



Emergency Department Linking to Information Project

Vendor HIE Solutions Summary (Based on responses submitted to an RFI)

October 2006

About the Vendor HIE Solutions Summary

To support organizations that are seeking information on health information exchange (HIE) solutions, CalRHIO is publishing a summary of vendor responses received to a request for information issued earlier in 2006. The information gathered in the RFI process provides a rich resource of potential HIE solutions proposed by various vendors.

CalRHIO's RFI was aimed at identifying potential technical solutions to enable Emergency Department physicians to access integrated clinical information provided by multiple data sources across the health care community. Vendor responses address a specific use case and set of requirements related to CalRHIO's ED Linking to Information Project. Nineteen solutions are categorized as "comprehensive/total solutions" and eight are "component solutions." In an effort to meet our requirements, many of the solutions proposed are product suites comprised of various vendor applications.

Each vendor listed reviewed and approved its summary for publication and is responsible for the accuracy of the information as of October 2006. CalRHIO does not endorse any vendor, product, or solution presented. Readers should independently assess the contents. Because technology solutions change rapidly, please contact companies directly for the most current information and further details.

CalRHIO is continuing to review potential technology solutions for HIE. As additional information becomes available we will publish it.

About the RFI

CalRHIO requested information on solutions that included the following functionalities: master patient indexing, clinical results reporting, flexible reporting and querying, systems integration, data warehousing, and data standardization.

Solutions also needed to meet the following:

- Interoperability with other information systems
- Conformance to existing and emerging National Health Information Network and federal health architectures, and national data and messaging standards
- Security and compliance with existing privacy regulations, including data and network security, authentication, role-based access rights, and audit functionalities

To review CalRHIO's ED Linking Use Case and Requirements documents and the RFI, please visit www.calrhio.org, Projects/Emergency Department Linking. Or click on this link: <http://www.calrhio.org/?cridx=401>

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<p>3M Health Information Systems</p> <p>3M Corporate Headquarters 3M Center St. Paul, MN 55144-1000</p> <p>Contact Info: James Date 1-800-367-2447</p> <p>www.3mhis.com/RHIO</p> <p>Partners: Orion Health www.orionhealth.com</p>	<p>Centralized HIE Model 3M has partnered with Orion and proposes a centralized ED solution utilizing clinical portal, integration engine, data dictionary, enterprise master person index, and data repository products.</p>	<p>3M Clinical Data Repository (CDR): Centralized, relational database that stores patients' lifetime, longitudinal medical records in an information model that preserves clinical relationships, thus enabling medical decision support.</p> <p>3M Enterprise Master Person Index (EMPI): Uniquely identifies patients using an innovative Advanced Matching Logic (AML) algorithm that employs probabilistic-based matching.</p> <p>3M Healthcare Data Dictionary (HDD): A metadata repository for transforming legacy data values to industry standards in order to achieve semantic interoperability.</p> <p>Orion Concerto: A Medical Applications Portal that features a personalized clinician home page, dynamic patient summary, a clinical data viewer and electronic patient work lists.</p> <p>Orion Soprano Forms: Forms tool that allows clinical forms to be designed and displayed in a web-based user interface.</p> <p>Orion Rhapsody: Integration engine designed solely for healthcare organizations and currently ranked #1 in KLAS</p>	<p>3M CDR, EMPI and HDD are utilized in the Department of Defense AHLTA implementation which serves over 100 military treatment facilities worldwide and over 15,000 concurrent users.</p> <p>Within North America, Orion Health deployed Canada's first provincial electronic health record, currently used by 8,000+ clinicians across Alberta, and is currently implementing two RHIOs in Vermont.</p>

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<p>AT&T</p> <p>Contact Info: Patrick D. Pothier pp3542@att.com 805-583-6688</p> <p>www.att.com/healthcare</p>	<p>Hybrid HIE Model</p> <p>For this RHIO model AT&T partnered with Azyxxi to deliver an object-oriented, real-time data distribution system. Based on the CalRHIO specific criteria the solution also included private line transport to enable secure hospital data transfer and data hosting via the AT&T data center.</p>	<p>Azyxxi software offered by Regional Datomics: object-oriented, real-time clinical data distribution system. Azyxxi uses an edge server to replicate data from source systems and also acts as a switch to route results over a secure robust private network to a series of server stacks at a host data center. The edge server also hosts an integration engine.</p> <p>Data is tagged with metadata and ultimately stored in a SQL database. A customized master patient index locates data and presents it to end users.</p> <p>A Web based front end is available as well as a more feature rich hybrid client.</p> <p>The Azyxxi stack is intended to operate in both centralized and distributed deployments based on the need of the client.</p>	<p>To date, no deployed RHIO solutions.</p>

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<p>Axolotl Corporation</p> <p>800 El Camino Real West, Suite 270 Mountain View, CA 94040</p> <p>Contact Info: Lew Altman laltman@axolotl.com 650-964-1100 x 115 www.axolotl.com</p>	<p>Hybrid HIE Model Axolotl proposes their commercial product line and Web services implementation of an SOA comprised of various service layers. Axolotl recommends deploying Axolotl's Elysium suite of products for an initial pilot to link 3 metropolitan areas in California with at least 3 hospitals each.</p> <p>Partner Northrop Grumman brings extensive experience in multiple concurrent technology deployments and rigorous implementation methodology.</p> <p>Axolotl and Northrop Grumman can apply lessons learned in other communities and leverage work products developed during the NHIN prototype development.</p>	<p>Elysium Patient Index: Patient Identification Service [PIDS]</p> <p>Elysium Patient Index: Record Locator Service – Patient Registration [RLS]</p> <p>Elysium Directory: Create and manage records of authorized users, security services, authentication, user and entity registration</p> <p>Elysium Edge Servers: Message transformation to standards and push patient registration data, terminology services</p> <p>Elysium Repository: Federated Clinical Data Repositories to store local, entity specific clinical data. Repository responds to queries.</p> <p>Elysium Clinical Viewer: User interface for EDs without application adapters</p> <p>Elysium Usage Analyzer: Usage, access and performance monitoring</p> <p>Participating EDs will access patient identification, record locator, health records via Elysium, an ED application adapter or Elysium Adapter.</p>	<p>Eleven years' experience connecting communities with over 150 institutions and 15,000 users of Elysium.</p> <p>Three nationally recognized RHIO's are using Elysium.</p> <p>Frost and Sullivan RHIO Market Leader Award 2006</p> <p>Awarded 3 Robert Wood Johnson grants for public-private collaboration</p> <p>Part of Northrop Grumman Consortium for ONC award. Northrop Grumman also partnered with Axolotl on the CalRHIO proposal.</p>

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<p>BearingPoint (Systems Integrator)</p> <p>1676 International Drive McLean, VA 22102</p> <p>Contact Info: Jim Sullivan jim.sullivan@bearingpoint.com 484-269-6290</p> <p>www.bearingpoint.com</p> <p>Vendor Team: Quovadx Orion Health Initiate Systems Oracle</p>	<p>Hybrid HIE Model BearingPoint proposes a hybrid HIE model as an integrated ED Linking solution using applications and components offered by Quovadx, Orion Health, Initiate and Oracle. The solution supports federated or centralized implementation typologies by duplicating required components at a local or regional level or by using an integration engine to “centralize” data into a central or distributed warehouse as needed.</p>	<p>BearingPoint, Inc: Global Management and Technology consultancy with comprehensive health care and health information technology experience and capabilities.</p> <p>Quovadx/ Cloverleaf® Integration Services: integration/messaging broker and data management services.</p> <p>Orion Health Concerto Medical Applications Portal: browser-based, user web portal for viewing clinical data that will act as the presentation layer for the solution, communicating with Oracle HTB to request data.</p> <p>Initiate Identity Hub: MPI application that supports the integration, development and operation of healthcare applications.</p> <p>Oracle Healthcare Transaction Base: a health data repository based on industry information standards and shares a common unified architecture with the Oracle E-business suite. HTB is a service-oriented architecture that supports the integration, development and operation of healthcare applications.</p>	<p>Individually and as a subset of the entire group, the solution providers represent a global healthcare and HIE/RHIO presence. Each member of the team currently plays a key role in the national RHIO dialogue. BearingPoint is under contract to The Office of the National Coordinator (ONC) providing Program Management Office services. Oracle, Quovadx, Initiate, and Orion are involved either as teaming members and/or separately on prominent HIE/RHIO projects in the United States and abroad. This includes solution roles on one or more of the four NHIN prototype teams currently developing the national health information exchange connectivity models.</p>

