

Interface Engines Simplify Interoperability— But Should You Go It Alone?



Interface Engines Simplify Interoperability—But Should You Go It Alone?

The healthcare industry is in an era of transformative change. Meaningful Use requires organizations to use health information technology (HIT) in ways that reduce costs, improve clinical outcomes, and increase patient engagement. At the same time, the advent of value-based reimbursement is disrupting traditional payment models. The ability to share protected health information (PHI) across disparate systems is now imperative, as a means to drive more collaborative care. This means interoperability is no longer an option in HIT—it is *necessary* to tighten the alignment between clinical and financial goals, since outcomes now affect reimbursement. Interoperability is now critical to an organization's bottom line.

When it comes to sharing data, healthcare is far behind other industries, such as financial services (banks have long been able to exchange data and move money around). Healthcare is now struggling to catch up. Collaborative care models require data exchange with multiple partners. Hospitals and physician groups send and receive data to and from labs, pharmacies, radiology centers, and clinics. Regional health systems connect with multiple providers, who may all use different EHR systems. The new reimbursement models drive the need for data exchange that can keep up with payers, as well as simplify tracking and reporting on regulatory and quality measures.

Yet interoperability—the ability to send and receive data between disparate systems—remains an elusive goal. According to KLAS Research, deep interoperability comes when patient data is delivered in a way that it has a positive impact on the quality of care. This means data exchange must be simple, reliable, secure, and robust. And while much of the interoperability discussion has been focused on hospitals and ambulatory care

practices, other organizations in the healthcare arena have good reasons to care about interoperability as well. Some of these considerations are briefly summarized below:

- **Laboratories.** With eight to 10 billion lab tests performed annually,¹ lab data makes up a huge part of the clinical data that drives medical decision-making. Interoperability between the laboratory information system (LIS) and the EHRs of multiple providers, offers a way to manage this large volume of data and deliver test results quickly. To advance lab interoperability, Health Level Seven International (HL7) has created a framework implementation guide that shows laboratories how to provide their catalog of tests and services to providers in an electronic format, using the EHR and LIS with compatible data formats, rather than having a person curate the catalog manually.²
- **Radiology and imaging.** Surveys demonstrate that an imaging center's turnaround time is the leading driver of physician satisfaction with the facility.³ Interoperability between the EHR, the picture archiving and communications system (PACS), and the radiology information system (RIS) can result in higher productivity and improved workflows for radiologists,⁴ as well as better care coordination on the part of referring physicians.
- **Medical device manufacturers.** In September, 2017, the FDA issued final guidance for medical devices that interact with information systems, recommending that all manufacturers design devices with interoperability in mind.⁵ These devices include IV pumps, life support systems, vital signs monitoring equipment, and others. Ideally, the data they generate will be transcribed and integrated automatically with other devices and the EHR, made possible through a set of common standards such as the Medical Device Plug and Play Interoperability Program. This next-generation interoperability will improve clinician workflows and enhance patient safety.

Going forward, health IT professionals across all types of healthcare organizations will face the need to leverage interoperability as a foundation for the organization's success

Going forward, health IT professionals across all types of healthcare organizations will face the need to leverage interoperability as a foundation for the organization's success. To thrive in the current healthcare environment, organizations must understand how interoperability systems work, choose the right one to meet their needs, and maintain interfaces with best practices in mind.

The case for interface engines

The current lack of common data standards is arguably the biggest barrier to achieving interoperability. FHIR is the latest, most promising standard to be developed under the HL7 organization. (Pronounced as "fire," the acronym stands for fast healthcare interoperability resources.) While FHIR facilitates easier data transfer in a wider variety

of workflows, it has not been universally adopted and there is still a need for interfaces between systems that use different standards. An HL7 interface consists of an *export* endpoint for the sending application, an *import* endpoint for the receiving application, and a means of transmitting data between the two endpoints. There are currently two ways to create interfaces: through point-to-point solutions and through interface engines, which are quickly proving to be the superior solution.

