within Arizona for e-prescribing, receipt of structured lab results, and exchange of patient care summaries. GOHIE has identified gaps within all three of these areas.   As described in Arizona's Strategic Plan, the long-term vision is to develop a rich and robust HIE platform. GOHIE recognizes that in order to meet the 2011 key deliverables and to enable the meaningful use objectives, Arizona must take a phased approach focusing on core services and the implementation of a strong policy framework addressing standards, security, data accessibility, and document types.

GOHIE understands the importance of continued Electronic Health Record (EHR) adoption within the state to both support providers in meeting Stage 1 meaningful use and the overall success of the Health Information Exchange (HIE).

In February 2010, the Arizona State University Center for Health Information and Research conducted a survey on EHR product usage and concluded that 45% of Arizona providers were currently using one. In this same survey, 20% of physicians in Arizona were identified as neither having internet or email access at their practice settings and that paper files still remain the most prevalent method for medical record storage in Arizona. Furthermore, only 54% of those 45% state EHR users transmit medical data to unaffiliated organizations. More recently, a national survey conducted by National Center for Health Statistics, an agency of the Health and Human Services' Centers for Disease Control and Prevention, and the American Hospital Association, stated an EHR rate of nearly 60% for Arizona.

GOHIE plans to collaborate with the Arizona Health-e Connection (AzHeC), the Regional Extension Center, Arizona Health Care Cost Containment System (AHCCCS), Arizona's Medicaid agency, and other local stakeholders throughout the state to encourage EHR adoption, educate providers on meaningful use incentives and the benefits of an EHR. AzHeC intends to register 1,958 priority primary care providers by April 2014.

Yet adoption is only part of the process as to achieve true health information exchange (and future Stages' of meaningful use requirements), data must flow from/to unaffiliated organizations. In support of this exchange, GOHIE, as indicated earlier, is participating in a NW-HIN Direct pilot which will showcase data flow and exchange. AHCCCS is involved currently with the pilot and there is a plan to include AzHeC at a future date as the pilot grows. Through the procurement process, GOHIE intends to implement a statewide provider directory as part of its core services that will over time be instrumental to vendors and providers leveraging NW-HIN Direct for exchange activities. Health Information Network of Arizona (HINAz) is currently in the process of working with Sonora Quest Laboratories, LabCorp, and Surescripts to integrate their interfaces into its HIE solution. This will simplify the overall process for all involved entities in the state to connect to laboratories and pharmacies. GOHIE recognizes HINAz as a potential partner as it moves forward with it's HIE work and GOHIE will need to communicate with HINAz along with exploring potential collaboration opportunities with it.

Electronic Prescribing

In Arizona, 95%, of community pharmacies have activated e-Prescribing systems in place. This high percentage can be related to the high number of chain community pharmacies, 875, compared to independent ones, 142, within the State (Source: Arizona State Board of Pharmacy). Within the last two years there has been an increase of 10% in physicians routing prescriptions electronically, from 8% in 2007 to 18% in 2009. This two-year increase correlates to an 8% growth during that same time period in eligible prescriptions routed electronically from 3% to 11% (Source: Surescripts).The following strategies will be implemented to address the current E-Prescribing gaps in Arizona to ensure 40% of all permissible prescriptions written by eligible providers are transmitted electronically using certified electronic health record (EHR) technology for Stage 1 Meaningful Use:

1. GOHIE will work with the state Medicaid agency, Arizona Health Care Cost Containment System (AHCCCS), to assess the volume of its claims that are from pharmacies that do not accept electronic prescriptions and if significant, GOHIE will consider measures to help increase e-Prescribing adoption.

2. For pharmacies, GOHIE is considering a subscription to Surescripts' medication history and offering it to those using e-Prescribing. This will further the efforts of both the overall HIE in Arizona and allow for pharmacists to participate more fully in clinical support decisions

3. Develop core infrastructure and messaging services to connect to vendor(s) such as Surescripts to provide services for pharmacies that do not currently support e-prescribing. In addition, any Request for Proposal (RFP) issued by the State will require the HIE vendor to provide technical resources for EHR vendors to develop connections to the statewide HIE. Also, as part of Arizona's core services, the HIE will include a provider directory which could be leveraged by providers to route prescriptions to the appropriate destinations.

4. GOHIE will leverage its NW-HIN Direct pilot as an option for connecting pharmacies and providers. For example, there are no pharmacies in Apache County with the ability to accept and fill e-prescriptions. GOHIE sees NW-HIN Direct as an initial strategy for these pharmacies to enable fluid communications with eligible providers. Please see NW-HIN Direct section for further details on the pilot and future implementation.

5. Collaborate with the Regional Extension Center grantee, Arizona Health-e Connection (AzHeC), to help providers understand meaningful use requirements and incentives.   GOHIE will continue to work with other prevalent statewide organizations such as Arizona Pharmacy Alliance, Arizona State Board of Pharmacy, and the National Council for Prescription Drug Programs to provide their vast knowledge and understanding of e-Prescribing to better the adoption and exchange in Arizona. In addition, several of these entities will be leveraged to provide technical assistance and support to providers where needed.

Receipt of Structured Lab Results

In Arizona, there are 2 major lab organizations (Sonora Quest and LabCorp) which cover an estimated 80-90% of lab transactions within the State. GOHIE is still collecting and analyzing data which will be important in determining the most prudent approach to any gap in this area. As mentioned in the environmental scan, at the end of 2009 the Arizona Medical Information Exchange (AMIE) contained about 7.6 million records for more than 3.1 million patients (about 40 percent of the state's total population). About 150 medical practice personnel, representing about 400 physicians, used the AMIE. Of the 7.6 Million records accessible in the AMIE system, 6.35 Million (84%) of all records were provided by Sonora Quest Laboratories. Currently, Sonora Quests reports that 63.6% of all their transactions are submitted electronically to providers. GOHIE will continue to research the following data elements:

- % of labs able to produce and deliver structured lab results

- % of labs able to receive orders electronically

- % of providers receiving structure lab results

The following strategies will be employed to address Stage 1 Meaningful Use (MU):

1. Assess the volume of Medicaid claims coming from labs and work with the Regional Extension Center and HINAz to prioritize providers that are unable to deliver electronic results to providers and if significant, consider measures to increase adoption, such as policies, standards, core infrastructure, and technical services.

2. Develop core infrastructure and messaging services to connect to Sonora Quest and LabCorp. In addition, any RFP issued by the State will require the HIE vendor to provide technical resources for EHR vendors to develop connections to the statewide HIE. As mentioned above, Sonora Quest and LabCorp represent a very large percentage of lab transactions in Arizona. It is critical for them to be a part of any statewide HIE solution. Also, as part of Arizona's core services, the HIE will include a provider directory which could be leveraged by providers to route lab orders to the appropriate destinations.

3. GOHIE will leverage its NW-HIN Direct pilot as an option for connecting laboratories and providers. Assuming the success of the pilot, GOHIE feels that this will provide a viable option for both providers and labs to send and receive structured lab results in the "white space" areas of Arizona. For example, there is a hospital laboratory in Flagstaff that currently does not have EHR capabilities and GOHIE sees NW-HIN Direct as an initial strategy for it to enable fluid communications with eligible providers. Please see NW-HIN Direct section for further details on the pilot and future implementation.

4. Collaborate with the Regional Extension Center grantee, Arizona Health-e Connection (AzHeC), and the Arizona Department of Health Services' (ADHS) Office of Laboratory Services, which is the Clinical Laboratory Improvement Amendments (CLIA) contact for Arizona, to help providers understand MU requirements and incentives as related to laboratories.

Sharing Patient Care Summaries across Unaffiliated Organizations

GOHIE is placing emphasis on establishing an infrastructure and policy framework that enables the exchange of Clinical Summaries to support Stage 1 meaningful use objectives. Currently, there is no centralized system or strategy for coordinating patient care summary delivery in Arizona. The following strategies will be employed to address Stage 1 Meaningful Use:

1. Develop core infrastructure and messaging services through an HIE vendor to enable eligible providers and hospitals to conduct exchange of patient care summaries. In addition, any RFP issued by the State will require a vendor to provide technical resources and support for the exchange of patient care summaries using the CCD standard. Also, as part of Arizona's core services, the HIE will include a provider directory which could be leveraged by providers to route patient care summaries to the appropriate destinations.

2. Provide, document, and issue standards to support existing EHR connectivity among unaffiliated hospitals and health systems as a mechanism to achieve the HIE meaningful use requirements. This will be partially achieved by working with the prevailing EHR vendors in Arizona and with Arizona Health-e Connection (REC Grant) to support these standards.

3. Evaluate and create strategy for potential offerings for NW-HIN Direct-based solutions to help enable eligible providers and hospitals to meet meaningful use. This strategy will be established as one of the main objectives of this project is the exchange of data between unaffiliated providers/organizations. If successful, this will re-enforce the viability of NW-HIN Direct as a state option for those "white space" areas in Arizona.   Given that only 9% of EHR-enabled providers are currently exchanging information electronically in Arizona per Arizona State University's Center for Health Information and Research survey, GOHIE strongly feels that NW-HIN Direct is a great initial strategy to fluidly exchange data. Please see NW-HIN Direct section for further details on the pilot and future implementation.

Health Plans Supporting Electronic Eligibility and Claims Transaction

AHCCCS Overview

Arizona Health Care Cost Containment System (AHCCCS), the State's Medicaid Agency, uses federal, state, and county funds to provide health care coverage to the State's acute and long-term care Medicaid population, low-income groups, and small businesses. Since 1982, when it became the first statewide Medicaid managed care system in the nation, AHCCCS has operated under a federal Research and Demonstration Waiver that allows for the operation of a total managed care model.

Unlike programs in other states that rely solely on fee-for-service reimbursement, AHCCCS makes prospective capitation payments to contracted health plans responsible for the delivery of care. The result is a managed care system that mainstreams recipients, allows them to select their providers, and encourages quality care and preventive services. In State Fiscal Year (SFY) 2009, AHCCCS provided health care coverage to over 1.3 million Arizonans.

AHCCCS oversees three main programs (as of December 2009):

Program	Number Recipients*	Percent Recipients
AHCCCS Acute Care	1,270,850	93.0%
Arizona Long Term Care System (ALTCS)	49,411	3.6%
KidsCare	46,886	3.4%
TOTAL	1,367,147	100.0%

AHCCCS Acute Care

The majority of Acute Care Program recipients are children and pregnant women who qualify for the federal Medicaid Program (Title XIX). Although most are enrolled in AHCCCS contracted health plans, American Indians and Alaska Natives in the Acute Care Program may choose to receive services through either the contracted health plans or the American Indian Health Program. AHCCCS also administers an emergency services only program for individuals who, except for immigration status, would qualify for full AHCCCS benefits.

Arizona Long Term Care System (ALTCS)

The Arizona Long Term Care System (ALTCS) provides acute care, behavioral health services, long-term care, and case management to individuals who are elderly, disabled, or developmentally disabled and meet the criteria for institutionalization. Whereas ALTCS members account for only 3.6% of the AHCCCS population, they account for approximately 23.8% of the costs. The ALTCS program encourages delivery of care in alternative residential settings. As in the Acute Care Program, elderly physically disabled and developmentally disabled members of all ages receive care through contracted plans called program contractors.

KidsCare

The Children's Health Insurance Program (CHIP), referred to as KidsCare, offers affordable insurance coverage for low-income families. Children under age 19 may qualify for the program if their family's income exceeds the limit allowed for Medicaid eligibility, but is below 200% of the Federal Poverty Level (FPL). With the exception of American Indians, who are exempt in accordance with federal law, parents pay a monthly premium based on income. The KidsCare program results in a federal contribution that equates to a $3.00 federal match for every $1.00 spent by the State. As with the Medicaid Acute Care Program, American Indian and Alaska Native children may elect to receive care through an AHCCCS-contracted health plan or the American Indian Health Program. The majority of children enrolled in the KidsCare program however, is enrolled in AHCCCS health plans, and receives the same services as those available to children in the Medicaid Acute Care Program.

AHCCCS engages in contracts with a number of public and private organizations that provide a variety of services:

- Behavioral health services are provided by the Arizona Department of Health Services (ADHS), Division of Behavioral Health Services (DBHS).

- Services for developmentally disabled individuals in ALTCS are offered through the Arizona Department of Economic Security (ADES) Division of Developmental Disabilities (DDD).

- Acute health care services for children in foster care are provided by the Arizona Department of Economic Security (ADES), Comprehensive Medical and Dental Program (CMDP).

- Services for children with chronic conditions are offered through the Arizona Department of Health Services, (ADHS), and Children's Rehabilitative Services (CRS).

- Selected administrative services, such as eligibility determination, are performed by Arizona Department of Economic Security (ADES)

For the purpose of this HIE strategic plan; this section is going to focus on the state managed mechanisms for electronic eligibility verification and on the Division of Fee for Service's Claims Submission.

The following is a list of AHCCCS Acute Health Plan Contractors:

- Arizona Physicians IPA

- Bridgeway Health Solutions

- Care1st Health Plan

- DES/CMDP

- Health Choice Arizona

- Mercy Care Plan

- Phoenix Health Plan

- Pima Health Plan

- University Family Care and Maricopa Health Plan

Current environment – Eligibility Verification and Electronic Claims

There are four different ways a registered Arizona Medicaid provider can check on eligibility electronically.

The first method is thru the secured provider web portal, AHCCCS Online, for member eligibility verification.

- Processing 9,540,334 verifications (10/1/2009-9/30/2010)

- This web portal is free of charge

- Eligibility verification uses the HIPAA 270/271 transactions

The second way is by our phone system that uses an Interactive Voice Response (IVR) which guides/prompts providers thru menu choices for enrollment information. This is considered an electronic eligibility inquiry even though it is done by phone.

AHCCCS also accepts bulk verification transactions through its Virtual Private Network (VPN) - also called the EDI Gateway, this uses AHCCCSA virtual private network to send and receive information including member eligibility. The VPN offers a batch eligibility verification capability that lets providers requests a list of current patients (HIPAA 270 request) eligibility verification, then AHCCCS sends back the HIPAA 271 transaction with the patient eligibility status. Using the EDI Gateway, AHCCCS provides daily updates to its health plans regarding members enrolled in their plan.

AHCCCS has also contracted with a vendor who has access to Medicaid member information -this service provides eligibility information for many health plans including Medicaid, and providers pay a transaction fee to the contractor for this service.

Electronic Claims Submission

Because most of AHCCCS membership takes part in a managed care health plan, individual providers submit claims to the member's health plan, not to AHCCCSA.   Health plans are required to submit to AHCCCSA electronically all of their health claim information, so the baseline would be 100% of all claims are submitted electronically for AHCCCS.

There are three ways Providers can submit claims from Medicaid members Electronic claims submission uses the HIPAA 837 transaction:

1. AHCCCS accepts claims through AHCCCS Online portal (direct data entry or DDE)

2. AHCCCS also accepts bulk claims submissions and their attachments through the Virtual Private Network (VPN) and batch thru the EDI. . The VPN offers a batch claim submission send claims (HIPAA 837 claims submission)

3. Paper submissions

AHCCCS requires all health plans to submit their claims/encounters to AHCCCSA electronically in the Acute Program so 100% of the encounters come to us electronically. Each plan established a policy of what it requires its providers to do, which means that at a minimum all plans must have at least 60% of their claims electronically. Some plans run 80% of their claims are received electronically. The exception to this arrangement at AHCCCS is in the Division of Fee-For – Service Population, or DFSM. This division is responsible for the clinical, administrative and claims functions of the Fee-For- Service population of more than 160,000 members. This includes American Indians enrolled in the AHCCCS Fee-For-Service Program and individuals in the Federal Emergency Service Population. DFSM pays fee-for-service provider claims, prior authorizes medical services, and provides ongoing training in all areas. DFSM also acts as the Third Party Administrator for various other state entities serving approximately 70,000 clients.

Division of Fee for Service Claims Unit

More than 6 million claims totaling more than $600 million are paid each year. The Claims Unit processes paper, electronic, and online claims, provides retrospective claims review and research, and provides customer service regarding claims. The Claims Unit also provides training for providers who serve the FES population and for the entities for which DFSM is the Third Party Administrator.

 The GOHIE team wants to work with the commercial plans to better understand their electronic eligibility and claims processes over the next six months.

Health Departments Receiving Immunizations, Syndromic Surveillance, and Notifiable Laboratory Results

Public Health HIE Capabilities

Arizona Department of Health Services (ADHS) has developed many different mechanisms to collect information necessary to monitor public and behavioral health and to trigger public health action. ADHS has worked diligently on improving information timeliness and accuracy and to reduce the burden on health care providers and other information sources by moving from manual processes to automatic data transmission from other electronic systems. ADHS has also worked to improve the effectiveness and efficiency of public health and prevention programs. The following sections provide details and baseline data about the primary public health capabilities related to immunizations, laboratory reporting, and syndromic surveillance.

ADHS has developed an HL7 Integration Engine for health data exchanges with its partners. The engine utilizes the HL7 accelerator which incorporates data types and segments for many message types in different HL7 standards, from versions ranging from 2.2 to 2.6. It has the capacity to process HL7 ORU messages and sends an ACK for acknowledgement. It is part of the ADHS Enterprise Service Hub (ESB) with multiple interfaces including web services, HTTPS uploads, automatic SFTP transmissions and the CDC's PHINMS broker. It is currently being used for automated electronic laboratory reporting with ADHS partners and will be implemented for ASIIS.

Although ADHS has developed infrastructure to allow for electronic exchanges with partners, it is interested in utilizing any common state infrastructure that becomes available such as NW-HIN, common client index, and common provider/facility directories.

Immunization Registry

Arizona's immunization registry, the Arizona State Immunization Information System (ASIIS), was developed in conjunction with ARS §35-136, effective January 1, 1998, which mandates that all immunizations administered to children in Arizona be reported to ASIIS. In 2009, the statute was amended to mandate that pharmacist-administered vaccines given to adults also be reported to ASIIS. Since 1998, ASIIS has grown to include over 4.3 million patients and 41.5 million immunization records. ASIIS is also populated using birth certificate data.

The following table depicts the current methods used to submit data to ASIIS:

Data Submission Method	# of Sites	Transaction Volume	% of Total Transactions
Batch upload (HL7)	46	120,000	11%
Batch flat file	200	316,361	29%
Website entry	600	621,813	57%
Paper	200	32,727	3%
Total	1,046	1,090,909	100%

The Arizona Department of Health Services has been awarded a $1.1M CDC ARRA cooperative agreement to provide support for the enhanced interoperability of Electronic Health Record systems with ASIIS with a specific focus on the exchange of vaccination records and reducing duplicate data entry burden on providers. Funding will be used to plan, enhance, adopt and apply health information technology standards for direct health care system interoperability with ASIIS and will accomplish the following:

- Increase the number of provider sites submitting immunization data via HL7 messages by at least 40 sites
- Increase by at least 10% the amount of HL7-based transactions that are submitted on a weekly/monthly basis
- Improve current transactions to meet national standards and immunization reporting needs
- Work with EHR vendors to develop standardized products and templates for data exchange projects
- Increase the amount of immunizations reported to ASIIS within 30 days or less by at least 10%
- Participate on statewide committees and national panels of experts regarding interoperability between IIS and EHR's
- Update ADHS software and hardware to meet increased needs and to migrate toward HL7 version 2.5 functionality; and
- Develop the means to submit HL7 transactions through the ADHS Enterprise Service Hub

Outcomes will include: 1) the development of EHR-ASIIS interfaces that will allow seamless, timely and efficient reporting of child immunization data by health care providers using their EHR systems to ASIIS, 2) additional steps

toward enhancing a "one-stop" gateway for provider reporting of public health information by including ASIIS in the integration engine of the ADHS gateway; 3) benefits to the parents of children and health care providers who rely on ASIIS to provide complete and timely electronic immunization records, 4) the incorporation of ASIIS immunization standards into off-the-shelf EHR systems, better service to providers and ADHS statewide; and 5) progress toward achieving Arizona's long-term goal of Health Information Exchange.

Electronic Lab Public Reporting

The electronic exchange of public health data is critical in improving the accuracy and timeliness of notifiable disease reports. ADHS currently has several electronic databases used to exchange infectious disease information. The Arizona State Public Health Laboratory (ASPHL) has been using a laboratory information management system, STARLIMS, to process test requests and report test results. ADHS is in the process of modifying the STARLIMS database to generate influenza data messages using Public Health Laboratory Interoperability Project (PHLIP) standard messaging terminology to allow for the electronic exchange of influenza results between ASPHL and the Centers for Disease Control and Prevention (CDC) and the epidemiology program at ADHS. The Department has also implemented an Electronic Laboratory Reporting (ELR) system to receive notifiable disease results from clinical laboratories into the epidemiology program surveillance databases, including Arizona's National Electronic Disease Surveillance System (NEDSS)-compliant system, MEDSIS.

MEDSIS (Medical Electronic Disease Surveillance Intelligence System) is a web-based application to electronically capture and analyze disease information from Arizona hospitals and clinical laboratories. MEDSIS is a statewide system hosted and supported by ADHS for use by local health departments, and individuals and institutions responsible for reporting communicable diseases. Participating institutions will electronically transmit disease information to MEDSIS. When completed, MEDSIS will be linked to numerous other data sources including other surveillance data sources.

