

What are the high level goals of healthcare interoperability?

At its base, health data interoperability involves semantic interoperability, which Wikipedia loosely defines as “the ability of computer systems to transmit data with unambiguous, shared meaning.”

As the healthcare industry shares more patient data, the challenge has become how to share and store that data between systems without losing the true clinical meaning of the diagnosis. In a conversational way, a paragraph of words by the clinician can most effectively present the full meaning of the diagnosis. But the problem is paragraphs of words are not easily understood by machines.

Rather than get into the technical details of the tasks required to harmonize the data between

systems to achieve an acceptable level of semantic interoperability (a job achieved using an HL7 interface engine) we'll take the macro view and look at the jobs the industry needs to accomplish as we work toward widespread interoperability.

This white paper will examine the three stages of the government's Meaningful Use program and the steps that health care organizations can take to successfully go beyond the requirements and create a modern health data system.

Meet Meaningful Use requirements

The original driver of health data interoperability, the government's Meaningful Use program is designed to incent healthcare providers to adopt electronic health records and use them in a meaningful way.

The government spelled out what they consider as meaningful use in the program's three stages, which are loosely summarized as:

- **Stage 1** Encourage the widespread adoption of electronic health record systems
- **Stage 2** Encourage the sharing of health data between providers
- **Stage 3** Improve the quality of patient care using shared patient data
What jobs need to be done at each stage to attest for Meaningful Use?

Stage 1: Adopt certified technology

Stage 1 requires that program participants adopt 2014 edition Meaningful Use-certified technology, which applies to full EHR systems and any technology that assists in activities associated with the program, including interface engines, HIE technology, patient portals, and other applications as designated by the ONC. Stage 1 certification tested applications for very minimum requirements that, unfortunately, led many healthcare providers to install technologies they believed would put them in a healthy position to succeed in future stages of the government's program.

As certification criteria has begun to include Stage 2 criteria, 2014-certified technologies have to undergo much more rigorous testing to prove that can indeed perform the Meaningful Use data exchange requirements.

As many applications have been unable to pass the more rigorous criteria, many providers have been forced to consider migrating to new, 2014-certified technology—primarily EHRs—to attest for MU, a

MEANINGFUL USE CONFIDENCE

Corepoint Integration Engine was health IT's first Meaningful Use Stage 2-certified interface engine for Modular Ambulatory EHR and Modular Inpatient EHR. Corepoint Integration Engine is also certified for the proper use of Direct Project for transfer of patient care data.

Using the Audit Logging feature, Corepoint Health customers can provide required data in the event of a Meaningful Use audit. Data

insights include messages that were viewed, modified, and/or copied. Audit log reports show the user involved, patient ID, and the type of information viewed.

The data in audit logs can also be used to improve the organization's data security practices and procedures.



task that typically requires migrating health data into the new system.

There are various data migration options available to providers, such as maintaining two separate

databases or performing a complete data migration to the new application. For both options, Corepoint Health customers have successfully used Corepoint Integration Engine to map legacy data into the new database in a usable format.

Additionally, customers are able to recreate and seamlessly transfer valuable interfaces in

production in the old application to the new application using the engine's test-as-you-develop feature. Using this tested feature, customers duplicate interface logic behind the scenes using real patient data prior to activation, which eliminates downtime and increases staff confidence that the "go live" with the new EHR's interfaces will be a success.

Stage 2: Integrate and exchange

Goal #1: Connect internal applications

There are many benefits of electronic patient health records. Perhaps the most beneficial is the ability to have access to patient data when it is needed, where it is needed, for both the provider and for the patient. Having access to patient treatment and diagnosis history will undoubtedly save lives and improve treatment outcomes, which is the ultimate goal of Meaningful Use.

Having access to the health data for caregivers is key, but so is giving patients access to their own treatment history. The first step in achieving these ambitious goals is to build an integrated health data system from the ground up—by connecting myriad internal technologies into a single, connected ecosystem.

Creating interoperability and building a modern health system is not about a single software application, or even a few applications working together—modern health IT departments are working to build a connected architecture of several interacting software systems from multiple departments.