The point-to-point (P2P) system involves building a separate interface for every HL7-enabled application the organization needs to share data with. Each application needs either an export or import endpoint—or both, if the data flow is bidirectional—created specifically to interface with the other application. For example, a medical practice that sends data to and receives data from a lab will need to build a total of four endpoints (each application needs both an import and export endpoint). This system is both expensive to implement and extremely time-consuming; it can take up to three months to configure and test each interface. Ongoing maintenance also requires time, expense, and significant IT expertise to build interfaces for new applications. Yet another disadvantage is that point-to-point solutions don't have a central monitoring system. When an endpoint fails, no alerts are issued, and communications continue to break down until someone notices that essential data—like lab results—are missing.

Interface engines are a better option. Once the solution is up and running, it can create new interfaces in hours, rather than weeks or months, and does not require advanced programming skills. It's less expensive to implement, often roughly half the cost of a P2P solution. Maintenance is also simplified because an interface engine provides centralized monitoring, allowing for a quick response when a connection fails. An interface engine also logs detailed information about connection activity and the number of messages being processed, allowing IT staff to more accurately estimate hardware needs to support data exchange. It is more flexible than a P2P solution, able to filter data from the sending application and map it to match the requirements of the receiving application—which reduces the number of export endpoints needed.

The built-in flexibility of an interface engine allows an organization to scale up at a lower cost as it receives more referrals and adjusts to rising patient volumes. There are significant costs associated with growth—and reducing the cost of adding new interfaces between more payers and providers is key to maximizing profit as an organization expands.

The case for open-source interface solutions

An organization shopping for an interface engine will be faced with two broad categories of options: proprietary and open source. Research published in the *Journal of Medical Internet Research* argues for the “superiority of open source licensing to promote safer,

more effective healthcare information systems.”⁶ There is good reason for this: proprietary EHR systems were largely responsible for creating the current barriers to information exchange. Conversely, when source code is freely accessible, it encourages programmers to develop multiple platforms using the same standard, rather than creating new platforms that must compete with others, as did the legacy systems of yesterday. When developers can buy a license to modify the source code, which is less expensive than developing software from scratch, they can continually improve upon the technology.

Open source interface engines are vendor-neutral, making them widely compatible with a variety of hardware. In addition, the very nature of open source software allows for complete customization of an interface engine to meet individual needs. The built-in flexibility allows not only for scalability but for a measure of “future-proofing” because systems can adapt along with changing standards. By investing in an open source interface engine, organizations can contain IT infrastructure spending, while remaining agile enough to adopt new technologies and solutions as they emerge.

*All the flexibility and scalability capabilities in the world **can't help an organization that doesn't have the IT expertise to expand or customize***

The case for a supported interface solution

The right approach to interoperability is essential to an organization's success in sharing and receiving data. Even when an open source interface engine is easily configured and deployed, users can run into roadblocks, have questions, or face a problem that calls for an expert resource. All the flexibility and scalability capabilities in the world can't help an organization that doesn't have the IT expertise to expand or customize. This is why many opt for the supported version of an open source interface engine.

From the ambulatory care perspective, a supported product makes sense because many small standalone offices don't have an IT staff. A growing practice may need help to scale up quickly or frequently as referrals increase. Certain ancillary services, like pathology labs and imaging centers, may opt for a supported product because their business depends on being able to receive referrals and report results and they can't afford downtime. And as organizations increasingly implement new payment and collaborative care models, they will need to expand interoperability across even more diverse systems and geographies. Planning for data backups and failover processes is another consideration. A supported interface engine is often more cost-effective in the long term than hiring and training IT experts.

Even large health systems with adequate IT budgets and resources can benefit from supported solutions in areas, particularly where IT staff turnover is high or positions are hard to fill. When programmers or developers leave in the middle of an interface project, the remaining staff may be unable to continue—and outside support can make all the difference. A breakdown in data sharing can ultimately affect patient care in areas like the ER or ICU where the flow of patient information has life-or-death consequences. Support with customization activities can help an organization leverage a solution's full capabilities, like customizing the view of data for different workflows.