ELR (Electronic Laboratory Reporting) – ELR is a component of MEDSIS that is solely for the collection of reportable Laboratory orders and results used for disease surveillance. This web-based system utilizes data messaging standards, and allows for web-based data entry if electronic data transfer is unavailable.

ADHS was recently awarded a $600K CDC ARRA cooperative agreement to enhance both the ELR system and the STARLIMS system to allow for the exchange of laboratory information with public health and clinical labs and Electronic Health Records (EHRs). One of the key gaps to expanding the interoperability of STARLIMS with external partners, including hospitals and labs, is the need for additional staffing resources to perform mapping of laboratory data elements into a standard vocabulary and to configure existing systems to generate and accept electronic reports according to national HL7 messaging standards.

Funding will be used to accomplish the following:

- Configure the STARLIMS system to produce HL7 messages for reporting to the state ELR system and the CDC using PHLIP standards

- Increase capacity to work with hospital laboratories to satisfy the hospital care goal by establishing secure data connections using HL7 messages

- Enhance the state STARLIMS system to accept electronic lab orders and return results to ordering facilities using a data exchange hub and international messaging standards

Syndromic Surveillance

ADHS has a variety of surveillance systems that are used to analyze medical data and detect or anticipate disease outbreaks. Probably the most recent example of the types of syndromic surveillance performed was last year's H1N1 influenza outbreaks. ADHS' State Lab was the entity responsible for confirming these cases.

The ADHS Infectious Disease Epidemiology Section (IDES) receives information through the state laboratory's electronic laboratory database (LITS) or by communication with the laboratory. The information sharing procedures between IDES and the state laboratory and clinical laboratories is evolving with the addition of MEDSIS, Electronic Laboratory Reporting (ELR), and the Laboratory Information Management System (LIMS).   The following types of information sharing are occurring:

- Schools, long-term care facilities, or other institutions report influenza or other influenza-like outbreaks to state or local health departments (passive reporting) and ADHS is in the process of evaluating electronic ways to receive this information more easily

- Enhancing influenza surveillance (works in progress):

    o Increasing electronic submission of laboratory results from clinical and hospital laboratories
    o Developing a protocol for investigating institutional outbreaks; working with local health departments to implement the protocol, and identify the necessary data collection tools
    o Incorporating the use of other alternative surveillance sources (e.g. over-the-counter pharmaceutical sales, BioSense) into routine surveillance
    o Recruiting additional Arizona pharmaceutical retailers for the Natural Resource Data Management System (NRDMS) to increase coverage in rural areas of the state
    o Collaborating with CDC to provide additional hospital data for BioSense and MEDSIS
    o Providing additional training on CDC BioSense and suggesting system enhancements
    o Continuing development of Early Warning Infectious Disease Surveillance (EWIDS) functions in MEDSIS to address needs along the Arizona-Mexico border.

In addition to the major surveillance applications mentioned above, ADHS also utilize the following applications:

- CDC BioSense – An application that provides visualization of syndromic surveillance data using in and out patients seen at Veterans Administration and Department of Defense facilities as well as laboratory orders from Laboratory Corporation of America. County health department are able to access this system to identify sentinel alerts and unexpected data aberrations for follow up investigations. CDC in conjunction with ADHS and Maricopa County Department of Public Health are working with large hospital systems to transmit additional patient specific emergency department and inpatient data to BioSense and MEDSIS.
- AZ Child Health Indicator Program (CHIP) – An application used to assist school nurses in electronic management of student health records. The software is used to collect information on 266 nursing diagnosis codes, including acute and chronic illnesses and injuries. Currently 340 schools from 10 counties throughout Arizona use CHIP representing 20% of the state's school population. The system allows public health to alert school users of health related events or emergencies and with further development could alert public health users when counts exceed threshold levels.
- Hospital Discharge – An application used to report on data provided by hospitals. This includes data on inpatient stays and emergency room visits.

- Arizona State Trauma Registry (ASTR) – An application used to collect trauma data. Qualifying trauma events are those transmitted to a trauma center or emergency department or hospital patients admitted or died from a qualifying injury ICD-9 code.
- ADHS EMS and Trauma – An application used to collect Emergency Medical transport information.

Goals and Tracking Progress

ADHS has responded to the following goals in the tables below; however because of the way that ADHS is structured in Arizona it does not feel that these goals are going to be adequate for its needs in assessing its current state or for measuring progress. Arizona has one state health department so it has one health department receiving these types of data and this will remain the same. ADHS feels that measures more applicable to its environment would be to measure the percent of these types of electronic data exchanges as proposed in the tables below.

Activity	Current State (July 2010)	Goal (July 2011)	Goal (July 2012)	Goal (July 2013)
Percent of health departments receiving immunizations	100%	100%	100%	100%
Percent health departments receiving syndromic surveillance	0%	0%	100%	100%
Percent health departments receiving notifiable laboratory results	100%	100%	100%	100%

Activity	Current State (July 2010)	Goal (July 2011)	Goal (July 2012)	Goal (July 2013)
Percent of immunization records received electronically (all electronic submissions, via HL7, batch flat file and ASIIS website	97%	98%	98%	98%
Percent of immunization records received via HL7	11%	13%	25%	30%
Percent of syndromic surveillance data received electronically	0%	0%	10%	40%
Percent of notifiable laboratory results received electronically	16%	60%	75%	90%

Arizona State Department of Health – Lab Data Exchange Architecture

MEDSIS Team

Data Exchange Web App

Viewer / Resubmission

Partner Folder

ERRORS
SUBMISSION
ACKNOWLEDGE
ARCHIVES

Lab Reports

HSP DEX WEBAPPL Server

TEXT format Reports

XML Output

FTP

Maricopa County

Sonora Quest

H S P   G A T E W A Y

ARUP

LABCORP

BOSTWICK

AZ State Lab

F I R E W A L L

FTP

PHINMS

HL7 Adapters

Acknowlegment / Re-Submission

LOINC
SNOMED
NEMSIS

ORCHESTRATIONS

Receive PORTS HL7 2.x Incoming

HSP PHEDEX BizTalk Server

XML Output

SEND PORTS

ELR - DB

STD

TB

CANCER

MEDSIS

NEDSS Compliant System

HIV

MANUAL Reports

F I R E W A L L

PHINMS

CDC

Arizona State Department of Health – Lab Data Exchange Architecture

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TB

CANCER

MEDSIS
NEDSS Compliant System

HIV

MANUAL Reports

PHINMS

Maricopa County

CDC

FIREWALL

Strategic Stakeholder Participation

A high degree of involvement in and support for statewide HIE is expected from a wide range of federal, state and local stakeholders throughout Arizona. There is a consensus that no single method exists to undertake such a diverse task as creating an e-health infrastructure for Arizona. However, stakeholders and participants in the process have been able to reach a general agreement on the direction of the strategy. The HIE strategy balances various competing priorities by advocating a representative governance structure, and it incorporates flexibility to adapt to lessons learned, technical advancements, and national standards as they emerge.

Regional Extension Center Coordination

Close coordination with Arizona Health-e Connection, the Regional Extension Center (REC), is instrumental to improving EHR adoption based on the reference data. Arizona intends to coordinate with the REC and provide network services to medical practices that serve rural and underserved populations. These services will include HIE capabilities in 2011. This will enable these medical practices to demonstrate care coordination over the HIE, and therefore meet the requirements for meaningful use of HIT as set forth by ONC.

Health Information Exchange (HIE) Development and Adoption

Vision, Goals and Objectives

The Arizona Governor's Office of Health Information Exchange (GOHIE) **vision** is to implement a sustainable statewide Health Information Exchange (HIE) that enables the sharing of health care data across organizational boundaries to improve patient safety, security, quality, and cost.

GOHIE's HIE **goals and objectives** are:

- Initial stages of the HIE platform in 2011 will include the capabilities for e-Prescribing, receipt of structured lab results, and sharing patient care summaries across unaffiliated organizations.
- Implement an HIE platform across the state in a "phased" approach focusing on specific milestones and ensure ONC requirements are fulfilled by 2014.
- Ensure meaningful use outcomes for health systems and providers by providing viable HIE capabilities.
- Prioritize privacy and security.
- Represent underserved and rural populations.
- Effectively manage grant resources as a one-time investment and deliver long-term value to the state of Arizona.
- Support HIE services and adoption for all relevant stakeholder organizations, including providers in small practices, across a broad range of uses and scenarios.
- Be operationally feasible, achievable, and sustainable, building on what is already working.
- Remain vigilant, foster innovation and adapt to emerging trends, standards and developments both locally and nationally.

HIE Strategies

GOHIE intends to expand on the foundation of HIT/HIE established within the goals and objectives set forth in the Arizona Health-e Connection Roadmap (Appendix A) published April 2006. A great deal of the information in that plan is still relevant as it identified the community priorities for network services and constructed a business plan that focused on meeting the needs of health care providers, payers, patients, consumers, and employers. Organizations within the community embraced these ideals and continued to move towards the electronic exchange of health information.

Arizona has always been a progressive state and this thinking is not lost on HIT/HIE. The Arizona Telemedicine Program was created in 1996 as a ground-breaking partnership between the Arizona State Legislature and the Arizona Health Sciences Center in Tucson. Since then, the 8-site pilot project has evolved into one of the largest and most successful

comprehensive telemedicine programs in the world. With this example of innovation, GOHIE recognizes that it is essential to partner with the existing health care community leaders to build a sustainable solution.

Governance of privacy and security

The keystone of the overall solution for health exchange is privacy and security. The Governor has tasked GOHIE to ensure that Arizona's consumers and stakeholder's information will be protected. While working in a transparent manner with public stakeholders, GOHIE's privacy and security strategy is to define, communicate, and enforce policy. In order to educate the community, these policies will be made publicly available and GOHIE will hold specific public training sessions. GOHIE will provide resources to perform audits to guarantee compliance by all parties.

Partner with existing Arizona entities and build upon existing solutions

The HIE Grant is a catalyst to provide the necessary infrastructure for Arizona's health exchange investment.   GOHIE's strategy is to leverage existing organizations and relationships to propel the HIE project and implementation forward. GOHIE realizes and appreciates the history and resources of these entities in Arizona and understands that those relationships will exist beyond the life of this grant. By leveraging these organizations, GOHIE can move forward quickly with its mission rather than building relationships from the ground up. The types of organizations critical to the success of this implementation consist of, but not limited to:

- Health care providers
- Health plans
- Patient consumer organizations
- Education and research entities
- Public health agencies
- Technology vendors

This strategy works to ensure the three core fundamental capabilities of e-Prescribing, receipt of structured lab results, and sharing patient care summaries across unaffiliated organizations during the early implementation of the plan. To achieve this, GOHIE will continue to build upon existing solutions and relationships that provide these services today.

For example, LabCorp and Sonora Quest Laboratories account for the vast majority of lab transactions across the state of Arizona. Leveraging the existing relationships and processes in place today is important as GOHIE moves forward and implements to assist with rapid adoption. GOHIE acknowledges the best practices currently used by LabCorp and Sonora Quest Laboratories and will use a similar approach to establish all fundamental HIE capabilities.

E-Prescribing | Receipt of Structured Lab Results | Patient Care Summaries

HIE Fundamental Capabilities
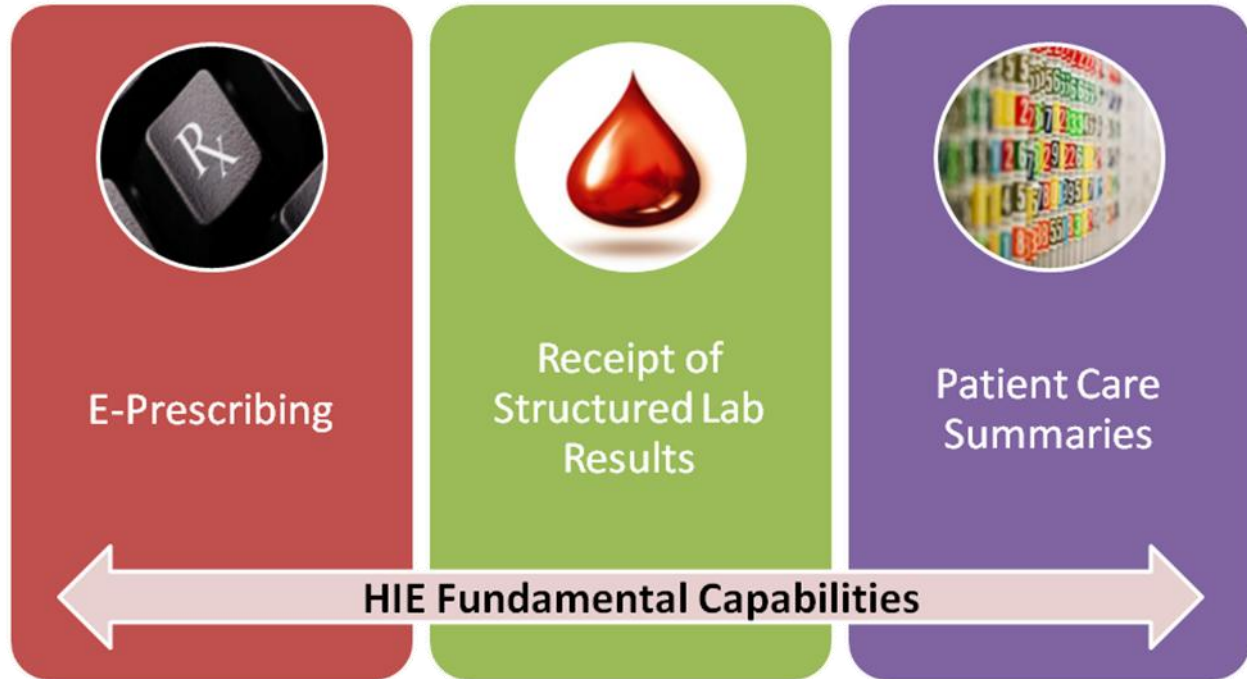
Form strategic alliance between GOHIE, Arizona Health-e Connection (AzHeC), and Arizona Health Cost Containment System (AHCCCS)

With the long term vision in mind of secure, electronic movement and use of health information; a strategic alliance between GOHIE, AzHeC, and AHCCCS is vital. The State will oversee the implementation of the HIE platform allowing hospitals and health care providers access to electronic records.

AzHeC is responsible for the Regional Extension Center (REC) grant. The regional center will offer technical assistance, guidance, and information on best practices to support and accelerate health care providers' efforts to become meaningful users of Electronic Health Records (EHRs). These two efforts share a similar focus and objective to improve the electronic movement of health information. The role of GOHIE is to oversee the implementation of a statewide HIE which will provide at least one viable option for an EHR system and the interfaces to customize connectors for other EHR vendors. Therefore, coordinating the HIE/EHR vendor strategy between GOHIE and AzHeC in the early stages will have a significant impact on the meaningful use requirements.

AHCCCS is responsible for the tracking and monitoring of meaningful use in Arizona. The level of reporting required by AHCCCS to properly track meaningful use will be a product of the HIE platform. Thus, having hospitals and providers connected to the state HIE platform is crucial to fulfilling the data and reporting needs.
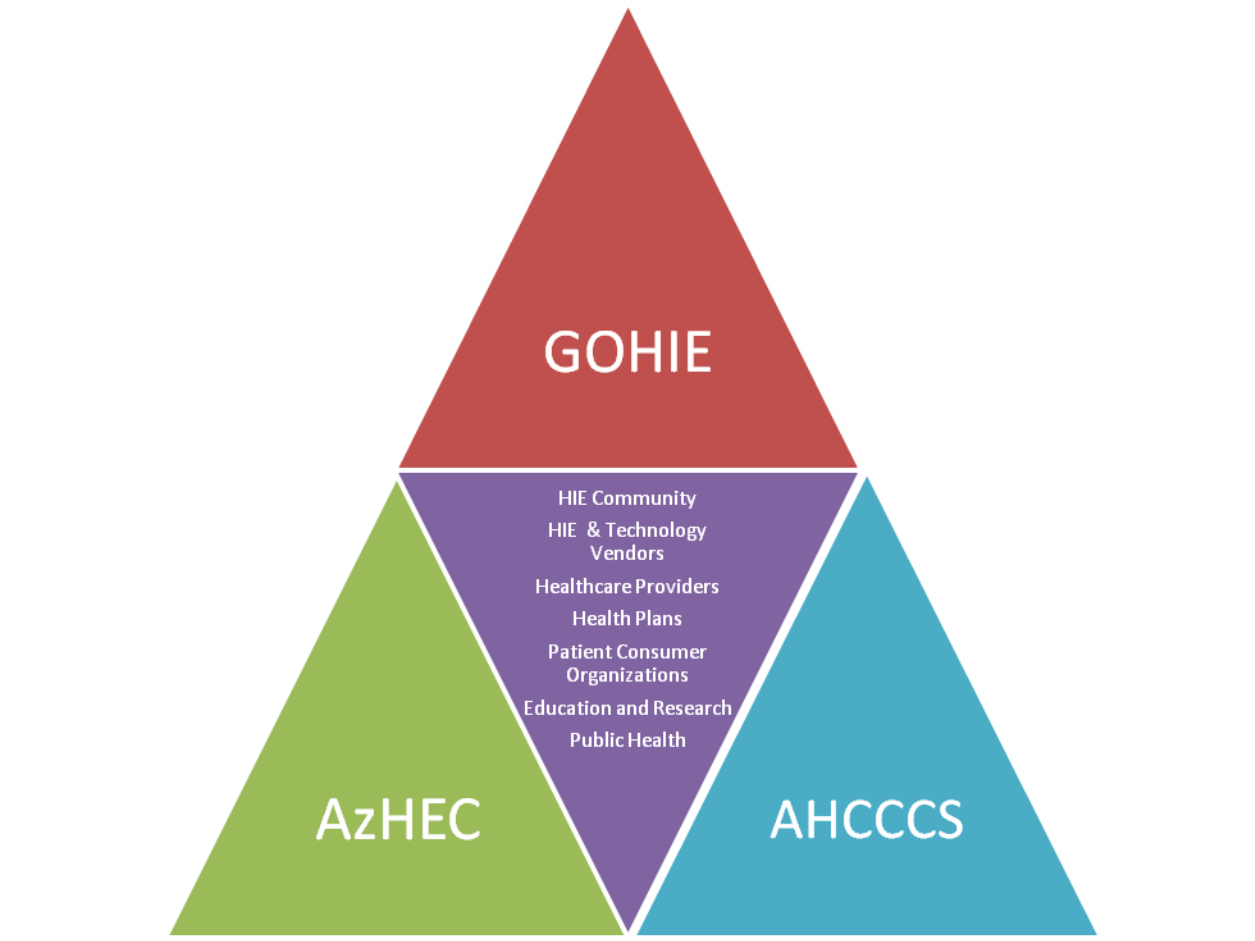
Build the sustainable future

At the end of this program, Arizona will have a fully functional HIE platform serving the needs of the entire state. Phoenix and Tucson metropolitan areas represent nearly three-quarters of Arizona's entire population. To be a sustainable solution, significant return on investment and cost saving measures must be realized early on in the implementation, and to achieve this it is expected the major urban areas of Arizona will be addressed in the initial stages of the implementation.

In alignment with the overall objective to prioritize underserved and rural populations, GOHIE will place an emphasis on specific milestones that address these populations throughout the entire implementation plan. GOHIE realizes the importance of all aspects of healthcare for developing an end to end solution that identifies varying services including behavioral health, radiology, correctional health, telemedicine, and other services in Arizona.

The health care community, in collaboration with GOHIE, is responsible for assuring the appropriate costs of HIE services and what the market can bear for long term sustainability. The State will facilitate this process during the 4-year implementation and create a transition plan for long term shared sustainable business plan. The appropriate mix of hospital, payer, and provider contributions will need to be established for system viability.

Strategic Infrastructure Partnerships

GOHIE will **not** be building an HIE platform. However, GOHIE will be partnering with an undetermined vendor(s) for a statewide HIE solution. In support of meaningful use, the platform shall communicate with existing systems within hospitals, pharmacies, labs, health care providers, and other statewide systems. The platform shall also be interoperable with Nationwide Health Information Network (NW-HIN).

Health Information Technology (HIT) Adoption

HIT Adoption Strategies

HIT activities within the state indicate a strong foundation to support collaboration with ONC. These efforts have focused on increasing the provider's adoption and use of EHRs in the state. With the finalized meaningful use standards released by ONC, Arizona has modified the HIT strategy to support the new standards.

The HIT adoption strategy for the state of Arizona involves partnerships with AHCCCS and Arizona Health-e Connection, leveraging the state's REC to provide grants and accelerate the adoption of EHR throughout the state, support meaningful use standards and improve the transmission of shared information among clinicians and other service providers such as pharmacies, labs, and non-ambulatory facilities.

EHR Adoption

Arizona is fortunate in that the state's Medicaid agency, AHCCCS supported a survey of physician use of EMRs in 2007-2009 that now provides Arizona-specific information on a very large sample of physicians. Survey questions were added to the Arizona medical licensing/renewal cycle in years 2007-2009 (and continuing), thus the population of potential respondents include every active MD and DO in the state. The study received responses from 6,777 practitioners of 13,371 Licensed Physicians living in Arizona, which represents a 51% response rate. Key findings from the study indicate that about 45% of surveyed practitioners use some form of EHR. Of the practitioners using EHRs, 54% use these systems to transmit medical data electronically to other parts of the health care system like pharmacies and laboratories. 46% of the EHR users identified in the study use EHR systems to send information within intra-office operations.

