# IHE Profiles and Certification Drive Interoperability

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Introduction

Dr. Jones has a referral summary on a patient in his electronic health record (EHR) that he wants to share with specialist Dr. Kern, who is in a different medical group using a different EHR system. Despite the differences, a common technical data-sharing infrastructure is available to all clinicians in the region. Through a series of transactions following a use case orchestrated by an IT movement called Integrating the Healthcare Enterprise (IHE), Dr. Kern’s system queries for the patient related information and finds that record. If she wants to, Dr. Kern can store a copy in her own EHR system.

Dr. Kern finds out that the referred patient has just transferred from another city and wonders if there is relevant information there on her new patient. Her EHR system sends out a query to the data-sharing infrastructure of that region, and because the cross-community access technology operates uniformly throughout, Dr. Kern can receive a comprehensive set of results for the patient.

These scenarios and others related to the interoperability of IT systems can and should be supported in healthcare today. But the complexity of healthcare data and the array of systems that generate, manage and store it have made this level of efficiency and convenience hard to attain.

When it comes to communicating among various types of information systems in healthcare, the underlying premise is actually quite simple: System A needs to understand how System B represents clinical data, and it also needs to know what to do with incoming data. Putting that premise into practice has been the challenge.

Pushing, Pulling the Same Way

To begin with, figuring out how to represent data consistently has been a complex undertaking. It requires various information technologies produced independently by multitudes of manufacturers to employ standards and specifications by which they document healthcare details and uniformly exchange them.

And that’s just the prologue to the story. Assuring that those standards are incorporated into health information technology (HIT) products well enough to accomplish their aims is the make-or-break step in this quest for interoperability. The tendency to proliferate options rather than implement standards precisely has complicated the task further.

Technology developers must find a balance between standardization and customization. No two organizations are identical and, ideally, the functionality of HIT systems should align with organizational workflows. The industry is faced with a delicate balancing act of providing standardized functionality and information via customized workflows and interfaces.

Since 1998, IHE has achieved consensus on a common framework for going about the business of applying HIT standards to the real world. Its principal contribution to interoperability has been to narrow down (constrain) how pivotal information of an HIT system is conceived and packaged when processing that information in an IT system and using it for clinical care. IHE calls the solutions to a particular problem an “Integration Profile” and the specifications are described in a “Technical Framework.”

This process—developing Integration Profiles for clinical and IT functions, providing the specifications to implement them, and operating from clinical scenarios to ground them in the way health professionals conduct their business—have all gotten the industry closer to pragmatic interoperability. But not close enough.

1 For those interested in further information or learning more about the basics of IHE and interoperability for HIT, a free e-book is available through IHE USA: www.iheusa.org/ebook.aspx
That last mile—the actual incorporation of standards-based interoperability into a specific technology product and version for productive use by people relying on attested interoperability—has proven difficult to cross. The intent to conform to IHE profiles and other interoperability requirements can get lost along the way to implementation, something all too familiar for implementers of HIT. Developers typically claim support for standards, but come implementation time it could be a different story.

To differentiate those products that can deliver robust integration capabilities in production systems, a joint initiative of IHE USA (a national deployment committee of IHE International) and ICSA Labs (a HIT testing laboratory and certification body) have taken the step of devising a formalized, rigorous, and independent examination of those profiles and specs in specific versions of products going to market. This testing is based on industry best practices and international ISO standards. Products that pass this testing and receive the IHE USA's mark of certification will operate as they should in meeting IHE functionality.

This white paper explains the current state of industry conformance to IHE frameworks, and consequently the need for an additional, higher level of precision and proof of correctness that certification achieves. IHE USA certification carries with it a broad range of benefits to clinical users, their IT vendors, and policy-makers who are aware of how crucial IT integration is to coordinating and improving people's health.

In addition, the following issues will be addressed:

- Why the industry needs to encourage and certify the ability of components of the HIT ecosystem beyond those directly addressed in the U.S. government's EHR Adoption program and associated incentives—such as personal-care devices, mobile health, medical monitoring devices—to exchange interoperable data with EHRs.
- How vendors of EHRs can elevate and differentiate their EHR products from the many choices that have been certified for the government's meaningful use incentive program.
- Why healthcare providers need the level of integration provided by IHE USA certification to produce the results from their EHRs demanded under Stage 2 of the U.S. government's meaningful use program.
- Why EHRs certified to support meaningful use under federal incentive programs could leverage the IHE USA certification program to demonstrate interoperability capabilities that can help implementers better integrate EHR modules.