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<p>Covisint</p> <p>1 Campus Martius Detroit, MI 48226</p> <p>Contact Info: Brett Furst bfurst@covisint.com o: 313-227-6210 c: 248-496-2584</p> <p>www.covisint.com</p>	<p>Hybrid HIE Model Utilizing Web Services in an SOA Framework</p> <ul style="list-style-type: none"> Covisint's web-based infrastructure featuring a robust Federated Identity and Access Management system, a Portal Framework and Real-time messaging system enables improved physician productivity by delivering features that minimize redundant data entry via a cross-domain single sign-on capability. Covisint's seamless integration into existing applications, communication methods, and workflow is an essential component of this solution. Information will be delivered through Covisint's web-based interoperability framework that is operationally efficient and operated in a centralized, hosted model. Establish a secure foundation infrastructure for future initiatives Share patient medication history information Provide a central portal application with patient search capabilities allowing access to medication data Provide real-time messaging and data exchange between providers and health plans Leverage standards and industry best practices for long-term adoption Implementing this infrastructure facilitates the rapid implementation and deployment of the additional use cases, as well as ensuring the 	<p>Covisint Healthcare Information Exchange</p> <ul style="list-style-type: none"> Real-time Messaging Composite Application Framework Federated Identity and Access Management Master Patient Indexing (MPI) service National Provider ID (NPI) crosswalk service Encryption and Certificate Service Communication Management Virtual Fax Service Attachment Management Work Flow Management Trading Partners (e.g. providers, payers, pharmacy, third parties, and vendors) and user registration and on-boarding 24/7 support and help desk <p>Key Benefits</p> <ul style="list-style-type: none"> Provides secure, reliable, real-time access to health information and records Allows identification of patients and physicians utilizing probabilistic matching, NPI and MPI functionality Federated Identity and Access Management allows for the provisioning of user, system, and web service credentials Analytics and metrics are utilized to identify inefficiencies and opportunities for improvement in the healthcare community; and 	<p>SE Mich</p> <p>Building of an HIE in a distributed environment amongst the largest payors, providers, employers and physician groups.</p> <ul style="list-style-type: none"> <u>Document retrieval / Document distribution</u> - Access to patient centric clinical information at the point of care (e.g. emergency department) <u>Results reporting</u> - Transforming (all or some portion) and/or enhancing (paper to electronic) results delivery processes for laboratory, radiology, and consult reports <u>Third party data sharing</u> - Carbon copy third party organizations (e.g. Disease Management) with front end point of care clinical data <p>Key Benefits</p> <p>Avoid unnecessary inpatient hospitalizations</p>

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	<p>rapid adoption by other providers and health plans throughout the state. As an early adopter in using this HIE, Hospitals may also realize the following (2) additional benefits:</p> <ul style="list-style-type: none"> • A reduction in Medication errors and their related adverse drug events • The hospital's compliance with JCAHO (Joint Commission on Accreditation of Healthcare Organizations) requirements for medication reconciliation 	<ul style="list-style-type: none"> • Provides the ability to exchange anonymized data in support of State and National research and public health integration. • Provides integration mechanisms for non-structured and paper-based data 	<p>due to missing patient information</p> <ul style="list-style-type: none"> • 1 in 7 hospital admissions is unnecessary, due to missing patient information <p>Decrease unnecessary duplicative laboratory tests</p> <ul style="list-style-type: none"> • 20% of all labs tests are unnecessary, redundant and preventable <p>Decrease unnecessary duplicative radiology tests</p> <ul style="list-style-type: none"> • 20% of all rad tests are unnecessary, redundant and preventable <p>Third Party data sharing</p> <ul style="list-style-type: none"> • Coordination of Data with Disease Mgmt could save \$4-5 per patient per month <p>North Carolina Currently providing HIE environment for 85% of NC's Healthcare providers.</p> <p>Key Benefits</p> <ul style="list-style-type: none"> • 1.35 day reduction in length-of-stay • 69% reduction in

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<p>CSC (Systems Integrator)</p> <p>2100 East Grand Ave. El Segundo, CA 90245</p> <p>Contact Info: Gary Anthony ganhony3@csc.com 817-337-5302 (direct office) 817-832-1060 (mobile)</p> <p>www.csc.com</p> <p>Partners: Orion Health Initiate Systems ProviderLink</p>	<p>Hybrid HIE Model CSC proposes an open-source solution that leverages the architecture of <i>The Connecting for Health Common Framework</i>. This framework is a Web services implementation of a service-oriented architecture and comprises a collection of interoperable component architectures, standards, policies, and practices. Within this framework is a mix of centralized hub services and distributed integration and messaging functions, as well as other products offered by CSC's vendor partners.</p>	<p>Connecting for Health Record Locator Service: the RLS supports a network of clinical systems (EHRs) that use the Internet to communicate with each other by sending and receiving HL7 format messages. The RLS provides Patient Lookup services with a Community Master Patient Index updated through its Patient Publish service. Medical records are then exchanged through peer-to-peer messaging between EHRs.</p> <p>Orion Health Concerto Medical Applications Portal: browser-based, user web portal for viewing clinical data that will act as the presentation layer for the solution, communicating with Oracle HTB to request data.</p> <p>Initiate Identity Hub: MPI application that consolidates duplicate and fragmented patient records and accurately identifies and links patient records within and across data sources.</p> <p>ProviderLink (Covisint): application that digitizes unstructured data such as faxes or paper records.</p> <p>Security Model: a delegated authentication model where each gateway service operates as a full member of the clinical enterprise trust domain. A user's identity is embedded in each message and logged. WS-Security based authentication is utilized and the architecture is designed to adapt to the Liberty Identity Federation Framework (ID-FF) and the Secure Assertion Markup Language (SAML).</p>	<p>MA-Share RLS & CDE, CalOHI, LBNH</p>

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<p>dbMotion</p> <p>373 Arrowhead Trail Eatonton, GA 31204</p> <p>Contact Info: Elio Ronchini eronchini@dbmotion.com 713-876-2737 www.dbmotion.com</p>	<p>Hybrid HIE Model</p> <p>The dbMotion™ Solution securely shares medical information, creating a Virtual Patient Record by logically connecting a group of care providers and organizations without data centralization or replacement of existing information systems.</p> <p>The solution, based on .NET platform has won two consecutive MS HUG awards. It is SOA based and designed to provide services enabling the sharing and processing of clinical information within environments using heterogeneous standards or non standard data across best of breed systems and IT structures.</p>	<p>The main components are:</p> <p>dbMotion Unified Medical Schema: data integration, content validation, mapping and standard transformations</p> <p>dbMotion Clinical Views application: web based thin client user interface for viewing patient centric clinical & demographic information.</p> <p>dbMotion SmartWatch: Alerts, notifications and event driven messaging for personal and public health applications.</p> <p>dbMotion Server: Provides a virtual patient data object, integrated and indexed across multiple independent sites, and providing a set of services at each participant's site to present, process or use this object in any third party application</p> <p>dbMotion Security Framework: Provides the ability to manage policies and permissions across multiple user environments, Tracking and auditing capabilities, HIPAA compliance, patient privacy and monitoring modules, dynamic shared data set definitions</p>	<p>The dbMotion Solution currently serves one of the world's largest Healthcare Organizations as well as other hospitals and medical networks. It is in production for the past 6 years, in a 4 million patients RHIO like environment in Israel, serving approximately 9,000 physicians in 16 hospitals and 1300 clinics</p> <p>Already in implementation in the Netherlands</p> <p>Already selected by a major US RHIO</p>

