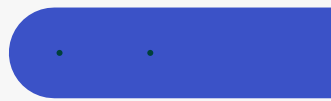
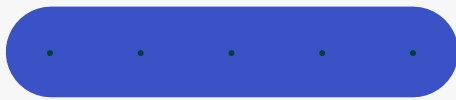


Level the Playing Field for Interoperability With Particle for Platforms





This white paper discusses the following:

- An overview of the current state of interoperability
- What are the technological barriers to interoperability?
- What prevents organizations from investing in interoperability?
- How Particle for Platforms addresses the five technological and business obstacles to true interoperability.

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Introduction

Federal regulations and technological advances have come together to make interoperability table stakes for today's healthcare organizations. Unfortunately, organizations with limited resources face a series of obstacles in connecting to the health information networks (HINs) that make interoperability possible.

With Particle for Platforms, Particle Health aims to give platform vendors and their clients an onramp to interoperability with a single application programming interface (API) to connect to all HINs, along with additional valuable data sources previously unavailable to them. By doing so, Particle Health is helping to level the playing field and enabling vendors to shift interoperability from a costly liability to a competitive asset.



Interoperability is in the spotlight

Healthcare's struggles to exchange information – among different organizations, within the same organizations, and even within the same technology tools used in the same organization – have been well documented and often derided. These struggles contribute to inefficient and ineffective care, costing patients and taxpayers money and contributing to poor health outcomes.

That said, the industry seems to be turning the corner. With the signing of the 21st Century Cures Act in 2016 and the release of the Cures Act Final Rule in 2020, there is now much more attention on interoperability and data sharing.

- **The Trusted Exchange Framework and the Common Agreement (TEFCA)** have provided healthcare organizations with an onramp for joining HINs that abide by agreed-upon expectations to enable the secure sharing of basic clinical information.
- **The Final Rule** also shines a spotlight on [information blocking](#), which as of Oct. 6, 2022 now comes with a potential noncompliance penalty of up to \$1 million. The rule's goal here is twofold: Improve interoperability while also enabling patients to access their health data.

Rulemaking isn't solely responsible for the interoperability push. The healthcare technology ecosystem has theoretically made it easier than ever before to share information. Adoption of the Fast Healthcare Interoperability Resources API ([FHIR API](#)) enables EHR systems and other applications to request and send information, and then to feed it into clinical workflows at the point of care. At the same time, the emergence of the data platform makes it possible to aggregate, store, process, and govern previously disparate data sources in one place.

The operative word is theoretically, however. There are five sets of challenges holding back true information sharing. Three are related to the technology that most healthcare organizations use today, and two are obstacles that healthcare IT vendors often face in their efforts to support interoperability.



The technology problems: Interoperability is easier said than done

To borrow a phrase, regulatory requirements about improving interoperability have led the healthcare industry to the water, but there are still some technological barriers in place that make it difficult to drink. As a result, vendors and provider organizations alike find it difficult to reap the full benefits of interoperability as government regulations have intended.

Challenge #1: Different HINs, different structures

At the moment, there are three national HINs in the United States: Carequality, CommonWell, and eHealth Exchange. Each is uniquely structured, and each serves a different constituency, with Carequality and CommonWell representing vendors and the eHealth Exchange representing providers and health information exchange (HIE) entities.

In other words, true, end-to-end interoperability requires working with all three HINs. That means signing an operating agreement, standing up an endpoint to send and receive queries, maintaining ongoing operations to ensure an always-on connection with the HIN, and paying membership fees. In each case, this process can take several months and cost upwards of \$250,000 – and it must be done three times.

But wait. There's more. The Cures Act also set in motion the process of designating Qualified HINs as a way of further standardizing and harmonizing information sharing. The Sequoia Project, which is coordinating TEFCA on behalf of the Office of the National Coordinator for Health IT (ONC), began accepting applications from prospective QHINs in October 2022. It's unclear when QHINs will be named, or how many there will be – but it's not unreasonable to expect that establishing connections to HINs will get more complex in the near future.



