## Functional Purpose

The functional purpose is to build and operate a Health Information Exchange (HIE) utility that will allow those participating in the HIE venture to exchange healthcare information such as clinical data, administrative and financial data, and prescription drug data. This exchange shall be for the benefit of those sharing the data as well as the subjects of the data, such as healthcare members, clients, and patients of the healthcare providers.

## Business Purpose

Implementing this HIE utility will transform the AHCCCS Medicaid program and the patient care process. Providing timely patient health information at the point of service will improve the quality, efficiency and effectiveness of Arizona's Medicaid program. Real time health information access will result in reduction of medical errors, reduction of redundant testing and procedures, better coordination of care for chronic diseases, increased preventive interventions, reduction in the inappropriate use of the emergency room, and lower administrative costs. When aggregated, these benefits will save significant state and federal taxpayer dollars (in Medicaid, SCHIP, and IHS) as well as beneficiary and provider frustration.

## Benefits

Reduction in overall annual acute and long term care Medicaid program medical costs.
Reduction in overall Medicaid health system administrative costs through fewer manual medical record reviews, record copying, denial of claims, claims errors, and avoidance of fraud and abuse through effective beneficiary
Improved quality of care oversight and quality transparency through the provision of timely performance
Improved care coordination for chronic diseases and better coordination between behavioral health and physical
Enhanced opportunities for better self-management of chronic illnesses by beneficiaries and their families through access to their health information and online wellness materials.
Early detection of infectious disease outbreaks around the country
Ability to gather de-idenfied data for research purposes
Evaluation of health care based on value enabled by the collection of price and quality information that can be

## Strategy

AHCCCS will leverage the work of other grantees. We will leverage HIE/EHR efforts in other states that are further down the development path. States like MA, CA, IN have assets that may support the efforts of
The project will reuse, where appropriate, other state assets. AHCCCS will leverage HIE/HIT efforts that have already been initiated by the Indian Health Services (IHS), Federally Qualified Health Centers, the Veteran's Administration, Arizona Health-E Connection, Southern Arizona Health Information Exchange and several
Access to the website will comply with NPI guidelines. Typical providers will be required to access the website via their NPI number. Atypical providers will access the website either by their NPI number, or by their AHCCCS
AHCCCS will provide non-savvy internet providers with help to access and navigate through the website.
Adoption of AHCCCS is critical to its success. AHCCCS will be designed to be user-friendly with self-help features. In addition, AHCCS staff will be ready to support providers if the need arises.
Data available on the AHCCCS EHR will be real-time or near to real-time as feasible. As soon as data is made available to the AHCCS EHR it will available to all providers.
The data sharing partners on this exchange will consist of those providing healthcare to AHCCCS patients. For example, healthcare payers, such as insurance companies and health plans, hospitals, physician practices, laboratory, and imaging services. This does not limit data sharing partners from sharing Non-AHCCCS patients

## Measures for Success

Connection of 35% of AHCCCS providers who will be actively sharing electronic health information through the HIE utility by the end of 2009, 60% by the end of 2010 and over 90% by the end of 2011.

Ability for the Health Information Exchange to sustain itself to be able to offer its services for free to the Arizona Community on a continous basis

## Stakeholders from HIE Project

**HIE Utility Users (People and systems that interact with HIE)**

HIE Administrator
Health Plan Systems
Hospital Systems
AHCCCS EMR System
Physicians EMR Systems
Laboratory Systems
Other HIE Systems
ADHS Systems
Imaging Labs Systems

**Business Partners are organizations that expose web content through the Utility web portal, for gain or mutual benefit; in other words, transact business through the Utility. E.g Sonora Quest Care360.**