Making Standards Implementable

Standards for categories of electronically documented information were a big breakthrough compared with the anything-goes world of software that existed before these standards came on the scene. Common messaging, content and terminology standards such as HL7, DICOM and LOINC greatly narrowed the once limitless ways to approach designing and coding software to create, manipulate and exchange data.

But in the complex business of generating, aggregating and exchanging clinical data for healthcare, standards by themselves are not enough. They amount to useful building blocks: uniform elements that can be assembled in myriad ways into a final product. Whether for a class of service like laboratory or radiology information, within a specialty such as cardiology or eye care, or for the overall ability to store and share health record documents, agreement on how to exchange and integrate information across each domain has to be far more specific than is possible just with standalone HIT standards.

An IHE Profile takes those individual building blocks and creates a precisely defined, implementable specification, for each of the systems involved in a specific clinical use case. In fact, IHE specifications are referred to as "compound
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standards,” comprising base standards such as HL7 in a configuration that solves a particular problem—say, “How do I discharge a patient back to primary care?”

Profiles are developed by experts in clinical and operational domains, 13 of them to date (See Sidebar 1, IHE Domains). Each domain addresses how health information should be shared by users in specific scenarios important to them. The fruits of this labor are a collection of precise guides on how to implement standards the same way across the industry. An IHE Profile (for example, cross-enterprise document sharing, or XDS) describes in detail how to use standards to enable efficient, secure information exchange. These profiles are collected in technical frameworks (for example, IT Infrastructure) that also specify how profiles for a domain can be implemented together. These frameworks cut across medical disciplines, healthcare settings, and different kinds of technology.

With standards constrained into profiles that are implementable in a uniform manner, any two IT vendors should have a high probability of success in making their systems interoperable. IHE USA increases that probability by hosting events where vendors can bring their systems to test how well they execute IHE Profiles individually and how well they interoperate with those of other vendors.

These events, known as Connectathons, provide a neutral, supervised environment to assess the conformity of systems with IHE profiles and their ability to interoperate effectively with corresponding systems. These systems may be commercial products or simple prototypes. The Connectathon enables vendors to refine their implementations. Development teams are allowed to make changes during the event until they are able to pass the testing scenarios, often resulting in efficient, real-time debugging of systems.

A bonus for vendors is that if their systems perform the functions of one profile or another, often after subtle modifications to the software, they are allowed to participate in the annual HIMSS Interoperability Showcase and to publish IHE Integration Statements articulating the particular IHE Profiles supported by their organization.

The Need for Certification

There is nothing in the Connectathon process, however, that guarantees that a specific product version available in the market fully complies with those profiles. Certification cements this link between tested and marketed version and helps vendors distinguish their products among buyers seeking compliance with IHE profiles in their HIT purchases.

IHE USA certification supplies additional rigor through a formal testing framework and a program of ongoing product surveillance to assure that the capabilities represented in those attested statements are reliably implemented in commercial products and that these products will achieve the specified aspects of interoperability.

The IHE USA certification process independently runs products through testing exercises meant to ascertain that functions calling for compliance to IHE Profiles perform as they should. Qualified testers make sure that everything examined during the process is verified, documented, repeatable and traceable. Once testing is completed and the results recorded, a certification body examines results independently, determining whether the testing was done to its satisfaction and that tests correlate to a particular version of the vendor’s product. Only then does it issue the certification mark.

The rigor of the process rests on its use of International Standards Organization (ISO) methods and standards, industry’s highest level of quality for both testing and certification. Compared with the testing at the Connectathon, which is intentionally fluid by design as appropriate for a development environment, an ISO-class structure operates on a different plane.
Of its more than a dozen domains, IHE USA concentrated its initial certification efforts in 2013 on profiles from the IHE IT Infrastructure and Patient Care Devices domains, with the intent to expand those offerings incrementally. Within those two initial domains, 10 profiles were selected based on relevance to the U.S. HIT industry and vendor readiness. In July 2013, the program certified the first set of HIT products offered by eight HIT vendors. The 2014 iteration of IHE USA certification plans to test over 20 profiles in 6 different domains.