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<p>Dinmar/Emergis</p> <p>755 Baywood Drive Suite 190 Petaluma, CA 95450</p> <p>Contact Info: Jason Huckaby jhuckaby@dinmar.com 707-490-6172</p> <p>www.dinmar.com</p>	<p>DiagnosisOne & Surescripts: clinical decision support, clinical data exchange, payer data exchange services.</p> <p>MEDecision: MPI, RHIO portal, device presentation services, ESB, Patient Clinical Summary.</p> <p>Medem: Data stores, privacy & security services, and PHR and Medem iHealthRecord for patient security, HxTI for the distributed network.</p> <p>HxTI: offers a network of digital imaging services covering identity, location, privacy, security, availability, transaction and archiving.</p> <p>The USB is intended to support multiple commercial off-the-shelf systems with the use of Web services as the primary interface.</p>	<p>DINMAR, an Emergis Company, is proposing its Open Architecture Clinical Information System (Oacis) Electronic Health Record (EHR) for the CalRHIO ED Link initiative. This is a web based solution that has been deployed in large scale initiatives throughout North America and Australia. Oacis consists of multiple applications which include the following:</p> <ul style="list-style-type: none"> • Enterprise Master Patient Index. This assures end users that they are working with the correct data for the correct patient, no matter which RHIO participant provided the data. When sharing patient data on a community or regional basis, it is important to ensure that participants can rely on having the correct information at their finger tips. The Oacis EMPI utilizes numerous weighting factors that can be prioritized and changed by each facility; this feature has proven to be very effective in regional Oacis deployments where contributions to the patient record come from a wide range of healthcare providers. • Integration Engine. The success of any HIE solution depends on the secure and reliable flow of patient information throughout the system. In combination with the Emergis EHIP integration engine, Oacis complies with all regulatory requirements and was one of the founding members of HL7; this allows us to gather information from all types of disparate systems and put that information into the hands of authorized clinicians where and when it is needed. 	<p>South Australia Department of Health; Adelaide, South Australia</p> <p>The Department provides acute, community and mental health services across the state, including 8 major public hospitals in metropolitan Adelaide. <i>This program is viewed as the leading example of a network-wide clinical information system (CIS) solution in the Asia Pacific region.</i> An overview of the delivered functionality is shown below.</p> <ul style="list-style-type: none"> • Clinical Data Repository to house all patients' longitudinal health records regardless of the source systems • Electronic Master Patient Index (EMPI) to reduce and eliminate duplicate patient records across the entire healthcare enterprise.

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		<ul style="list-style-type: none"> • Clinical Data Repository. The Oacis Data Repository has proven to be scalable, configurable and interoperable. Among our current customers we count thousands of end users, hundreds of interfaces and millions of records. Built-in access control mechanisms ensure only authorized users can access patient data, and only authorized systems from participating institutions can submit data to the repository. <p>In addition to these features, Oacis includes a Clinical Event Engine that alerts end users when predefined situations occur, such as re-admission within twenty-four hours of discharge. In addition to the comprehensive end-user features there is an onboard audit trail that records complete details about every transaction in the system, including the name of the patient whose record was viewed or changed, what details were viewed or changed, the date/time of the activity, and the user who performed the activity. This feature is essential for helping RHIO participants safeguard the privacy of their patients' personal health information.</p> <p>The Oacis EHR, when deployed as a RHIO or HIE solution, provides a secure, intuitive "Community Health Record" that can be used by all types of healthcare providers regardless of their location or affiliation. DINMAR has extensive experience deploying this type of integrated system although our customers may not refer to themselves as RHIOs or HIEs. Our experience spans years of work with many healthcare delivery systems in the United States, Canada and Australia. In all of these</p>	<ul style="list-style-type: none"> • Clinical Viewer module to provide a single point of access to the on-line patient record including demographics, encounters, outpatient appointments, medications, laboratory results, radiology reports, OR procedures and emergency department attendances. • Clinical Order Management module to provide an electronic ordering system for pharmaceutical, diagnostic, therapeutics, medical and surgical patient services. • Discharge Summary module to distribute information from the hospital's clinical information system to community based General Practitioners (GPs) and other providers, about a

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		<p>environments we have deployed large EHRs that are shared by not only the surrounding community but extend well beyond predefined geographical borders. We have found that a “Hybrid” approach is the most cost effective and productive installation methodology, wherein all patient data is retained in the source systems, while subsets of the data are stored in a central repository. This approach ensures appropriate response time for end users accessing core data from the repository. When fully deployed any end user with the proper security can look at any patient from any location and see that patient’s health history and then package either all or part of the patient’s record and send it either via fax or encrypted Email to a colleague as a referral or for additional input.</p> <p>Our approach to projects of this type is to protect RHIO members’ investments in their current technology while utilizing our integration engine to create the centralized repository. We believe that any solution that requires RHIO participants to replace existing systems that are working well will create a barrier to effective health information exchange in a community or region. Instead, we build a bridge from those systems to Oacis so we can extract information as needed. This approach not only minimizes costs, it also expedites the installation process. We realize there are many vendors with different approaches; however, none have the capabilities and proven successful track record of DINMAR in integrating disparate systems to facilitate health information exchange across a wide array of patient care settings.</p>	<p>patient’s hospital encounter to ensure continuity of ongoing healthcare.</p> <ul style="list-style-type: none"> • Health Data Warehouse module to provide capability to query, analyze, and explore the substantial clinical data held in the patient population repository <p>Centre hospitalier de l’Université de Montréal (CHUM) CHUM provides specialized and sub specialized services to a regional and supraregional clientele. Hôtel-Dieu, Hôpital Notre-Dame and Hôpital Saint-Luc form the CHUM, which counts 10,000 employees, 900 physicians, 330 researchers, 5,000 students and trainees, and 800 volunteers, who provide services to more than 500,000 patients each year.</p>

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		<p>Finally, we invite you to attend an interactive Web demonstration that will convince you that Oacis is the only real solution to meet CalRHIO's objectives now and in the future.</p>	<p>McGill University Health Centre (MUHC) MUHC is a comprehensive academic health institution with an international reputation for excellence in clinical programs, research and teaching. The MUHC is a merger of five teaching hospitals affiliated with the Faculty of Medicine at McGill University - the Montreal Children's, Montreal General, Royal Victoria, and Montreal Neurological hospitals, as well as the Montreal Chest Institute. The implementation of Oacis at the MUHC and CHUM is ongoing. Functionality delivered to date includes :</p> <ul style="list-style-type: none"> • Clinical Data Repository • Electronic Master Patient Index (EMPI) • Clinical Viewer • Clinical Order Management module (clerk-entered lab orders)

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<p>EDS</p> <p>10888 White Rock Rd Rancho Cordova, CA 95670</p> <p>Contact Info : Brett Barton brett.barton@eds.com 916.636.4333</p> <p>www.eds.com</p> <p>Partners: Centrify Health Sun Microsystems, Inc.</p>	<p>Hybrid HIE Model</p> <p>TeamEDS deploys a new, fully service-oriented architecture (SOA) that delivers functionality via a series of Web-service driven portlets -- Access Management, Health History, Medication Management, Health & Disease Management and others.</p> <p>Their innovative product is centered on the new Individual Health Record (IHR), a next generation offering that combines the capabilities of both an EHR and PHR into a single offering that is powered by hardware and software from CentrifyHealth and Sun Microsystems, which are operable within any JSR168 or WSRP compliant portal.</p> <p>TeamEDS recommends a hybrid approach with a centralized individual-centric CDR that can support even organizations with limited or no EMR capabilities as well as a centralized record locator that contains an index to participating systems hosting their own repositories that can also respond to/send requests to other RLS services.</p>	<p>TeamEDS proposes the Individual Health Record (IHR) – a solution offering that aggregates key clinical data elements that originate from claims, labs, radiology, registration, transcription, Rx and any other health record source system. The health record data is transformed, reduced to a single ontology and model, re-purposed and presented in the appropriate format that is understandable to any end user, including clinicians, patients and supporting caregivers.</p> <p>The solution empowers the client with the following services delivered via the CentrifyHealth IHR Appliance and the Sun Microsystems' composite application platform:</p> <p>Connectivity Services: receive and transmit individual data from source systems. Centrifcation Services: transform / standardize data using a unified ontology/vocabulary, identity management and rules. Interaction Services: enable users to interact with the IHR. Custodial Services: security authorization and audit. Administration Services: maintenance support tools. Portal Services: portal framework building tools. Portlets: JSR168/WSRP compliant health portlet applications</p>	<p>TeamEDS members have projects in different stages of deployment with several large scale health systems and state/country -wide or RHIO centered organizations. Here are a representative few:</p> <p>Newfoundland and Labrador Centre for Health Information (NLCHI) – Canada</p> <p>Dossier Médical Personnel - France</p> <p>Geisinger Health RHIO – PA Queens Health Network – HI National Health System – UK Alberta Provincial HIE – CN</p> <p>National Health Information Network (NHIN) – CA / OH</p>