For example, small hospitals and clinics typically include a:

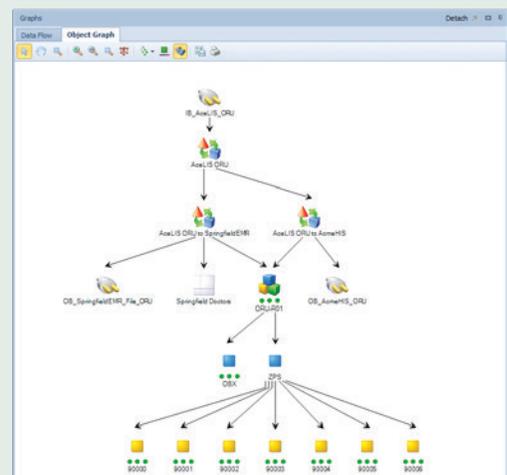
- Billing system
- Clinical system that includes EHR, lab and radiology
- Email

- Web portals
- Other IT systems and applications

Most major medical centers have 20 to 30 different, integrated applications that work together to take aid in patient care. Take those 20 to 30 different applications and multiply that by the number of affiliated and electronically connected hospitals and clinics and the number quickly compounds to hundreds or even thousands of applications that eventually need to be connected.

GRAPHING VIEWS

Easily explain how internal applications are connected and what data is being transferred using Corepoint Integration Engine's graphing views.



Goal #2: Create and populate a patient database

Health IT is evolving to create a collaborative management of the patient's health involving both the physician and the patient. To help patients in this important task, applications such as web patient portals give patients access their health records remotely and securely so they can communicate and share information with their providers. The theory behind this change, as far as Meaningful Use is concerned, is that better communication will lead to improved quality of care and improved outcomes.

This drive for better care communication is driven in large part by incentives included in the Affordable Care Act, such as those offered to Accountable Care Organizations, but also by Meaningful Use and its view, download and transmit requirement. This portion of Stage 2 states that patients must have the ability to view online and download their medical records for personal use and also have the ability to electronically transmit their health information to other providers.

A patient database, whether it be a clinical data repository (CDR) or a data warehouse, consolidates data in real time using Corepoint Integration Engine from a variety of clinical sources to present a unified view of a single patient. This patient database—either a standalone repository or an existing EHR database—stores data from various applications so that it can be accessed and processed by clinical applications in the workflow of patient care.

Typical data stored within a patient database include: clinical laboratory test results, patient demographics, pharmacy information, radiology reports and images, pathology reports, hospital admission, discharge and transfer dates, ICD-9/10 codes, discharge summaries, and progress notes.

Patient databases are translational or analytical databases that allow users to perform a significant

amount of data analysis and reporting. While some analysis and reporting can be done from any database, very complex analyses on large quantities of data will significantly slow down a typical repository.

Clinical decision technology enhances patient databases by compiling information from more than one disparate application, which is required to present a truly unified view of a patient's care. Additionally, some databases include pointers to documents and images that are stored in other locations due to size, processing, or the desire to keep a single file copy. The model of the database can be adjusted to accommodate various workflow preferences in a healthcare setting.

VIEW-DOWNLOAD-TRANSMIT

Meaningful Use requires that more than 50% of all unique patients seen by eligible professionals are provided online access to their health information within four business days. MU also requires that 5% or more of all patients seen by the physician actually accesses their health information online.

Corepoint Health customers successfully meet this

requirement by providing patient data to various patient-facing portals using Corepoint Integration Engine. Customers transmit required Consolidated CDA files to the patient portal using the engine, and they provide patients the ability to transmit their data from the portal using Direct Project protocol, as required by Meaningful Use.

Goal #3: Connect externally

With a solid, integrated data foundation in place, it becomes easier to smartly scale to add new layers to your health data ecosystem. Whether it be to simply satisfy the Meaningful Use requirement of sending patient summary of care information to state public health repositories, to incorporate new clinics and hospitals as health systems continue to consolidate and expand, or to offer premium services to the referring medical community, you now have the ability to effectively create meaningful interoperability outside the four walls of your organization.

Through the experience and lessons learned from connecting internal applications and populating a patient database using Corepoint Integration Engine, users now have the experience necessary to obtain and share data between applications.