**Connecting IT Infrastructure**

The principal objective of profiles in the IT Infrastructure domain is to enable efficient and secure exchange of clinically essential information. These profiles define the behavior of systems, many not directly visible to end users, that enable exchange of information across care settings, such as in HIEs. The need for this capability is urgent. Stage 2 of the ONC’s objectives for meaningful use of EHRs introduces requirements for data sharing among non-affiliated providers, which means an EHR system must be able to issue structured clinical information (usually in the form of documents) to an external destination and also receive them.

In some cases, IHE specifications (like XDM and XDR) are named as optional transports in a Stage 2 transaction; in other cases a specific profile is not named but the use of an IHE profile would accomplish the stated requirement (such as medication reconciliation functions, incorporating laboratory information, and identifying patients).

There are ways to meet Stage 2 requirements without building IHE Profiles into EHR systems that are ONC-certified. For example, regulations assign the point-to-point document exchange protocol Direct as the main conveyance for data to and from external IT systems. But products also can be Stage 2 certified to optional transactions that follow IHE Profiles. Using one or both designated IHE options, EHRs will be able to create documents with machine-readable information (aka “metadata”) about the nature of the data being sent, and the destination EHR can better manage and route the data without having to open the document. Both options also enable improved privacy and security management. (See Sidebar 2, Safe Passage Through IT infrastructure.)

Keep in mind that the federal program is designed to progress toward increasing efficiency, convenience and use of HIT systems, encompassing a growing range of products and environments. The program establishes a floor on technological capabilities, not a ceiling. Providers still bear responsibility for managing the health of patients whose information is spread among many computerized sources. That means being able to query all possible places where a record may or may not exist. For example, in October 2013 ONC announced a partnership between IHE and ONC’s Data Access Framework (DAF) Standards and Interoperability Framework initiative, to develop a whitepaper that provides further technical guidance to the industry.

Identifying patients and matching them to their documents is the foundation for exchange. Two key IHE Profiles for managing identity are Patient Identifier Cross-Referencing (PIX) and Patient Demographics Query (PDQ). PIX stores whatever identity tags are used for a patient from various known sources and provides appropriate identity when queried. PDQ matches patient information across health records when no central system is available, based on standard demographic information. There also is a family of profiles (XD*) for transporting documents depending on whether the exchange is cross-community, enterprise-wide or to a document registry or repository.

The question for purchasers of HIT systems—and something for vendors to take note—is this: Do you only want to do the minimum in Stage 2 to earn the available incentives, or will you build for the long haul into Stage 3 and beyond, when interoperability is essential to delivering outcomes improvement?

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2 See IHE’s list of domains: [www.ihe.net/IHE_Domains](http://www.ihe.net/IHE_Domains)

3 PDF: [www.himssehra.org/docs/EHRAStage2SecureHealthTransportCertificationandMeaningfulUse.pdf](http://www.himssehra.org/docs/EHRAStage2SecureHealthTransportCertificationandMeaningfulUse.pdf)
External interchange of data by “push” from one known source to a defined destination through the Direct standard will suffice for today but it doesn't address “pulling” from multiple known organizations or discovering patient data from previously unknown sources. And if the decision is made to also implement IHE profiles, the stakes are higher than ever that the product version of the IT system is IHE USA Certified and ready and able for that challenge.

Integration from Ground Up

Another readiness challenge for the more advanced stages of meaningful use may already be affecting providers: attempting to get the many different modules of EHRs certified separately in Stage 1 of the federal incentive program to work together in Stage 2 and beyond.

With the objective of stimulating the size and innovation of the HIT market, the ONC devised a modular approach so vendors could develop and present for certification the software products to perform some, most or all of the functions that hospitals or eligible providers need in an EHR to demonstrate specific types of meaningful use. Each module is tested and certified in isolation. Even with “complete” EHR products containing every module, each module is considered separately.

INTEGRATING THE HEALTHCARE ENTERPRISE: THE DOMAINS

IT Infrastructure
Describes both complex functions, such as how to store and share EHR documents, and some of the most basic and important functions, for example synchronizing all clocks in an IT system. Includes IHE Profiles now being certified.

Patient Care Devices
Deals with how medical devices communicate with other healthcare technology, primarily from the point of care to the EHR, eliminating manual steps. Includes IHE Profiles now being certified.

Radiology
Covers everything from ordering and scheduling to storing and viewing images. One of the first IHE domains, its Profiles are well-established in many IT platforms, such as radiology information systems, picture archiving and communication systems (PACS), and enterprise imaging solutions.