An additional study was conducted by AHCCCS with AzHHA in June 2009 to assess hospitals' level of interest in adopting EHR. Approximately one third of the targeted hospitals in the state responded. The majority of responding hospitals indicated there were either plans in place to upgrade their current EHRs or install new EHR systems by 2011. Of the current hospitals using EHRs, 64% are using the systems to transmit medical data electronically to other parts of the health care system.

NW-HIN Direct

Arizona recognizes part of the core strategy for Health Information Exchange will be the ability to share electronic medical records across unaffiliated organizations. The use and adoption of standards must be central to unfettered communication. Arizona is in the process of adopting the NW-HIN Direct standards and developing policies and strategies that will allow us to connect providers, hospitals, laboratories, and pharmacies in Arizona and to the rest of the world.

NW-HIN Direct Pilot

GOHIE, in collaboration with other local stakeholders and with the cooperation of ONC, has started a NW-HIN Direct pilot project. This pilot is a volunteer effort by all parties participating but under the governance of GOHIE.

The objectives of this pilot are:

- Support meaningful use and the continuity of care through the use of critical Direct user stories

- Engage and work directly with ONC

- Securely exchange clinical information among a diverse group of physicians in small practices in Arizona

- Demonstrate the exchange of data between a hospital and a provider

- Implement the full Direct infrastructure including SMTP backbone and XDR elective protocol

- Provide the reference implementation and guideline for a future HIE to work in the state

The initial phases of the pilot project will only use test data. This is an ideal approach to help provide guidance and reference implementation for understanding the state healthcare landscape and the required data flows.

The specific use cases that have been identified as providing the most value in Arizona for providers meeting Stage 1 meaningful use are:

- Provider to Provider - this Phase 1 implementation demonstrates the following four Direct deployment models

    o Provider using an internet browser

    o Provider using an e-mail client that does not use S/MIME

    o Specialist e-mail client using native S/MIME

    o Provider using EHR or PHR to send the summary care record to the specialist

- Hospital to Provider

    o Hospital sends a discharge summary to referring provider

- Provider to Patient

    o Provider sends a clinical summary of an office visit to the patient

The following architecture diagram illustrates Arizona's approach for the test pilot. GOHIE has identified a local provider association using a single EHR vendor to work with as well as local technology companies that will provide the Health Information Service Provider (HISP) implementation. Direct messaging between unaffiliated entities is part of the Phase 1 scope, however, GOHIE is looking to coordinate Direct to HIE messaging in future phases.

Diagram of NW-HIN Direct Pilot Architecture
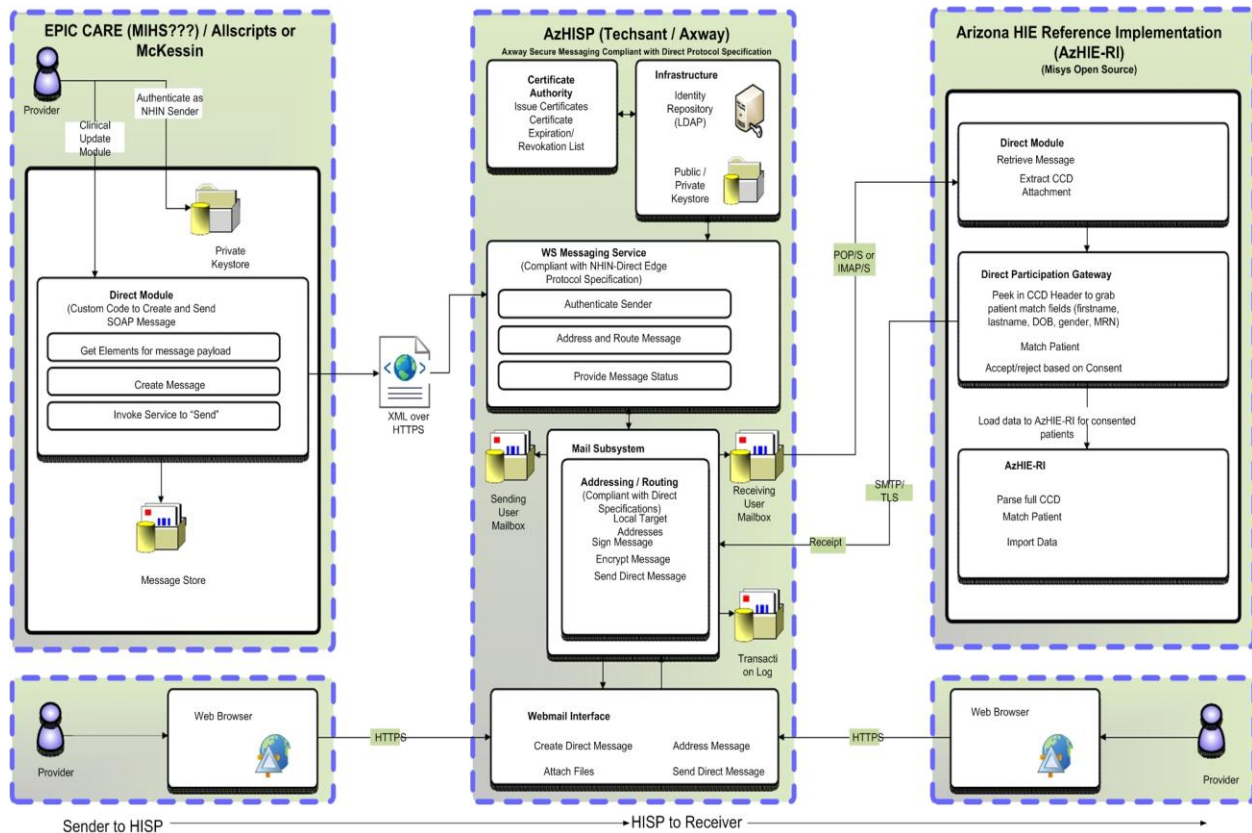
After the initial phase of the pilot project, GOHIE will evaluate and have further discussions around the following use cases as a next step:

- Laboratory sends lab results to ordering provider

- Primary care provider sends patient immunization data to public health

- Provider sends a clinical summary of an office visit to the patient

Regional Extension Center (REC) Vendor Coordination

GOHIE will collaborate with the Regional Extension Center awardee, Arizona Health-e Connection (AzHeC), and its recommended vendors, to ensure those vendors have NW-HIN Direct capabilities to exchange information between unaffiliated entities including providers, hospitals, pharmacies, labs, and others. GOHIE and AzHeC will be developing a roadmap for interfacing with the statewide provider directory. Part of the roadmap will include promotion, education, training, and technical assistance of these services to all participants.

Health Information Service Provider (HISP) Strategy

GOHIE realizes that continuous evaluation will be necessary throughout the Direct pilot project and beyond to develop an implementation strategy and policies for a Health Information Service Provider(s) or HISP(s) in Arizona. The results and outcomes from the pilot will influence the overall statewide strategy. Several approaches have already been discussed including a single statewide HISP, regional HISPs, EHR/EMR vendor-linked HISPs, national providers' HISP, and many other innovative approaches. At this point, GOHIE is in favor of a single statewide HISP as the starting point and foundation for its strategy especially for hospitals, pharmacies and laboratories. GOHIE believes that there will be a need and value for other HISPs to operate within the state which will coordinate and integrate with the main State HISP. Similarly, GOHIE believes in one centralized authority and certificate authenticator initially but again realizes that this will eventually grow into others playing a role and providing those services. . GOHIE intends to consult with other local stakeholders to develop a long-term strategy that addresses the needs of the entire state including those "white space" areas of the state i.e. rural and underserved. GOHIE recognizes that Direct will be influential in those areas and therefore the availability and utilization of a HISP(s) to enable health information exchange will be too. GOHIE feels that through the pilot process that best practices and proven methods will be identified which can be adapted and replicated in those needed areas as appropriate. Again, as previously mentioned; GOHIE will continue to work with Arizona Health-e Connection, the Regional Extension Center, and its vendors to address these issues.

From Pilot to Operational NW-HIN Direct

GOHIE plans to educate and promote NW-HIN Direct to its stakeholders within the state. Through the assistance of the Arizona's Regional Extension Center, Arizona Health-e Connection or AzHeC, the pilot will be showcased at its 2011 Western States Health-e Connection Summit and Trade Show. GOHIE staff will make themselves and other materials available to discuss the pilot and NW-HIN Direct as part of the HIE solution within the state. There will be other public "show and tell" events for the pilot as it grows and gets closer to operations (in the initial pilot documentation GOHIE states at least 2 public events).

Direct implementation is planned to start as soon as GOHIE has completed the RFP process to select an entity to manage and implement the technical capabilities of HIE within Arizona. GOHIE realizes the need for Direct capabilities in 2011 to facilitate providers and health care organizations to qualify for Meaningful Use incentives. The Arizona Direct pilot is a volunteer project that is specifically using test data. The HISP infrastructure utilized in the pilot should validate the use cases defined in the pilot charter and project plan. At the conclusion of the pilot, GOHIE and its partners will evaluate the success of the pilot and determine potential next steps. In parallel, GOHIE will be developing the RFP to select the State-level HISP for Arizona. The infrastructure used in the pilot is a potential candidate for the State-level HISP and will be evaluated in the RFP process.

To coordinate the education and adoption process, GOHIE is collaborating with AzHeC, and its providers and their Electronic Health Records (EHRs)/Electronic Medical Records (EMRs) vendors. One important coordination aspect that GOHIE has already determined in its pilot is the vendor adoption and customer implementation. For example, in the pilot, the stakeholders are working with a major EMR/EHR vendor that supports Direct in its latest version of the provider platform, but will not support Direct in the hospital platform until the later part of 2011. The hospital that GOHIE is working with is in the process of finishing an almost two year roll out of the provider EMR platform that does not currently support Direct and would require an upgrade of the platform. GOHIE has identified this to be a reoccurring issue with many of its stakeholders throughout the state.

GOHIE's strategy for provider engagement and onboarding is to work directly with the certified EMR/EHR vendors that are working with AzHeC. GOHIE will develop policies and standards, in alignment with ONC's recommendations, for how Direct will be used within Arizona for vendors and providers to leverage for Direct communications. GOHIE, through its

RFP, will provide education and make technical assistance available to providers through an outreach process across the state. This will include an overview of the technologies and specifics on how Direct can be leveraged to achieve Meaningful Use and what will be required to use Direct in Arizona (including HISP registration).

Quest Diagnostics has announced that its EMR platform, Care360, is the first certified EMR with Direct project specifications. GOHIE will continue to work with Sonora Quest (the Arizona arm of Quest Diagnostics) to coordinate Direct activities. Sonora Quest has more than one thousand EMRs deployed in the state of Arizona. Sonora Quest and LabCorp will be registered with the State-level HISP. Through the EMR/EHR vendor coordination, GOHIE will ensure that Sonora Quest and LabCorp have the mechanisms to deliver structured lab results via Direct messaging standards to providers.

Approximately 80%-90% of the lab transactions in Arizona are handled by Sonora Quest and LabCorp. Of the remaining transactions, most are facilitated through CLIA-certified facilities that can deliver results electronically. GOHIE will ensure that these facilities are a part of its education and outreach process including HISP registration. GOHIE is currently in the process of identifying labs that can not currently deliver results electronically and will work with them to understand different options for this electronic delivery including Direct messaging.

Telemedicine

Goals and objectives associated with HIE would include improving health care services to rural and underserved populations by providing health care information through telehealth. The Arizona Telemedicine Program (ATP) network is primarily devoted to improving access to specialized medical care throughout the State of Arizona through the use of telemedicine technologies such as digital imaging and real-time video conferencing. Dozens of clinical specialty services are available over the Arizona Telemedicine Program network from a variety of member providers. Teleradiology, teledermatology, and tele-behavioral health are the most common specialties provided through the network. A large majority of the hospitals and rural clinics across the state maintain some form of involvement with ATP.

In addition, through a grant with the Federal Communication Commission (FCC) and coordination with the New Mexico and Southwest IHS, the Arizona Telemedicine Program has become part of the Southwest Telehealth Access Grid, which enables health care providers in rural and low-income locations throughout the Southwest to access high-quality urban health centers through a broadband communications network.
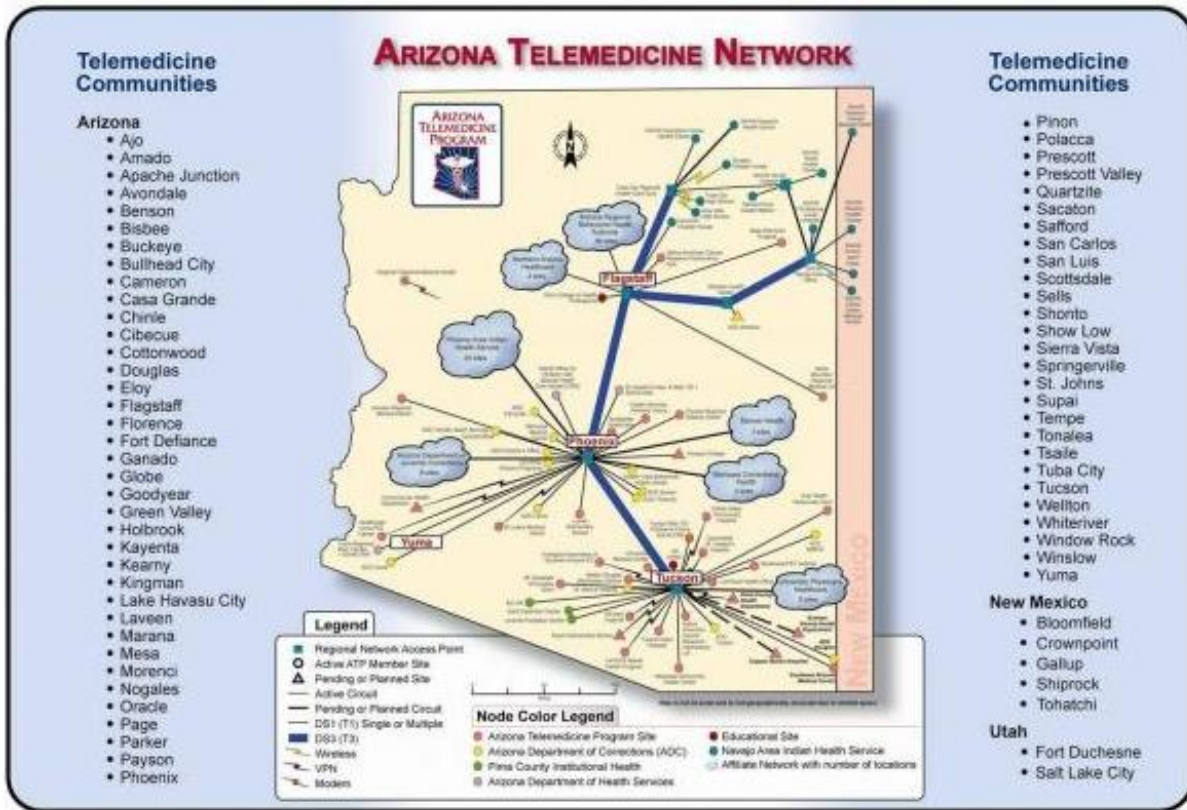
The University of Arizona – UANews.org

HIT Connectivity Requirements

Arizona, with the inclusion of the REC, only intends to work with certified EHR programs that are necessary to meet meaningful use requirements and are cost effective for participating physicians. With current baseline EHR use set at approximately 50%, Arizona must include an offering of affordable EHR solutions to physicians, to improve the adoption rate.

Communication among servers, data warehouses, EMRs and independently developed EHR exchanges systems is pertinent to the overall functionality of HIE. Infrastructure will use federally recognized standards to ensure interoperability. Requirements of the overall strategy will incorporate the development of data and messaging standards to establish the critical goal of interoperability to ensure information shared meets the requirements of semantic interoperability. As technology increases and eliminates current time constraints and access to information, the more widespread availability of protected health information increases the risk of unauthorized disclosure. A level of privacy and security that upholds the requirements of HIPPA, ARRA, and best practices for data stewardship will be included in the connectivity requirement in order to safeguard the information from unauthorized access, use and disclosure.

Request For Proposal (RFP) Approach

GOHIE intends to obtain the services of a Procurement Consultant, either an individual or a firm, to assist with the acquisition of a Technical Services Vendor who will be responsible for implementing the Health Information Exchange (HIE) core services described within this plan.

The Contractor will develop a procurement strategy for acquiring the core services vendor, including the development of a Request for Proposal (RFP) for the core services that includes technical requirements at a level of specificity sufficient

for bidders to develop a detailed work plan in response to the core services RFP. In addition, the Contractor will provide procurement support through the evaluation, oral presentation, and contract negotiation and contract execution phases.

The primary goal of the core services RFP that will be developed by the Contractor resulting from this solicitation will be to provide a fair basis for qualified vendors to respond, and a framework for GOHIE to select, the most functionally qualified and cost-effective proposal. It is possible that not a single, but multiple RFP's will be issued for different components and services. For example, it is likely that there will be an RFP issued for Core Services, including Provider Directory. Potentially, separate RFPs could be issued for Governance, Direct Implementation, Educational / Technical Outreach Services or some other combinantion. The specific details of the approach for the RFP process will be determined after consultation with the contractor and the Arizona State Procurement Office (SPO).

2011 HIE Deliverables Timeline

The table below provides the HIE services that will be offered, the timing, and priority of the 2011 HIE deliverables:

	2010		2011				2012				2013				2014			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2011 HIE Deliverables																		
HIE Plan Publication & Approval	X	X	X	X														
Direct - Pilot		X	X	X														
Direct - Evaluation & Public Forums				X														
RFP Process - Procurement Consultant				X														
RFP Process - Core Services (Including Provider Directory)					X													
RFP Process - Governance					X													
RFP Process - Outreach Services					X													
Direct - State-Level HISP Implementation & Operations					X													
Direct - Implementation & Rollout (Including CCD Exchange)					X	X												
Provider Directory Implementation & Operations					X													
Pharmacy(Assessment)	X	X	X	X	X													
Pharmacy (Outreach)					X													
Labs (Assessment)	X	X	X	X	X													
Labs (Outreach)					X													
Provider (Outreach)					X													
Public Health Meaningful Use Requirement (Immunizations)					X													
Other HIE Core Services (MPI, RLS, etc)							X	X	X	X								
State Coordination Meetings (REC, DHS, Medicaid, GITA)																		
Key	**Development / Implementation**							**Operations**										

Medicaid Coordination

Arizona's Medicaid HIE Representation

Arizona Health Care Cost Containment System (AHCCCS) is Arizona's Medicaid agency that offers health care programs to serve Arizona residents. As described in the HIE Strategies, a core strategy for the successful implementation is to form and build an alliance with AHCCCS. GOHIE will work with AHCCCCS to leverage their leadership and connectivity in Arizona.

AHCCCS, as a former Medicaid Transformation Grantee, developed the Arizona Medical Information Exchange or AMIE project which enabled the exchange of health information among different health care providers in Maricopa County. The data partners have formed a separate non-profit organization as a way to continue the work of health information exchange and as a way to increase the number of data providers and patients in the exchange.

The AHCCCS Director has had a seat on the board of directors for AMIE since its inception. The AHCCCS Director has participated in all of the discussions between AMIE and the Southern Arizona Health Information Exchange, SAHIE organization to form a single health information organization (HIO). The new HIO wants to oversee the state level exchange of health information and has created a new non-profit organization, called the Health Information Network of Arizona or HINAz. AHCCCS has a seat on the HINAz board of directors.

In addition to the new HIO, AHCCCS also has a seat at the non-profit education and collaboration organization, called Arizona Health-e Connection or AzHeC. The Governor's Health Policy Advisor also has a seat at the AzHeC board of directors as do 21 other different healthcare stakeholders. AzHeC was just recently awarded the Regional Extension Center Grant from ONC to support Medicaid and Medicare providers and help them reach meaningful use.

Medicaid Provider Outreach and Communications Coordination

GOHIE is in the process of developing an Executive Leadership group, made up of state agencies and other key health care stakeholders. The AHCCCS Director or his designee will continue to attend and participate in these meetings to ensure strong state agency coordination for HIE.

AHCCCS has identified four different strategies to ensure Medicaid eligible providers and hospitals are educated about meeting meaningful use. These strategies include:

1. Using existing provider information, the agency will identify a preliminary list of Medicaid eligible providers that appear to meet the Medicaid volume requirements and the eligible professional criteria. AHCCCS will then work with its contracted health plans to target communication to that provider to ensure they are made aware of AHCCCS' initial estimates. Each plan could evaluate their own data to identify any other individual eligible provider and provide information to them about the incentive program. Each plan could track adoption within its network.
2. AHCCCS is putting resources into building its website to enable eligible hospitals and providers to receive education about the incentive program and be able to apply online once registration is completed.
3. AHCCCS has identified a small group of eligible providers including hospitals, tribal representatives, federally qualified health centers, and small practices to be a part of testing program between February – May, 2011 to ensure all aspects of the incentive program are well tested and prepared to accept registrations by a variety of providers. This will ensure AHCCCS ability to register, verify, pay and audit providers.
4. AHCCCS is working closely with the Regional Extension Center to ensure there are education and outreach events for interested providers. The REC will offer services for EHRs selection and implementation support to ensure that Medicaid providers can attain meaningful use.

