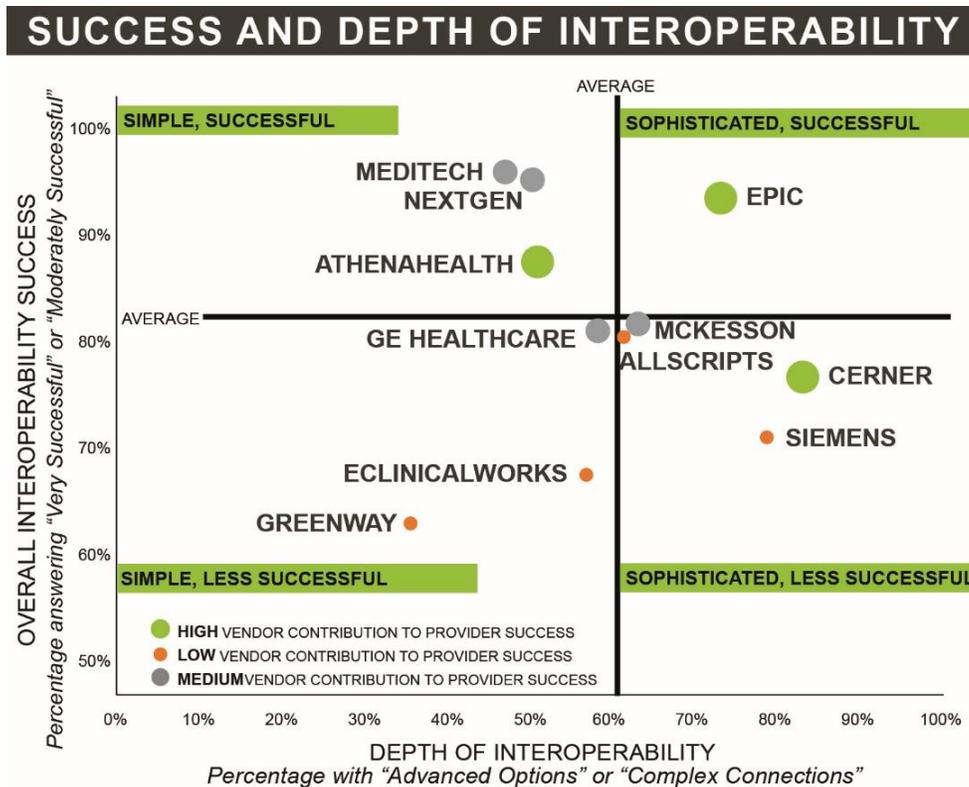


Epic Interoperability

Interoperability—the ability of different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged¹—helps to provide comprehensive patient information in an electronic health record. Epic enables the secure flow of patient data between Epic sites and between Epic and other vendors’ systems. We accomplish this in three ways: 1) Care Everywhere, Epic’s patient record exchange platform 2) interfaces, and 3) application programming interfaces (APIs).



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Source: “EMR Interoperability 2014”, KLAS Enterprises, September 2014

Patient record exchange between healthcare organizations

Care Everywhere is Epic’s standards-based patient record exchange platform and uses the Consolidated Clinical Document Architecture (C-CDA) as required for Meaningful Use Stage 2 certification.² Epic installed Care Everywhere in all versions of its EpicCare EHR software in use so that 100% of customers who are live with EpicCare also have the ability to exchange patient records.

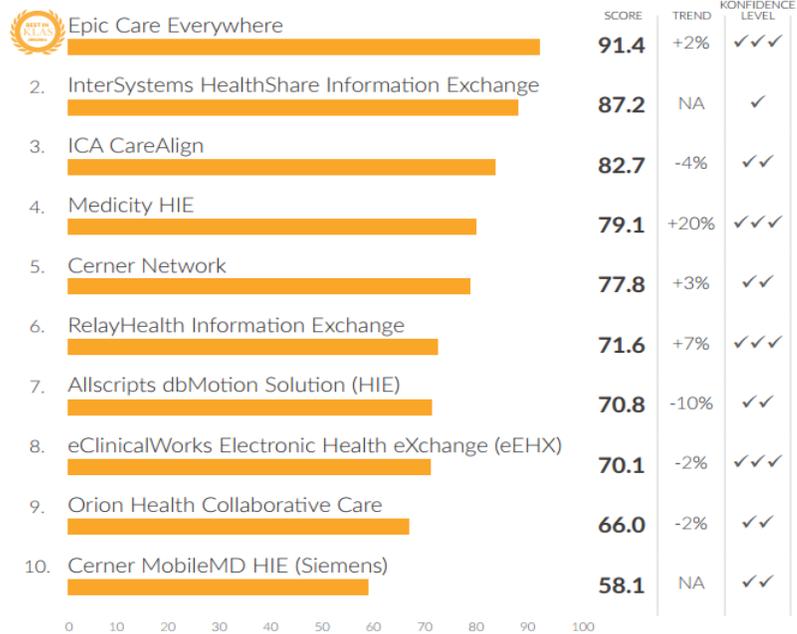
Care Everywhere is available to **436,726 providers at over 1,183 hospitals and 33,989 clinics**. These organizations cover a patient population of approximately 183 million—**over 56.5% of the U.S. population**.