While Meaningful Use is a good minimum threshold for exchange, most modern, connected systems go beyond Meaningful Use requirements and employ a variety of data standards and exchange methods to build a dynamic ecosystem that

SCALE SMARTER

Externally exchange health data using a variety of methods with Corepoint Integration Engine depending on users' needs and easily satisfy Meaningful Use requirements using:

- Direct Project and web services (data transport)
- Consolidated CDA (data standard)
- HL7
- XML
- TCP/IP
- FTP, and more

With the technology already in place, many healthcare organizations are using Microsoft technologies to help expand operations and quickly incorporate new facilities and exchange partners.

Microsoft technologies are more affordable and have many proven benefits, including:

- High Availability
- Proven Privacy and Security
- Scalable and cost-effective
- The ability to easily find data using Google-like search across multiple days and connections

provides key insights that include treatment history and context where it is needed—at the point of care.

Stage 3: Exchange and utilize the data

In March 2015, the ONC released their proposed Meaningful Use Stage 3 criteria. And, according to the documentation, "Stage 3 of meaningful use is expected to be the final stage and would incorporate portions of the prior stages into its requirements."

Interoperability is the main focus of the new rules, with a particular emphasis on increasing requirements of participants to exchange and utilize patient data in a more meaningful way. While additional challenges are ahead, they should be easily accomplished if previous stages were accomplished utilizing the proper technology and a forward-thinking approach.

Following are a few key points about the proposed rules as they relate to interoperability:

- The number of objectives for Meaningful Use Stage 3 has been greatly reduced for providers. There are eight objectives in Stage 3, which is less than half of what was included in Stage 2.
- Providers now must meet a higher threshold for sending CDA documents during Transfer of Care. Previously, only 10% of referrals/transfers had to be accompanied by an electronic version of CDA. Now 50% must include a CDA.
- Providers also have higher requirements for electronic patient access of their medical record after leaving the facility. Previous 5%, the requirements are now 25%.
- Public health reporting has added three new reporting measures.

Conclusion

Following this three-prong approach to creating high level health data interoperability will allow health IT leaders to position their facility in prime position to get the most out of their technology investments and realize their promise of improved efficiency and patient care.

When this approach is taken using the proper technology that provides users with unique insights and control over their patients' health data, even greater success can be achieved. Unique features in Corepoint Integration Engine, such as Audit Logging and Intelligent Message Tracking, provides added security and insights that keep data flowing between applications as intended.

Audit Logging

Modern integration engines provide features and functionality that break outside the secured IT datacenter, extending into departments, allowing technicians to view, monitor, and debug message flow without being dependent on the interface team. However, this now exposes PHI outside the security of the IT professionals who traditionally manage and debug the interfaces.

Departmental access makes it critical that an integration engine incorporates the same audit logging capabilities as an EHR into the product. Tracking of any PHI exposure is critical. Meaningful Use sets the standard for the functionality that must be included in an Audit Logging solution.

Corepoint Integration Engine has modeled its audit logging requirements after the Meaningful Use definitions, and has passed the criteria for the 2014 Edition for EHR technologies. Key audit logging requirements include:

- The ability to log events such as:
 - Additions

- Deletions
- Changes
- Queries
- Printing
- Copying
- The ability to log pertinent data such as:
 - Date and time of event
 - Patient identification
 - User identification
 - Type of action (from the list above)
 - Identification of data (such as labs, demographic, etc.)
- Tamper resistant data storage
- Ability to generate reports

Intelligent Message Tracking

Additionally, Corepoint Integration Engine provides a unique Log Search feature that employs a "Google-like" approach to trace the lineage of every health message back to its origination. This is particularly useful for locating specific HL7 messages or groups of messages for debugging and resending to ensure vital data is available where and when it is needed.

The Log Search feature gives interface analysts and IT managers the ability to view the history of every health message transmitted in their IT environment. Users can perform detailed searches across all connections for defined message types. At the click of a button, users can see the lineage of the message, tracing the message back to its origination.

A modern approach for a modern healthcare system

Corepoint Integration Engine delivers a simplified approach to internal and external health data integration and exchange for hospitals, radiology centers, laboratories, and clinics. Our software solutions help healthcare providers achieve interoperability goals and create operational leverage within their care organization. Contact us today to find out why Corepoint Integration Engine has been named the #1 interface engine for six consecutive years, 2009-2014, in the *Best in KLAS: Software & Services* report.

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