Laboratories
Imaging
Suppliers
Pharmacies
SureScripts
RX Hub
Other HIEs

# HIE Business Requirements

| Req # | Business Requirement | Justification |
|---|---|---|
| BR 21.1 | HIE must provide a Record Locator Service to search for patient record locations across all HIE data sources. | |
| BR 21.2 | HIE must provide a management and administration utility for the HIE master patient index. | |
| BR 21.3 | HIE must provide a management and administrative utility for data partner contract management. | |
| BR 21.4 | HIE must provide an information interface for Data Partners systems (EHR, EMR, custom, payers, test labs, imaging labs,) | |
| BR 21.5 | HIE shall provide a utility to manage the system to interface data partners in a secure manner, protecting the privacy and integrity of the data within the utility. | |
| BR 21.6 | Data Partners must comply to the HIE messaging and terminology common standards when exchanging information thru the HIE. | HIE governing body will select specific terminology and standard to which data partners should comply by transforming their messages. This will allow consistency of data exchange thru the HIE. |
| BR 21.7 | HIE shall withstand and thwart attacks from malicious and unauthorized use | |
| BR 21.8 | HIE must be adaptable to new standards as they emerge. The system should be extensible enough to accommodate variations and improvements in technical, infrastructural, legal as well as business standards and practices. | Need a way to incorporate healthcare related standards such as new versions of HL7, new mechanisms to identify providers (e.g. NPI), new amendments if any that are made to privacy and portability related standards such as HIPAA. |
| BR 21.9 | HIE shall provide an additional level of tracking of operations performed on it through an extensive system of auditing and logging. | |
| BR 21.10 | HIE shall interoperate with all data partner systems, including legacy systems. | |
| BR 21.11 | HIE shall provide management tools that give authorized administrators very simple and efficient means to monitor manage and administer the systems components (7x24x365). | |
| BR 21.12 | HIE shall provide timely and accurate responses to requests by each of the data sharing partners that are connected to it. | |
| BR 21.13 | HIE shall enable a federated peer to peer model of data sharing between data partners. | |

| | | |
|---|---|---|
| BR 21.15 | HIE must be compliant with various security and technical standards such as HIPAA for privacy and security, and web service standards for interoperability. | |
| BR 21.16 | HIE shall support a subscription Model in which a data partner subscribes to another data partner to automatically receive updates from its systems. | |
| BR 21.17 | HIE must provide a matching algorithm that is configurable to meet policy and contractual requirements | |
| BR 21.18 | IF AHCCCS members give consent to exchange their data within the HIE, THEN AHCCCS must be able to retrieve all their records on the HIE, REGARDLESS whether the data partner has their consent or not. | |

| | HIE Functional Requirements | |
|---|---|---|
| **Req #** | **HIE Functional Component** | **Requirement** |
| FR 21.1 | HIE Service | HIE shall restrict data partners to share their data on the network only within the limits of their data partner contracts within the HIE. |
| FR 21.2 | HIE Service | HIE shall create audit logs of actions taken by the HIE in response to queries and in managing exchanged data. |
| FR 21.3 | HIE Service | HIE shall support a subscription model in which a data partner subscribes to another data partner to automatically receive updates from its systems. |
| FR 21.4 | HIE Service | HIE shall ensure sufficient information is available within the message so that it can be unambiguosly traced to the user by the participating organization. |
| FR 21.5 | HIE Service | HIE shall be able to search and share data among other HIEs |
| FR 21.6 | Record Locator Service | RLS shall search patient index for patient record locations using a matching algorithm based on a set of demographic attributes or a configurable alternate ID, such as an AHCCCS ID. |
| FR 21.7 | Record Locator Service | RLS shall be identify multiple patient records pertaining to the same individual, but created with potentially different attributes. |
| FR 21.8 | Master Patient Index Service | MPI Service shall provide the ability to publish new patient record to Patient Index. |
| FR 21.9 | Master Patient Index Service | MPI Service shall provide the ability to print reports of patients index records. |
| FR 21.10 | Master Patient Index Service | MPI Service shall provide the ability to update patient index records to resolve data quality issues. |
| FR 21.11 | Master Patient Index Service | MPI Service shall provide the ability to enable or disable Patient Index record. |
| | Master Patient Index Service | MPI Service shall provide the ability to delete patient index records. |
| FR 21.12 | Master Patient Index Service | MPI Service shall provide the ability to export patient index records. |
| FR 21.14 | Data Partner Contract Management Utility | HIE contract management utility shall maintain a record of all data partners contracted to share data with details of their contractual rights and obligations. |
| FR 21.15 | Data Partner Contract Management Utility | HIE contract management utility shall enforce data partners contractual rights and obligations. |
| FR 21.16 | Data Partner Contract Management Utility | HIE contract management utility shall provide the ability to print a report of data partners contractual rights and obligations. |
| FR 21.17 | Data Partner Contract Management Utility | HIE contract management utility shall provide the ability to disable data partner temporarily for data sharing. |
| FR 21.18 | Message Transformation Service* | HIE must provide the ability to translate data partner system messages into format compliant with the AHCCCS HIE messaging standard, if any. |
| FR 21.19 | Message Transformation Service* | HIE must provide the ability to map message terminology to be compliant with the AHCCCS HIE terminology standards, if any.. |
| | | ***NOTE: Message transformation services will not be provided by HIE, but it is required for HIE to deliver data in a standard format.** |