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<p>First Consulting Group</p> <p>111 West Ocean Blvd. 4th Floor Long Beach, CA 90802</p> <p>Contact Info Joe Yelanich jyelanich@fcg.com 480-209-4172</p> <p>www.firstgateways.com www.fcg.com</p>	<p>Hybrid HIE Model FCG proposes a product solution based on a Web enabled N-tier thin client architecture. The application is supported by a hybrid federated data model used to acquire and store data produced by participating facilities. These “edge” data stores may be hosted in a centralized location or maintained in a distributed fashion by the organizations participating in the Health Information Exchange.</p> <p>FirstGateways conforms with industry standard protocols and specifications, including HL7 v2.x & 3.0, IHE XML, and J2EE. The database architecture is relational and SQL-based.</p>	<p>FirstGateways product suite consists of two core components:</p> <p>VLink: data collection and identification components that capture and store an entity’s clinical information. VLink has two components:</p> <ul style="list-style-type: none"> • Front Office: data store running on Microsoft SQL Server and an integration engine instance. Utilities capture a site’s data into a permanent data store. • Back Office: applies the overall security, identifies each patient, routes requests for patient-centric information and directed responses to the correct requester. Components include Sun’s eIndex EMPI, FCG’s interface engine, FCG’s Record Locator System, JBoss application server with the Tomcat Apache servlet container and custom Java code that runs within the servlet container. <p>HealthView: a web browser portion of the product solution which enables a site to deploy a branded, consistent front-end that gives an end-user portal functionality and a patient-centric view of clinical data. Components include Apache Cocoon and Apache Lucene (search engine).</p>	<p>In excess of \$10M has been invested in R&D, integration & deployment.</p> <p>FirstGateways as a product solution is backed by a large consulting/outsourcing company with over 2,500 employees.</p> <p>Deployed examples include:</p> <p>Seattle, WA – anchor site is Swedish Medical Center</p> <p>Cleveland, OH – anchor site is University Hospitals Health System</p> <p>Waterbury, CT – multiple physician practices</p> <p>Knoxville, TN – Innovation Valley Health Information Network (under Patient Safety Institute)</p>

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<p>Flexis</p> <p>Box 854 Palo Alto, CA</p> <p>Contact Info: Andreas Kogelnik andy@flexis.net 650-776-4703</p>	<p>Federated HIE Model</p> <p>Flexis proposes an Online Medical Information Exchange system that is driven by an integration of Internet, database, and user interface technologies, enabling streamlined clinical data querying and multi-source longitudinal clinical record integration.</p>	<p>OMIE – The Online Medical Information Exchange: is a flexible information system built around a comprehensive DBMS and user interface template system with an Integration Engine for interfacing with external data systems for digital/electronic, paper, fax, image, and voice data exchange.</p> <p>The OMIE Application: OMIE is a distributed object-relational information management and data exchange system. It is highly flexible, distributed Model-View-Controller architecture built over a distributed DBMS query system. The OMIE system can be used as a query manager of data sources which are interfaced with its integration engine or as central repository of an institutions data or both (as meets the needs and requirements of each institution).</p> <p>Subsystems include Security/Authentication, Data Integration Engine, Dynamic User-Interface Engine, and Database Management System/Query Manager:</p> <p>Dynamic User Interface Engine: a Web server capable of serving creating Web pages on-the-fly from multi-source data, allowing customizable, role-based access to data from available data sources.</p> <p>Integration Engine: maintains interface connectivity with subscriber systems, mediates query activity, and aligns data into a structured format for the User Interface Engine.</p>	<p>As of August 1, 2006, Flexis through the OMIE system will complete the initial phase of implementation of a regional information sharing network.</p> <p>By August 1st, one major academic medical center will have the ability to exchange information with over 1000 providers in the San Francisco Bay Area.</p> <p>Through the CONCRETE project, the continued implementation will include 3,000 providers and over a dozen large medical institutions with IT interfaces already in progress. We expect to continue connecting at least one hospital every 45 days for the near future.</p> <p>In addition, the OMIE network extends to out of state providers and institutions as well.</p>

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		<p>Database Management system: is a distributed database management system that maintains meta-data on external resources and data types, permitting external query generation as well as optionally maintaining data internally (upon request).</p> <p>Security/Authentication module: is a layer woven into each OMIE module providing for security via SSL, RSA encryption, VPN connectivity (where applicable), and database encryption (where applicable). This module also regulates user authentication through validation of user data with participating institutions.</p> <p>OMIE modules can function as stand-alone technology or can be linked to existing EMR solutions.</p>	

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<p>IBM</p> <p>1503 LBJ Freeway Dallas, TX 75234</p> <p>Contact Info: Van Cosby vcosby@us.ibm.com 972-679-6796</p> <p>www.ibm.com</p> <p>Partners: Wellogic Initiate Systems</p>	<p>Hybrid HIE Model</p> <p>IBM's Interoperable Health Information Infrastructure (IHII) solution is a composite, SOA-enabled solution. IBM has proposed to use Wellogic for its portal (clinical data viewing) and Initiate Systems for patient matching and linking. The architecture is flexible in that both applications can be replaced with other commercial off the shelf systems (COTS), or the solution can be enhanced by the integration of additional COTS applications. IHII is designed to support a range of RHIO architectures, from point-to-point (with no data resiliency), to federated, "fetch on demand" architectures, to centralized, data "replication" or data "repository" architectures, to hybrid models.</p>	<p>Wellogic Consult: physician portal that is XDS-compliant and provides access to browsing results, reviewing alerts, creating orders, documenting findings, checking schedules, securely messaging with colleagues and patients, etc.</p> <p>Wellogic Rapport(patient portal with consent services): A secure, fully customizable web portal that links patients to their providers through an easily accessible interface. From patient education documents to the latest test results, Rapport offers patients a wealth of information while greatly reducing the volume of phone calls and mailings to and from the hospital, health system, office practice or other venue of care.</p> <p>Wellogic Synapse (health integration platform: transformation, terminology and security/audit trail services & clinical data repository): A modular healthcare integration platform providing Web services-based features – ranging from data and image transport and translation between systems, to an industrial strength master patient index and clinical data repository to HIPAA-supportive auditing and logging – necessary to integrate disparate healthcare information systems within and between organizations. (IBM Websphere Application server)</p> <p>Security & Access Control Services: (IBM Tivoli Identity Manager) this component provides overall functionality for identity federation, federated provisioning, web single sign-on and web services</p>	<p>RHIO/ONC award recipient.</p>

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		<p>security.</p> <p>Auditing Services (IBM Tivoli Data Warehouse): this component comprises an implementation of the IHE audit trail and node identification profile.</p> <p>Initiate Systems (Identity Hub): MPI application</p> <p>IBM Websphere Application server: server platform for Wellogix Synapse (terminology and transformation services)</p> <p>IBM DB2/UDB: database for CDR</p> <p>Initiate Identity Hub: MPI application that supports PIX, PDQ and other IHE requirements</p> <p>IHE Patient Identifier Cross-Referencing: provides cross-referencing of patient identifiers from multiple Patient Identifier Domains.</p> <p>Patient Demographics Query (PDQ): profile for multiple distributed applications to query a central patient information server for a list of patients.</p> <p>Cross Enterprise Document Sharing (XDS): enables healthcare organizations belonging to a clinical affinity domain to cooperate in the care of a patient by sharing clinical records in the form of documents as they proceed with their patients' care.</p>	