Common Business or Health Care Outcome Priorities

AHCCCS anticipates that over time, activities implemented as a result of clinical outcomes measures and meaningful use measures may result in improved outcomes. The use of EHR and the implementation of clinical outcomes measures may result in:

- More productive patient/provider interactions
- More accessible self-management tools and support
- Improved clinical decision support for providers
- Advanced clinical information systems capable of accessing data and measures quickly and across populations
- Improved delivery system design including patient navigator, work up nurses, care manager/clinical outreach coordinator, health educator and support staff

- Establishment of Eligible Provider (EP)/Hospital Goals such as, better chronic disease control, reduced medication errors, improved discharge planning, improved patient cycle time, improved patient self-management, reduced tobacco use, improved immunization rates and reduced inappropriate ER utilization.

Ultimately, focusing efforts on clinical outcomes measures may result in cost savings/benefits for AHCCCS including:

- Increased chart data from EHRs will increase accuracy and completeness of data used to report clinical quality measures (including HEDIS-Healthcare Effectiveness Data and Information Set) without the cost of data abstraction by nurses or other qualified individuals
- AHCCCS data will be more comparable to other states when submitted to CMS and NCQA
- Complements current data sources by including chart data, public health data, registry data into all applicable clinical quality measures without additional human resource requirements
- Reduces administrative burden on providers, health plans and AHCCCS as data can be collected, received and analyzed electronically
- Identification of opportunities for population health management and quality improvement initiatives
- Potential to reduce clinical and medication errors
- Potential to drive down emergency room and inpatient utilization
- Potential to improve discharge planning and coordination of care and thus reduce hospital readmissions

AHCCCS - 5 Year HIT/HIE Goals and Objectives

AHCCCS has set the following goals for the next five years around HIT/HIE that were included in the State Medicaid HIT Plan (SMHP) July, 2010 submission.

Health Information Exchange

1. AHCCCS represented on a state level HIE governance operating entity.
2. Participation with a health information exchange that has a sustainable business plan in place and includes financial and governance contributions from health plans and provider stakeholders.
3. Participation with a health information exchange that promotes health care quality and exchange of information, and ensures the privacy and security of data for members and providers.
4. Start making Medicaid electronic health record incentive payments by the summer of 2011.

Health Information Technology for Hospitals

1. Hospitals representing 90 percent of inpatient days will qualify and meet meaningful use criteria
2. 90 percent of IHS and 638 inpatient facilities' will qualify and meet meaningful use criteria

Health Information Technology for Eligible Providers

1. 90 percent of all eligible providers in Federally Qualified Health Centers will qualify and meet meaningful use criteria.
2. 75 percent of all eligible providers will receive meaningful use incentive payments
3. The percent of physicians routing e-RX would increase up to 40 percent over the next five years.

Program Integrity

1. Adequate oversight of the incentive program, including the tracking of meaningful use attestations and reporting mechanisms that results in no federal disallowances

Long-term, AHCCCS also anticipates EHRs and the reporting of clinical outcomes measures to result in changes in the organizational and payment structures surrounding the care experience to focus on outcomes and quality of life. Anticipated design changes may include the development of patient centered medical home or accountable care organization models of providing patient care.

Coordination of Federally Funded Grant Projects

GOHIE in collaboration with Medicaid, will leverage, participate in and support all Office of National Coordinator funded grant projects in Arizona. Through participation in Arizona Health-e Connection and its education and outreach efforts, GOHIE is supporting all current ONC funded grantees. GOHIE is starting to convene bi-weekly project coordination meetings between the ONC grantees, GOHIE, Medicaid, Public Health and GITA for broadband updates. The Medicaid Director and HIT Coordinator meet regularly with the REC staff to ensure strong coordination between organizations.

Meaningful Use

GOHIE will align efforts with AHCCCS to meet Medicaid requirements for meaningful uses. Over the next five years, AHCCCS will be making internal system changes to support the capture of timely, accurate and meaningful use data that can be used to monitor quality among various types of providers and in a way that is consistent with national standards or core measures developed/adopted by CMS, so that health information is available and actionable from both the individual provider level and also from a system perspective.

Long-Term Approach

To further expand the focus on clinical outcomes rather than processes or episodes of care, AHCCCS will focus on developing the mechanisms needed to incorporate electronic health information into quality performance measures, such as the HEDIS measures and meaningful use measures.

EHRs offer a much richer data source than administrative data, providing information such as laboratory values indicating improvement in a members' health status or condition, and whether comprehensive preventive and follow-up services were provided during a visit, such as those required under the federal Early and Periodic Screening, Diagnostic and Treatment Services (EPSDT) Program. Implementing a philosophical shift toward incorporating EHR connectivity/data sources will add another layer of complexity to the clinical outcomes measure process.

Long-term, AHCCCS also anticipates the following objectives related to capturing and sharing data:

*   Support reporting of CMS Core Measures and ARRA meaningful use and Clinical Quality Outcomes Measures as they are approved and implemented by CMS, including reporting of HEDIS measures.
*   Determine ways to improve quality oversight of contracted managed care organizations and their network providers, including ensuring complete, accurate, and timely reporting of data.
*   Secure electronic health information from Medicaid providers including hospitals, physicians, federally qualified health centers (FQHCs), behavioral health providers, long- term care facilities, dental providers, etc., in order to test processes and applications for quality monitoring and oversight
*   Develop mechanisms to reduce process waste and maximize automation to increase administrative simplicity and efficiency in quality measurement/oversight

- Share information for care coordination and quality measurement with other entities serving AHCCCS members (e.g., Arizona Department of Health Services, IHS) in a timely and seamless manner while ensuring the privacy of its members and the security of its data
- Enhance existing processes to report quality measurement data through the AHCCCS website, as well as through stakeholder forums (State Medicaid Advisory Committee, Arizona Medical Association Maternal and Child Health Committee, The Arizona Partnership for Immunization, legislative caucuses, etc.)

Increase transparency in the Medicaid program by making available performance and quality data to a variety of stakeholders, including members/patients, other health care professionals, policy makers and the public at large.

Coordination of Medicare and Federally Funded, State Based Programs

It is an objective of Arizona's strategy to provide a sustainable statewide Health Information Exchange (HIE) that enables the sharing of health care data across organizational boundaries to improve patient safety, security, quality, and cost. Achieving these benefits is dependent on more than technology alone. Arizona must work collaboratively with stakeholders to develop sound reporting capabilities to meet any necessary reporting requirements. In addition, access to the clinical information from the Medicaid program is a requirement in order to demonstrate improvements in public health. The statewide HIE will utilize many of the resources and tools developed for health care research an quality to assist Medicaid in improvement of delivery and coordination of care through the electronic exchange of patient information. One of Arizona's goals is to maximize coordination efforts with Medicaid and Medicare on relevant federally-funded state programs to advance robust interoperable HIE as quickly and strategically as possible. GOHIE and other HIE stakeholders in Arizona will coordinate with CMS to identify challenges and lessons learned in exchanging electronic health information.

Participation with Federal Care Delivery Organizations

FQHC's are an integral part of health delivery in Arizona. These facilities are health care organizations dedicated to providing quality, compassionate and accessible care and services to large underserved populations. Currently in the state, there are 16 FQHC's and a number of which have already begun or completed the EHR adoption process. From an objective based stand-point, connecting the statewide HIE with the FQHC's is of high importance to Arizona. The statewide HIE will explore data sharing with the 16 FQHC's in 2011. Implementation is expected to occur on a Use Case basis.

The incorporation of Indian Health Services (IHS) and the Veterans Affairs (VA) has been considered and is part of the long-term HIE strategy. Due to the complex nature of both IHS's system RPMS and the VA's Vista-A, it better serves the strategy to incorporate these two government entities at the latter part of implementation. The statewide HIE will connect with these systems through the Nationwide Health Information Network. The end state goal will be to improve care to both veterans and American Indians by developing ongoing relationships and exchanging information using NW-HIN.

Coordination of Other ARRA Programs

Created in 2009, The Governor's Office of Economic Recovery (GOER) works with federal, state, local, and tribal agencies, as well as, corporate and community-based organizations to develop, operate, and evaluate a wide range of programs in order to fully implement the American Recovery and Reinvestment Act (ARRA) of 2009 throughout the State of Arizona. GOER's mission is to effectively manage several high-profile ARRA programs along with providing leadership in developing the state's capacity to apply for, receive, implement, and report on programs made available by the federal government through ARRA.

GOER Mission: To maximize the benefits of the American Recovery and Reinvestment Act (ARRA) of 2009 and to increase the grants management capacity of the State of Arizona.

GOER Vision: To be the premier resource for the Arizona grants community by providing and coordinating information, business intelligence, systems, model guidance, best practices, training, and support to help the grants community build the capacity it needs to successfully implement ARRA, and establishing a foundation for the future in order to ensure that Arizona receives its fair share of federal resources while minimizing unnecessary federal regulations and unfunded mandates.

GOER Motto: Innovation. Collaboration. Financially Stronger Arizona.

GOER's Critical Mission Areas

- State Fiscal Stabilization
- K-20 Educational Reform
- Health Information Technology
- Public Safety
- Economic Development and Job Training
- Federal Grant Reporting (Section 1512)
- Federal ARRA Coordination
- Grants Streamlining

GOER's Major Functions

- Manage the State Fiscal Stabilization Fund (SFSF) – Education grant from the U.S. Department of Education in order to provide budgetary relief to the state and k-20 budgets.
- Manage the State Fiscal Stabilization Fund (SFSF) – Discretionary grant from the U.S. Department of Education in order to provide budgetary relief to the state, as well as, strategically invest in: (1) education reform; (2) health care and children's program; (3) public safety; and (4) innovation, technology, and economic development.
- Manage the HIE program from U.S. Department of Health and Human Services and the Office of National Coordinator in order to secure the resources necessary to implement an health information exchange initiative in Arizona.
- Manage the application process for the Race to the Top (RTTT) program through the U.S. Department of Education in order to secure the resources necessary to reform the K-20 educational system in Arizona.
- Implement Stimulus 360 as a centralized reporting solution to aggregate agency data in order to comply with the ARRA Section 1512 reporting requirements.
- Coordinate all inquiries from and communications with the following federal agencies and national organizations involved in the implementation and oversight of the American Recovery and Reinvestment Act (ARRA) of 2009: (1) the Recovery, Accountability, and Transparency Board (RATb); (2) U.S. Government Accountability Office (U.S. GAO); (3) Office of Management and Budget (OMB); (4) Office of Inspector General (OIG) community; (5) federal grantor agencies; (6) National Governor's Association (NGA) and other membership stakeholder organizations; and (7) Arizona's Congressional Delegation.
- Establish grants management capacity for state agencies and departments who have not traditionally received or managed federal financial agreements.

GOER Grants Awarded

State Fiscal Stabilization Fund-Education (Phase I)

- Grantor – U.S. Department of Education
- CFDA – 84.394
- Award Amount - $557,352,452
- Purpose – Educational Budget Support and Reform

State Fiscal Stabilization Fund-Government Services

- Grantor – U.S. Department of Education
- CFDA – 84.397
- Award Amount – $185,085,841
- Purpose – General Budget Support

Health Information Exchange

- Grantor - Office of the National Coordinator for Health Information Technology (ONC)
- CFDA – 93.719
- Award Amount - $9,377,000

Fiscal Stabilization Fund-Education (Phase II)

- Grantor – U.S. Department of Education
- CFDA # - 84.394
- Projected Award Amount - $276,000,000
- Purpose – Educational Budget Support and Reform

BTOP II – Public Computing Centers

- Grantor – National Institute of Standards and Technology
- CFDA # - 11.557
- Projected Award Amount - $1,646,936
- Purpose – AZ Job Help Hubs @ Your Library

GOER Grant Applications Submitted

Race to the Top

- Grantor – U.S. Department of Education
- CFDA # - 84.395
- Projected Award Amount - $250,000,000
- Purpose – P-20 Educational Reform

Education Jobs Fund Program

- Grantor – U.S. Department of Education
- CFDA # - TBD
- Projected Award Amount - $211,824,489
- Purpose – K-12 LEA Support

Arizona has effective and efficient grant administration processes and procedures. The GOER serves as both a grants management office and a statewide coordinator of ARRA funding. Serving as the fiscal agent for the HIE grant, GOER will provide budget, accounting and sub-recipient monitoring support to the project.

In establishing GOER's grants administration process, GOER secured the resources of two national consulting firms, KPMG and Deloitte, to help develop internal controls, sub-recipient monitoring protocols, performance measurement tools and processes for preventing waste, fraud and abuse. GOER has demonstrated the effectiveness of its processes on multiple occasions through the allocation of more than $1 billion worth of State Fiscal Stabilization Funds to more than 600 eligible subrecipients.

GOER has strong inter-agency processes to facilitate the allocation, disbursement, performance monitoring and oversight of HIE funds, and they utilize technology to ensure efficiency and effectiveness.

One of Arizona's goals is to build on the strengths of the various organizations involved in the HIE effort and to deploy the necessary resources to ensure that every participating organization has the opportunity to succeed in implementing their initiatives.

State and Regional HIE Efforts

The Arizona Regional Extension Center (REC) is led by Arizona Health-e Connection, in collaboration with Arizona State University's Department of Biomedical Informatics (ASU-BMI), Health Services Advisory Group (HSAG) and the Purchasing and Assistance Collaborative for Electronic Health Records (PACeHR). The REC team will support meaningful use EHR adoption by performing outreach, education, workflow analysis, project management, privacy and security training, and IT infrastructure support to rural communities. The Governor's Office, including the State Health Information Technology Coordinator and the Governor's Policy Advisors routinely participates in the Arizona Health-e Connection Board meetings to ensure coordination and timing of efforts. Because the Governor's Office and Arizona Health-e Connection staff already work together, this team will work to coordinate EHR adoption efforts, so primary care practitioners implementing EHRs will maximize their opportunities to demonstrate meaningful use of summary document exchange, e-Prescribing, care coordination and public health participation through HIE.

ARRA Program Coordination

The Arizona Governor's Office is in a unique position to coordinate with other ARRA programs throughout the state. The Governor's Office of Health Information Technology was formed from the Governor's Office of Economic Recovery who has oversight of over $2.5B in ARRA funding coming into the State of Arizona.

The Governor's Office will use funds from the State Health Information Exchange Cooperative Agreement Program to advance Use Case implementation throughout the state of Arizona. The Governor's Office will explore opportunities to collaborate with the recipients of ARRA funding related to workforce development initiatives, wellness and prevention programs, comparative effectiveness research, and grants to community health centers. Under the current operational plan, the statewide HIE will also be the recipient of the potential Regional Center grant.

Domain-Specific Components

Governance

Background

In February of 2009, Governor Janice Brewer formed the Governor's Office of Economic Recovery (GOER) to oversee all ARRA-related projects. GOER has formed the new Governor's Office of Health Information Exchange (GOHIE) and in this

capacity, will be the ultimate decision making organization responsible for planning, coordinating, and reporting for the Cooperative Exchange Agreement Program in Arizona. The state Health Information Technology (HIT) Coordinator will lead GOHIE and reports to the Director of GOER.

Arizona has been very active in supporting HIE/HIT through its early work in producing a state Roadmap in 2006, forming a non-profit public private partnership organization to support HIE/HIT efforts, and participating in the Medicaid Transformation Grant Program through CMS.

There are many organizations in the state who have contributed to the current landscape. Through the collaborative efforts of all the stakeholders, Arizona has come to better understand the complexity of its health care environment and is in a strong position to build on the lessons learned from its earlier projects.

Collaborative Governance Model

The governance of health information exchange within the State of Arizona has been based upon broad and diverse community participation over the years. This model will be continued forward and likely expanded as this plan is implemented. GOHIE will facilitate a transparent multi-stakeholder approach which will be open to the public. A health information exchange Executive Steering Committee will be formed which will include organizations within State Government, health care providers, payers, professional associations, employers, and consumer representatives. This Executive Steering Committee will work with GOHIE on key decisions related to the HIE strategy and platform. In parallel and associated with the Request for Proposal (RFP) awardee for vendor services, GOHIE will seek an entity to lead the larger community and stakeholders including the management of the technical infrastructure vendor for the State of Arizona's HIE solution.

There are many organizations in the state who have contributed to the current landscape. Through the collaborative efforts of all the stakeholders, Arizona has come to better understand the complexity of its health care environment and is in a strong position to build on the lessons learned from its earlier projects. GOHIE in partnership with Arizona Health-e Connection (AzHeC) and Health Information Network of Arizona (HINAz) will provide leadership in the collaborative approach for setting the HIE strategy in the State of Arizona.

Arizona Health-e Connection

Arizona Health-e Connection was founded in January 2007 to provide this leadership and won a Council of State Government Innovation Award for the process and subsequent establishment of a multi-stakeholder leadership Board.

The current AzHeC Board composition is as follows:

	Board Allocation	Board Organization	Board Member
Permanent Members	The Governor of Arizona	Governor's Office	Beth Kohler Lazare, Deputy Director of Policy, Interim State HIT Coordinator
	Arizona Health Care Cost Containment System (AHCCCS)	AHCCCS	Thomas J. Betlach, Director
	Arizona Department of Health Services (ADHS)	ADHS	Janet Mullen, Deputy Director
	Arizona Government Information Technology Agency (GITA)	GITA	Chad Kirkpatrick, State CIO & Director
	Arizona Hospital & Healthcare Association	AzHHA	John Rivers, President & CEO
	Arizona Medical Association	ArMA	David Landrith, Vice President, Policy and Political Affairs
	Arizona Osteopathic Medical Association	AOMA	Amanda Weaver, Executive Director
Non-Permanent Members	Health Plans	Blue Cross Blue Shield of AZ	Richard Boals, CEO & President
		Humana	Mark El-Tawil, President
		Schaller Anderson	Thomas Kelly, President
		United Health Care	Benton Davis, CEO, Western States
		CIGNA	James Burrell, III, MD, CMO
	Hospitals	Banner Health	Michael Warden, Senior VP and CIO
		Maricopa Integrated Health System	David Kempson, VP & CIO
	Employers	Intel Corporation	Celeste Fralick, Principal Engineer & Director of Biomedical Engineering, Digital Health Group
		Arizona Chamber of Commerce & Industry	Glenn Hamer, President & CEO
	Higher Education	Arizona State University	William Johnson, MD, Director, Center for Health Information and Research
	Laboratory	Sonora Quest Laboratories	David Dexter, President & CEO
	Pharmacy	Arizona Pharmacy Alliance	Mindy Smith, RPh, CEO
	Medical Trading Areas (MTAs)	Phoenix MTA	Bruce Bethancourt, MD
		Tucson MTA (SAHIE)	Kathy Byrne, Co-Chair
	At-Large	Your Partners in Quality (Consumer Representative)	Debra Nixon, PhD
		Arizona Advisory Council on Indian Health Care	Bennett Smiley, Gila River
		University of Arizona, College of Medicine	Ronald Weinstein, MD, Founding Director, Arizona Telemedicine Program
		Health Services Advisory Group	Mary Ellen Dalton, CEO

The Board of AzHeC is a non-profit legal structure independent of government but involving government participation and designation as some of the permanent members of the Board of Directors. Historically, the organization has provided some staffing and convened a number of venues for gathering input and public communications. AzHeC has operated a number of work groups focusing on:

1. Clinical technical standards development
2. Communications and outreach for consumers, media and host of Western States Summit, and monthly forums and newsletters
3. Policy development serving as the Arizona Steering Committee for adoption of all reports and policies created by Arizona's Privacy and Security Projects under the Federal Health Information Security and Privacy Collaborative (HISPC) legal and policy
4. e-Prescribing through the EAzRx, the five-year statewide electronic prescribing initiative
5. Medicare Personal Health Record Choice Pilot Program

The work groups have been meeting on and off since AzHeC was started in 2007. The organization has applied to ONC and been awarded the Regional Extension Center grant for Arizona, which ties in well with its goal of education, outreach, policy development and coordination of all Arizona HIT/HIE efforts. With the new ONC guidance related to meaningful use, and the new role in the Regional Extension Center, the organization is looking at how to realign itself to meet the expectations of its stakeholders. This will include re-alignment of its committees and work groups with the needs of the Regional Extension Center and the state HIE program.

Health Information Network of Arizona (HINAz)

A consolidated nonprofit Health Information Organization has been formed called Health Information Network of Arizona (HINAz) made up two former long standing HIO boards, Southern Arizona Health Information Exchange (SAHIE) and Arizona Medical Information Exchange (AMIE). In order to maximize HIE infrastructure investments in Arizona, these two organizations acknowledged the benefits of combining funding across northern and southern Arizona. HINAz has been a major leader in the statewide HIE planning process and continues to play a strong role in the development of the Strategic and Operational plans.

HINAz is now poised to re-launch its efforts combining the assets and funding of both companies. Over the past two years AMIE has piloted health information exchange in Arizona. This pilot incorporated statewide medication history, statewide lab data and discharge summaries hospital systems for Medicaid recipients. It offered a web-based viewer for physicians and clinics, the only active HIE in the state.