¹ HIMSS Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations, 2nd Edition, 2010
² Full Meaningful Use Stage 2 certification details are available at <http://www.epic.com/software-certification.php>

Organizations using Care Everywhere make up the largest EHR-based exchange group in the United States³, exchanging **1.25 million patient records a day** with each other and with over 10,000 other organizations.⁴ This includes healthcare providers using other EHR systems, Health Information Service Providers, Health Information Exchanges, and entities connected to the eHealth Exchange like the VA, the Social Security Administration and the DoD. According to the Sequoia Project, “Organizations using Care Everywhere exchange more records with the VA than any other vendor.”

Care Everywhere is ranked the #1 HIE by healthcare organizations surveyed by KLAS Enterprises.⁵

HOW DO VENDOR SOLUTIONS **COMPARE?**



Source: Year-end Best in KLAS 2015, KLAS Enterprises © 2016 KLAS Enterprises, LLC. All Rights Reserved. www.klasresearch.com

Care Everywhere connects with these vendors

Connections to other systems are growing as more organizations on different vendor systems are able to meet Meaningful Use Stage 2 exchange requirements.

- | | | | |
|---------------------------|--------------------------|-----------------|---------------------------|
| ACS/Xerox | eClinicalWorks | MedAction Plan | Quest |
| Agilex | eHealth Data Solutions | MedAllies | Redox Engine |
| Allscripts | Evolent | MedFX | RelayHealth |
| athenahealth | GE/Caradigm | Medicity | Rhapsody |
| Care Connected Enterprise | Greenway | MEDITECH | Sandlot Solutions |
| Care 360 (Quest) | Harris | MedSleuth | Secure Exchange Solutions |
| CareEvolution | HealthFinch | Mirth | Soarian Clinicals |
| CareFusion | HealthMyne | MobileMD | SSA |
| Carequality | Iatric Systems | Mosaiq | Surescripts |
| Catalyze | Infor | Moxe | Surveyor Health |
| Cerner (EHR & HIE) | ICA | Netsmart | Team of Care |
| Certify | Inpriva | NextGen | Tiani Spirit |
| CONNECT | Intelligent Healthcare | NITOR | Truven |
| Covisint | InterSystems | NoMoreClipboard | VA Vista |
| Curaspan | Logician | OptumInsight | Verinovum |
| DataMotion | Magellan Health Services | Orion | VITL |
| dbMotion | MaxMD | Partners EHR | Wellcentive |
| Diameter Health | MDLive | Pearl | ZirMed |
| DoD AHLTA | MDI Achieve | Qvera | |

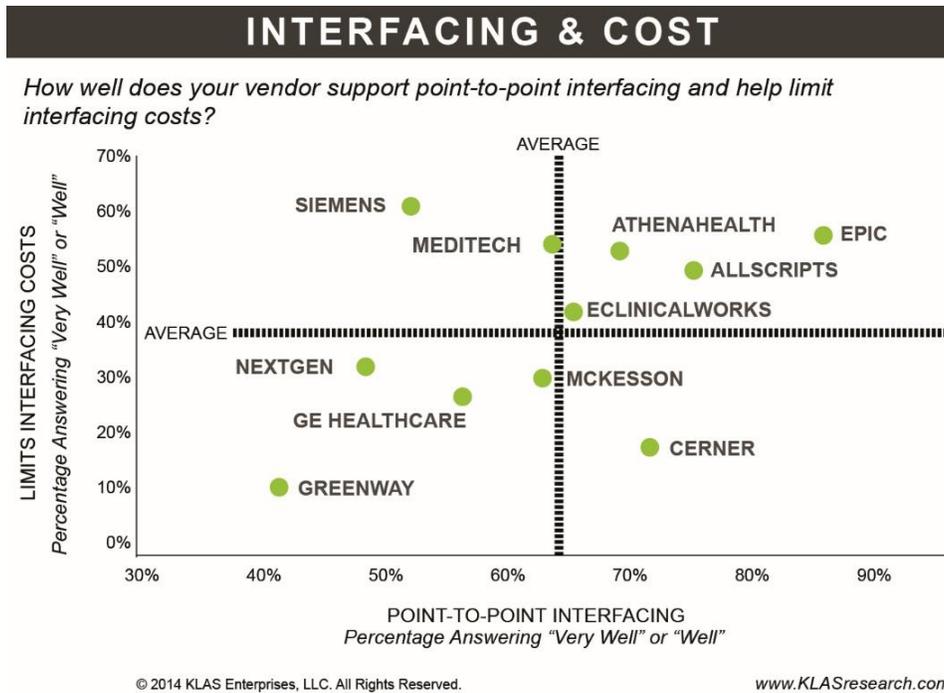
³ Based on Epic’s physician and patient footprint as well as a review of exchange numbers published or supplied by other EHR vendors, the Surescripts network and Healthway. Epic customers are the largest e-prescribing vendor community according Surescripts and Epic customers exchange more with the VA than any other vendor according to Healthway.
⁴ Exchange numbers are from October 2016. Care Everywhere customers exchange with each other and 10,000 organizations that use other vendors.
⁵ Year-end Best in KLAS 2015, KLAS Enterprises

