GSI Health

Delivering on the Promise of Health Information Technology

DRAFT

Interoperability: Beyond the Talk –

GSI Health's Basic Principles to Achieve Meaningful Results

There is widespread agreement and evidence that interoperability, or better health information accessibility and usability, would dramatically improve health and reduce health care costs.

The President's Council of Advisors on Science and Technology (PCAST)[1] published a report to the President in December 2010 entitled, Realizing The Full Potential Of Health Information Technology To Improve Healthcare For Americans: The Path Forward. The report highlights the need for interoperability and robust health information exchange (HIE), argues for the development of new technical solutions to enable HIE and suggests that achieving the President's goals for health IT supporting higher quality, lower cost health care depend on accelerating and re-directing current federal work related to HIE.

The report concludes that due to the current "very modest focus on health information exchange there is a danger that electronic health records (EHR) adoption during early stages of meaningful

[1] The President's Council of Advisors on Science and Technology (PCAST) is an advisory group of the nation's leading scientists and engineers, appointed by the President to augment the science and technology advice available to him from inside the White House and from cabinet departments and other Federal agencies. PCAST is consulted about and often makes policy recommendations concerning the full range of issues where understandings from the domains of science, technology, and innovation bear potentially on the policy choices before the President. PCAST is administered by the White House Office of Science and Technology Policy (OSTP).

use may exacerbate the problem of incompatible legacy systems. What is needed is a simultaneous focus on the capability for universal data exchange, able to unleash the power of the competitive market, to produce increasingly better and less expensive systems."

The Office of the National Coordinator for Health IT (ONC) and The Centers for Medicare and Medicaid Services (CMS) also have signaled their intent to include more rigorous interoperability standards in stage 2 and 3 of the Meaningful Use regulations.

GSI Health offers 6 basic principles for health care providers and the health care industry to increase the focus on advancing interoperable HIE. These principles underpin GSI Health's HIE products and services with the goal of establishing the free flow of information as ubiquitous in the health care industry by setting the market standard for health information exchange and management services, including an open, robust marketplace of clinical applications and an infrastructure for accountable care organizations.

The 6 basic principles are:

1. **Start now**
2. **Demand open, non-proprietary HIE solutions**
3. **Seek broad and seamless access to clinical applications**
4. **Policy and people matter**
5. **Standards are important but should not be an impediment to action**
6. **Address privacy requirements right from the start**

Start now. Interoperability is a journey and there are many things that can be done now to improve operations, lower costs and position your organization or prepare your company for payment and delivery system reforms. First, set clear interoperable HIE goals, which align with strategic and clinical goals and proper capital and operating investment. HIE investment should be built into annual IT budgets. 'Start now' in order to strategically position your organization to take full advantage of federal funding opportunities through the CMS Center for Medicare Innovation $10B billion dollar grant program advancing delivery and payment system reforms as well as the stage 2 and 3 EHR Meaningful Use Incentive program. Interoperability will be a crucial enabler of these programs and essential to gaining a competitive advantage. Interoperability also supports total cost and quality management and accountability with physicians and other provider organizations whether through alignment, acquisition or new organizational structures like accountable care organizations. Connecting multiple information systems across multiple organizations for real-time information exchange is a foundational requirement for effectively managing care transitions, team care, performance/outcomes risk as well as utilizing clinical decision support, registries and quality reporting systems. Having the ability to influence vendor

products based on clinical need and driving workflow innovation within your organization is also an important consideration in prioritizing HIE. In short, an interoperable HIE infrastructure gives you options to influence as well as respond nimbly to and keep up with myriad forthcoming market-based and public policy changes. Indeed, the free flow of information along with clinically valuable and user friendly tools is a key to survival in the next 5-10 years.

In choosing an interoperable HIE system, in many ways, you are buying into the particular philosophy and technological approach of the product's vendor. Accordingly, today's products vary substantially in security architecture, data architecture, network topology, and other vital aspects that work counter to the interoperability needed to enable many desirable point-of-care functions, like clinical decision support, quality reporting, clinical alerting, etc. Given this variety, it is no surprise that many systems that boast "plug-n-play interoperability," or the ability to "transmit a CCD or CCR," or other similar claims, can only do so in very specific ways that are likely proprietary and incompatible with other vendor products. GSI Health's cloud-based and SaaS[2]-delivery HIE platform is built on select open source technology and is designed to be low cost and massively scalable ensuring compatibility with any vendor product. Part of the advantage of using open source components is that many of these projects collect and reflect the technological consensus of the industry regarding implementation of specific functionality, and are broadly compatible with many vendor offerings that will need to be integrated during the project.