As of early October 2009, AMIE contained about 6.5 million records for more than 2.5 million individuals (about 40 percent of the state's total population). The information was not collected and maintained at a central repository, but rather remains at its source with viewing via AMIE's Web-based application. It offered access to information from AMIE's "data partners": hospital discharge summaries and other documents from seven major hospitals and health systems; laboratory test results from one of two major lab systems in the state; and medication histories supplied by a subcontractor (Managed Care Pharmacy Consultants) that aggregates pharmacy claims data received from the AHCCCS-contracted health plans and from the state-funded behavioral health providers serving a large portion of low-income residents in the state. The addition of the latter source in early 2009 targeted fewer interactions between drugs prescribed for behavioral health reasons and those prescribed for physical health care. About 150 medical practice personnel, representing about 400 physicians used AMIE. Participating practices signed a contract stating that they accessed the information for treatment purposes only. The entire statewide Children's Rehabilitative Services program used AMIE in the maintenance of an Integrated Medical Record for each member of its fragile 24,000 member children's population. In December 2009, the AMIE Board felt it would be best strategically to suspend its technical operations and pursue a vision of developing a single state level health information exchange and roadmap with SAHIE.

In parallel, SAHIE has worked to evaluate and secure the services of a HIE vendor and scalable HIE ASP model. The combined experience from the HIE pilot and investigation of "best-in-class" solutions is now vested in this new organization. Furthermore funding from the participating organizations in both organizations is now combined and statewide versus the original regional RHIOs. The new combined HIO organization represents over 70% of the insured and state supported lives, and over 70% of the licensed beds in the state.

In January 2010, the joint AMIE-SAHIE Boards created Guiding Principles that supported their evolution to a single HIO. Based on these principles, the AMIE-SAHIE Boards upon agreeing to collaborate, the organization initiated a Technology Assessment Work Team made up of representatives from health plans, hospitals, Medicaid, County Correctional facilities, and others to do a technology assessment and a separate due diligence and interview process with current clients of the SAHIE technology vendor. The results of that inclusive and transparent process, is a preferred vendor product that the team felt would meet all of the architecture, privacy and security requirements established by ONC. The group determined that the AMIE product was not scalable to meet all of the state level requirements.

The Governance Workgroup of the joint AMIE-SAHIE Boards created and signed a new Memorandum of Understanding between both boards, and created a smaller Transition Committee, made up of representatives of three members from each board to oversee the startup of their HIO. A priority for them is to develop a viable business plan for a sustainable funding strategy.

Arizona State Health Information Technology (HIT) Coordinator

The Arizona State Health Information Technology (HIT) Coordinator, Aaron Sandeen, has overall two primary roles; champion statewide HIT implementation and to coordinate efforts with Medicaid, public health and other federally funded programs. The HIT coordinator will be responsible for oversight of the HIE Executive Steering Committee.

Champion Statewide HIT Implementation
- Collaborate with state health policy makers in establishing HIT strategies for reaching shared health care goals.
- Leverage state purchasing power such as establishing requirements for entities reimbursed by the state to participate in e-Prescribing, electronic labs results delivery or electronically sharing care summaries across transitions in care.
- Address legal or policy issues to ensure the information may be shared securely and with appropriate privacy protections.
- Lead efforts to enable interstate HIE, such as harmonizing privacy policies and consent laws with neighboring states where appropriate.

Coordinate Efforts with Medicaid, Public Health and Other Federally Funded Programs
- Advance operationally viable strategies that accelerate the success of the EHR incentive program in meeting shared meaningful use goals.
- Work with other State agencies to ensure state program participation in planning and implementation activities including, but not limited to Medicaid, behavioral health, correctional health, public health, departments of aging.
- Ensure that State Medicaid HIT Plans and State HIE plans are coordinated.
- Work with other State agencies to leverage state program resources such as immunizations registries, public health surveillance systems, and CMS/Medicaid funding to ensure resources are being maximized (e.g., ARRA authorized Medicaid 90/10 match leverage to support HIE activities).
- Assure integration of other relevant state programs into the state's HIT governance structure.

- Identify, track and convene the various federal HIT grantees for cross-program coordination and to leverage program resources. Examples: RECs, Beacon Communities, Community Colleges involved in HIT workforce efforts, HRSA HIT adoption projects, federally supported broadband programs, CHIPRA HIT grantees.

Accountability and Transparency

Accountability and transparency is central for the development and operations of Arizona's statewide Health Information Exchange (HIE). The collaborative public-private governance model will accomplish this through the following activities and resources:

- Open public stakeholder meetings
- Accountability policies and processes
- Prioritized list of features and capabilities
- State HIE Website and collaboration tools
- Established metrics, reports and monitoring activities

Arizona will continue to refine the vision and scope of the state's HIE working with ONC, state agencies and private sector organization to ensure accountability and transparency. GOHIE will host quarterly stakeholders update meetings and all materials will be posted on the public website. Financial information, payments to sub-recipients and vendors will be posted to the Arizona Governor's Office of Economic Recovery website along with other American Recovery and Reinvestment Act (ARRA) Section 1512-reportable data elements.

Arizona, to date, has not passed legislation pertaining to electronic health information consent. In 2008, legislation was proposed favoring an "opt-out" approach to electronic health information consent. However, the legislation was not passed due to inconclusive statewide strategy for health information exchange at that time. GOHIE realizes that the consent issue needs to be addressed early on in this process and will be targeted in the operational plan.

Nationwide Health Information Network (NW-HIN) Strategy

Arizona's governance model is well-positioned to be compatible with the emerging Nationwide Health Information Network governance principles and functions. Any proposed infrastructure of the statewide HIE must be designed to ensure flexibility so that the organization can respond to market changes and eventually support data sharing with the Nationwide Health Information Network (NW-HIN). The technological design of the statewide HIE will be based on federally endorsed standards and integration protocols that bridge proprietary boundaries. Building the statewide HIE consistent with national standards mitigates a wide range of technology challenge for providers in Arizona and establishes the framework for eventual connectivity to the NW-HIN. Stakeholders agreed that a statewide HIE must build upon approved standards to not only avoid vulnerability to vendor selection issues and risks, but to ensure compatibility with other HIEs and federal initiatives.

Continued Activities

The Governor's Office of Health Information Exchange (GOHIE) is committed to continued activities to improve the governance of the Arizona health information exchange. Building a strong coalition of stakeholders including organizations within State Government, health care providers, payers, professional associations, employers, and consumer representatives will be essential to the continued success of the Arizona health information exchange.

Identified in this document are key risks and gaps to Arizona's HIE strategy. An important next step will be to address these issues in working groups. These working groups could leverage existing working group sessions within organizations or the formation of new group's altogether.

GOHIE will follow the State procurement process and will be issuing Requests for Proposals (RFPs) for various HIE capabilities identified in the strategic and operational plans. Stakeholder participation will be highly encouraged for both the development of the RFPs and evaluation of potential vendors.

GOHIE recognizes a need for a long term transition plan for oversight and governance for the statewide HIE platform beyond the life of this program (4 years). GOHIE will work with the Executive Steering Committee as well as key community stakeholders to address this need throughout the program.

Finance

HIE Grant Impact

The ONC HIE grant monies will be used to accelerate HIE implementation in Arizona. The $9,377,000 will be used to make a major long-term impact by implementing a standards based HIE platform and supporting key initiatives and organizations across the state in adopting HIE. GOHIE realizes that these one-time funds must be used to provide the fundamental HIE infrastructure that will empower all health organizations to build upon for Arizona's future.

Beyond the life of these funds, Arizona must have a sustainable plan. Every Arizonan, has a stake in the long-term success of this solution including providers, hospitals, plans, State agencies and all the consumers in the state. All of these stakeholders have a responsibility for the sustainability and GOHIE will help identify the solution that works for Arizona.

Long-term Sustainable Finance

To maximize HIE infrastructure investments in Arizona, GOHIE will rely heavily on existing entities within the state to supplement the investment and to provide an effective long-term sustainable plan beyond the ARRA funds. ONC 's funds must be used in conjunction with the funding received from participants within the state including organizations like HINAz and potentially AHCCCS to expand the number of Use Cases that can be implemented over the four year performance period. Initial funding by the ONC is limited and will not enable full deployment of the statewide HIE. The incremental approach to building the statewide HIE using ONC funds combined with funding from participants ensures sustainability. Key to the development of this cost model are a series of assumptions about the fees that various participants would be willing to pay for services offered through the statewide HIE, and how fast those services could be deployed and subsequently adopted by the user community.

The strategy for identifying revenue sources was formed by considering a number of factors, including:

- ONC monies should be leveraged as a one-time investment to achieve a sustainable business model
- The participants in the statewide HIE will be willing to pay fees relative to the value they gain from using the exchange
- The value of EHR adoption and HIE participation by physicians and hospitals has been markedly increased by the Medicare and Medicaid payment incentives for meaningful use
- The financial model should not rely on grant funding, even though grants may be available for future projects and expansions
- Revenue should not be sought disproportionately from any one stakeholder or group of stakeholders
- Properly developed subscription fee models that incentivize higher utilization of HIE services can provide stability in revenue planning
- Inclusion of health plans as key stakeholders with information that drives improved efficiency and quality
- Identify appropriate model to include AHCCCS participation

HINAz has estimated annual costs of the fully deployed statewide HIE are as follows:

Head of Account	sub-head		hourly rate	hrs/month	monthly estimate		annualized amount	Comment
Budget when HIE reaches full State-wide Implmentation								
Operating Costs								
Staff								all staff:base salary + 25% benefits
	Executive Director		n/a		$	20,833.00	$ 249,996.00	$200K + Benefits
	Business Director		n/a		$	12,500.00	$ 150,000.00	$120K + Benefits
	Technical Manager		n/a		$	10,417.00	$ 125,004.00	$100K + Benefits
	Communications Manager		n/a		$	8,333.00	$ 99,996.00	$80K + Benefits
	Executive Assistant		n/a		$	4,688.00	$ 56,256.00	$45K + Benefits
Contract Charges								
	Legal Counsel		$ 350.00	12	$	4,200.00	$ 50,400.00	
	Accountant/Bookkeeper		$ 45.00	20	$	900.00	$ 10,800.00	Accountant avg 5 hrs/week
Operating Costs			n/a				$ -	
	Travel		n/a		$	2,000.00	$ 24,000.00	Staff Travel within AZ
	Meetings		n/a		$	400.00	$ 4,800.00	board, committee, annual meetings
	Conferences		n/a		$	500.00	$ 6,000.00	national & state conferences
	Rent and Utilities		n/a		$	6,250.00	$ 75,000.00	
	Supplies		n/a		$	2,000.00	$ 24,000.00	
	Insurance		n/a		$	2,083.00	$ 24,996.00	
	Marketing		n/a		$	12,500.00	$ 150,000.00	
	Other General & Admin		n/a		$	515.00	$ 6,180.00	
Retention for Capital Buildup			n/a		$	2,644.00	$ 31,728.00	3% of non-vendor expenses through year
Total Operating Costs					$	90,763.00	$ 1,089,156.00	
Vendor Costs								
Vendor Charges					$	528,238.00	$ 6,338,856.00	
Grand Total					$	619,001.00	$ 7,428,012.00	

These costs were developed assuming that the vendor operating model leveraged is an Application Service Provider (ASP), versus purchased components. HINAz has developed pricing models for each of the constituents to support the end-cost of the HIE and are in the process of validation with key stakeholders.

The following table depicts funding assumptions for each category of participant. AHCCCS has not yet been included in this analysis.

Hospitals

Size Class	Number of Beds Between		Implementation Fee / month		Monthly flat subscription fee
	Min	Max	Monthly Fee	Number of Months	
9	> 1000 Beds		TBD	8	TBD
8	751	1000	TBD	8	TBD
7	501	750	TBD	8	TBD
6	251	500	TBD	6	TBD
5	201	250	TBD	6	TBD
4	151	200	TBD	6	TBD
3	101	150	TBD	6	TBD
2	50	100	TBD	4	TBD
1	< 50 Beds		TBD	4	TBD

Health Plans

Group	Group Share in Total	HealthPlan	Annual Subscription	Quarterly Amount
IV	40%		$ 1,155,255.00	$ 288,813.75
		BCBS of Arizona	$ 385,085.00	$ 96,271.25
		United Healthcare + APIPA	$ 385,085.00	$ 96,271.25
		Aetna + Mercy Care	$ 385,085.00	$ 96,271.25
III	30%		$ 866,439.00	$ 216,609.75
		HealthChoice	$ 288,813.00	$ 72,203.25
		Phoenix Health Plan	$ 288,813.00	$ 72,203.25
		HealthNet	$ 288,813.00	$ 72,203.25
II	25%		$ 722,034.00	$ 180,508.50
		Humana	$ 240,678.00	$ 60,169.50
		Sun Health	$ 240,678.00	$ 60,169.50
		Cigna	$ 240,678.00	$ 60,169.50
I	5%		$ 144,408.00	$ 36,102.00
		UPH Plan	$ 48,136.00	$ 12,034.00
		Mariposa Plan	$ 48,136.00	$ 12,034.00
		Care 1st	$ 48,136.00	$ 12,034.00
			$ 2,888,136.00	

Physicians

Community Physicians: Independent practice or group, not hospital based				
UserType	Monthly Subscription	Monthly License Charge	Implmentation Cost	Comments
Community Physicians using a portal for basic use only	tbd			
Community Physicians using EMR-lite provided by Wellogic	tbd	tbd		No charge for support staff
Community Physicians using commercial EMR, interfacing to HINAz	tbd	tbd	tbd	A group practice with one EMR in place will pay for only one interface for the entire practice

In order to manage risk and sustainability, an incremental approach to Use Case implementation and user connectivity balances the use of state funding along with revenue generated by the statewide HIE. The participant funding will provide the matching funds required by ARRA.

The development of a secure HIE poses special challenges. Trusted HIE requires the involvement of a broad range of stakeholders – patients, providers, payers, purchasers, and health agencies – and the consideration of a broad range of policies, principles, and designs. Identifying solutions to the following specific series of issues is essential: governance; privacy and security; role-based access; user authentication and trust hierarchies; architecture of the exchange; hardware and software solutions; cost of implementation; alternative sustainable business models; and strategies to assure appropriate patient engagement, access, and control over information exchange. Establishing an appropriate funding mechanism to support the development costs of the exchange and the daily operations until it becomes sustainable is a key issue related to the deliverable. States that have implemented an exchange continue to grapple with funding issues.

Budget
The budget is comprised of three specific areas: Vendor ASP, HIO Operations, and GOHIE. The costs associated with each specified area are not unique to a specific function but are required to support the statewide HIE as a whole, such as the cost of the data sharing platform and portal license, and the Enterprise Master Patient Index. The budget also includes the cost of human resources to implement and maintain the statewide HIE. GOHIE will provide oversight to the budget and will resolve issues related to the budget and determine appropriate financial risks.

Technical Infrastructure

GOHIE's proposed approach is to support the establishment of a statewide HIE for Arizona using a scalable and national standards-based infrastructure. The statewide HIE will be designed for sufficient flexibility and the capability of growing and adapting over time. In order to secure adoption, attracting and retaining both private and public stakeholders are key elements to consider throughout implementation. The architecture will be specifically developed using national standards. Implementation of a standards-based solution offers immediate value that supports connectivity to the NW-HIN. GOHIE will monitor the work of ONC's Health IT Policy Committee and the Health IT Standards Committee to ensure that the technical infrastructure adheres to interoperability standards.

The envisioned HIE solution is based upon an "open architecture" and "standards-compliant" approach that allows for maximum flexibility and interoperability amongst HIE participant systems. The solution will comprise a set of infrastructure services that enable publication, discovery, understanding of, and access to health care information. The exchange must support both data and powerful end user applications including an HIE based Physician Portal and optional EMR based on federal recognized standards which is certified to meet ONC's meaningful criteria. While there will be a focus on ONC's meaningful use, Arizona's HIE core services will deliver on the 2011 key objectives of:

- e-Prescribing
- Receipt of Structured Lab Results
- Patient Care Summaries

The proposed HIE solution meets the goals set by ONC and Health Information Technology Standards Committee (HITSC) in terms of:

- Conforming to accepted industry standards through providing Integrated Healthcare Enterprise (IHE) conformant client and server-based infrastructure components as part of the HIE solution
- Conforming to standards embraced by the Health Information Technology Standards Panel (HITSP)
- Supporting an incremental and risk/cost/benefit-driven approach to the roll-out of the HIE
- Providing a world class Enterprise Master Patient Index (EMPI) solution and HIE components such as a Record Locator Service (RLS) provided by an IHE/HITSP compliant Cross Enterprise Document Sharing (XDS.b) infrastructure
- Providing alignment to the United States Federal Government as it relates to the direction of the Office of the National Coordinator (ONC) and the Nationwide Health Information Network (NW-HIN)

The capabilities of the HIE will provide a comprehensive end-to-end solution to meet the needs of Arizona in the short-term, yet flexible to accommodate future long-term requirements.

- A sophisticated person-centric HIE solution that is capable of supporting a hybrid, federated or centralized HIE deployment model
- Support for IHE profiles including: XDS.b, Patient Identifier Cross-Referencing (PIX) and Patient Demographics Query (PDQ) profiles
- A Personal Health Record (PHR) application

- A consent solution capable of supporting multiple consent models (including opt-in/opt-out) based on contributing source and other criteria
- Support for standards compliant MPI interfaces through IHE Patient Identifier Cross-Referencing (PIX)/Patient Demographics Query (PDQ) profiles
- Supports core IHE profile/actors from both client and server-side perspectives
- Supports integration with the NW-HIN and interoperability with other NW-HIN participants, including the Social Security Administration
- A provider portal and EMR-lite implementation based on a standards based EMR that ensures an easy to use, stepping stones based, vehicle for caregivers to progress from paper-based solutions to a standards certified, connected, EMR that currently meets the 2011 criteria for meaningful use. The portal respects all authorization and consent policies and can push selected information to consuming systems on demand. Additional EMR functionality may be configured to handle e-Prescribing, document problem lists and allergies, record vital signs, order tests, referrals, and document encounters.
- The solution will provide for connection to third-party PHRs such as Google Health and Microsoft HealthVault via Continuity of Care Document (CCD) or Continuity of Care Record (CCR) patient summaries. Patient information can be "contributed from" or "consumed by" these PHRs limited only by patient consent and the capabilities of the respective PHR. The solution also includes a fully integrated PHR. The PHR is provided as a web-based service and supports a broad range of clinical and administrative transactions.
- GOHIE anticipates that eventually meaningful use will require providers to exchange information among each other and work cooperatively with providers across borders to coordinate patient care such as CAPAZ-MEX.

Conceptual View of the Arizona Health Information Exchange:
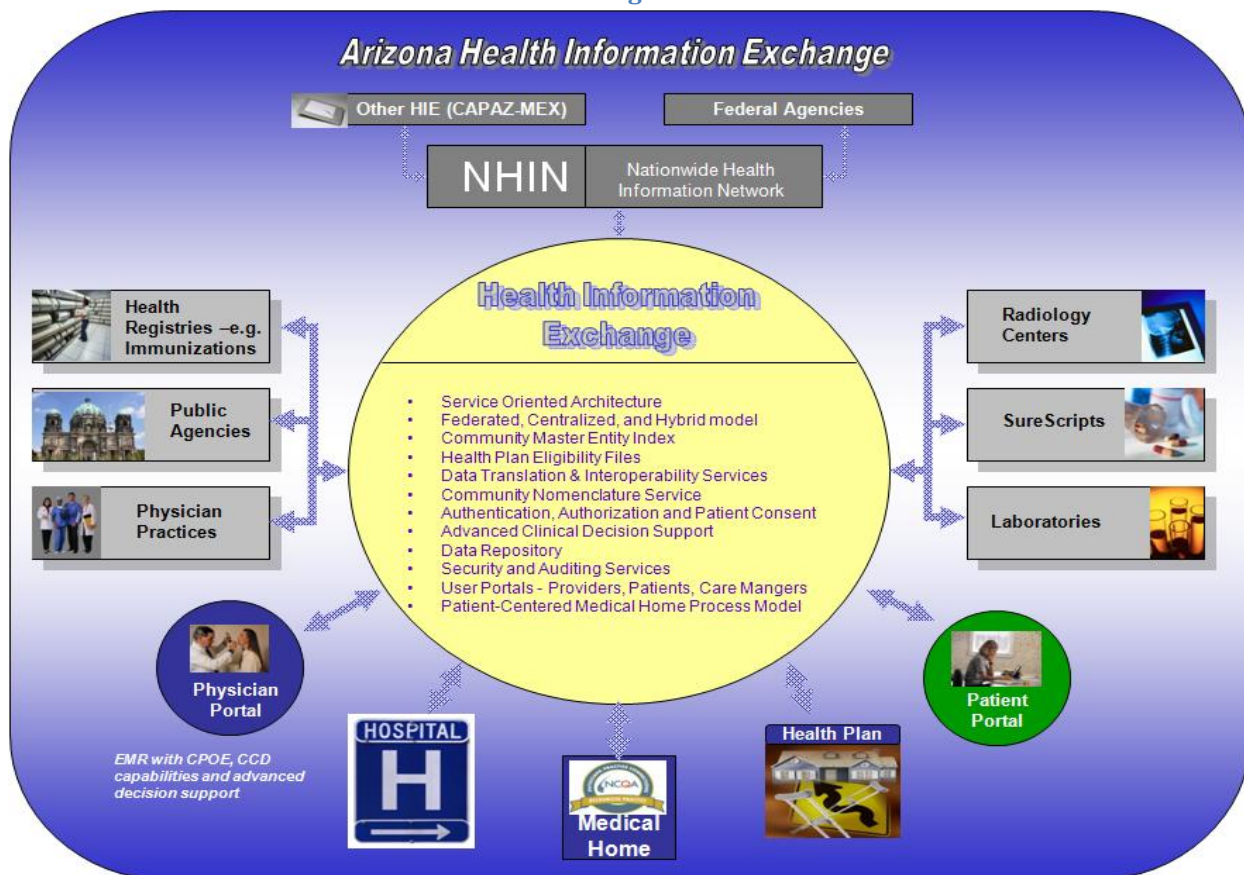
In a proposed model for development in Arizona, a hybrid system is conceived of as one that consists of a single core vendor infrastructure that serves as a base platform for expanding functionality of the utility by adding different applications to the core system. For instance, the core infrastructure selected will consist of at least an exchange utility with a master patient index (MPI). The HIE will use a powerful utility called Community Master Entity Index for reconciliation of all entities in the community including patients, providers, facilities, and organizations. Linked to the core capability can be other applications such as the Patient-Center Medical Home Registry and Evidence-Based Care Opportunity decision-based systems offered by other vendors.