Challenge #2: Data is rarely easy to read

One primary drawback to efforts to promote interoperability is the heavy emphasis on exchanging information as it exists within an EHR system. Most commonly, this information is in the Consolidated Clinical Document Architecture (C-CDA) format. This poses a challenge for a few reasons:

- A C-CDA document is basically a giant XML file. It was never designed to be ingested by other software applications.
- Every clinical encounter results in the creation of a new C-CDA. Even for patients who infrequently visit the doctor, this generates a significant amount of information.
- With so much information on hand, it's difficult for a provider to know which file is the most relevant when making a query. Last week's cardiology appointment, for example, may have an irrelevant podiatry procedure from 2002 stacked on top of it.
- A provider or vendor attempting to surface the right piece of information to clinical staff at the point of care faces a monumental task.
- Notifying clinical staff every time a new C-CDA document has been received only increases alert fatigue and contributes to frustration with technology.

Challenge #3: Queries are tough for providers – and a nightmare for vendors

Each HIN – and presumably each future QHIN – requires that a query for patient records originate from a clinician; they also require all queries to be documented. This is certainly understandable from the perspective of protecting personal health information (PHI), but it also adds a layer of complexity to the querying process, as only certain individuals within the provider organization can make a query.

If it's hard for providers, it's much, much harder for vendors. That's because the process requires vendors to maintain a list of every customer they serve, every endpoint at every customer that can be queried, and every query that has been made. It's not uncommon for a vendor with only 20 provider customers to have more than 1,000 endpoints to manage and maintain. This is a significant operational expense – and it may leave a vendor with limited resources to take on more strategic initiatives.

Key Takeaway

Not just any API will do

A FHIR-enabled API on its own doesn't immediately make a health IT solution "interoperable." It's important for vendors to consider the right API – one that facilitates exchange among multiple HINs, is capable of making raw data searchable, and does the heavy lifting of maintaining customer and endpoint lists.

The business problem: The juice isn't worth the squeeze

Vendors in healthcare IT want to be interoperable. It's good for their business, and it's good for the patients that their customers care for. The issue is that supporting interoperability on a scale large enough to encourage business growth unfortunately isn't always worth the investment. When the juice isn't worth the squeeze, vendors have a hard time making a business case for supporting interoperability.

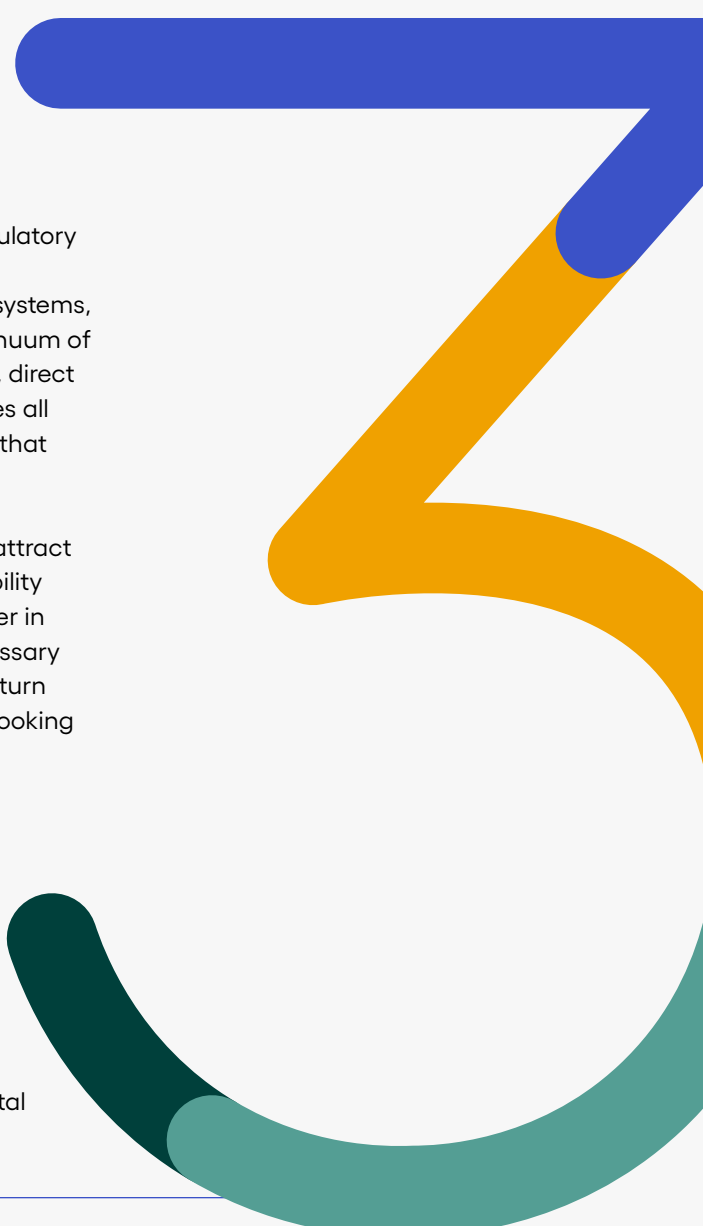
Challenge #4: Smaller EHR vendors are shut out