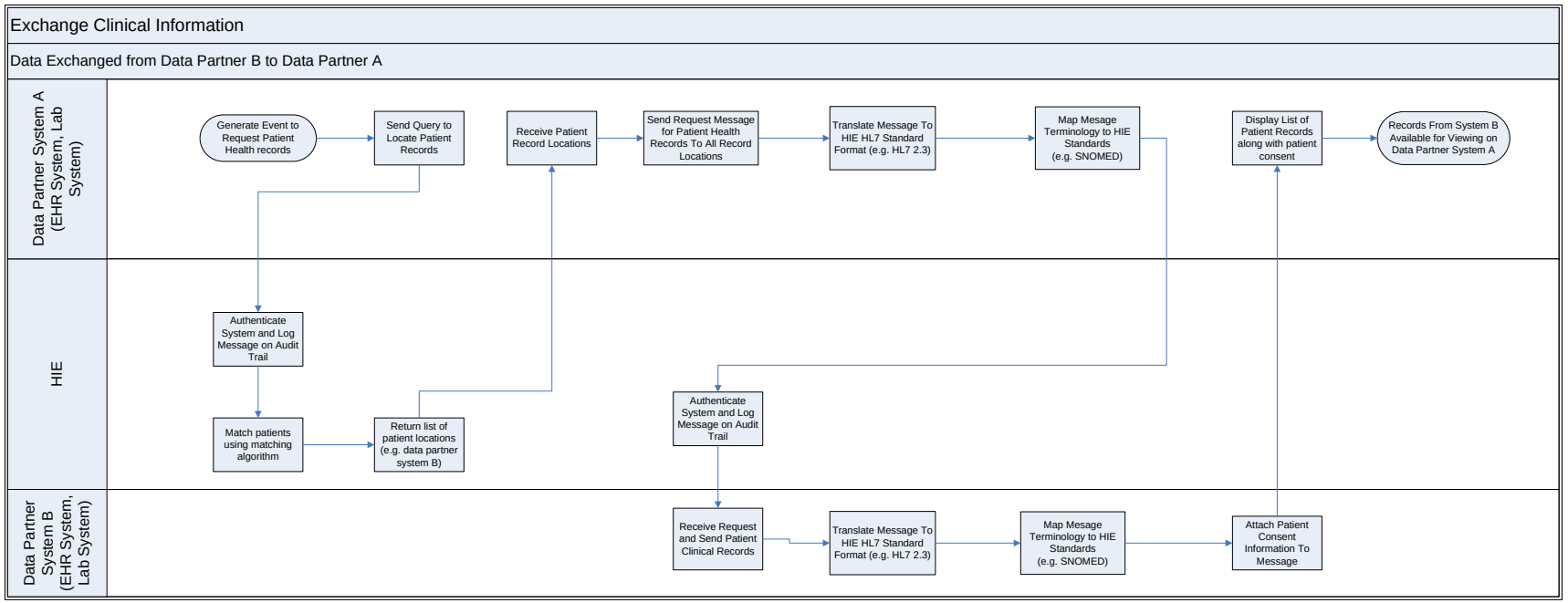
| Req # | **Requirement Type** | **Requirement** |
|---|---|---|
| TR 21.1 | Messaging Standards | HIE must support the following messaging standards HL7 2.X, HL7 V3, X12 EDI, CDA, CCD, DICOM, NCPDP for interfacing with external systems. |
| TR 21.2 | File Exchange | HIE must support the exchange of unstructured data (e.g. electronic files .doc, .pdf, .xls, and graphic files) |
| TR 21.3 | Terminology Standards | HIE must support a standard Clinical terminology, such as SNOMED, LOINC and RXNORM. |
| TR 21.4 | SOA | HIE architecture shall be modeled around an SOA |
| TR 21.5 | Open Standards | HIE must be based on open standards and not be dependent on any proprietary technologies. |
| TR 21.6 | Performance | HIE response time must not be greater than 5 seconds. |
| TR 21.7 | Availability | HIE must be highly available and should require zero downtime for maintenance or management. |
| TR 21.8 | Secure Data Caching | HIE may cache data to improve system performance, but cache must be kept secured from unauthorized access. |
| TR 21.9 | Messaging | HIE must support asynchronous messaging. HIE shall not have to wait for a response from the recipient, because it can rely on the messaging infrastructure to ensure delivery. HIE must allow participants to communicate reliably even if one of the systems is temporarily offline, busy, or unobtainable. |
| TR 21.10 | Audit Security | HIE must prohibit all users read access to the audit records, except those users that have been granted explicit read-access. |
| TR 21.11 | Audit Security | HIE should protect the stored audit records from unauthorized deletion. |
| TR 21.12 | Audit Security | HIE must be able to prevent modifications to the audit records. |
| TR 21.11 | System Backup | HIE must generate a backup copy of the system data, security credentials, and log/audit files on a scheduled basis. |
| TR 21.12 | System Monitoring | HIE must alert/notify an administrator when preset queue thresholds have been reached. |
| TR 21.13 | System Error Handling | HIE must alert/notify an administrator when an error condition occurs (either with a specific message or with systems components). |