The exchange will operate using architecture and technology specifically designed to facilitate interoperability. It will use a Services Oriented Architecture for data and image transport, routing, and translation. Common standards will be deployed.

GOHIE will implement a dual architectural model including both federated and centralized approaches to allow the data supplier the option of transient or placed storage. This flexibility allows the HIE to deliver population management features such as practice risk stratification and chronic care opportunity generation. It is intended that the HIE connect to public repositories such as immunization registries. The diagram below depicts the component architecture of targeted capabilities.
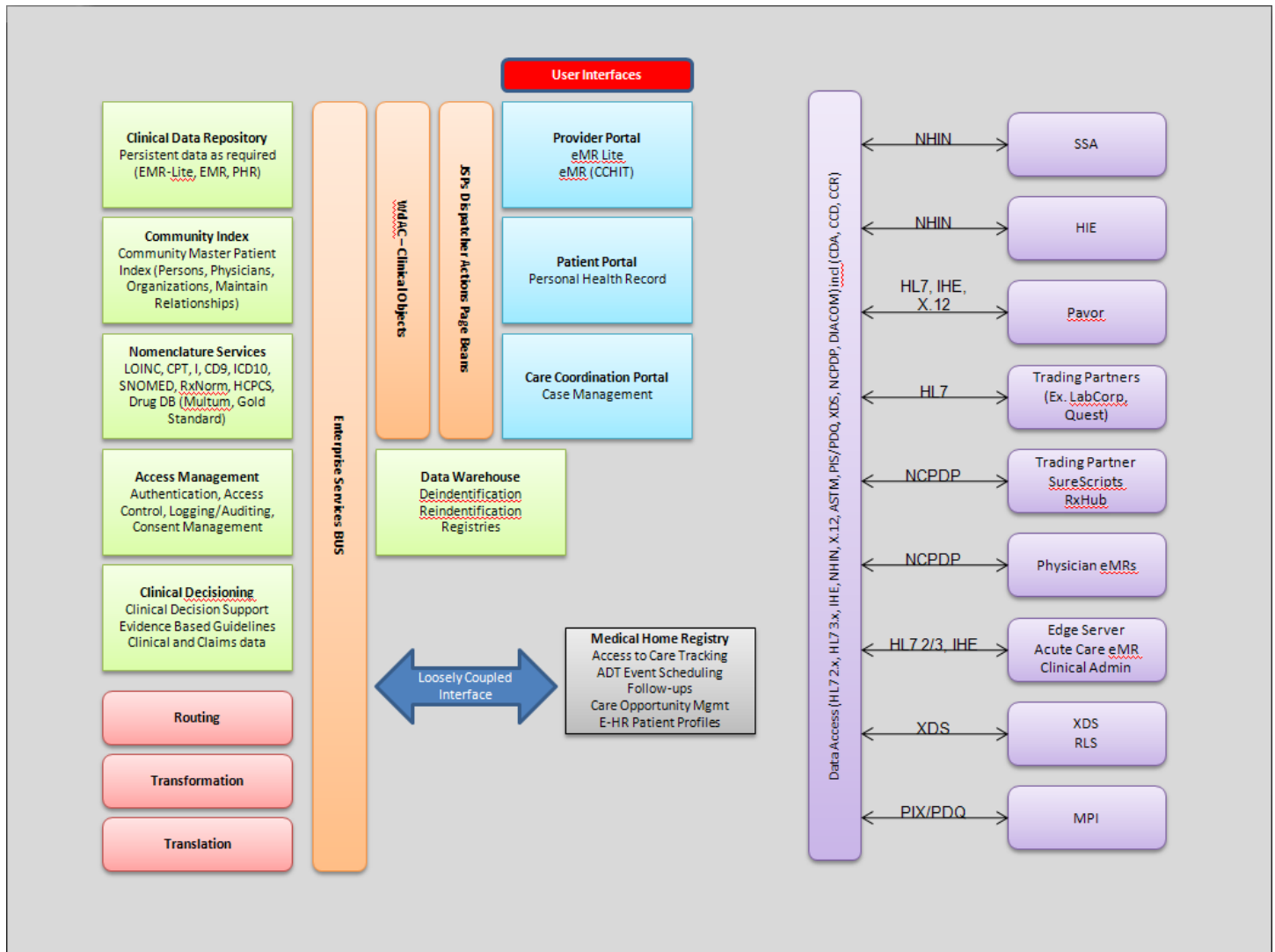
The HIE solution should be highly modular, have clear separation of concerns through architectural layering and should be based upon a Service Oriented Architecture (SOA). It must offer connectivity through a multitude of interfaces including: IHE, HITSP, NW-HIN, HL7 and X.12.

System Components

Each of the following components is described in further detail below:

1. **Master Patient Index (MPI)** – The exchange will have the capability to support any third-party MPI that provides connection via PIX/PDQ, and HL7 ADT transaction sets. Alternatively the native MPI provides the functionality required to uniquely identify individuals and support the translation of their identifiers between contributing and consuming systems.

2. **Provider Directory**– The solution will include a Community Master Entity Index (CMEI) that manages the identification of providers and their respective organizations. It allows for provider identification in multiple organizations, management of multiple locations for a provider, and supports multiple hierarchies for relationships between organizations and entities (e.g. IPA to practices, providers to patients).

3. **Document Registry** – GOHIE will provide a fully IHE compliant XDS.b Document Registry or Record Locator Service (RLS).

4. **Document Repository** – Clinical documents are supported by the fully IHE compliant XDS.b Document Repository and "optional" multi-tenant Clinical Data Repository (CDR). Depending on the requirements of the central and/or distributed HIE services, either or both may be utilized.

5. **Clinical Data Repository (CDR)** – Clinical documents and discrete values are supported by the fully IHE compliant multi-tenant Clinical Data Repository (CDR). This repository provides for full virtual isolation of each contributing entities' information. Each contributor may designate rules related to the consent, data sharing, and authorization. Full logging and audit is available to review who accessed which data elements for an individual. This proposed solution provides all of the security of an Edge device without the cost, overhead, restrictions, and complexity.

6. **Edge Devices** – The state infrastructure will allow for both physical and virtual edge devices depending on the needs of the contributing and consuming organizations. Each edge device may be configured with a full copy of the messaging layer, including the CMEI and CDR, the Document Registry and Repository or both. By providing these services virtually thorough a multi-tenant CDR, the cost for smaller organizations can be managed without sacrificing the ability to have an entity control the rules under which its information is shared.

7. **Integration Framework** – GOHIE will ensure a robust set of integration solutions to allow connection to any contributing or consuming system that support standards based messaging. Supported communications protocols and message formats include: HL7 V2.x, HL7 V3.x, IHE, NW-HIN, PIX/PDQ, XDS.b, CCR, CCD, CDA, NCPDP, X.12 and DIACOM.

8. **Authentication and Authorization** – Is provided by an integrated module that supports multi-factor authentication, support single sign-on to multiple partner solutions, and maintains multiple profiles to ensure that authorized users have access to only the functions and information to which they have rights.

9. **Consent Management** – Full support for opt-in/opt-out consent management is provided by the solution. The ability to configure the selection by contributing source provides augments the flexibility to manage consent centrally, via the Consult portal by authorized individuals in the provider organization, via transactions that specify consent status, and by the patient from their Personal Health Record.

10. **Subscription Management** – The HIE solution aims provide a sophisticated subscription management (publish/ subscribe) functionality that is fully integrated into the provider's workflow. Interest in a patient can be declared by transactions (e.g. Admission Discharge Transfers (ADT)), provider selection or patient selection. Published information, or a notification, can be automatically delivered, within the limits of consent and authorization, to the subscribing providers.

11. **Logging and Audit** – All actions (request, viewing, changes, information entry) related to authorization, authentication, consent, contributing messages, consuming messages, searches for patients, viewing of information on specific patients, and "break glass," may be logged (note: this is not an exhaustive list). Audits may be performed on any of the logged information by individuals authorized access to the log files. This audit activity is also subject to logging.

12. **Nomenclature Normalization** – The nomenclature services provides the ability accept specific or custom clinical terminologies from contributing systems, convert them to accepted standard terminologies (e.g. RxNorm, LOINC) where available, and convert them to the terminology required/preferred by the consuming systems as required. This ability is described by the industry as "semantic interoperability" and is available to each of the contributing and consuming systems.

13. **Portal/Electronic Medical Record-Lite/Electronic Medical Record** – The HIE can provide a full range of provider interactions depending on the specific instantiation. The HIE can be configured as a portal to provide the ability to select and view information contained in the contributing systems for a specific patient. The portal respects all authorization and consent policies and can push selected information to consuming systems on demand. Additional functionality may be configured to handle e-Prescribing, document problem lists and allergies, record vital signs, order tests, referrals, and document encounters. In its fullest configuration, the EMR is a CCHIT certified EMR that support all of the ONC/ARRA meaningful use criteria for 2011.

14. **Personal Health Record (PHR)** – The solution assumes the importance to provide for connection to third-party PHRs such as Google Health and Microsoft HealthVault via CCD, CCR, or CDA patient summaries. Patient information can be contributed to or consumed by these PHRs limited only by patient consent and the capabilities of the respective PHR. The solution also includes a fully integrated PHR that can be personalized. The PHR is provided as a web-based service and support, a broad range of clinical and administrative transactions.

Additional key components are described in further detail below:

In addition to providing a proposed fully functional system that meets all of the current ONC requirements, this HIE solution can provide sophisticated evidence-based clinical decision support, population management, case management and other value added services that will significantly improve the quality of care and reduce the cost for care delivery for the residents of Arizona. For instance, the HIE will support provisioning of information to support Patient-Centered Medical Home (PCMH) applications.

Practice Level Patient Registry
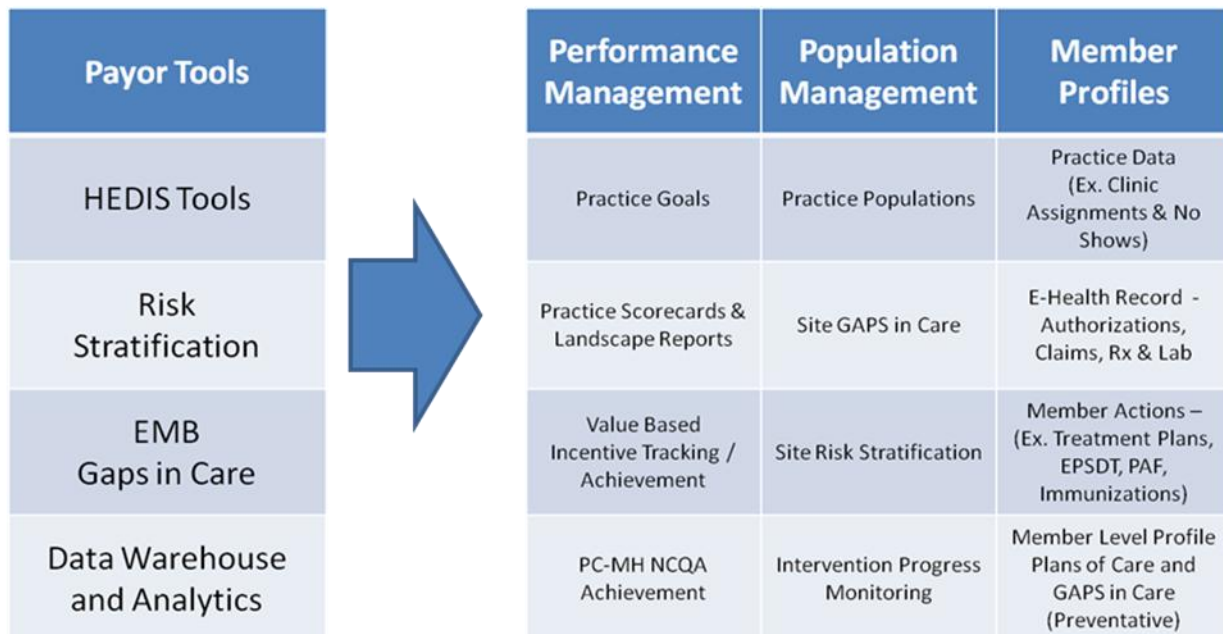
Master Patient Indexing (MPI)

For an HIE to function, providers need a reliable way of matching their patients with available records in the network. This is no trivial task, and even within a single enterprise, matching a person with his or her past records is not always easy. The statewide HIE will follow the IHE Patient Identity Cross-Reference (PIX) approach to patient matching. At a high level, the PIX manager is a layer on an MPI that is operated within the exchange. Each record in the PIX contains cross-references to medical record numbers (MRN) located at participating institutions. In essence, the PIX can translate the MRN of one provider to the MRN of another provider. The initial link of an MRN to an existing PIX record is initiated through deterministic matching. That matching will be tuned to avoid errors and final linking can be resolved through either probabilistic or deterministic matching.

GOHIE's use cases will not require providers who are consuming/receiving data to write PIX feeds to the exchange MPI. Instead, receiving providers will send demographic data to the exchange that is matched to the MPIs of data suppliers/senders (e.g., RxHub's Systems MPI) to obtain available data. It is only when an institution becomes a supplier/sender of data to the HIE that their MPI will need to be linked to the PIX.

MPI Discussion

The objective of the MPI strategy is to maximize the positive identification of subject patients while minimizing both false positives and false negatives. The recommended approach will use the IHE PIX Manager integration profile accounting for demographic data variation (i.e., first name John vs. Jonathan) and human data entry error (e.g., zip code or birthday number transposition) with weighted scoring assignments to each data element based on those variations. The MPI will run algorithms against the existing demographic information to preprocess the database to determine the frequency of every attribute and score the match according to the discriminating ability of the specific attributes of that database. The limits of acceptance and rejection will be tailored to the size of the population and the risk tolerance of both false negatives and false positives.

Comparing Probabilistic and Deterministic PIX Record Linking

Significant challenges and risks are inherent in maintaining an accurate MPI rooted in statistical matching techniques. Effectively mitigating those risks is possible. An understanding of the difference between probabilistic and deterministic record linking within a PIX/MPI is important in evaluating the overall risk of false-positive and false-negative linking. Relying on a completely automated probabilistic record matching and linking approach requires an extremely high threshold for accuracy to limit the potential for false-positives, thereby increasing false-negative outcomes. An effective PIX/MPI solution will require some degree of manual intervention and ongoing attention to linking. Deterministic matching includes manual intervention by escalating MPI matching events that do not meet the threshold requirements set by the exchange operators. A resource in the HIE support center would then look at the records and try to determine whether or not they in fact refer to the same person. The support center will use a combination of intelligence, common sense, and investigation to make this determination. Furthermore, the support resource will determine that the records match and that the numbers were likely transposed. The resource will then manually merge the records. If the matching issue is not as straightforward as a transposition, the resource may need to do some more investigation by perhaps calling the organization where the record originated to see if it has more information on the patient that could help them make a determination. The statewide HIE wants to implement a deterministic matching approach in an effort to build trust in the accuracy and effectiveness of the exchange MPI.

Provider Directory

Much like Master Patient Indexing (MPI), a statewide provider directory is no small task and presents similar issues (and their solutions) to HIE functionality. At its core, the provider directory will supply a mechanism for the exchange of data between two unaffiliated providers/organizations. It will contain all relevant information for all registered clinicians within Arizona. "Clinician" is broadly defined to include all certified and licensed clinicians (e.g., physicians, nurse practitioners, nurses, certified nursing assistants, medical assistants).

GOHIE will leverage organizations that have expertise in managing various information assets, such as the Arizona Medical Board (AMB). GOHIE also recognizes other great sources of data through the collaborative efforts of AHCCCS and the Arizona State University's Center for Health Information and Research. It is through those data efforts that the AMB currently manages an up-to-date provider directory of physicians licensed to practice in the state with their EHR capabilities. Rather than recreate the intellectual property, processes, and policies to manage such a directory, GOHIE will pursue leveraging this existing statewide asset to the greatest extent possible. Still, GOHIE intends to release a Request for Proposal (RFP) for the development and management of the statewide provider directory component. The intention is to partner with those existing state data sources like the AMB, Nursing Board, Dental Board, and others. GOHIE will seek a vendor that can deliver on this approach and may have an existing relationship with one or more named partners. Also, GOHIE believes in an incremental process to achieving a robust, multi-user/multi-interface functioning provider directory. At first, the scope will be a "yellow pages" type listing and service which ultimately can be scaled to furnish the desired result of a robust provider directory.

GOHIE, with other local stakeholders, will provide assistance to the selected vendor with the onboarding of providers into the directory. GOHIE views this also as a two part process broken into hospitals (and all associated clinicians) and individual providers. GOHIE believes that the vendor should work with a prioritized list of hospitals and their communities of providers initially. In parallel, GOHIE will expect the vendor to work with Arizona Health-e Connection Regional Extension Center to provide a process for onboarding providers seeking to meet Stage 1 Meaningful Use. At the same time, GOHIE must continue to work with all licensures within the state to establish processes and policies for adding and maintaining all eligible providers in a statewide provider directory. GOHIE anticipates the vendor or contracted entity will assist with the establishment of these practices and policies.

Throughout, GOHIE will remain as the governance lead and will assure a standards-based architecture and connectivity. Lastly, GOHIE will assure equal access rights to the provider directory for all interested, qualified users in the state on a non-discriminatory and uniform basis.

Integration Framework

Data enters and leaves the HIE through the integration layer, whose transformation services support incoming and outgoing transformations to and from HL7 v2, HL7v3, XML, X.12, IHE, NW-HIN, CDA, ASTM, NCPDP, DICOM, and other structured formats via Web and SOAP interfaces. The HIE can be configured to use the Surescript or RxHub networks so that end users can transact with pharmacies and pharmacy technology vendors.

The following transactions are supported by the proposed HIE solution (in addition to IHE XDS.b support):

- Demographic sources (HL7 primarily)
- Specific inbound (to HIE) interfaces – HL7/CCR/CCD/IHE/DICOM/Other Standards
- Specific outbound (to Hospital EMR) interfaces – HL7/CCR/CCD/IHE
- Commercial laboratories (e.g. Sonora Quest and LabCorp) – transactions Supported – HL7, CSV, HL7/CDA
- Diagnostic imaging centers – transactions supported – HL7, CSV, Web Services
- Medication management (Surescripts) – transactions supported – NCPDP/Custom Protocol/RXNorm
- Clinical summary via CCR/CCD – both in-bound and out-bound
- Physician office EHR – Inbound (to HIE) transactions supported – HL7, CCR/CCD, IHE, CSV

- Outbound (to EHR) Transactions Supported – HL7, CCR/CCD, CSV

Existing HIE capabilities in the state currently can support integration with:

- over 30 different office based EMR systems including Allscripts, GE, eCW, NextGen, and Sage
- over 30 different hospital based EMRs and clinical systems including Cerner, GE, Epic, McKesson, Siemens, Eclipsys, and Meditech
- multiple national and regional laboratories and imaging centers

GOHIE recognizes the current work and infrastructure established by HINAz and others. The ability to interface and interoperate with third-party solutions is one of the core strengths of these existing HIE platforms. These solutions feature a scalable, adaptable, field-proven integration engine that connects disparate healthcare systems and distributes data and images among those systems. HINAz's engine provides a host of services via Web interfaces, allowing the rapid integration of any system or application using industry standard interfaces.

Registering Clinical Information with the Exchange
The central Registry can capture the metadata of any information being stored locally on an edge device. The intent of the document Registry is to maintain information about the location and type of documents that exist on the network. When a participant saves a document to the statewide HIE edge device, a standard transaction is initiated to register the document and sends the necessary document identification information to the centralized Registry.

Transformation and Nomenclature Normalization Services
The HIE solution should provide a number of transformation and translation services to convert non-standard data published by EMRs, clinical systems and Trading Partners to standardized vocabularies and document types. This facility is available to all messages that traverse the HIE. Transformation and translation services examine each transaction that enters or leaves the HIE and, based on the rules established for that particular message type from the specific contributing or consuming system, the vocabulary services are performed as required by the message type and content, for example, translating facility names and identification using CMEI information.