Yes, three large vendors have approximately two-thirds of the ambulatory EHR and inpatient EHR markets, according to data from Definitive Healthcare. At the same time, there are hundreds of certified EHR systems, and the market is only poised for additional fracturing as the continuum of care further extends outside the hospital. For example, urgent care, direct primary care, behavioral health, and many other medical specialties all have specific clinical documentation, coding, and reporting needs that traditional EHRs may not be able to meet.

Smaller EHR vendors face a difficult dilemma here. Their ability to attract provider clients and achieve continued growth depends on their ability to connect to HINs, as it elevates their value proposition as a partner in true coordinated care. Unfortunately, acquiring the resources necessary to facilitate connections to HINs requires revenue growth, which in turn requires new customers. This leaves these vendors on the outside looking in, and it makes market penetration that much harder.

Challenge #5: Point solutions lack a starting point

A point solution is defined as a product or service that delivers on one, singular value proposition for an organization. The rapid pace of digital health innovation has blessed the market with a range of data sources that traditionally haven't been included in HIN feeds but nonetheless can inform and improve patient care. The list includes (but by no means is limited to) condition management programs, remote monitoring devices and sensors, applications collecting patient reported outcomes (PROs), and digital therapeutics.



Like smaller EHR vendors, though, companies making these point solutions typically lack the resources to make HIN connections. Plus, they face additional hurdles:

Given the nature of the data they collect and the purpose they serve, these applications often leverage a different class of specialized EHR systems that face the challenges discussed above.

- Point solutions don't always know the best time and place to surface their valuable insight at the point of care. Even the slightest disruption to a clinical workflow will make adoption of a point solution all but impossible.
- The volume of data generated by a single point solution – say, for managing the health of the 0.2% of Americans with end-stage kidney disease – is far too small on its own to otherwise be of interest to larger EHR vendors, providers, or HINs.