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<p>Infosys Technologies Limited</p> <p>400 Crossing Blvd. Suite 101 Bridgewater, NJ 08807</p> <p>Contact Info: Praveen Soti, MD, MBA Praveen_soti@infosys.com 908-922-2142</p> <p>www.infosys.com</p> <p>Partners : Quovadx Inc. Initiate Systems</p>	<p>Hybrid HIE Model (<i>Enhanced Federated</i>) Infosys proposes to build a system based a Web services implementation of SOA architecture. The system leverages the Quovadx integration platform and the Initiate Identity Hub for patient matching.</p>	<p>Infosys Technologies Limited has an EHR Center of Excellence which provides technology framework as well as services for EHR initiatives. Infosys' <i>Healthcare Interoperability Platform</i> (HIP) offering is a highly customizable and scalable platform for sharing patients' health data securely, adhering stringently to the highest data security standards. The platform can be leveraged by both Regional Health Information Organizations (RHIO) and hospital groups looking for simple and seamless information flow. Infosys' turnkey HIP offerings include:</p> <ul style="list-style-type: none"> • HIP Implementation and roadmap planning • Business case definition • Readiness assessment • Technology evaluation • Infrastructure sizing • Disaster recovery planning • Patient portal • Provider portal • Information exchange development, hosting and maintenance • Development of information exchange services subscription model • Training and adoption strategy • Operations and helpdesk support • Security planning <p>Quovadx Cloverleaf: integration services</p> <p>Initiate Identity Hub: EMPI.</p> <p>CareScience Clinical Terminology service: maps</p>	<p>Some representative case studies are presented below :</p> <p>Capital Health, Alberta : Capital Health is a Canadian EHR initiative serving a population of 1.6mm.</p> <p>Implemented regional Identity Management System and Record Locator Service, making all Lab, ADT and Demographic data available in real</p> <p>Santa Barbara Data Exchange initiative : Community-wide clinical data exchange serving a population of approximately 500,000</p> <ul style="list-style-type: none"> • Identity Correlation Service • Record Locator Service • Access Control Service • Integration Services • Clinician, Patient and Administrator Portals

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		<p>facility-specific terms from an organization to a charge description master to a standard clinical vocabulary.</p> <p>Oracle Database 10g: data store for EMPI, provider registry, clinical meta-data administration, control and consent data management. JBoss Application server: business/components services Apache HTTP server: Web server</p> <p>The service layers include: Presentation services, Data Provider services, Business services, Data Integration/ EAI services, MPI & RLS services, <i>Clinical Metadata Services</i>, Infrastructure services, Data Access services and Data Storage services.</p> <p>Infosys suggests deploying a proxy server / repository to be established at each data sharing partner's site where it receives data from local databases and maintains maps and terminology dictionaries. The proxy server also triggers an update to the centralized record locator service. <u>Such metadata update allows the response time to be improved tremendously, under the clinical setting.</u></p> <p>Centralized services include: EMPI, Record Locator, Consent Management, <i>Clinical metadata management</i>, Data Aggregation and Anonymization.</p>	<p>State of Florida, DHS</p> <p>The DHS Integrated Health Information Systems (IHIS) project was created to integrate and automate data flow through this complex network, and support automated alerts and notifications.</p>

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<p>InterSystems Corp. 1 Memorial Drive Cambridge, MA 02142</p> <p>Contact Info: Trevor Matz trevor@intersystems.com 617-621-0600</p> <p>www.intersystems.com</p> <p>Partners: EMPI: Initiate EMPI: Quadramed Terminology Services: Health Language</p>	<p>Hybrid HIE Model</p> <p>InterSystems HealthShare supports federated, repository, and hybrid configurations. Implementing the Connecting for Health Common Framework Record Locator Service (RLS) specification, HealthShare uses a Hub to manage centralized MPI components and Gateways for communications with existing data source systems. The Gateways support real-time access to the data source systems as well as supporting local repositories or "edge caches." All data is encrypted, both at rest in motion, and all requests within the exchange are logged in tamper-resistant logs. The HealthShare Viewer and HealthShare administration tools are all web-based.</p>	<p>InterSystems HealthShare InterSystems HealthShare includes three components that, together, address the end-to-end requirements of a multi-organization health information exchange:</p> <p>HealthShare Hub: Serves as the central patient index. The Hub stores summary patient demographic information together with links to each patient's medical record at each of the participating Data Sharing Providers (DSPs).</p> <p>HealthShare Gateway: Connects Data Sharing Providers and Data Users to the exchange. Adapters are deployed to handle bi-directional gateway-to-data source system communications for real-time data exchange. The Gateway also supports a hybrid model using local "edge cache" repositories.</p> <p>HealthShare Viewer: Browser-based clinical viewer supporting history timeline to represent episodes of treatment, customized workflow and screen layout, multiple lab formats, standard coding diagnostic support, medications, allergies, radiology results, diagnoses, procedures, physical exams, discharge summary, family, medical and social history, clinical findings, and progress notes.</p> <p>EMPI: Initiate's Identity Hub and Quadramed's EMPI.</p>	<p>As of September 2006, HealthShare has been selected as the platform of choice for two major RHIO initiatives. Implementation will begin in Q4/06.</p>

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<p>Lockheed Martin (Systems Integrator)</p> <p>9500 Godwin Drive Manassas, VA 20110</p> <p>Contact Info: Jude E. Edwards Jude.e.edwards@lmco.com 703-267-6331</p> <p>www.lmco.com</p> <p>Partners: Secure Services Corp (SSC) Regional Datomic EMSystem Sun Microsystems Heuristic Technologies SSC Heuristic Technologies Regional Datomic</p>	<p>Hybrid HIE Model LM proposes an integrated clinical data distribution system solution with local ED access supported by an open messaging architecture which can be locally or network-hosted.</p>	<p>The Secure Token Infrastructure offered by Secure Services Corporation (SSC), includes: Differential Encryption Methods, Secure e-Purse & Folders and Role-Based Access and Permissions Management.</p> <p>Azyxxi software offered by Regional Datomic: object-oriented, real-time clinical data distribution system.</p> <p>EMSystem: Emergency Resource Availability and Patient Tracking.</p> <p>Sun Java Composite Application Platform Suite: eGate: J2EE-compliant and Web services based integration platform eView: MPI eInsight BPM: BPM solution build on a Web services architecture. eVision Studio: development tools eTL Integrator: data extraction, transformation and loading. eWay Adapters for API development eExchange Integrator: services repository eBAM: development tools for BAM applications.</p> <p>EMMA offered by Heuristics Technologies: ecommerce message management/transactions processing architecture.</p>	<p>To date, no deployed RHIO solutions.</p>

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<p>MEDecision</p> <p>601 Lee Road Chesterbrook Corporate Center Wayne, PA 19087</p> <p>Contact Info: Gary Austin gary.austin@medecision.com 610-389-3562</p> <p>www.MEDecision.com</p> <p>Partners: Medem SureScripts HxTI DiagnosisOne ProviderLink</p>	<p>Hybrid HIE Model</p> <p>MEDecision recommends a Web-based implementation of an SOA architecture, a universal service bus (MEDeWeaver) approach, as well as using clinical data type-specific technologies to achieve a low cost, quick win implementation.</p>	<p>MEDecision: Payer-based health records used as a RHIO foundational data set</p> <p>DiagnosisOne: Clinical decision support for lab and pharmacy transactions</p> <p>Surescripts: Medication history from retail pharmacies</p> <p>Medem: Personal health record services for the consumer, and an ambulatory communications portal for the provider. Endorsed by the AMA and all state medical societies</p> <p>HxTI: HIE services layer, providing MPI, RLS, and security management, all within a comprehensive IHE compliant architecture</p> <p>The USB is intended to support multiple commercial off-the-shelf systems with the use of Web services as the primary interface.</p>	<p>Each partner has numerous production hardened deployments in various markets. For example:</p> <ul style="list-style-type: none"> • MEDecision has in excess of 11 million lives contracted for to provide PBHR services • HxTI manages the Philadelphia Health Exchange • Medem has tens of thousands of MD's live on their ambulatory portal • Surescripts has ~ 80% of pharmacies nationally connected to their Rx network