Interfaces between products

With over 35 years of experience creating and maintaining connections to other vendor systems, Epic has one of the largest libraries of existing interfaces⁶. Each year, billions of data transactions happen between Epic and 700+ other systems through 14,000+ standards-based interfaces.

Along with our interfaces we supply Bridges™, an interface development and runtime toolkit that allows customers to write new interfaces and enhance/modify existing ones as well as efficiently maintain and monitor all the Epic interfaces they use.

These interfaces allow healthcare organizations to connect with other vendors and outside groups such as pharmacies, specialty and immunization registries, and lab systems. Connections to outside agencies include public health agencies, research societies, research registries and 52 out of 55 of the nation’s immunization registries. According to a KLAS survey of healthcare organizations in 2014, Epic customers rank us the highest in the ability to support interfacing and keep interfacing costs low.⁷



Source: "EMR Interoperability 2014", KLAS Enterprises, September 2014

Device integration between products

We connect with hundreds of bedside monitors, biometric devices, and home monitoring devices such as Withings home scales and Fitbit activity monitors. Data from these devices files to the patient’s Epic record, so it is visible to clinicians and care managers for review and decision support in combination with other clinical data. We partnered with Apple on Apple HealthKit, allowing MyChart for iPhone users to upload health and fitness data to Epic’s clinical system using HealthKit-supported wellness apps and devices. Similar integration is planned for the recently announced Google Fit.

⁶ We offer interfaces that are compliant with HL7, ANSI, DICOM, XML, NCPDP, and other standards and can support interfaces that are either real-time or batch, one-way or bi-directional, point-to-point or mediated by an interface engine.
⁷ "EMR Interoperability 2014", KLAS Enterprises, September 2014

APIs and developer support

For third-party application providers and device manufacturers, the **open.epic** initiative speeds the connection process to Epic’s systems through public documentation, application programming interfaces (APIs), and online testing tools. Epic provides public test harnesses for third party developers to test their integration using FHIR © (Fast Health Interoperability Resources) at <http://open.epic.com/Interface/FHIR>.

Epic offers hundreds Web services and APIs for healthcare organizations to create add-ons, extensions, and new functionality. We also offer them the same tools that we use to develop our systems, as well as training for developers and access to source code. Epic applications receive over 300M web services calls each month.

National interoperability participation

Standards organizations like HL7 and public-private collaborations like the Sequoia Project’s Carequality (<http://sequoiaproject.org/carequality/>) are helping to accelerate national interoperability between multiple platforms. Carequality is the industry’s broadest coalition of over 50 healthcare organizations, pharmacies, payors, vendors, and providers working together to build an ATM like network for healthcare information exchange. In early April 2015, Carequality released their national interoperability framework⁸ that included trust policies, implementation-level functionality, standards-based technical and testing requirements, and operational practices for faster inter-network connectivity. Epic was one of the first adopters of the framework along with athenahealth, eClinicalWorks, HIETexas, NextGen and Surescripts. The first Carequality connection went live in July 2016 between Epic and athenahealth covering 302 clinics, 24 hospitals and 5,082 providers in one state. Expansion of Carequality participation has been rapid. By October, the network included 40 states and 6 vendors--the number of clinics increased 4,000%, the number of hospitals increased 2250% and number of physician increased by 3300%.

The HL7 Argonaut project is a multi-organization initiative dedicated to supporting rapid development and deployment of the FHIR standard by May of 2015. FHIR is a “RESTful API, which is an approach based on modern internet conventions and widely used in other industries. FHIR is a significant advance in accessing and delivering data while offering enormous flexibility. For patients and providers, its versatility can be applied to mobile devices, web-based applications, cloud communications, and EHR data-sharing using modular components”.⁹



⁸ Leigh, “Carequality Introduces Trust Principles for Secure Interoperability among U.S. Data Sharing Networks” April 6, 2015, Carequality, <http://healthwayinc.org/carequality-news/carequality-introduces-trust-principles-for-secure-interoperability-among-u-s-data-sharing-networks/>

⁹ “HL7 Launches Joint Argonaut Project to Advance FHIR” December 4, 2014 HL7 International