Key Takeaway

Clinical outcomes will suffer

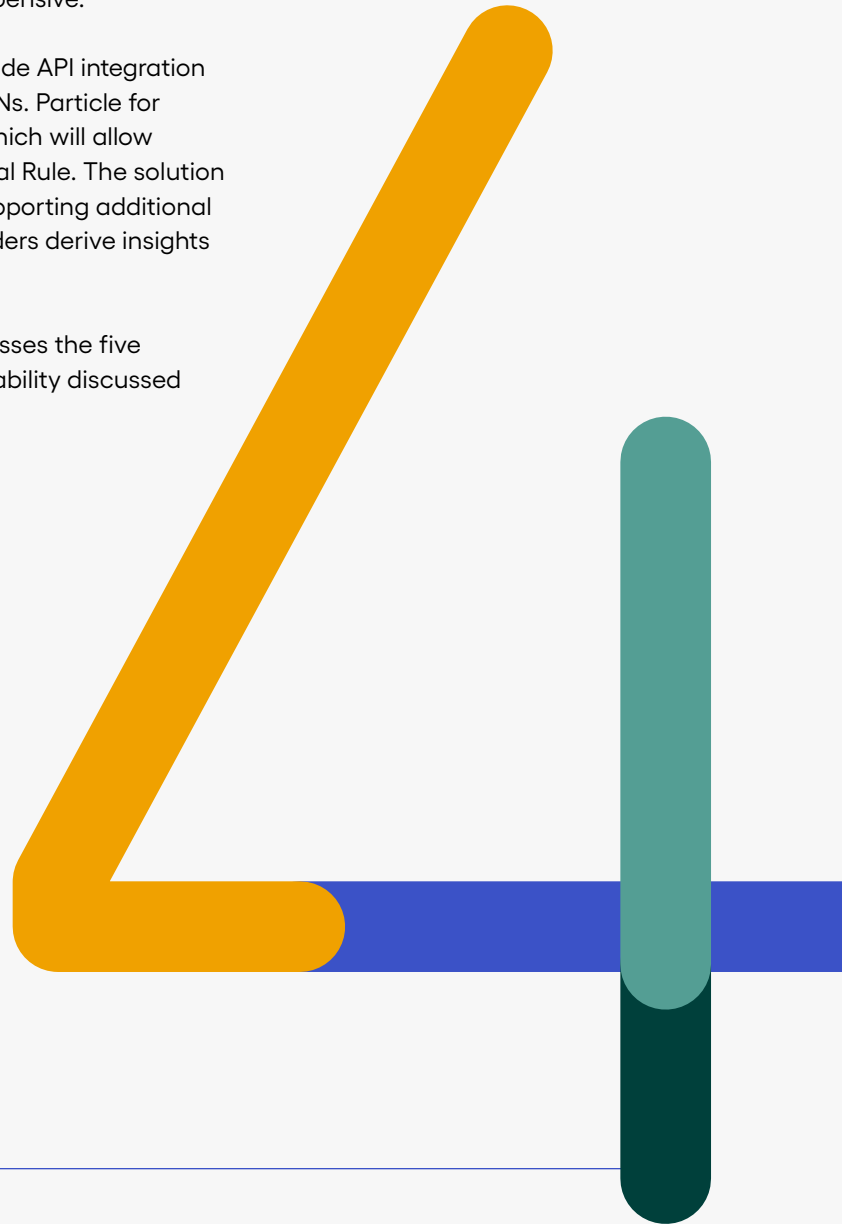
One of the primary selling points for interoperability is the ability for information to “follow” patients throughout the continuum of care. But when critical points in the continuum of care are missing, whether it's medical specialties or remote monitoring applications, then interoperability doesn't live up to its potential – and clinical outcomes suffer.

How Particle for Platforms enables true interoperability

This is where Particle for Platforms enters the picture. Particle Health understands the stark realities of interoperability in healthcare: Providers expect access to longitudinal data, but the integrations that make this access possible are complex, time-consuming, and expensive.

At its core, Particle for Platforms is a single, platform-wide API integration that facilitates connection with all three nationwide HINs. Particle for Platforms enables bidirectional information sharing, which will allow vendors to meet the requirements of the Cures Act Final Rule. The solution goes above and beyond federal regulations, too, by supporting additional data types and adding an analytics layer to help providers derive insights from data that has been locked up in messy XML files.

Here's a closer look at how Particle for Platforms addresses the five technological and business obstacles to true interoperability discussed above.