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<p>Medicity, Inc.</p> <p>56 East Broadway 6th Floor Salt Lake City, UT 84111</p> <p>Contact Info: Rebecca Little Vice President of Business Development rlittle@pcsigroup.com 801.322.4444</p> <p>infosite.medicity.com</p>	<p>Hybrid HIE Solution</p> <p>Medicity proposes a “confederated” (or hybrid) data architecture for CalRHIO. Key components of this architecture include: A distributed MPI and record locating service, data distribution to users via fax, printing or POMIS/EMR interfaces and Web based clinical applications. Each of these components are flexible and can be assembled into solutions that will enable almost any business model. The same component applications can be architected to enable any business model or data interchange requirement, including a federated architecture that require real-time data queries or a centralized repository model.</p>	<p>Principal benefits and features of Medicity’s software solutions include:</p> <ul style="list-style-type: none"> • Ubiquitous Clinical-data Access. Makes clinical information readily available from any internet-connected computer • Reduced Medical Errors. Electronic management of clinical information reduces the opportunity for human error in clinical workflow that can result in significant liability • HIPAA-compliant Security, Access Control, and User Logs. Provides a powerful platform to support enforcement of HIPAA policies. • Disease Management. Automatically generates medical alerts and reminders to improve the care of chronic illnesses • Financial and Hosting Options. Medicity offers its clients flexibility in how they deploy, host, and pay for clinical information solutions. <p>DataStage (EHR): This relational data staging environment aggregates and stores all administrative and clinical data, including both discrete and non-discrete data values from disparate systems to create a longitudinal health record for the full continuum of care.</p> <p>ProAccess: A viewing application is also available for the DataStage EHR which gives providers a roles-based view of patient data. This application includes inpatient and outpatient views with trending. RHIOs that want to enable electronic ordering within the care community will appreciate the application’s global order entry feature, encompassing laboratory, imaging, and</p>	<p>Delaware Health Information Network LabCorp United Healthcare Carilion Health System Stanford Hospital and Clinics Daughters of Charity Providence Health System Henry Mayo Health System Community Hospital of Fresno</p>

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		<p>medications.</p> <p>Community Master Person Index (CMPI): A patent-pending CMPI with customized algorithms to accommodate the unique requirements of each data feed in the community of care. The index is updated in real time with demographic feeds from physician and hospital information systems. New records received through system interfaces are adjudicated by the CMPI and matched with an existing patient or entered as a new patient into the index with appropriate notation in the record written to the DataStage.</p> <p>Nexus Integration Manager: The third major component in a RHIO configuration is the integration engine—a powerful software utility engineered to supplement the functional capabilities of an interface engine or in some cases to eliminate the need for one. One feature of our engine is the ability for users to see the status of their own interfaces to the Data Stage and start, stop, or restart them. This utility provides tools for standardizing data around standard nomenclatures, normalizing, and transforming it to meet the requirements of the DataStage for inbound feeds and the requirements of the receiving system for outbound interfaces.</p> <p>Portal Infrastructure: The infrastructure provides organizations and RHIOs with content management and all of the elements/applications to shape a full portal strategy for all community constituents, especially physicians and patients. Medicity’s physician portal is an integrated clinical platform offering secure, practical, and customized access to patient data that can be accessed at any time from</p>	

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		<p>any location. The portal provides caregivers with a secure, centralized space to gather information in an organized way in order to facilitate clinical decision making and information exchange.</p> <p>Patient Portal: provides patients with a framework to safely and securely access and manage their personal health information by way of an online personal health system and related features. This functionality increases the support and improves the interaction between the patient and the healthcare network. Once authenticated, patients can communicate with caregivers and can make transactions with the network, at any time and from any location where the web is accessible.</p>	

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<p>Sun Microsystems</p> <p>4150 Network Circle Santa Clara, CA 95054</p> <p>Contact Info: Phillip Stiles Phillip.Stiles@sun.com 661-312-6287</p> <p>www.sun.com</p>	<p>Hybrid HIE Model</p> <p>Sun offers a single vendor solution that is based on its Java Composite Application Suite (Java CAPS) v5.1. Using a modern highly distributed integration platform as the cornerstone, Sun's HIE Model, coupled with an intelligent business logic layer, an enterprise master patient index, and record locator system is capable of identifying patient information in a secure federated or centralized model. Sun offers pre-built 2 way adapters (including database) allowing access to all major HIS and EMR systems.</p>	<p>Sun Java Composite Application Platform Suite:</p> <p>eGate: J2EE-compliant and Web services-based integration platform. Allows for true interoperability with any disparate system. Highly Distributed, High Availability, and unsurpassed in Scalability.</p> <p>eView/eIndex: Enterprise Master Person Index (EMPI) allowing for the ability to uniquely identify patients across an unlimited number of systems and geography. Allows for Single Patient Views of Data while maintaining existing ID's in the local systems. eView enables similar identifying for any other type of person and entity data elements such as provider indexing (NPI), health plans, facilities, etc.....</p> <p>eInsight ESB/BPM: Business Process Management solution built on a Web services and allowing for a true interoperable Service-Oriented Architecture (SOA). Allowing for process orchestration, business process improvement, and workflow capabilities inherent in the product.</p> <p>eVision Studio: Web Application development tools</p> <p>eTL Integrator: data Extraction, Transformation and Loading.</p> <p>eWay Adapters: Over 80 Pre-built intelligent adapters for communication, database, and application connectivity. Standards based maps for HL7 including v3.0, and all X12 transaction to name a few.</p> <p>eExchange Integrator: Trading Partner Management for B2B activity including X12 transactions.</p> <p>eBAM: development tools for Business Activity Monitoring and identifying and visually displaying</p>	<p>Sun enables clinical transformation by liberating trapped data in the health system. Sun's software, storage, systems and services help deliver secure health information exchange, data management, compliance, and caregiver mobility solutions that reduce costs and medical errors, while improving efficiency and patient care. Organizations looking to Sun solutions for creating secure health information exchange include:</p> <ul style="list-style-type: none"> • United Kingdom's National Health Service Programme for IT (UK NHS NPfIT) • Irish Health Services Executive National Patient Eligibility Database • San Diego Medical Information Network Exchange • Georgetown University

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		<p>Key Performance Indicators (KPI's).</p> <p>Sun - Identity Management: A complete Identity Solution to provide ease of managing access to the enterprise, single sign-on, provisioning, and more.... thereby ensuring the right person access to the right data at the right time.</p> <p>Core services and an interface layer would exist statewide and locally / regionally. Core services include; Network Security, Interface Layer, Message Security and service bus access.</p> <p>Regionally, a central EMPI maintains patient IDs with the option of having a centralized or Federated Electronic Health Record to store critical clinical data, as well as a communication channel to allow entities to exchange data with the central system.</p> <p>Regional integration is accomplished through defined programmatic interfaces to support other RHIOs and other data types such as provider to payer interchange for claims processing. Example of this exists in the Utah Health Information Network where providers are connected to payers.</p> <p>Centrally, an enterprise service bus acts as the interface backbone providing network security, interface layer, message security and service bus access. Centrally, access or authentication, data aggregation, data de-identification, mailbox, centralized patient health record, centralized electronic health record, bios-surveillance data service, public health registries, and emergency support services are supported via the enterprise</p>	<p>Medical Center RHIO Project</p> <ul style="list-style-type: none"> • Alberta Health and Wellness • British Columbia Ministry of Health • Geisinger Health System

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		<p>service bus. Enterprise service bus and other services would be maintained at a statewide layer. Components would be distributed regionally / locally as needed.</p> <p>A statewide hub for access or indexing combined with the Sun Identity Manager Suite would support authorization and authentication.</p> <p>Most of all the functions described above are also being implemented in the largest Health Information Exchange project in the World today. Sun Microsystems and its recently acquired SeeBeyond entity along with partner British Telecom were selected to deliver and implement the U.KKK.'s National Programme for IT (NPfIT)'s eHealth clinical transformation including key components of the EMPI or "SPINE". This effectively creates a single best record throughout the United Kingdom for the National Health Service (NHS) patients. The integration, EMPI / Record Locator Service, ESB / Business Process, B2B, Identity Management, and many other products are being used to link all clinical information throughout the entire country. This project consists of over 50,000 Million patients, 600,000 providers, and the integration of over 10,000 disparate systems.</p>	