Demand open, non-proprietary HIE solutions. Architectural solutions for a complex environment like health care are organized at different levels or layers. Architectural layers contain boundaries used to define interfaces and isolate system components as well as provide principles and processes used to guide design of dependent layers. At each layer, GSI Health's HIE service-oriented architecture is as concise as possible and yet still descriptive enough to answer all the questions of the next level of refinement. For example, the Constitution of the United States is the entire architecture of our government, and based on that original foundation, resulting systems were constructed that have run the country throughout its history through present day. The whole foundation of our government fits in a few pages, a bit more if you include all of the subsequent amendments. The analogy with open HIE platforms is that they should serve as the Constitution for a widespread operating system or exchange language for healthcare. The laws and cases that have resulted from that Constitution fill libraries, and are full of contradictions and messy corners, but the principles drive all the users and provide ultimate resolution if necessary. Just as open HIE architectures enable mutually interoperable systems for a patient's data to be located and accessed across vast institutional boundaries and collaborative applications

[2] SaaS = Software as a Service, a term describing a pay-for-use model of hosted software, rather than a perpetual license purchase.

putting the information to work in clinically relevant, valuable and user friendly ways, subject to strong, persistent privacy preferences. HIE platforms need to be open and accessible like the Constitution in order to build the necessary latticework on top of it that supports an entire nation.

GSI Health believes the lynchpin of an HIE's Constitution or architecture should be groups of accepted protocols, such as those adopted in NY State, referred to as Common Health Information Exchange Protocols (CHIxP). The CHIxP provide a common basis or language for interoperability, which governs the function of not only compliant platforms like GSI Health's HIE, but also the interconnections to 3rd party applications to share data and context among those applications. Through CHIxP, every core HIE service and 3rd party service talks to every other core HIE service and 3rd party service it requires to fulfill its function (with an optional adapter layer for external/legacy environments). The result is that every interaction is dependent on the protocol. The CHIxP protocols are 'open' – not proprietary. This approach is the most effective known for addressing large-scale systems that are heterogeneous and undergoing continuous change, like our health care system. We have a good example of this today – the Internet – which implements open protocols. Moreover, it is important to avoid ceding control of a critical utility to a particular vendor or other institution in the health care environment. One goal of GSI Health's HIE architecture is to instantiate CHIxP keeping it as simple and succinct as possible making the overall HIE vision achievable in an easier, efficient and cost effective way.

Seek broad and seamless access to clinical applications. Like any infrastructure project -- roads, water treatment or information exchange -- efforts can provide value by integrating demand and supply through the infrastructure. For example, a small number of well-chosen roads will enable some transportation and commerce that was not possible prior to their construction. Conventional EHR systems, which for the most part resemble digital versions of paper records based on a fee-for-service environment, are siloed in the offices where they are deployed dramatically limiting their value. Applications based on clinical need and that improve the usability of EHRs are needed to attract sufficient demand and supply to increase the likelihood of success and delivery of value to doctors and patients. Achieving this value is dependent on much more than conventional EHR technology.

While harnessing the power of more innovative clinical applications is still in its early stages, progressive HIE platforms, such as GSI Health's HIE, provide for the ability to thread together multiple 3rd party applications by passing along or "propagating" data and workflow rules among them in an open and non-proprietary fashion. This allows for multiple applications used by clinicians and patients to integrate and work together seamlessly like disease registries, wellness and patient engagement tools, care management applications, and quality reporting unleashing market forces to drive the best solutions to be used. Indeed, today's EHRs as well as proprietary

applications that are a part of many vendors' HIE platforms are advancing a single solution for end-user functionality that retards efforts to bring increasing value to network users.

As HIE grows, providers will have access to clinical data on a scale they have never seen before and vendors will have unlimited potential to innovate and deliver value to doctors and patients. This will provide the opportunity to compare clinical outcomes, monitor and standardize treatment and procedures and reward providers for cost effective, quality care. Systems like GSI Health's HIE platform and state of the art propagation service provide the ability efficiently and cost effectively to capitalize on these opportunities providing the technological underpinnings for accountable care organizations, health systems, physician practices and health IT vendors.