Solution #1: Connecting to multiple HINs through one integration

Not only is Particle for Platforms a single API; it's also a single contract and a single, usage-based bill. And not only does it connect to Carequality, CommonWell, and eHealth Exchange; it's optimized to connect to QHINs once they're approved and it connects to additional data sources such as admit, discharge, and transfer (ADT) feeds and pharmacy feeds. It's now possible to establish these critical connections without months of engineering work and hundreds of thousands of dollars of sunk costs. Particle for Platforms' direct connections to the national networks also highlights the importance of the "full interoperability stack", meaning there are no vendors playing the middleman. When organizations developing interoperability solutions depend on suppliers to facilitate network connections, it drastically restricts their ability to manage things like the infrastructure and how they query.

Solution #2: Providing usable data

Particle for Platforms recognizes that there's little benefit to sharing clinical data if providers can't gain insight from it. That's why the solution is designed to make raw data from C-CDA files available, and then convert data to the FHIR standard so it's ingestible. This has two key benefits for providers: Data is searchable, which means clinicians no longer need to comb through C-CDA files for the tidbits of information they need, and it's in a format that supports analysis to identify business opportunities or patient populations with unmet needs.

Particle for Platforms also has the ability to transform data even further by providing curated datasets for specialty care. Specialists face a particular problem in searching patients' longitudinal records: Even after all the data has been normalized to FHIR standards, there's still a lot of information that isn't applicable to an individual specialty provider. Queries take a long time to run, forcing patients and providers alike to wait, and false positives are unfortunately all too common. Curated datasets include only the most pertinent information for seven different medical specialties. Data is refined using clinically-validated codesets to highlight relevant labs, medications, procedures, and diagnoses. This separates the signal from the noise for specialty care, allowing for more meaningful and valuable decision support at the point of care, and enabling platform companies to provide a value-add service that differentiates them in a highly competitive market.

Solution #3: Making interoperability accessible

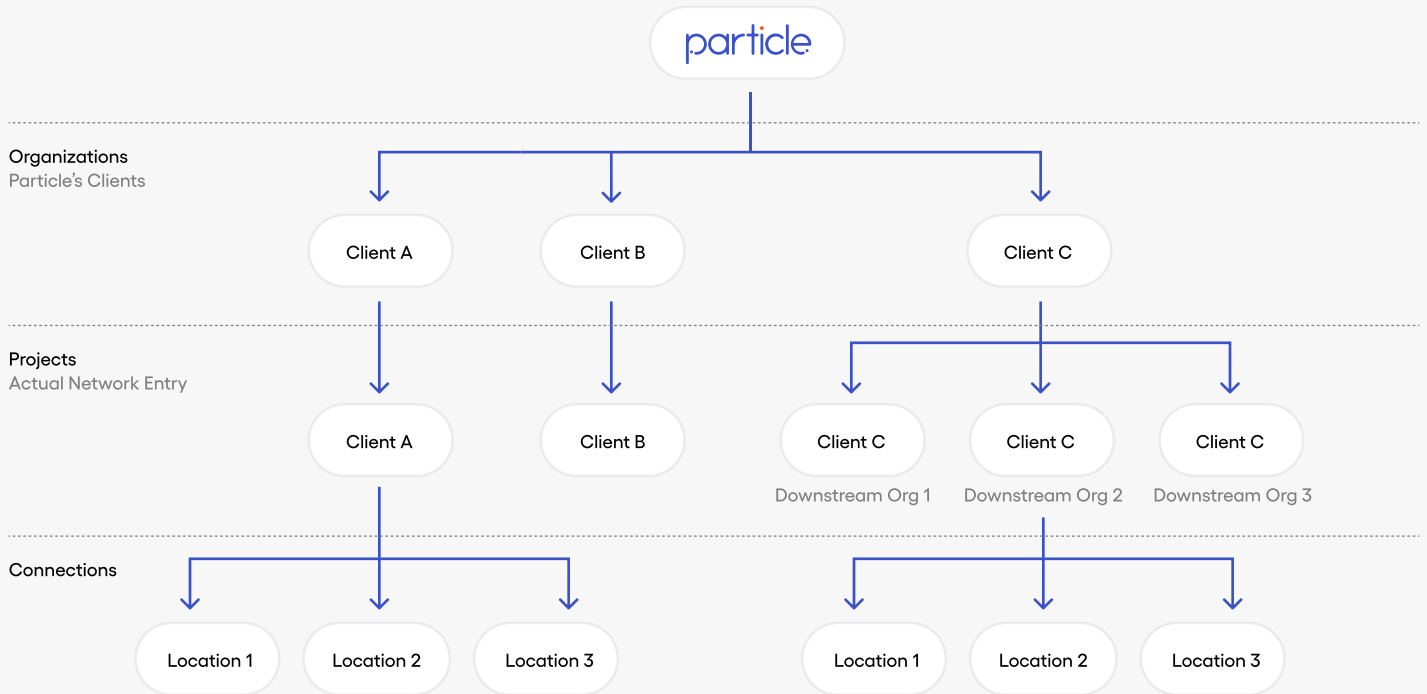
Under the Cures Act Final Rule, interoperability is now table stakes for healthcare organizations. Particle for Platforms levels the playing field for existing vendors and lowers the barrier for entry for vendors that are new to the market. Instead of spending valuable resources on interoperability infrastructure, these vendors can invest in interoperability as a competitive advantage – for example, by leveraging Particle for Platforms to build point-of-care decision support tools unique to the market segments they serve.