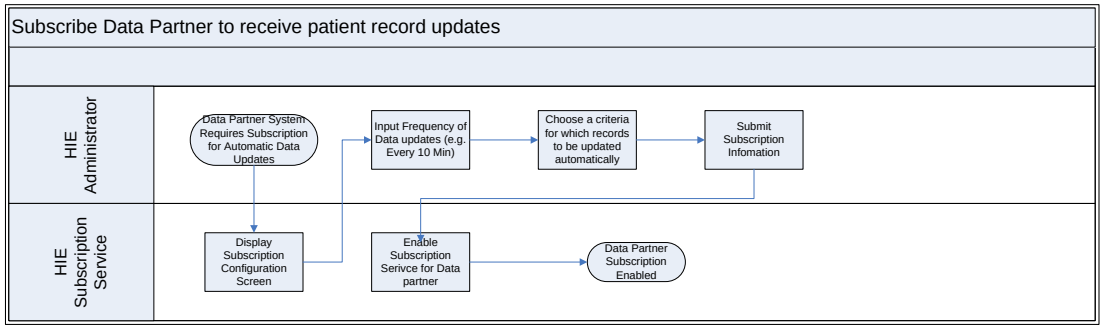
| | | |
|---|---|---|
| TR 21.14 | System Monitoring | HIE must alert/notify an administrator in the event that it is no longer receiving messages from a source system. |
| TR 21.15 | Security | HIE must prevent the reuse of administrator passwords within a configurable timeframe. |
| TR 21.16 | System Error Handling | HIE error messages shall be specific to one and only one triggering condition. |
| TR 21.17 | Fail-Over Environment | HIE must provide a fail-over enviromnent to support a geographic disaster recovery plan |
| TR 21.18 | Real Time Data Caching | HIE must update the cache with real time data based on events trigered on the data partner system |
| TR 21.19 | Authentication | HIE must verify that the systems that send and receive information are the systems they claim to be. |
| TR 21.20 | Data Integrity Checking | HIE must verify that the data received was not corrupted and that it has not been changed. |
| TR 21.21 | Error Handling | HIE must ensure that robust and informative information is available in the event of errors. |
| TR 21.22 | Non-Repudiation | HIE must ensure that once a data partner system has received a message it cannot reasonably deny that it has received the message. Also, HIE shall ensure that ensure that a sender of a message cannot reasonably deny that it was the source of the message. |
| TR 21.23 | Secure Transport | HIE shall ensure that transmissions between systems are delivered confidentially, reliably and intact. |
| TR 21.24 | Web Services Standards | HIE must comply with the WS-I basic profile for web service communications. |
| TR 21.25 | Web Services Standards | HIE must comply with WS-Security for secure communications between nodes in the system |
| TR 21.26 | System Management | HIE must provide Infrastructure management utility - Servers, Network (LAN/WAN), Disk (SAN) |
| TR 21.27 | Application Management | HIE must provide logs and other reporting mechanisms for application management. |
| TR 21.28 | System Monitoring | HIE must provide system event and alert management. |
| TR 21.29 | Quality of Service Monitoring | HIE must provide the ability to monitor system availability, response time, and errors. |
| TR 21.31 | Scalability | HIE must be able to support the exchange of patient records for least 1,000,000,000 patients. |