Policy and people matter. The definition of interoperability includes much more than technical interoperability of multiple information systems; it is policies and people, also. Health Information Exchange uses the term liquidity or free flow of information to express the level of interoperability or rate of flow of assets through the exchange. Exchanges are characterized as very liquid when almost all uses succeed (e.g., finding clinical information about a patient to inform medical decisions; receiving a drug-drug interaction alert). Conversely, in an illiquid exchange a large number of uses may fail (e. g. not finding current and/or complete medication profiles for patients). A high level of liquidity for the health information exchange is essential. A key to generating liquidity in any exchange is the belief on the part of its users that uses of the exchange will succeed and be beneficial and that, in rare cases of problems, the stakeholders will be protected and problems solved. This is as much a function of trust and clinical usability as technology and all together has the highest probability of generating 'health information liquidity', where health information not only is reaching the right place at the right time but also is smart and useful and generating benefits to doctors and patients. Health IT and health improvement goals will not be met without vendor partners who bring all three ingredients to the table.

Standards are important but should not be an impediment to action. There are a number of efforts taking place to adopt and deploy standards. There is an old one-liner: "The nice thing about standards is that there are so many to choose from". There are at least three issues underlying the difficulty. First, the standards are still developing and many overlap and create inconsistencies. Second, most standards have emerged over time in response to needs of the providers. Third, standards need to be integrated with HIE infrastructure to become stable and thereby widely adopted. In other words, we need to build interoperable systems to achieve interoperability, not just set standards.

GSI Health manages the integration of standards into products ands services. The technology approach uses a layer of protocol to isolate the HIE platform and its users, for example, from the evolving standards. This mapping protocol is then implemented using adaptors to the various standards as necessary. In this manner the messy nature of the standards interface is confined to these adaptor components so as new standards are introduced and existing standards evolve, adjustments and changes can be easily made without impacting the underlying systems. This strategy ensures that particular standards are not embedded into HIE infrastructure and clinical applications.

It is also important to monitor the adoption of standards 'in the field'. Widespread use of standards in practice is perhaps the most important element driving the need to integrate a standard into an HIE platform. The needed solutions for healthcare will not only use prevailing standards for interoperability, security, and data representation, but also use adapters, which can be updated as standards evolve to allow the most comprehensive data exchange and use among the greatest number of systems. The challenge is to hone nationally recommended standards into the essential kernels that are truly in use, and deliver immediate value for system interconnectivity.

Address privacy requirements right from the start. One of the largest barriers to widespread interoperability in healthcare is overcoming privacy concerns. As HIE becomes more prevalent, the need for sophisticated management of privacy policies at every level, not only at the patient level, becomes crucial. Additionally, given the nascent state of national HIE privacy policies; policies will evolve and change rapidly as experience is gained, requiring software solutions and manageable change procedures for the electronic representation of those policies. Vendor solutions have minimally addressed privacy management issues in today's crop of healthcare IT products. Many healthcare IT systems essentially hardcode privacy policies into their applications rather than allow the expression of policies as an administrative function. This means that if policies get more complex over time, it requires software changes to change policies, which is inefficient and expensive.

A credible HIE platform will offer a privacy management solution, which follows the national standards, and is extensible to accommodate heterogeneous environments, thus allowing providers and solutions providers to craft the right solution their constituency and purposes. There are potentially many organizations and patients in an HIE environment. Each of these may have different tolerances and privacy preferences, and should be able to express them individually rather than be limited to one monolithic policy imposed on the entire network. GSI Health has found that a privacy management solution which accommodates multiple sets of privacy policies, and is able to detect conflicts and resolve them into a clear action on making data available or not, is the only way

to address the normalization of such a complex and heterogeneous privacy landscape. Systems that are not able to facilitate this heterogeneity will force every stakeholder to adopt the same policy at the same time, which is unrealistic and will slow network growth. Additionally, privacy management solutions should enforce policies and be able to prevent or allow the flow of healthcare data based on the privacy settings registered with any 3rd party applications. If these considerations are not addressed right from the start, an inordinate amount of expense and complexity will ensue from efforts to retrofit privacy in later stages.

ABOUT GSI HEALTH

GSI Health is a leading health information solutions provider dedicated to improving the quality of healthcare and reducing costs. Our goal is to establish the free flow of information as ubiquitous in the health care industry by setting the market standard for health information exchange and management services, including an open, cloud-based market of collaborative end user applications and an infrastructure for accountable care organizations (ACOs). Our customers include provider organizations and health information information exchanges as well as vendors seeking interoperability solutions and/or a 'storefront' in our application marketplace. For additional information, email us at: business@gsihealth.com.