Security is also a top concern for all types of healthcare organizations. The more essential information organizations share electronically, the greater the opportunity for privacy and security breaches. These lapses can cost an organization tremendously, not only through direct financial implications but also with negative impact on reputation.

NextGen® Connect Integration Engine (formerly Mirth Connect)

NextGen Healthcare is an industry leader in interoperability solutions. Health IT analysts at KLAS Research stated, in a 2017 report on the state of interoperability, that “NextGen led all vendors in improvement for both access to external data (27% increase) and the impact on care (25% increase).” This statement refers to our NextGen Connect Integration Engine.

NextGen Connect Integraton Engine is an open source, vendor-agnostic interface engine that supports connections between a number of facilities and makes it easy to transform non-standard data into standard formats. With NextGen Connect Integraton Engine, an organization can eliminate the “cost per interface” model of a P2P solution. It can translate scalability and flexibility into profitability.

The solution is also available with a commercial license, in a scalable format that allows large organizations to implement enterprise-wide. The licensed version also provides premium support, making NextGen Healthcare a trusted partner to grow with. With support from NextGen Healthcare, healthcare organizations can better harness the power of enterprise-level interoperability to increase ROI and enhance overall information exchange capabilities to drive better outcomes and improve the health of populations. Specific benefits of NextGen Connect Integraton Engine include:

- Immediate access to a help desk, 24/7 product support, and implementation guidance
- Connection without disruption, through failover support and migration capabilities
- Vendor-agnostic connectivity with multiple EHR systems and devices
- No problem with complex interfaces
- User control—store data where you want it and give access to who needs it

With NextGen Connect Integrator Engine, the system is easily customized with pre-programmed plugins that extend default functionality. These include:

- Channel history
- User authorization (includes role-based access control)
- SSL manager
- LDAP authentication
- Email reader
- Advanced clustering
- Advanced alerting
- Message generator
- Serial connector

Additional products within the solution set can be used to further expand the interface engine; some can be purchased separately. The complete product set includes:

- NextGen® Results CDR (central data repository with an enterprise patient matching index)
- NextGen® Direct Messaging (secure messaging solutions)
- NextGen® Application Management Console (deployment platform)

Today's healthcare environment is dynamic and constantly changing. That's why forward-looking organizations are thinking three, four, and five steps down the road and seeking interoperability solutions from NextGen Healthcare—a company that keeps up with trends and is constantly evolving with the healthcare industry.

Take the next step:

Contact us at 855-510-6398 or email results@nextgen.com.

- 1 AMERICAN CLINICAL LABORATORY ASSOCIATION, [THE VALUE OF LAB TESTING](#)
- 2 THE VERSION 2.5.1 IMPLEMENTATION GUIDE: S&I FRAMEWORK LABORATORY TEST COMPENDIUM FRAMEWORK, RELEASE 2, [HTTP://WWW.HL7.ORG/IMPLEMENT/STANDARDS/PRODUCT_BRIEF.CFM?PRODUCT_ID=151](http://www.hl7.org/Implement/Standards/Product_Brief.cfm?Product_ID=151)
- 3 ADVISORY BOARD RESEARCH, [2013 IMAGING TURNAROUND TIMES SURVEY RESULTS](#)

- 4 WORTHY, S, STRENGTHENING YOUR TIES TO REFERRING PHYSICIANS THROUGH RIS/PACS INTEGRATION, [RADIOLOGY MANAGEMENT, 2003](#).

- 5 FOOD AND DRUG ADMINISTRATION, [DESIGN CONSIDERATIONS AND PREMARKET SUBMISSION RECOMMENDATIONS FOR INTEROPERABLE MEDICAL DEVICES](#), 2017.

- 6 REYNOLDS CJ, WYATT JC. OPEN SOURCE, OPEN STANDARDS, AND HEALTH CARE INFORMATION SYSTEMS. EYSENBACH G, ED. [JOURNAL OF MEDICAL INTERNET RESEARCH](#), 2011.