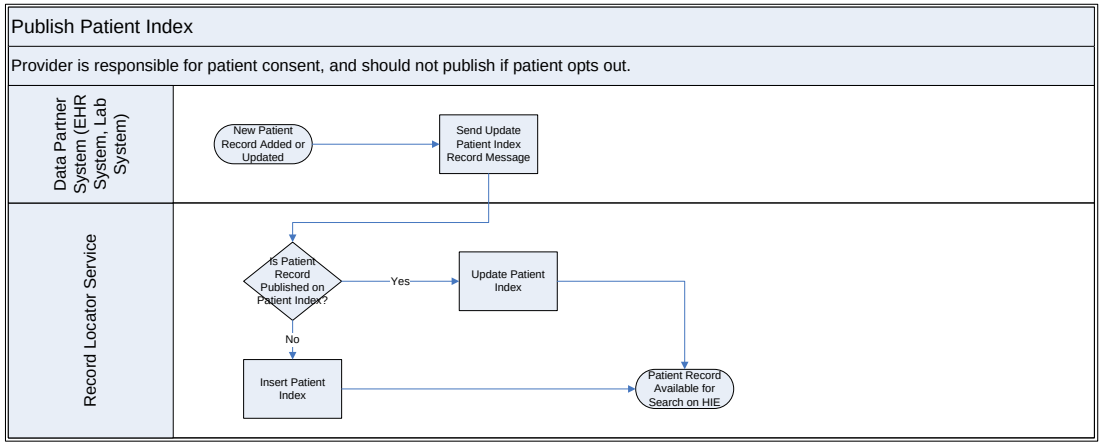
| | Assumption | Justification/Notes |
|---|---|---|
| AS 21.1 | HIE will NOT deploy any technology to detect or verify patient consent at this time. It is therefore necessary for HIE Utility Data Partners to deploy technology to record, detect and verify patient consent. | Initially, AHCCCS intends that patient consent be obtained by Data Partners to share their clinical data on the HIE. It will be the responsibility of Data Partners (physicians) to obtain this consent. At this time (July 31, 2007), AHCCCS believes that no consent is necessary, but is prepared to obtain patient consent as a minimum, in order to be legally compliant in the future. |
| AS 21.2 | HIE will NOT authenticate data partner system users (e.g. individual providers). HIE is only responsible for authenticating the systems interfacing with the exchange, but not the individual users. | HIE Governing entity will not have the time and resources to manage thousands of users. |
| AS 21.3 | HIE will NOT provide a service to remove personal identifying data to an extent compatible with HIPAA privacy standards from messages. | It is the data partners system responsibility. HIE will not provide this service to data partners (e.g EHR systems, lab systems, pharmacy systems, etc) |
| AS 21.4 | HIE will NOT assemble information from mulitple sources to provide a patient summary report upon request. | It is the data partners system responsibility. HIE will not provide this service to data partners (e.g EHR systems, lab systems, pharmacy systems, etc). internal use. |
| AS 21.5 | HIE will NOT provide a service to modify personal health information to include disguised personal identification information such that the identity of the subject is not immediately apparent with the ability to restore the identity information upon authorized request. | It is the data partners system responsibility. HIE will not provide this service to data partners (e.g EHR systems, lab systems, pharmacy systems, etc). |
| AS 21.6 | HIE will NOT responsible for notifying data partners of data for which data partners patient consent information. If data partner does not publish a patient record, it is impossible for the HIE to know the record is available, and so support a break the glass functionality on the data partner systems. | It is the data partners system responsibility. HIE will not provide this service to data partners (e.g EHR systems, lab systems, pharmacy systems, etc) |
| AS 21.7 | HIE will NOT map the terminology from disparate systems to support multiple code sets among disparate systems. E.g. all inbound laboratory orders will use a common nomenclature (e.g. LOINC). | It is the data partners system responsibility. HIE will not provide this service to data partners (e.g EHR systems, lab systems, pharmacy systems, etc). We will need to enforce this contractually. |
| AS 21.8 | AHCCCS HIE data partners must NOT be limited to exchanging only AHCCCS members health information, but also other patients. | |
| AS 21.9 | HIE may be managed by other organization in the future, other than AHCCCS. | |
| AS 21.10 | HIE will NOT technically prevent data partners from copying data into their databases, but this type of restriction may be enforced contractually. | AHCCCS may enforce this type of restriction on a contractual basis. Team reached a consensus was that it is imposible to technically prevent data partners from copying and persisting data into any of their databases |
| AS 21.11 | HIE administrator will NOT maintain patient index. It is the responsibility of the data partners to maintain the records they published on the patient index. | |