Laboratory
Outlines how diagnostic lab information should be captured and shared from start to finish. This domain includes specifications for ordering, performing and reporting results back to a provider, and also sharing data in other settings including point of care and bedside, between labs, and among lab equipment.

Patient Care Coordination
Covers sharing of patient information among different providers throughout a patient’s life or across different health problems in different specialty areas. Information documents include discharge summaries, emergency department referrals and personal health records (PHRs).

Quality, Research, and Public Health
Enhances use of HIT for clinical research, public health surveillance and improvement of patient outcomes. Standardizes how doctors and hospitals report clinical information so it can be gathered and combined.

Cardiology
Covers clinical workflow and information sharing for all aspects of clinical processes in this specialty, from ordering a procedure (such as echocardiography or stress testing) to viewing an image and storing it across providers and institutions.

Eye Care
Focuses on integrating patient information and workflow throughout healthcare facilities, including such functions as scheduling, eye evaluation, image exchange and diagnostic reporting.

Dental
Newly developed, the IHE Profiles and Technical Framework for this domain will be tested for the first time at the 2014 North American Connectathon.

Pharmacy
Integrates prescription, validation, dispensing, distribution, administration and recording of medication inside healthcare institutions, including hospitals and doctors’ offices.

Anatomic Pathology
Covers ordering, imaging and reporting for basic pathology exams; sets up templates for structured reporting; standardizes how reports are transmitted to public health organizations.

Radiation Oncology
Integrates the flow of treatment planning data to and from imaging equipment for basic treatments, including for scheduling, dose review and transferring dose information between systems.

Sources: IHE Website for Profiles (wiki.ihe.net); Interoperability for Dummies, IHE Edition (www.iheusa.org/ebook.aspx)
The tradeoff for this flexibility in certifying IT products is that no testing goes end to end. In fact, no two modules need to work together to be certified. They may use the same industry standards, but that doesn't mean one company’s Computerized Provider Order Entry (CPOE) product is going to work with another company’s Clinical Summary Exchange or Quality Measure products, for instance. So EHRs built modularly face the possibility of internal integration problems among their many and interdependent meaningful use functions, before they ever get to the challenges of external interoperability.

Adherence to IHE Profiles, however, builds integration from the ground up, no matter what the final purpose of the EHR function or module may be. Besides specifying the way to approach a software capability, some profiles depend on each other—so the software must comply with several profiles in tandem. Modules based on IHE Profiles will work end to end. Thus, with IHE USA Certification laid atop ONC’s meaningful use certification, all components are set up to mesh with one another.

The Bigger IT Ecosystem

The march toward industry-wide meaningful use of computerized data and transaction functions in EHRs is no less than a breakthrough in healthcare compared with the state of the field before the federal incentive program began. However, the focus on the EHR leaves out the rest of a much broader HIT ecosystem, including imaging systems, lab systems, home health systems, long-term and post-acute care (LTPAC) systems, personal health records, consumer devices and apps, public health registries, HIEs, pharmacy benefits management systems, revenue cycle management systems, and many more. All these systems must interoperate effectively to leverage the full potential of automation in order to advance efficient, safe care and meet the goals of health reform.

Tying that whole ecosystem together has always been a principal goal of IHE USA. Now its certification program is pinpointing the most important technology areas that figure into the overall objectives of exchanging clinical information accurately, immediately, and reliably.

IHE Profiles set the foundation for interoperability and greatly reduce the configuration necessary when various types of computerized systems, devices and diagnostic imaging are brought together in collaborative efforts to integrate the entire HIT continuum. What was always a good idea is now essential given new economics, business processes and quality requirements, because reliable, lean organizations must leverage automation in order to succeed.

For example, a class of technology that should contribute greatly to understanding patient conditions remains largely untapped and underappreciated. Patient-care devices, monitoring and infusion machines, vital-sign instrumentation of every type—all can and should lead to and from the EHR, capturing and supplying data without human intervention. The selection of Patient Care Devices as the second initial IHE Domain for certification makes practical and strategic sense for the healthcare industry. Integration of such devices with one another and with EHRs is emerging as a key factor in controlling cost, safeguarding quality and improving efficiency.