Solution #4: Making it easy to get started

Particle for Platforms offers a single API – and not a never-ending series of custom integrations – to connect point solutions to the healthcare data ecosystem. Any digital health solution addressing a pain point in the patient journey can now connect to national HINs, and that solution’s data (and the value it adds to the patient record) can move freely. This connectivity has a broader benefit as well, as it enables providers to build a critical mass of best-of-breed solutions that they know are ready to exchange meaningful data out of the box.

Solution #5: Handling query attribution

Platform companies do not have direct treatment relationships with patients, but their customers do. Since the networks require queries to be attributed to the entity with the direct treatment relationship, platform companies must define a hierarchical relationship between themselves and their customers, and attribute each query they make to a specific customer. Particle for Platforms provides platform companies with the tools they need in order to do so. The relationship between Particle Health, organizations, projects, and connections is outlined and defined in the diagram below. The Particle for Platforms API has been written to automatically include end-user information, such as National Provider Identifier (NPI), to an organization’s HIN queries. In addition, Particle for Platforms will take care of query attribution, query reporting, advanced record location services, network directory management, and credential management – all as part of a single contract with a single bill.



Conclusion

Both regulatory bodies and market forces are increasingly demanding and expecting digital health vendors to support interoperability. This is a tall order for many companies, but it's no longer optional, even if it comes with a hefty price tag and an implementation timeline of several months. Particle for Platforms has been purpose-built to help vendors plug directly into national HINs and receive data from additional relevant and valuable sources. Giving vendors a single API to manage all data connections levels the playing field in an EHR market where large players have traditionally dominated the interoperability landscape.

At the same time, Particle for Platforms ensures that providers have access to longitudinal patient data, allowing them to make more informed decisions at the point of care and leverage data for long-term clinical and business decision-making. This positions the technology vendors using Particle for Platforms to offer much-needed value-added services to the providers they serve – and to transform interoperability from a costly burden to a competitive differentiator.



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White Paper

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About Particle Health

Particle is shaping the new standard for healthcare data exchange with an interoperability API platform that delivers actionable patient data and insights to healthcare companies, in ways that efficiently tie into their existing workflows. Particle's API can bi-directionally share data for 320M+ patients, finding records on average 90% of the time, with an average of 135 records per search. Particle's data products also ensure that clinicians are not inundated with more data, but rather armed with the right data.

Learn more about Particle at particlehealth.com.