| Question # | Question | Type of Question |
|---|---|---|
| Q 21.1 | Where is patient consent information located within the proposed solution? | Architecture |
| Q 21.2 | Does the solution provide a separate utility/web application for patient consent management? | Architecture |
| Q 21.3 | Describe how your solution would accomplish our availability requirements? | Availability |
| Q 21.4 | As data is copied from one data source to another, how does the solution identify and manage duplicate records? | Data management |
| Q 21.5 | Does this solution provide a fail-over environment? If yes, describe how it may be activated. | Disaster Recovery |
| Q 21.6 | Are there any out-box configurable interfaces that come with this solution? For what systems? | Intergration |
| Q 21.7 | What are the underlying technologies used to implement the system interface components? | Intergration |
| Q 21.8 | Are customers permitted to develop customize interfaces into or out of the proposed solution? What are the implications to the syste | Intergration |
| Q 21.9 | Are there any system tools provided to aid in custom interface development? If yes, what is the cost of these tools? | Intergration |
| Q 21.10 | Provide details on system response time using references from current clients. | Performance |
| Q 21.11 | What is the proposed strategy to scale up this solution as the data storage size increases? | Scalability |
| Q 21.12 | What is the proposed strategy to scale up this solution as the volume of transactions increases? | Scalability |
| Q 21.13 | What is the proposed strategy to scale up this solution as the number of participating systems increases? | Scalability |
| Q 21.14 | Describe the security architecture for the proposed solution. | Security |
| Q 21.15 | Describe the authentication and authorization mechanism of the proposed solution. | Security |
| Q 21.16 | Describe how the authentication and authorization mechanism supports the Single Sign On (SSO) implementation. | Security |
| Q 21.17 | Does the security model supports customizable user groups? | Security |
| Q 21.18 | List any messaging standards that the proposed solution supports. | Standards |
| Q 21.19 | List any terminology standards that the proposed solution supports. | Standards |
| Q 21.20 | List any security standards that the proposed solution supports. | Standards |
| Q 21.21 | Describe the data exchange mechanism of the proposed solution | System Functionality |
| Q 21.22 | How will this solution manage participating systems within the HIE? | System Management |
| Q 21.23 | Describe the solution's current monitoring capabilities. | System Monitoring |
| Q 21.24 | Identify the Web Servers and/or Browsers that are required for the proposed solution. | System Requirements |
| Q 21.25 | List any additional system requirements for the proposed solution. | System Requirements |
| Q 21.26 | Describe how this solution will integrate with other HIE's solutions? | Intergration |