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<p>Wellogic 222 Third Street Cambridge, MA 02142</p> <p>Contact Info: Jean Oliver jean@wellogic.com 617-818-2677</p> <p>www.wellogic.com</p>	<p>Hybrid HIE Model Wellogic proposes leveraging their foundational platform product which is comprised of a suite of open, standards-based, modular, adaptable, and extensible applications that provides a front-to-back foundation for health information exchanges and clinical information systems.</p>	<p>Wellogic Consult: An award-winning clinical provider solution for RHIOs, portals and EHRs that unifies patient information and clinical workflows, creating a comprehensive patient record with decision support at the point of care. Consult's core features include a personalizable, event-driven desktop, personal patient lists, results and reports review, transcription review and e-signature, rules-driven alerts, and secure messaging. Advanced features include e-prescribing, document management, referrals/second opinions, and CPOE.</p> <p>Wellogic Rapport: A secure, fully customizable web portal that links patients to their providers through an easily accessible interface. From patient education documents to the latest test results, Rapport offers patients a wealth of information while greatly reducing the volume of phone calls and mailings to and from the hospital, health system, office practice or other venue of care.</p> <p>Both Consult and Rapport are built upon the Wellogic Platform for Healthcare.</p> <p>The Wellogic Platform Wellogic Synapse: A modular healthcare integration platform providing Web services-based features – ranging from data and image transport and translation between systems, to an industrial strength master patient index and clinical data repository to HIPAA-supportive auditing and logging – necessary to integrate disparate healthcare information systems within and between organizations.</p>	<p>53 Platform clients (6 HIEs/RHIOs)</p>

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		<p>Wellogic Catalyst: A clinical knowledge platform that provides features – ranging from medical vocabulary-driven rules authoring and management to rules driven application workflows and Web questionnaires – that enable clinical decision support through proactive reviews and at the point of care.</p> <p>Wellogic Insight: A Web-based medical imaging toolkit that enables examination and manipulation of medical images.</p> <p>Wellogic Visage: A modular, open, and adaptable secure application platform providing all the core features – ranging from user management to single sign-on and access control to a robust Model–View–Controller framework – necessary to build secure, reliable, and scalable Web and mobile solutions that seamlessly integrate with third-party applications and content.</p> <p>Wellogic offers 3 implementation models:</p> <ul style="list-style-type: none"> • Centralized data repository (Consult maintained at a central site in a data repository and collects data from source systems via HL7 after an initial batch load) • Federated Model (interface engine and data repository are deployed at a central site for patient and provider demographics; consult is deployed at source data sites with additional data repositories as needed. Patient and provider demographics are stored centrally) • Cache model: Consult deployed centrally; each partner has a data repository and is checked first for results before accessing the source. 	

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Component Solutions			
<p>Agfa Healthcare</p> <p>100 Challenger Road Ridgefield Park, NJ 07660</p> <p>Contact Info: Charles Morris charles.morris@agfa.com 916-419-5533</p> <p>www.agfa.com/healthcare</p>	<p>HIE Portal Agfa proposes its Enterprise Clinical Dashboard. The Dashboard utilizes a federated approach for patient data information sharing and consolidation.</p> <p>The Clinical Dashboard accesses patient data real-time from multiple data provider and HIT systems while retaining patient context and presents findings in a customizable web portal.</p> <p>The Enterprise Clinical Dashboard can present results to both web clients and PDAs in both wired and wireless environments.</p>	<p>Enterprise Clinical Dashboard: is a real-time data access application that directly queries legacy systems and other sources of clinical data and presents data from multiple systems in a customizable web portal.</p> <p>Patient Matching: the Dashboard includes an internal patient matching algorithm to resolve patient context across multiple source systems and can work independently or in concert with a eMPI.</p> <p>Application Server: manages incoming user requests, securely queries patient information from multiple sources and formats patient data for presentation. The server hosts AGFA Clinical Dashboard query engine, portal engine, user authentication, and HIPAA audit logs.</p> <p>Access Management: provides secure user authentication and restricts access to only the applications and data required.</p> <p>Load balancing, Fail-over and Test Servers: increases application availability for high-traffic solutions and provides an environment for testing new HIT system modules and new software releases.</p>	<p>RHIO Experience: Two examples of RHIOs currently deployed are the Western North Carolina Datalink project in Asheville, NC and the Halton/Osler project in Canada with their LHIN (Local Health Integrated Networks).</p> <p>Clinical Portal Experience: Agfa has deployments in independent small rural hospitals, 1000+ bed trauma centers, multi-hospital IDNs, as well as RHIOs.</p> <p>Interface Experience: Agfa has in excess of 140 major interface modules currently developed.</p>

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<p>Crossflo Systems, Inc.</p> <p>11995 El Camino Real Suite 101 San Diego, CA 92130</p> <p>Contact Info: Kem Oury koury@crossflo.com 858.724.2216 760.505.6879</p> <p>www.crossflo.com</p>	<p>Integration Platform</p> <p>Crossflo DataExchange (CDX3) is a commercial off-the-shelf (COTS) product specifically designed for secure, inter-agency data exchange. This functionality facilitates the creation of an interconnected health information network connecting data stores across disparate hospitals, labs, pharmacies and government agencies. Crossflo has extensive, complex public sector implementations and by leveraging HL7, NIEM, GJXDM and proprietary data sets, Crossflo is solidly positioned to become the backbone of a RHIO and the NHIN. CDX supports leading national data sharing standards such as the Global Justice XML Data Model (GJXDM), the emerging National Information Exchange Model (NIEM), and Health Level 7 (HL7).</p>	<p>Crossflo DataExchange 3.0 (CDX3)</p> <p>CDX3's standards-based approach and services oriented architecture (SOA) provide for a robust, system-agnostic data-sharing solution that is extendible and scalable. CDX, Version 3.1, is built on the enterprise class J2EE application server standard, and delivers comprehensive functionality including:</p> <ul style="list-style-type: none"> ▪ Data mapping application which provides a "drag and drop" approach for connecting data sources, and includes a powerful set of data transformation functions for standardizing data as it moves between agencies ▪ An expanded set of data sources, including: relational databases, web services, message queues, Enterprise Service Buses (ESB's), and flat files ▪ Support for both federated (pull) and event driven (push) data sharing models ▪ Support for publication-level and element-level encryption 	<p>Recognizing that information sharing is the critical component of monitoring public health, the Montana Department of Public Health and Human Services (DPHHS) sponsored a data sharing initiative between data sources at Kalispell Regional Medical Center (KRMC) and the Flathead County Public Health Department. This deployment has been in place since October, 2004. Crossflo has extensive experience in the law enforcement, port and homeland security arenas, as well as healthcare.</p>

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<p>HealthUnity® Corp. 777 108th Ave. NE Suite 1630 Bellevue, WA 98004</p> <p>Contact Info: info@healthunity.com 425-454-6699</p> <p>www.healthunity.com</p>	<p>RHIN/Network-based product solution HealthUnity proposes a “Regional network-in-a-box” model that can be configured for a given healthcare community.</p> <p>Overall solution includes a legal framework for data sharing and a sustainable business model approach.</p> <p>Their 3rd generation product architecture is based on the latest technical innovations in web services, privacy protection and security technologies.</p> <p>The solution offers pre-packaged components comprised of standardized workflows such as demographic data exchange, secure messaging, electronic referrals, lab and radiology results delivery, medications history, problems list and allergy exchange, inpatient progress notes and discharge summaries and a variety of new services.</p>	<p>HealthUnity offers a package of services that can be configured based on local requirements. Services are based on a web services platform using dot net framework and offers the following:</p> <ul style="list-style-type: none"> • Solution to connect starting with two entities all the way up to hundreds of entities in a health information sharing network • Deployable within an IDN or across a region • Security and authentication management of all nodes connecting to the Regional Health Information Network (RHIN) • Smart Client user interface that leverages existing internet connections. • Distributed architecture that works with existing systems investment through an array of application adapters • Architecture supports multiple simultaneous standards thus permitting smooth evolution as new standards emerge • Architecture supports not only viewing of longitudinal data but also importing of relevant data to your local systems for full fidelity usage. • Extensive privacy and security features • Appliance model means easy installation and support • Network services includes a region-wide master patient index, region wide workflows, physician directory, security and privacy management etc • Edge servers include clinical document repository, bulk import and export, role based user access, application adapters 	<ul style="list-style-type: none"> • Greater Seattle RHIN • DC/Baltimore RHIN • NY Long Island RHIN (Central Suffolk) <p>Several more in the pipeline for rollout across the country</p>