Eliminating a Manual Mire

Vital signs are just that, vital. Patient weight, temperature, heart rate, blood pressure, oxygen levels and other signs measure current medical status and signal whether nurses or doctors should take action immediately. But the means for documenting that data is stuck in the 20th century. Many organizations may still use their most expensive and limited resources—nurses and doctors—to manually document on paper and later enter by keyboard very fundamental physiological data from devices containing computers and interface capabilities. These processes can and should be automated.
The accuracy and timeliness implications of such automation are substantial. Manual capture and data entry slow nurses down considerably. Those delays can also affect quality of care because changes may require rapid response—whether that patient is being monitored from home, or in an intensive care unit.

Automation increases the likelihood of improving decision-making at the point and time of care with accurate information. Life-critical changes have to be reported and responded to in the flow of care, not at the end of a busy caregiver’s day. Add to that the velocity at which patients are expected to move through the healthcare system today—in many cases within the same day or next day following substantial surgery—and it becomes clinically inadequate, or even dangerous, to rely on manual entry.

HIT systems that comply with IHE specifications can automate many manual data entry processes. IHE Profiles lay out in a very simple, structured way how the data should move from any device to any other device, or from a device to an EHR system and back to a device. This framework also contributes fundamental infrastructure capabilities such as ensuring consistent time stamping among all devices, which becomes crucial when results from different systems over time are being combined to chart time-sensitive trends.

These profiles not only automatically capture documentation from patient care devices but also help supply accurate information to the devices as nurses are using them. An EHR should be able to provide directly to the device all the information about the order, such as medication orders for an IV infusion, which saves a step and can ensure accuracy. The nurse simply has to double-check that it’s the right drug, the infusion rate is correct and so on. When completed, the infusion result is automatically sent to the EHR to be documented in the record.

Certification Promotes IHE in Devices

Even though the ONC does not require medical-device integration—and manufacturers thus don’t have the incentive prizes and prods that EHR vendors have—providers are under enormous pressure to improve their quality and efficiency and also plan for bringing as many as 30 million more insured Americans into a system trying to do more with less. IHE USA Certification is a vehicle to raise awareness of the efficiency-producing, cost-saving potential of direct device-to-EHR integration, and to increase visibility of devices with standardized interfaces.
Some manufacturers are striving to incorporate the full integration potential of IHE Profiles, and several patient care devices were among the first set of products to be IHE USA Certified in July 2013. IHE USA Certification can help organizations build a roadmap to an integration strategy, identify their product options, and instill confidence that the IHE Profiles are solidly locked into the operation of the products that providers purchase.

Absent that connectivity, healthcare organizations are faced with cobbling together interfaces one device at a time to achieve integration with their EHR system. If the IHE Patient Care Devices technical framework is not incorporated into the device replacement cycle, providers will not efficiently grow and expand an ecosystem that works together across multiple IT systems and venues of care.

Profiles for Analysis, Coordination

As other IHE domains are added to IHE USA Certification, they will address integration issues rising in importance with new industry demands to aggregate and use data to achieve new objectives. The Patient Care Coordination domain specifically addresses sharing of patient information among different providers throughout a patient’s life span or across different health problems in specialty areas. The Quality, Research and Public Health domain enables HIT systems to support secondary uses of clinical data, facilitating clinical research, public health surveillance and improvement of patient outcomes.

The central problem with sharing and analyzing diversely created data in many disparate IT systems is the lack of standardization at the data element level. The IHE Profile development process has contributed to and leveraged industry efforts to create a summary with standardized data, so when a patient moves from setting to setting, data elements are consistent for blood pressure, monitored vitals and so on. Those data can be aggregated based on ground-level standards and elicit trends and measurement of outcomes. The summary component is available today in IHE specifications.

This key advance was a collaborative effort between IHE, Health Level Seven and the Health Story Project to merge several precursor summary documents. The resulting specifications in HL7’s Consolidated CDA, or C-CDA—part of Meaningful Use Stage 2—enable exchange of summary data at the element level.

In addition, comprehensive patient care requires integration of information from medical specialties, such as Radiology, Laboratory, Cardiology, Eye Care and Dental, all IHE Domains. IHE’s roots go to Radiology, where those specialists wanted to make sure their workflow was governed by standards. They were concerned about patient safety as they entered data separately and differently in each of the different imaging modalities. Once islands unto themselves, systems such as CT, X-ray and ultrasound employ standardized transactions with departmental information systems and image storage systems (PACS) because of longstanding IHE Profiles.