| Questions | Answers | Notes |
|---|---|---|
| What is the scope of the HIE in terms of what patient records can be exchanged thru it? What is the scope of the RLS MPI? | RLS Master Patient Index may include patient index records from any data source, either AHCCCS or NON-AHCCCS patient. Any data partner contracted with AHCCCS HIE may publish to the RLS. RLS functionality is NOT constrained to search only AHCCCS patients. | type of patients, type of data |
| What is the scope of the EHR application in terms of what patient's records are going to be accesable thru it? If it's only AHCCCS patient, how do we account for providers who want to use the EHR application to service their NON-AHCCCS members? | AHCCCS Only for Phase 1, Scalable to be used to track Non-AHCCCS Patients | |
| What is the scope of the EHR Repository in terms on what patient's records are going to be stored there? | AHCCCS Only, Scalable to be used to track Non-AHCCCS Patients | |
| Gateways are going to be needed at data partner locations? Is there a way we can incentivize some data partners to pay for their own gateways. i.e. DHS | case by case | |
| Who should manage the consent from patients? EHR or HIE | Initially, the EHR, based upon the Massachussetts model. | |
| At what level should consent be managed at provider, data type, data source, role of user? Just some ideas. | Initially in/out only. | |
| Who should enforce break the glass policy and procedures (each participating organization thru their system, AHCCCS EHR or the HIE Technology) | not the HIE | |
| What should be break the glass policy and procedures? | data partner is responsible for all privacy and inntegrity. | |
| What should be stored in the audit log, just the transaction history or also the message itself? | discuss? | |
| When returning HIE candidate matches, do we want human intervention in selecting records from a set of matches? | not HIE | |
| Are we going to set up SAHIE as part of our HIE, or are we going to assumme we have to integrate to their own implementation of their HIE? | SAHIE is currently envisaged as a separate business and administrative domain that can exist either on a common infrastructure or on separate infrastructure | |
| If we implement a push model, who should manage its subscritpions. Does the HIE or HIE data sources (Systems and databases)? | not HIE..HIE may provide utility..data partners will manage and administer. | |
| Do we want to allow data to be copied from one data source to another? How do we manage record duplication? | not hte HIE | |
| Where should patient record agregation take place? At the client, central service, or proxy aggregation service? | not the HIE | |
| What factors in the matching algorithm must be configurable? | TBD | |
| Who should manage HIE participating system registry? What should be stored on this registry? | this is the UPI Utility Provider Inder | |
| Shoud AHCCCS MPI be used for the HIE? Does that correlate with the scope of the HIE? | yes aqnd no..the AHCCCS MPI will be the seed, but all patient records can be passed thru the utility. | |
| If a patient or provider finds a error on a patient's Health Record, who is responsible for correcting the error. Should a correct data request feature be included within the HIE or EHR? | not the HIE | |
| Since RLS will hold patient demographics, Should we require in the contract that AHCCCS ID, and certain demographics are stored and captured accurately at the data sources? | for AHCCCS memebers, yes... | |
| Is the AHCCCS repository to be used just for reporting purposes, or will it also feed the HIE with data? | tbd ... Sina say yes..but only for special circumstances..tbd | |
| What system should provide the folllowing functionality EHR/HIE? | See Below | Description of functionality |
| HIPAA-De-identification | EHR (Data Partners responsibility, not an HIE fucntionality) | |
| Patient Record Aggregation | EHR (Data Partners responsibility, not an HIE fucntionality) | |
| Pseudonymize and Re-Indentify | EHR (Data Partners responsibility, not an HIE fucntionality) | |
| Patient Consent Management | EHR (Data Partners responsibility, not an HIE fucntionality) | |
| Delegated Security Model | EHR (Data Partners responsibility, not an HIE fucntionality) | |
| Confidentiality | EHR (Data Partners responsibility, not an HIE fucntionality) | |
| Break the Glass | EHR (Data Partners responsibility, not an HIE fucntionality) | |
| Context Management | EHR (Data Partners responsibility, not an HIE fucntionality) | |
| Federated Architecture with data feeding capabilities | EHR (Data Partners responsibility, not an HIE fucntionality) | |
| Terminology Mapping | EHR (Data Partners responsibility, not an HIE fucntionality) | |


Exchange Clinical Information
Data Exchanged from Data Partner B to Data Partner A
Data Partner System A (EHR System, Lab System)
HIE
Data Partner System B (EHR System, Lab System)
Generate Event to Request Patient Health records
Send Query to Locate Patient Records
Receive Patient Record Locations
Send Request Message for Patient Health Records To All Record Locations
Translate Message To HIE HL7 Standard Format (e.g. HL7 2.3)
Map Mesage Terminology to HIE Standards (e.g. SNOMED)
Display List of Patient Records along with patient consent
Records From System B Available for Viewing on Data Partner System A
Authenticate System and Log Message on Audit Trail
Match patients using matching algorithm
Return list of patient locations (e.g. data partner system B)
Authenticate System and Log Message on Audit Trail
Receive Request and Send Patient Clinical Records
Translate Message To HIE HL7 Standard Format (e.g. HL7 2.3)
Map Mesage Terminology to HIE Standards (e.g. SNOMED)
Attach Patient Consent Information To Message


Subscribe Data Partner to receive patient record updates
HIE Administrator
HIE Subscription Service
Data Partner System Requires Subscription for Automatic Data Updates
Input Frequency of Data updates (e.g. Every 10 Min)
Choose a criteria for which records to be updated automatically
Submit Subscription Infomation
Display Subscription Configuration Screen
Enable Subscription Serivce for Data partner
Data Partner Subscription Enabled


Publish Patient Index
Provider is responsible for patient consent, and should not publish if patient opts out.
Data Partner System (EHR System, Lab System)
Record Locator Service
New Patient Record Added or Updated
Send Update Patient Index Record Message
Is Patient Record Published on Patient Index?
Yes
No
Update Patient Index
Insert Patient Index
Patient Record Available for Search on HIE