The Nomenclature (Terminology) Service is conformant with IHE SVS as constrained by Healthcare Information Technology Standards Panel (HITSP) T66. The Nomenclature Service ensures data normalization across multiple data sources and supports all of the common clinical terminologies used in healthcare in the United States. It provides for the incoming and outgoing translation and transformation of standard nomenclatures and code sets as coded data enters or leaves the system respectively. The Nomenclature Service provides the ability to accept specific or custom clinical terminologies from contributing systems, convert them to accepted standard terminologies (e.g. RxNorm, Logical Observation Identifiers, Names and Codes (LOINC)) where available, and convert them to the terminology required/preferred by the consuming systems. This ability is described by the industry as "semantic interoperability" and is available to each of the contributing and consuming systems. The service also performs the conversions of coded data that does not conform to national and state standards, as long as a consistent structure is followed by the source organization that can be mapped to the desired end state.

The ability of GOHIE's HIE solution's to translate and transform services ensures that the messages, content and specific coding in each contributing and consuming system is appropriately translated to and from a global standard. This permits the creation of aggregated data that is appropriately harmonized and available to optimally support the providers as they utilize the HIE services.

Authentication and Authorization

The HIE must utilize a security component that is expressly designed to be HIPAA-supportive and configurable to meet specific federal, state and organizational requirements. Not only does the solution meet all HIPAA requirements regarding patient consent, data privacy, and security, but the customizability of the solution provided by the customization framework allows for the system to be configured to behave according to policies that are more restrictive than its default HIPAA-supportive policies and to be in accordance with all state requirements that are more restrictive than HIPAA patient consent, data privacy and security measures.

The solution will support multiple levels of access. The component features a customizable role-based access control framework that will require users to be authenticated in order to access the system. Furthermore, it will require that users be authorized in order to execute any of the system's service operations or read, write, update or delete any system data. In order to be authenticated against a protected authentication store, users will have to supply a user identifier and personal pin or a SSL client-side certificate. The solution also supports multi-factor authentication.

All system events (service operations, reads, writes, updates and deletes) are captured by the Logging and Auditing components so that administrators and auditors may track user access. Password policies are flexible and once defined are enforced consistently across the user population. The Authorization and Authentication capabilities meet or exceed all current federal and state requirements and position the HIE to fully respond to provider and patient concerns regarding information privacy and security.

Data Security

The HIE solution must secure Protected Health Information (PHI) by using sophisticated encryption services to ensure that all information is encrypted in transit, at rest, and on backup media. The following mechanisms are employed to handle encryption in each of the situations:

- Encryption of data in transit
- Encryption of data at rest
- Encryption of data on backup media

In summary, the solution will utilize industry standard solutions to make certain that PHI is fully protected by encrypting all data during transit, encrypting demographic data at rest and fully encrypting all data on backup media. This solution must ensure that confidential data regarding the health and care delivered in Arizona is fully protected under these conditions.

Consent Management

The solution for consent management should support multiple consent models (opt-in/opt-out) with varying granularity in a single HIE installation. The HIE may define a consent policy that reflects the requirements of the various stakeholders and patient/consumer populations served. By managing consent on a contributing system basis, the HIE will be able to address confidentiality of the interaction between an individual and a specific provider organization. Of course, the system can manage a single consent policy across all consumers/patients if that is desired.

The Personal Health Record (PHR) should also allow the consumer to manage their consent via a consumer friendly interface. The distributed nature of the consent management solution provides the flexibility to have consent managed centrally, at responsible provider organizations, through interfaces to provider systems that themselves provide consent management, and directly by the consumer through the PHR.

Subscription Management

A provider may create a relationship with their patient panel through several mechanisms. The most common vehicle is through the pre-load of demographic information from the provider's practice management (PM) or electronic medical record (EMR) system. This list may be updated by on-going ADT transactions (typically distributed by the MPI) that continue to populate the list of declared relationships. In addition to the electronic method, either the provider (via the portal) or the patient (via PHR) may explicitly declare that a relationship exists. In the event that multiple individuals have declared (and consented) relationships with the patient, all will be notified by the preferred method declared for each subscriber.

Logging and Audit

The final HIE solution should provide the capability for the logging of all actions related to authorization, authentication, consent, contributing messages, consuming messages, searches for patients, and viewing of information on specific patients. Audits may be performed on any of the logged information by individuals authorized to access the log files. This audit activity is also subject to logging.

The audit includes the reference ID of the data viewed, added, or updated, and does not include the data itself. Audit trails and activity reports can be constructed from the audit repository through the use of database reporting tools (such as Crystal Reports), application monitoring tools (such as Tivoli), XML processor tools (such as XML Spy) and the event viewer, which is a Web-based applet that allows administrators to view errors and events. Using these tools, the audit repository can be filtered by user identifier, patient identifier and activity date/time range. Again, these tools are restricted to tables that do not contain PHI.

Reporting capabilities will be available to show all access to patient records by any users or by a specific user. Physicians can query the audit repository for this information. Queries and reports can be run on a single patient or across multiple patients using any data element as criteria.

Accessibility

A Web-based clinical application can be used as a Portal, EMR-lite or ONC-certified EMR solution, providing single sign-on for providers using additional complementary systems. This clinical point-of-care solution, is highly configurable, and its architecture allows for customization and incorporation into existing business process, at the user, group, department, and institution levels, giving the HIE user organizations the ability to adapt the solution to their unique needs. Further, the tool should provide the flexibility to allow for direct import of data into the participant's applications when desired, as long as that application can accept the import. It should support the loading of as much historical data, demographic and clinical data, as desired.

Consumer PHR

The HIE solution should provide for integration with consumer-designated third-party personal health record (PHR) systems such as Google Health and Microsoft HealthVault. Summary documents (e.g. CCR, CCD) may be passed to these PHRs or conversely, they may act as data contributors to the HIE – in each case, limited only by patient consent and the capabilities of the respective PHR. In the event they are data contributors, all information provided shall be identified by the source to avoid confusion when viewed by requesting providers.

This HIE solution should provide for central control of consumer policies related to consent and the contribution of "data to" or "retrieval of" data from a third-party PHR. These consumer solutions provide a convenient vehicle for consumers to participate in their own care by (to the extent supported by the PHR product) allowing the consumer to enter important data on their health (e.g. glucose readings for a diabetic) and sharing them with their physician. The Personal

Health Record is built on the same core platform as the clinical provider portal. It is a secure, fully-customizable Web portal that links patients to their providers through an easily accessible interface.

Medication History e-Prescribing Solution Integration

The EMR component should have a fully integrated e-Prescribing capability. During the ordering conversation, the clinician can search for a medication either from their list of favorites or from the entire medication catalogue. Once the medication is selected, the system will perform the interaction checking in the forefront of the process. The clinician is immediately notified of any potential interactions or duplicate therapies. If they choose to continue with the prescription, they fill in the details of the script, as designed by the client, including specified required fields. After the details are filled in, the clinician signs the prescription and it is routed according to the routing rules established in the system (i.e. sent via Surescripts to the pharmacy, printed in the office, faxed to the pharmacy, etc.).

Message Standards and Transport Protocols

The HIE solution must support all of the following Message and Transport formats and additional standard format identified through analysis:

Message/Transport Format	Support	Use
HL7 V2.x	Yes all versions, all transactions	Peer to peer transactions - usually ADT, lab (orders/results), radiology, (orders/reports), Master File Notification, Discharge Summary, and other transactions as supported by contributing/consuming system.
HL7 V3.x	Yes all versions	Emerging standard with many vendors for exchange of XML based patient summaries.
DICOM	Yes	Broadly deployed for clinical images - used by most PACS systems and their viewers.
EDI X.12	Yes	Traditional standard for payer transactions for eligibility, claims and remittance advice.
HITSP C32	Yes	HITSP Summary Documents using HL7 Continuity of Care Document (CCD) Component.
NCPDP	Yes	Traditional standard for pharmaceutical transactions.
Web Services (SOAP)	Yes	Used to access web services and exchange XLM - variety of uses depends on specific web services.
ebXML	Yes	Emerging standard for XDS.b document Registry transactions.
SSL/TLS	Yes	SSL is traditional encryption standard for web based communications - TLS is the emerging replacement for the SSL standard.

Clinical Terminology Standards

The infrastructure currently supports the following Clinical Terminology Standards, in messages, CDR (optional), and nomenclature services for translation or rules authoring:

Clinical Terminology Standard	Use
LOINC	All laboratory test and orders
SNOMED-CT	Diagnosis, problem lists and structured documentation
RxNORM	Drug codes, dosage descriptions, and drug allergies
ICD 9 and ICD 10	Diagnosis and problem lists
CPT	Clinical Procedures
HPI	Health Practioner Index code set
Drug DB (NDC, NDDF, Multum, Gold Standard, etc.)	Use for all interaction checking (drug-drug, duplicate therapy, drug-disease, drug-lactation, pediatrics, etc)

Moreover, the desired HIE solution should support all of the above clinical terminologies in their current release. These are used for harmonization of data (semantic interoperability) by the nomenclature services and to author rules for specific actions related to clinical terminology identified data. All common clinical terminologies should be supported by the solution to ensure that rules adapt to commonly accepted standards (e.g. HITSP).

A fiscally sound incremental approach to implementing the statewide HIE represents the vision for what the exchange will aim to achieve. In the near-term, clinical data sharing will leverage portions of the functionality that will be deployed in the full-scale HIE.

HIE Services Implementation Timeline
The table below provides the HIE services that will be offered, the timing, and priority of the Use Cases:

Data Exchanges Use Cases	2010		2011				2012				2013				2014			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
HIE Plan Publication & Approval	■																	
Funding & Participation Agreements - Major Players		■	■															
Medications History, Lab and Major Hospital ADTs			■	■														
Linkage to Existing Medical Home Efforts			■	■														
Risk Stratification and Chronic Care Opportunities			■	■	■													
Hospital Discharge Care Summary Exchange			■	■	■	■												
Radiology Orders and Reports Delivery				■	■	■												
Clinical Care Summary Exchange					■	■	■	■										
Public Health Registries							■	■	■									
Quality Reporting Measures								■	■	■	■							
Public Health Reporting											■	■	■	■				
Behavioral Health											■	■	■					
Correctional Health												■	■	■				
Key	**Development / Implementation**										**Operations**							

HIE Services
When fully implemented, the statewide HIE architecture will enable connections between Arizona's approximately 80 acute care hospitals, 15,000 physician practices and all health plans. The statewide HIE will provide a mechanism that enables appropriately authorized individuals to perform select analytical reporting. The statewide HIE will also allow secondary use of data for public health, bio-surveillance, and other appropriate secondary uses of data according to consent and data stewardship policies to be established. Below is a brief discussion regarding the statewide HIE's implementation schedule for the required Use Cases.

Medications, Lab and Major Hospital ADTs (Admission, Discharge, Transfer)

The first use case that delivers high value to a large number of key stakeholders including hospitals, practices, county agencies and health plans is the sharing of patient medications, lab results from major labs, and hospital discharge notifications for inpatient, ER and observation stays. This information can be used by the many existing patient-centered medical home activities collaboratively underway with health plans, hospitals and practices. The objective will include several major hospital systems from across the entire state participate in the sharing of ADTs with nine health plans and participating practices. Hospitals will include those in all major areas of the state including Yuma and Flagstaff. In addition medication information is highly desired by the Arizona County Agencies. The desired objective of this use case will be to collect real-time information for 80% of the state's lab orders (Sonora Quest & Lab Corp), capture 80% of the hospital ADTs and 75% of the medication prescription orders.

Linkage to existing Medical Home Efforts/Applications

There are several patient-centered medical home efforts underway in Arizona with both commercial and Medicaid populations. In fact, four practices have achieved Level 3 certification. The proposed HIE will be able to provide real-time discharge notification information to these practices to effect proper transition of care from inpatient and ER with outreach and follow-up scheduling with the primary care physician. In addition, the State can use real-time medication information to perform reconciliations post discharge to prevent readmissions. Additionally, practices can provide schedule information to enable close monitoring of access to care, a fundamental pillar of the Patient Center Medical Home (PCMH).

Electronic Public Health Reporting

Arizona has specific need to capture public health reporting for a number of infectious or communicable diseases, such as meningitis, measles, mumps, and smallpox, to name a few. Currently, providers are required to submit information to public health officials for monitoring and reporting purposes with variable requirements on the reporting timeframe. Initial discussions regarding the implementation of an electronic, bi-directional process for this Use Case are underway.

Quality Reporting Capabilities

Quality reporting is essential to inform and educate stakeholders, and it is an important component for achieving meaningful use. Interest in quality reporting continues to grow; however, a consistent mechanism for reporting does not exist. The statewide HIE is expected to make available quality reporting services, as deemed appropriate, for use by authorized stakeholders.

Support for HIE Services

The HIE will provide technical support to providers for each Use Case through the establishment of a technical support help desk. The help desk is responsible for resolving technical and operational issues, including connectivity and performance. The help desk will resolve the majority of provider inquiries within one business day, or escalate the more complex issues to the statewide HIE for resolution.

Safeguarding Data

The statewide HIE will maintain the confidentiality of patient information by establishing policies related to securing the integrity and ensuring the availability of electronic patient information. The HIE will comply with the 18 broad standards under the HIPAA Security Rule. Technology partners will be required to demonstrate that their solutions meet or exceed the security requirements. Participation agreements will stipulate that users comply with the HIPAA requirements. The HIE will maintain a log of activity for auditing purposes.

The physical locations, networks, platform, and application technologies that will support data sharing are expected to provide ample security on all levels.

Business and Technical Operations

Arizona's strategy for statewide HIE implementation is to designation the Governor's Office of Health Information Exchange (GOHIE) to oversee the implementation and coordinate the selection of an HIE vendor for implementation. Arizona's plan for advancing HIE within the state is to balance the need for information sharing with the need for strong privacy and security policies.

Operational Responsibilities

GOHIE will serve as the state's designated entity to oversee and manage the grant and implementation of the statewide HIE.   However, GOHIE does not have the long standing relationships across the state that is so critical to ensuring a successful implementation. GOHIE's strategy is to leverage existing organizations and relationships to propel the HIE project and implementation forward. GOHIE realizes and appreciates the history and resources of these entities in Arizona and understands that those relationships will exist beyond the life of this grant. By leveraging these organizations, GOHIE can move forward quickly with its mission rather than building relationships from the ground up. The types of organizations critical to the success of this implementation consist of:

- Health care providers
- Hospitals
- Laboratories
- Health plans
- Patient consumer organizations
- Education and research entities
- Public health agencies
- Technology vendors
- Imaging Centers

With the long term vision in mind of secure, electronic movement and use of health information; a strategic alliance between GOHIE, AzHeC, and AHCCCS is critical. GOHIE will oversee the implementation of the state's HIE platform which will allow hospitals and health care providers access electronic records. AzHeC is responsible for the Regional Extension Center (REC) grant. The regional center will offer technical assistance, guidance, and information on best practices to support and accelerate health care providers' efforts to become meaningful users of Electronic Health Records (EHRs). These two efforts share a similar focus and objective to improving the electronic movement of health information. It is the role of GOHIE to oversee the implementation of a statewide HIE which will provide at least one viable option for an EHR system and the interfaces to customize connectors for other EHR vendors. Therefore, coordinating the HIE/EHR vendor strategy between GOHIE and AzHeC in the early stages will have the significant impact on the meaningful use requirements.

AHCCCS is responsible for the tracking and monitoring of meaningful use in Arizona. The level of reporting required by AHCCCS to properly track meaningful use will be a product of the HIE platform. Thus, having hospitals and providers connected to the state HIE platform is critical to fulfilling the data and reporting needs.
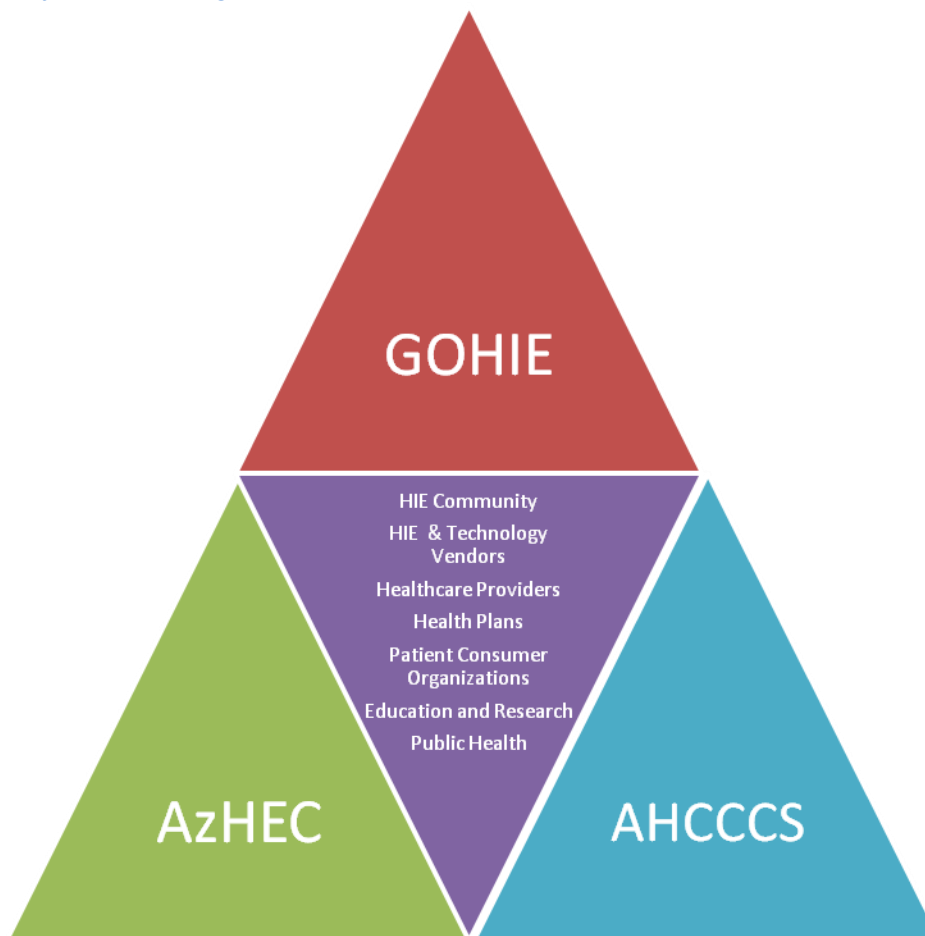
HIE Medicaid Coordination

Leverage Existing Statewide HIE Capabilities

It is fully expected a single HIE platform will be chosen for use statewide. As mentioned in other sections of this document, GOHIE in collaboration with other organizations will choose a vendor to implement a statewide HIE system.

GOHIE realizes there are other existing pockets within the state using an HIE to some degree. In some cases, these existing HIE capabilities within the state are fairly advanced and working well for those organizations. It is imperative that GOHIE collaborate with these organizations to help understand their needs as GOHIE moves forward with the statewide HIE. When implementing the statewide HIE, GOHIE may leverage these other HIE capabilities to ensure consistency and ease of use for organizations already using HIE technologies. It may also be feasible that an existing HIE operating within the state may meet the requirements and needs as the HIE to serve the entire state of Arizona. An RFP process will be conducted for statewide HIE development and a single HIE vendor will be selected to serve the entire state.

It is also recognized these organizations using HIE technologies may be able to help GOHIE and other organizations understand "lessons learned" as GOHIE moves forward with the statewide HIE.

Resource Implementation Strategy

GOHIE has a comprehensive approach to project management based on industry best practices and Project Management Institute's (PMI) methodologies. GOHIE will start by creating a comprehensive project management plan, including the project charter, its approach to scope management, a detailed work breakdown structure, a

comprehensive schedule, risk mitigation strategies, and definitions of project processes. GOHIE will start with a project kickoff meeting and host weekly status update meeting with stakeholders. The Microsoft Project schedule will be updated frequently, when applicable, as GOHIE proceeds through the project. The project schedule will be shared with project stakeholders regularly to ensure good communication and project tracking.

To date, the following resources have been defined to work on this project. It is expected additional resources will be added as GOHIE moves forward with the project.

- State HIT Coordinator - Aaron Sandeen
- Manager of IT Projects & Services - Ryan Sommers, PMP
- Policy Analyst – Jason Mistlebauer

Contractual resources will also be considered on an "as needed" basis to fulfill specific project needs such as specific regional coordination or to meet a specific skill set required.