Effective interoperability with diagnostic specialties also is important for generalists, who have to deal with radiology, laboratory, cardiology results and other sources of information to get the big picture. Without standards for specialty data movement that are integrated into the IT ecosystem, there are pockets of data value that aren’t accessible. Consequently physicians are not able to see everything about a patient so they can make the right decision at the right time.

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4 See the ICSA Labs IHE USA Certified Products directory: [https://www.icsalabs.com/products?tid[]=4965](https://www.icsalabs.com/products?tid[]=4965)
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Value for Vendors

Originally developed to guide a base level of interoperability, IHE Profiles now are being relied upon to increase the ability of information within EHRs to be applied to analysis of clinical outcomes, trends in treatment, research and public-health vigilance. At the next level of data sharing, health information organizations are establishing themselves as platforms for population health initiatives, not just to facilitate document or message exchange.

For example, at InterSystems Corp., a product called HealthShare has fully incorporated IHE specifications for exchanging clinical documents, managing patient identities and enforcing consent preferences, among others—and has the certification mark to prove it. “The IT Infrastructure Domain is essential to our ability to function as a health information exchange,” says Matt Spielman, InterSystems’ product specialist for IHE and CDA interoperability in HealthShare.

“It is the language by which we communicate with the edge systems that send and receive data from us,” he explains. “Without IHE Profiles, it would be a much more complicated job to really set up new health information exchanges in HealthShare and effectively interoperate with all the disparate EHR systems that are participating in that exchange.”

The success of cross-enterprise data exchange hinges on setting up interface connections ably and quickly, and the use of IHE Profiles “has definitely increased the ability to roll out these interfaces more rapidly.”

At Greenway Medical Technologies, the full use of IHE Profiles has kept its IHE-Certified PrimeSUITE EHR capable of document interoperability as the product continues to be upgraded and expanded to meet industry demands.

“These profiles, historically via testing at Connectathons and certainly through the new Certification exercises, further the sets of standardized mechanisms to exchange data with,” says Justin Barnes, Greenway’s vice president for industry and government affairs. “That way we and our colleagues don’t have to continually reinvent the wheel in order to provide consistent and connected patient care. And by having all of this backed by an open source community with active testing phases, these types of consensus and standardized processes expand interoperability on a national basis.”

When IHE USA Certification is added to that process, “it ensures or helps confirm that what we’ve been testing can take the next step into being focused on the EHR application workflow, to continue to determine and advance provider usability,” Barnes says. The extra rigor takes testing “from the basic Connectathon level of ‘show it’ to the more real-world level of ‘use it.’ I think certification brings that important mindset.”

For InterSystems, IHE USA Certification “differentiates us in the sense that it provides a simple and visible mechanism by which we can quantify all of the effort we put into making our product highly interoperable using standards, particularly IHE standards,” says Spielman. “So it’s not just that we went through the process to pass the tests at the Connectathon. We really are committed to this as a long-term strategy for the success of our product.”

Certification quantifies that effort better for the outside world, he adds. “When we’re doing the certification process, we’re not able to tweak and fiddle with code the way we are during the normal Connectathon, so it has to be working and functional and ready to go. It can be difficult, particularly for people relatively new to the IHE space, to have that ability to really set up a turn-key system that can competently communicate using IHE Profiles.”

Certainty for Providers

That distinction converts into time and money saved for healthcare organizations as they seek to make IHE Profiles work in their integration efforts. A lot is riding on the assumptions that providers make about the complexity and breadth of their interfacing challenges and system configurations on the basis of whether their own IT products or those of partners successfully use IHE Profiles. They would appreciate the assurance that the certified products do not require vendors to substantially customize code—at extra expense—to make them interoperable. Certification also includes
industry standard practices for post-market surveillance, to ensure that products that have been tested and certified continue to perform as expected over time. Updated products are also re-examined and issued updated certifications to ensure that any changes to the code did not impair previously tested functionality.

Geisinger Health System in central Pennsylvania has embraced the leading edge of HIT for decades, earning national recognition for the sophistication and integration of its internal clinical information network. “Now that health reform and population-based approaches to care are extending their reach outward to non-Geisinger EHRs and other clinical IT data sources, IHE Profiles are increasing in importance,” says James Younkin, Geisinger’s director of IT. “But working with vendors claiming to use various profiles is fraught with uncertainty.”