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		<ul style="list-style-type: none"> • Tested for use in environment where millions of patient documents are involved • Workflow services for demographics data exchange, secure messaging, ED data (Medications history, problems list and allergies), inpatient data, electronic referrals, ancillary integration (labs, cardiology, radiology etc), clinical document management • Editions: Network, Hospital, Ancillary (lab, radiology) <p>The HU architecture does not require any centralization and a search domain can be defined to include all sub RHINs if necessary. Hospitals and ED departments would need to be responsible for: user and role management, local interfaces, audit log monitoring, training and support.</p> <p>Platform: Microsoft .net, Windows server, SQL server, BizTalk server, BizTalk accelerator for HL7</p> <p>HealthUnity Network Edition R 3.0: RHIN product for establishing a network.</p> <p>HealthUnity Physician Practice Edition R 3.0: edge server specifically configured for physician practices to join the RHIN with an EMR or without one.</p> <p>HealthUnity Hospital Edition R 3.0: edge server specifically configured for hospitals and EDs to join a network.</p>	

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<p>Mendocino Informatics</p> <p>216 West Perkins St. Suite 206 Ukiah, CA 95482</p> <p>Contact Info: Will Ross wross@minformatics.com 707-272-7255 www.minformatics.com</p>	<p>Open Source RLS</p> <p>Mendocino proposes an open source solution based on the Connecting for Health Common Framework for connecting rural hospitals in Northern California. Mendocino recommends leveraging existing information systems with incremental improvements that focus on high value, normalized patient health information to provide ED sites with flexible and adaptable policy and technology options.</p>	<p>“OpenHRE”: RLS style MPI built in J2EE or “OHDN”: RLS style MPI built in PHP</p> <p>HRE Interface: [1] bidirectional HL7 interface to existing ED systems or [2] providing access via a lightweight browser.</p> <p>HRE Query Mechanism: Pull or push</p> <p>HRE Data Repository: existing normalized data accumulated during HRE content delivery operations</p>	<p>Mendocino SHARE demonstration of HIE among safety net clinics; Connecting for Health Record Locator Service; Local Health Market developing NHIN Prototype Architecture for ONC; clinical messaging deployment among 25 ambulatory practices</p>

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<p>Pervasive</p> <p>12365 Riata Trace Parkway Bldg. II Austin, TX 78727</p> <p>Contact Info: Joe Gorman joe.gorman@pervasiv e.com 800-287-4383 x 6829</p> <p>www.pervasive.com</p>	<p>Data Integration Solution</p> <p>Pervasive Software offers a loosely-coupled integration architecture for extracting data from one or more local applications and transforming this data into XML before placing into a message queue.</p>	<p>Pervasive Business Integrator Pro</p> <p>Pervasive Business Integrator Pro provides the visual designers, editors and browsers needed to build and test data integration processes across hundreds of data formats and applications including: e-business integration, data warehouses, application integration, data marts and business intelligence and legacy migration.</p> <p>Integration Engine: an execution engine that includes Java, COM and C interfaces. The integration engine is available for Windows NT/2000, IBM-AIX, HP-UX, SUN Solaris, Linux and OS 390.</p>	

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<p>Software Partners</p> <p>904 Second Street Encinitas, CA 92024</p> <p>Contact Info: Alean Kirnak akirnak@swpartners.com 760-419-8436</p> <p>www.swpartners.com</p>	<p>MatchMerge Application: Comprehensive/Total Solution MatchMerge Services: SOA/Web Services</p>	<p>MatchMerge Application – A robust Java-based N-tier application including a medical record database, matching algorithms, patient identifier assignment, HL7 query and notification services, user interfaces, and reports.</p> <p>MatchMerge Services - MatchMerge Application service modules exposed as web services – building blocks for a Service Oriented Architecture (SOA).</p>	<p>Emergency Department Medical Home (EDMH), a San Diego County Medical Society Foundation and Blue Shield Foundation pilot RHIO, uses MatchMerge Application.</p> <p>San Diego County Regional Immunization Registry (SDIR) uses MatchMerge Application. SDIR will connect with EDMH to provide true healthcare interoperability among emergency departments, safety net primary care, and immunization information systems (IIS).</p> <p>State of Massachusetts uses MatchMerge Services to provide IIS decision support services to multiple HIE clients.</p>

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<p>Tolven Inc.</p> <p>Contact Info: Tom Jones tom.jones@tolvenhealth.com 707-695-5712</p> <p>www.tolvenhealth.com</p>	<p>Electronic Personal Health Record (ePHR) Tolven proposes to use its open source platform that is engineered to capture a consumer's "Continuity of Care Record" (CCR) to provide a way for authorized members of an ED to gain access to a patient's CCR data in near real-time. This data is collated from a number of different sources (e.g. the consumer, primary physicians, etc.) The first release of the Tolven platform is scheduled for November 2006.</p> <p>Components of the Architecture</p> <p>Application Server – JBOSS AS Database – PostgrSQL O-R Mapping – Hibernate Application Framework – Seam Faces Web UI – Faces Full Text Search – Lucene Business Process Engine – jBPM DB Administration – pgAdmin III Java algorithms – Apache Commons Base Language – Java J2SE V5 Rules Engine – DROOLS LDAP Server – openLDAP</p> <p>Vocabulary and Standards Components UMLS HL7 v 3 RIM CCR</p>	<p>Tolven Platform: Open source platform that enables all clinical information to be stored, indexed and semantically mapped for use by the Tolven applications. The platform incorporates workflow, rules and terminology management.</p> <p>ePHR: an open source portal application aimed at the consumer (patient) for the collection of CCR and other healthcare related data. The application also enables a consumer to create records for others such as siblings or elderly relatives. In addition, the application enables the consumer in real-time to allow care providers access to their healthcare information. Any physician who is part of the Tolven network can request access to a consumer's record. The Tolven workflow notification system will then process the request and will notify the consumer that such a request has been received for either themselves or for someone for whom they are designated to act as an agent</p> <p>eCHR: an open source portal for healthcare providers to securely access and review a consumer's health record. In order to access a consumer's record, consent must be granted by either the individual or by someone authorized to act as an agent for the patient.</p> <p>All Tolven components are available on SourceForge: http://sourceforge.net/projects/tolven http://tolven.org/setup/installation.html</p>	<p>To date, no deployed RHIO solutions.</p>

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		http://tolven.org/tolvenarch.html http://tolven.org	

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<p>Xstor Medical Systems</p> <p>849 Independence Ave. Mountain View, CA 94043</p> <p>Contact Info: Terry Duesterhoeft td@xstorsystems.com 262-893-2847</p> <p>www.xstorsystems.com</p>	<p>Patient Identify Search Engine</p> <p>XStor is proposing their XStor Platform for the integration of the XStor EMPI search engine, graphical user interface browser, and standard informatics interfaces and profile support. Two specific Semantic Web applications have been developed to leverage the EMPI and CEMPI search engine which include a patient demographic server and a document registry.</p>	<p>XStor Platform:</p> <p>Cross Enterprise class Master Patient Index (CEMPI) and search engine, Patient Demographic Server and Clinical Document Registry.</p> <p>Interfaces: to XDS distributed clinical Document Repositories.</p> <p>This vendor neutral platform allows the clinical information to reside at the local clinic or hospital level and still be connected, listed, and accessed at the global or statewide level. Through the IHE PIX/XDS protocols, the XStor server application is able to monitor patient information as it is created, used, and modified in the system. To deal with legacy systems and data, XStor has developed applications and interfaces to ensure the smooth integration of legacy images, documents, and data as well as legacy information systems.</p>	

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