In addition, much of GOHIE's ongoing resource strategy may be dependent on its vendor(s) selection. The ongoing resource implementation strategy will be dependent on implementation schedule and will remain fluid until a comprehensive implementation project schedule is developed with the vendor(s). The resources utilized throughout this implementation will be a combination of GOHIE, vendor resources, strategic stakeholder participation, and contractual resources.
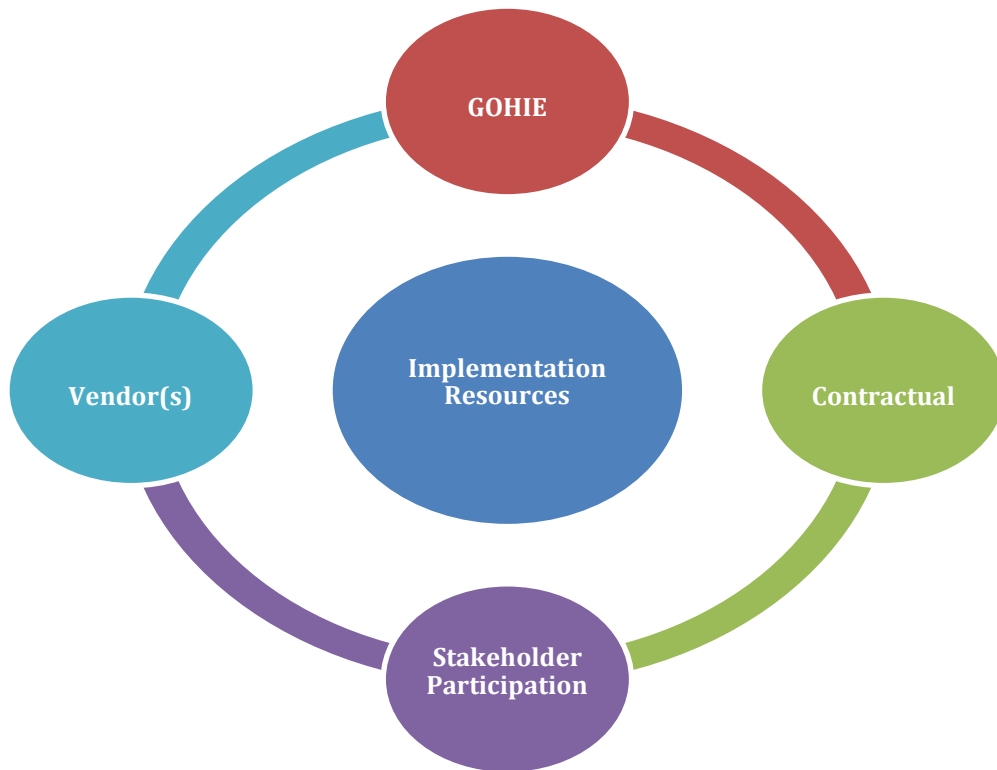
Strategic and Operational Plan Updates

In addition to consistent tracking and updating of the project implementation schedule, it is also imperative that GOHIE has a strategy in place to update the strategic and operational plans as needed. It is recognized, both the strategic and operational plans may need to evolve as the project progresses. A routine quarterly evaluation of the strategic and operational plans will be conducted to determine if any updates or shifts in approach are required. This review will be

led by GOHIE with feedback welcome from project stakeholders to ensure accountability to the plans. Any updates or shift in strategy will be an open and transparent process with stakeholders and the Office of the National Coordinator (ONC).

Program and Vendor Management

GOHIE will be managing the HIE program in it's entirely along with input from stakeholders. It is GOHIE's responsibility to ensure all requirements are met and to determine the appropriate monitoring and tracking of the statewide HIE implementation.

It is GOHIE's strategy to rely on vendors to provide services necessary to implement the statewide health information exchange system. This strategy may introduce the statewide HIE to greater risk relating to delivery disruption or vendors' inability to deliver services for which they are contracted. Recognizing this risk, the GOHIE will develop a vendor management plan to identify and mitigate any potential risks. GOHIE, in collaboration with other stakeholders, will also develop a contingency plan to support and avert disruptions in business operations should the worst happen and the vendor supporting the exchange fails to provide contracted services. Included in the vendor management plan will be an assessment of the organizational risk, financial risk, support risk, and strategy risk.

The State is also required to follow specific procurement processes when selecting any vendor(s). This procurement process requires GOHIE to go to RFP when selecting vendors to provide services.

Risk Management

Implementing a statewide HIE is a complex undertaking consisting of integrating multiple systems that need to work together for successful outcomes. GOHIE will self-evaluate and determine the appropriate measurement of success with regard to implementation and interdependencies. A risk management tracking tool will be used to identify, manage, and mitigate risks. Risks will also be given a value of both importance and a qualitative measure of likelihood to occur. All risks will also be categorized into various high-level buckets. It is important to have a mitigation strategy in place for each risk in the event the risk becomes an issue. The risk management tracking tool will be updated regularly, as needed, and will be evaluated by GOHIE and other stakeholders. In addition, it is also expected that specific "spin-off working groups" will be developed to help determine and tracking risks throughout the project. These spin-off groups will be coordinated by GOHIE and will consist of various stakeholders within the community.

Please see Appendix H for GOHIE's current Risk Register.

Legal/Policy

A major project in the area of policy development in 2009 was the creation of a legislative package to remove statutory barriers to HIE. The legislative package was developed primarily by the AzHeC Legal Committee in collaboration with Coppersmith Schermer & Brockelman PLC. The bill was drafted and negotiated by a wide range of stakeholders including consumer representatives, hospitals, physicians, health plans, government agencies and others. It reflects language that requires rigorous privacy protection, ensures that health information will be available when needed and attempts to reduce the costs for operating HIOs in Arizona. Additional efforts in this area include the development of the Model HIE Participation Agreement, as well as a standard set of HIE Policies. This section describes these efforts and others in depth, as well as what areas and activities the State HIE Program will focus on moving forward.

Privacy and Security

Arizona has been very involved in national privacy and security efforts, namely through participation in multiple phases of the Health Information Security and Privacy Collaboration (HISPC), a national project established in 2006. The HISPC project was funded by the Agency for Health Care Research and Quality (AHRQ) in 2006 with 34 participating states,

including Arizona. The purpose of this collaboration was to assess variation in organization-level business practices in order to identify specific practices that may pose challenges, as well as practices that facilitate interoperable exchange.

This, in turn, would help states to identify and propose practical solutions to barriers while preserving privacy and security requirements as defined by stakeholders and in applicable federal and state law. In 2006, Arizona's GITA received $350,000 to participate in the HISPC project. In 2008, an additional $414,000 was awarded to the agency to participate on a multi-state collaborative to address standards for HIE. This work helped to set the foundation and contributed substantially toward health information exchange initiatives, and will also be beneficial to all health information exchange efforts moving forward. A brief description of the work that Arizona accomplished follows.

HISPC - Arizona Health Privacy Project Phase One
During Phase One of the HISPC project, Arizona performed outreach to over one hundred stakeholders in the medical community in order to focus on business practices that pose as barriers to HIE. Once the barriers were identified, solutions were evaluated to those barriers and implementation plans were proposed. The Arizona Health-e Connection (AzHeC) Legal Committee worked on legislation that could be proposed to remedy legal barriers to HIE and also worked on model policies and procedures for provider access to the HIO and an enforcement policy for inappropriate access to the HIO.

HISPC - Arizona Health Privacy Project Phase Two
Under the second phase of HISPC, Arizona received a contract through RTI International and the Office of the National Coordinator to work on a multi-state collaborative called the "Adoption of Standards Collaborative (ASC)." The ASC's main goal was to establish a "National Health Bridge: Basic Policy Requirements for Authentication and Audit" for providers to access electronic health information across state lines. The other participating states in this collaborative were Colorado, Connecticut, Maryland, Nebraska, Ohio, Oklahoma, Utah, Virginia and Washington.

Arizona took on the role of co-chair of this collaborative as well as becoming a member of the National Steering Committee for the overall HISPC collaborative work. This work resulted in the creation of the Guide to Adoption of Uniform Security Policy, which impacted the HIE Security Policy of the AMIE proof of concept, which was in existence at the time. The following products developed under HISPC, Phase Two can be found in the Appendix:

- Recommended Minimum Policy Requirements for Privacy and Security (Appendix B)
- Overview of Basic Authentication Concepts Useful to Health Information Organizations (Appendix C)
- Guide to Adoption of Uniform Security Policy (Appendix D)

Participation in the HIE Cooperative Agreement program will provide Arizona an opportunity to continue addressing variation in interpretations of privacy and security regulation that constrain intrastate and interstate exchange. Arizona adheres to a common set of privacy and security principles essential for establishing workable information exchange standards and practices within and among states. This statewide privacy and security approach supports the use of health information technology such that the potential for reduced health care cost and improved health care outcomes are realized while protecting patient identifiable health information. This approach is guided by core privacy and security principles that operate in a consistent and coordinated manner to support and enable a successful state-wide health information exchange (HIE). These principles are in line with ONC's Nationwide Privacy and Security Framework. Arizona retains an established environment of trust among its health care stakeholder community. The privacy and security principles facilitate and promote public trust in Arizona's statewide HIE activities by defining the common values used to guide HIE activity across the state. The values guide the development of consensus-based community business

rules for exchange of health information and enable Arizona to maintain and grow the public trust in implementing electronic HIE.

HHS HIT Privacy and Security Framework

GOHIE intends to leverage the existing processes, policies, and laws that govern exchange today, electronic or paper. It anticipates that as more data is exchanged electronically new policies and decisions will need to be developed to protect the rights of all patients and the public. In alignment with the HHS HIT Privacy and Security Framework, Arizona's statewide strategic plan encompasses the following principles:

Individual Access

Individuals will have access to their patient health information. The developing Arizona HIE infrastructure will provide for connections to personal health record applications including a patient portal. The patient health record should also be accessible in a human readable format through their provider. Policies will be developed to facilitate patient access to the records.

Correction

A formal position on correction of patient health information will be addressed in the early stage of implementing the State HIE Program. The individual consumer has the responsibility to know/understand what information is contained in their record. Health care entities holding the record and the consumer share responsibility for maintaining accurate health information. Arizona values the individual's role in ensuring the accuracy and integrity of patient health information and will address this issue as it moves forward with patient access to virtual health records. Providing individuals access to their health information with the expectation of responsibility to maintain accurate health information necessitates procedures for that process.

As the virtual health record planning moves forward, the Governor's Office and HIE stakeholder community will draft, publically vet, and pilot a policy and guidance for consumers on the reasonable steps to ensure that information is accurate, complete, and up-to-date. Persons and entities, that participate in a network for the purpose of electronic exchange of individually identifiable health information, should make processes available to empower individuals to exercise a role in managing their individually identifiable health information and should correct information or document disputes in a timely fashion.   Policies will be developed to allow individuals to have a practical, efficient, and timely means for disputing possible errors in their health records

Openness and Transparency

Arizona recognizes that the success of it's HIE is depended on the trust of individuals and health care providers. Policies will be developed to create and maintain trust in the Arizona HIE.

In collaboration with State Agencies, Arizona Health-e Connection, HINAz, and other stakeholders, the governance and operating rules of statewide HIE activities will be open and transparent. The Arizona Governor's Office along with other community Stakeholders will provide vision and oversight of statewide HIE activities funded under ARRA. Consortium meetings are open to the general public and additional communication through a variety of public means.

Individual Choice

Individuals/patients have a choice to participate in the electronic exchange of their health information. Ensuring patient participation rights and consumer choice protections will happen by providing the patient clear notice about the HIO and the ability to determine their participation in the exchange. The patient/consumer will make an informed decision at the point of care about who can access and exchange their information via the participating HIO. Policies will be

developed to foster individual's informed decision making regarding the collection, use and disclosure of their health information

Collection, Use, and Disclosure Limitation

Limitations exist on the collection, use and disclosure of patient health data. Safeguards must ensure patient health data use and disclosure is in accordance with state and federal privacy regulations. Patient health data use and disclosure through the HIE is limited to treatment, payment, health care operations and public health reporting by state and federal law. Policies will be developed to further assure those limited uses.

Data Quality and Integrity

Participants, including users, HIE entities and data source have a responsibility to ensure data quality and integrity. This is vital to the HIE, as patient data is supplied from numerous sources and users. Clinicians, people responsible for recording patient information, and other members of the HIE understand that patient data stored in the HIE is the same data that would be present in a paper chart. The same standards of accuracy apply. Patient data is supplied from numerous sources and there is general agreement among users, not to solely rely on data accessed through the HIE for the provision of patient care. This is no different than current practice; users (clinicians) must apply their professional judgment in evaluating the accuracy of medical data. Policies will be developed for all the stakeholders in the HIE to ensure the accuracy of the data in an individual's health information and to prevent, detect and mitigate unauthorized changes.

Accountability and Safeguards

Organizations engaged in HIE activities are accountable for complying with federal and state regulations for safeguarding and securing patient health information.   Reasonable technical, administrative, and physical safeguards will be developed to protect the integrity and privacy of an individual's health information. Policies will be developed to monitor and audit unauthorized access and breaches. The policies will include guidelines for authentication and authorization for disclosure of identifiable health information; a procedure to receive complaints from stakeholders; and procedure to mitigate security breaches and unauthorized access including notification to individuals of breaches of their health information.

State Privacy and Security Workgroup

For the past several months, GOHIE has been participating in the national privacy and security Community of Practice (CoP) with other State HIE Cooperative Agreement recipients. These sessions have been very productive and useful in providing a forum to discuss best practices. It is GOHIE's plan to replicate the national CoP into a state-level privacy and security workgroup including representation from health care providers, attorneys, IT consultants, universities, businesses, insurers, advocates, Arizona State agencies and the Governor's Office. The state-level workgroup will discuss and address the following:

- National-level CoP topics related to privacy and security such as other state initiatives and their applicability to Arizona

- Review the alignment of Arizona law with the new requirements for privacy and security included in the HITECH Act and subsequent federal regulations

- Review the State's privacy and security principles in relation to the development and implementation of a state-level exchange, operating within a national (NW-HIN) and interstate exchange environment with evolving technologies

- Consider what revisions to Arizona law or regulations may be necessary or desirable with respect to privacy and security

- Consider the form of a data use and reciprocal support agreement (DURSA) for use by the Arizona state-level HIE or NW-HIN Direct and its participants

It is anticipated that the Privacy and Security Work Group will function under the authority of GOHIE until such time a state-level HIE providing core services is identified and operational. At that time it is anticipated some transfer of roles and duties related to the privacy and security will be made to this organization(s). GOHIE sees Arizona Health-e Connection in a dual leadership role with this other entity given its strong background and previous work on this topic.

State Laws

The AzHeC Legal Committee and AzHeC Legal Counsel Kristen Rosati and Beth Schermer developed a proposed legislative package in the fall of 2008 for the purposes of removing barriers to HIE that currently exist in state statute. This proposal was presented to the AzHeC Board, but deferred one year (to the 2010 Legislative Session), to ensure its inclusion of a consent policy that was reflective of Arizona clinicians and consumers. Concern was expressed that very little consumer outreach had been done to date. Other states that have performed consumer outreach activities found it extremely helpful and strategic in the development of both consent policy and overall direction. To this end, AzHeC staff sought pro bono legal assistance from the Board to assist with this further legislative package development and associated consumer outreach. Blue Cross Blue Shield (BCBS) of Arizona responded and worked closely with AzHeC staff to conduct focus groups in eight town hall settings between April 29 and June 17, 2009 in the Arizona communities of Surprise, San Luis (two sessions in the Yuma area), Marana (Tucson area), Arizona State University (two sessions), Flagstaff and Tempe. The focus groups had a total of 177 participants, all Arizona residents, with a statistical error rate of ±6.2 % at a 90% confidence level on the accompany survey. Focus group topics included protecting privacy and security, EHRs, HIOs and Consumer Controlled Health Records (CCHRs). The majority of the focus group project was funded by BCBS of Arizona; however, AHCCCS funding also contributed. While it was anticipated that the legislative package would move forward in the 2010 legislative session, it was withdrawn from consideration and further work is needed to refine several pieces of the legislation. Additional work will be completed this fall and the legislative package will be introduced during the 2011 state legislative session.

Key Bill Components

Arizona medical records laws were designed for paper medical records; therefore, the bill removes barriers to HIE. The legislation recommends the following changes:

- Permitting healthcare providers and clinical laboratories to disclose information to HIOs, if they have HIPAA "business associate agreements" in place that require HIOs to protect the confidentiality of health information. Being a HIPAA business associate also subjects an HIO to HIPAA enforcement by HHS and the Arizona Attorney General's Office.
- Permitting HIOs to re-disclose health information in a manner consistent with the underlying medical records confidentiality statutes. This ability to re-disclose health information to authorized individuals is essential to the HIE process.
- Removing the requirements for "written" records or documentation.

Critical to any legislation around HIE is how it will protect patient privacy. The legislative package ensures patient privacy through the following ways:

- Health information is protected by HIPAA and the Arizona medical record statutes. The bill leaves all existing privacy protections in place.

- The bill expands the Arizona Attorney General's Office enforcement authority by adding hospital, clinical labs and HIO electronic databases to the computer tampering statute. This will cover both outside hackers and unauthorized internal access by employees.

These new requirements for HIOs reflect the Fair Information Practices articulated by ONC in its "Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information." These include the principles of openness and transparency, individual participation, limitations on collection and use of individual information, information quality and accountability.

Other key elements that will likely be addressed in the final legislative package include:

- Removing statutory barriers to HIE
- Removing requirements for "written in ink," "written" records, etc.
- Disclosure of medical records by providers to health information organizations (HIOs)
- Re-disclosure of medical records
- Clarifying at what point externally-sourced information becomes part of a provider's record
- Ensuring rigorous privacy and security of consumers' health information
- Access (who can; and how)
- Authorization (who is; and how)
- Consumer Consent
- Opt-in, Opt-out, No-consent, where consent is executed
- Regulation of HIOs`
- "Safe Harbor" for health care providers using HIE in good faith
- Expanding computer tampering statutes to include unauthorized access to HIOs and health care providers
- Provision/release of state immunization registry data through HIOs
- Provision/release of lab results through HIOs
- Provision/release of communicable disease information through HIOs
- Health care provider access to patient directives
- Considering use of HIOs for public health purposes, such as disease, pandemic and bioterrorism surveillance
- Consumers' access to a copy of their information available through HIOs
- Consumers' right to amend their information available through a HIO
- Ensuring HIOs follow fair information practices
- Providing a statutory baseline of required HIO policies
- Ensuring participation in HIOs is voluntary for health care providers
- Considering position of HIOs relative to the subpoena process
- Enforcement, including injunction actions and penalties, for HIOs' violations of statutes

Policies and Procedures

Through a process that engaged broad stakeholder involvement and the Legal Committee, model HIE policies were developed, including policies on patient consent and notice, registration and authentication, data use, data submission and auditing and compliance. See this document in Appendix E.

Interstate Exchange Outreach Strategy

Participation in the HISPC program has exposed Arizona to the policies and strategies of many other states across the country. To ensure that Arizona is adequately prepared for interstate exchange, the state plans to initiate conversations with Nevada, Colorado, New Mexico, Utah and California and suggest that a Southwest HIE Consortium be formed. This Consortium will initially meet quarterly to share current status with HIE and exchange ideas, challenges and best practices learned through the State HIE Cooperative program. Eventually, this Consortium will form the basis for

developing policies, standards, procedures and necessary infrastructure for secure electronic exchange between the participating states.

Trust Agreements

AzHeC, in conjunction with Coppersmith Gordon Schermer & Brockelman PLC, prepared a Model HIE Participation Agreement as a guide to organizations considering HIE arrangements. This agreement, adopted by AHCCCS/AMIE as well as other HIOs such as SAHIE, was developed through convening stakeholders and negotiating the terms and conditions of the agreement. Written for use with data suppliers and health care providers, it outlines terms and conditions of participation, including:

- Definitions
- HIE obligations
- Health care provider obligations
- System operations
- Data provider obligations
- Compliance with laws; confidentiality
- Fees and payment
- Proprietary information
- Software license
- Electronic signatures
- Term and termination
- Limited warranties and disclaimers
- Limitation of liability; indemnification
- General provisions

This Model HIE Participation Agreement will be used as the basis for trust agreements utilized in HIE activities under the State HIE Program. The agreement will be reviewed by the stakeholder community, to ensure that any changes needed to incorporate recent developments in national policy, rules and regulations are incorporated.

Stakeholder Endorsement

Stakeholder engagement and endorsement has always been important to the HIT and HIE efforts in Arizona. Specifically, , the AzHeC Legal Committee, that has been extremely active and engaging since the development of the Health-e Connection Roadmap in 2005, was to develop standard HIE terms and conditions as well as model policies as a part of the HISPC – Arizona Health Privacy Project, described above. Additionally, the Legal Committee oversaw the development of a legislative package that is planned to be considered during the 2011 Arizona State Legislature session. Finally, the Legal Committee participated in the creation of a model HIE participation agreement that was adopted by AHCCCS/AMIE as well as other HIOs such as SAHIE. This committee is chaired by Kristin B. Rosati, Esq., a partner in the law firm of Coppersmith Schermer & Brockelman PLC. Her practice concentrates in clinical research, EHR, health information privacy (HIP) and security and consent issues.

Legal Committee Products

Products from this group, presented wholly in the Appendix, are as follows:

White Paper - Consumer Consent for HIE: An Exploration of Options for Arizona's HIOs (Appendix E)
This white paper discusses a fundamental policy challenge that every HIO must make in establishing its operations: whether and how to seek consumer consent to exchange a consumer's health information through the HIO. The white paper explores in detail that this is a difficult issue to resolve because different stakeholders in the health care community—consumers, health care providers, HIO administrators and others—often have

different and sometimes strongly held beliefs about this issue. In addition, decisions about consumer consent will impact the way an HIO's technology is structured and some of those decisions may be too difficult or expensive to implement.

Proposed Legislative Package (Appendix F)
See details in State Laws section.

HIE Policies and Procedures
See details in Policies and Procedures section.

The AzHeC Legal Committee will continue to be a resource to the State HIE Program as needed moving forward.