“It is not uncommon for us to have a vendor who went to the IHE Connectathon, even demonstrated in the HIMSS Interoperability Showcase,” says Younkin, “but when it comes to the production version of the software, even after upgrading their systems, we’re still finding that in their code they have developer notes that say, ‘IHE Connectathon.’ It’s not really been ‘productionalized,’ they’re cutting and pasting code tested at the Connectathon and putting it into their final version.”

The IHE USA Certification program, he says, makes a lot of sense “if there’s a way of validating that this is production-grade programming and that it’s not just slapped in on an as-needed basis.” That’s exactly what the program does.

If a vendor earned certification for certain profiles in a product that Geisinger is seeking to work with on cross-enterprise integration, “then we would know automatically that this integration is going to go a lot smoother and faster, and therefore reduce the cost of the integration,” adds William Moore, the expert on IHE integration at Geisinger. “That would be a great help, because some say they have these things and when you start connecting with them, you find out they have a lot of it, but then there are things that are not ready for production. Then we’re stuck waiting for the next version to come out so we’ll be able to fully make use of the integration profiles.”

Moore says he hasn’t yet run across a vendor’s IT product that fully incorporates all the available IHE Profiles that pertain to its functionality, but what’s most important is not that they can do it all, but that IT professionals know beyond

**Data Exchange Hinges on Automating the Receiving End**

The future of data exchange is not only standards-based but automated. That means the ability of different types of data to be recognized, routed and incorporated into a receiving EHR as a matter of course. By populating a patient record with new medications, problems, lab values and other elements, the result is more informed and up-to-date decision support.

“Like many of our colleagues in the industry, we started with more of a manual process of data exchange requiring more user involvement but now are migrating into automated workflows.”

– Justin Barnes, Greenway

IHE Profiles “certainly create a well-tested level playing field,” says Greenway’s Justin Barnes. “Right now our provider customers and industry standard-bearers like ONC are expecting standards-based interoperability to become a widespread reality around query and retrieve, and we’re seeing these use cases being supported by the Electronic Health Record Association, the CommonWell Health Alliance, the eHealth Exchange and any number of HIEs.”

“Like many of our colleagues in the industry,” says Barnes, “we started with more of a manual process of data exchange requiring more user involvement but now are migrating into automated workflows as we continually understand how providers are interacting with their interoperability capabilities.”

For example, the exchange option XDR “is a profile for sending data directly from one system to another,” he says. Other profiles, meanwhile, can focus on centralized data that can be sent to an HIE network, for example. “They all share the same metadata structure, which describes the payload inside the transport. All of these are IHE Profiles we can pursue and that factor into IHE Certification.”

The CommonWell Health Alliance, of which Greenway is a founding member, has established its functionality around the XCA (Cross Community Access) Profile, which then can merge with the transport being used by the eHealth Exchange, the successor to the federally initiated Nationwide Health Information Network. “So by noting all this, you can see how interoperability can expand nationally via IHE Profiles,” says Barnes.
a doubt which profiles they are provably capable of using. In the IHE USA Certification program, vendors declare before the testing begins which of the profiles they are seeking to certify.

The specific identification of profiles for which a product is certified makes the process pragmatically valuable, he says. “If you could go to a list and be able to say, ‘They’re certified in this, this, this and this, but not this, this and this,’ then that sets our expectations as to how we connect with them and how useful they are (to the integration effort).”

**Certifiably Possible**

Interoperability in healthcare is a never-ending challenge, driven ever forward by the advance of expanding demands for information-sharing beyond the next milestone in integration that the industry labors to attain during its continual push forward to better use of technology. IHE Profiles feed and sustain that drive for interoperability in its many permutations, and address new and evolving use cases for EHRs and an array of other IT-enabled care.

This drive will not succeed, however, unless ample attention is paid to incorporating the exactness necessary to uniformly implement those IT standards that have been developed to make integration simpler, quicker and reliable. Nothing new needs to be invented. The elimination of integration barriers rests at the outset on carrying through with existing, precisely designed IHE Profiles developed by domain experts to address real clinical need.

Support for an IHE Profile doesn’t mean automatic interoperability, of course. But it greatly shrinks the gap between two unlike IT products in their approach to integrating and exchanging information, from a disparate initial state to being functionally interoperable. Widespread certification of IHE Profiles by vendors, and demands for such certification by their customers, will build a platform for integration advancement in the real world of HIT.

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**Attributions**

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