Wired for Transformation: The State of Healthcare APIs

A review of API adoption, usage, and maturity among U.S. payers, providers, and healthcare technology companies, and the transformative impact on healthcare
Executive Summary

APIs to Drive Healthcare Transformation by 2023

APIs (application programming interfaces) are sets of code that enable data transmission and shared digital services between disparate software products. In healthcare today, they are already playing a vital role in helping solve long-standing, even once intractable challenges. However, adoption has been inconsistent, and concerns remain. Meanwhile, the clock is ticking for compliance with related CMS interoperability mandates that will be enforced starting July 1, 2021.

With so many questions surrounding API use across the industry, Change Healthcare commissioned research firm ENGINE Insights to conduct a new national study to look at where payers, providers, and healthcare tech companies stand in regard to their embrace of APIs.

The study revealed that APIs are emerging as the backbone of the digital health economy and will tip the balance to become mission-critical for healthcare by 2023. In the meantime, there remain some challenges to overcome.

This ebook reports the results of this survey, offering key highlights and take-aways. Some important themes that weave throughout the survey results include:

- APIs are recognized as mission critical or at least quite important to organizations’ business strategies
- Concerns about technical skills gaps, security, cost, and competing industry standards remain, and are hindering the industry from realizing the full transformative potential of APIs
- Adoption is inconsistent, with more than half of providers using APIs at scale as consumers, but payers lagging far behind
- Although there’s closer parity among payers, providers, and HIT vendors as API producers, it’s mostly for internal use
- API use and maturity today remain largely tactical, but maturity is predicted to escalate sharply among all stakeholders by 2023
Research Methodology
Research Methodology

• ENGINE Insights employed a dual qualitative and quantitative research approach to analyze and understand the perceptions of APIs in healthcare.

• A multi-faceted perspective was captured by engaging healthcare providers, payers, and digital healthcare companies that support API innovation within the healthcare industry. In order to participate, respondents must be familiar with their organization’s API use and be API influencers/decision-makers.

A total of 400 quantitative surveys were completed:

<table>
<thead>
<tr>
<th>Role</th>
<th>Total (n=400)</th>
<th>Provider (n=125)</th>
<th>Payer (n=75)</th>
<th>Healthcare Tech (n=200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive</td>
<td>n=172</td>
<td>n=66</td>
<td>n=32</td>
<td>n=74</td>
</tr>
<tr>
<td>Middle Manager</td>
<td>n=195</td>
<td>n=51</td>
<td>n=38</td>
<td>n=106</td>
</tr>
<tr>
<td>Developer</td>
<td>n=33</td>
<td>n=8</td>
<td>n=5</td>
<td>n=20</td>
</tr>
</tbody>
</table>

A total of 8 qualitative interviews were completed:

<table>
<thead>
<tr>
<th>Role</th>
<th>Total (n=8)</th>
<th>Provider (n=3)</th>
<th>Payer (n=2)</th>
<th>Healthcare Tech (n=3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive</td>
<td>n=5</td>
<td>n=2</td>
<td>n=1</td>
<td>n=2</td>
</tr>
<tr>
<td>Middle Manager</td>
<td>n=3</td>
<td>n=1</td>
<td>n=1</td>
<td>n=1</td>
</tr>
</tbody>
</table>
## Research Methodology

Qualitative interview respondents spanned a mix of organization types and job roles. All purchase and build APIs.

<table>
<thead>
<tr>
<th>Job Role</th>
<th>Department</th>
<th>Job title</th>
<th>API familiarity</th>
<th>Purchase APIs?</th>
<th>Build APIs?</th>
<th>Decision role</th>
<th>Company size</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providers</td>
<td>Providers</td>
<td>Providers</td>
<td>Providers</td>
<td>Providers</td>
<td>Providers</td>
<td>Providers</td>
<td>Providers</td>
<td>Providers</td>
</tr>
<tr>
<td>Executive</td>
<td>Executive</td>
<td>Executive</td>
<td>Executive</td>
<td>Purchase APIs</td>
<td>Purchase APIs</td>
<td>Primary DM</td>
<td>Just over $1B</td>
<td>n/a</td>
</tr>
<tr>
<td>Executive</td>
<td>C-Suite</td>
<td>C-Suite</td>
<td>C-Suite</td>
<td>Purchase APIs</td>
<td>Purchase APIs</td>
<td>Primary DM</td>
<td>$100 M - $1B</td>
<td>n/a</td>
</tr>
<tr>
<td>Middle Manager</td>
<td>Information Technology</td>
<td>Information Technology</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Influencer</td>
<td>$1-10M</td>
<td>n/a</td>
</tr>
<tr>
<td>Executive</td>
<td>Middle Manager</td>
<td>Middle Manager</td>
<td>Middle Manager</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Influencer</td>
<td>&gt; $1B</td>
<td>n/a</td>
</tr>
<tr>
<td>Middle Manager</td>
<td>IT VP/Director/Manager</td>
<td>IT VP/Director/Manager</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Influencer</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Executive</td>
<td>C-Suite</td>
<td>C-Suite</td>
<td>C-Suite</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Influencer</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Middle Manager</td>
<td>Digital Product Development</td>
<td>Digital Product Development</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Influencer</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Executive</td>
<td>C-Suite</td>
<td>C-Suite</td>
<td>C-Suite</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Influencer</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Middle Manager</td>
<td>Business/Partner Dev.</td>
<td>Business/Partner Dev.</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Influencer</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Executive</td>
<td>C-Suite</td>
<td>C-Suite</td>
<td>C-Suite</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Influencer</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Middle Manager</td>
<td>IT Manager</td>
<td>Middle Manager</td>
<td>Middle Manager</td>
<td>Build APIs</td>
<td>Build APIs</td>
<td>Influencer</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

### Resources
- How Change Healthcare and AWS Marketplace Can Help
Research Findings
API Maturity: Current and Future
Widespread API maturity is on the verge of reshaping healthcare IT.

The following pages illustrate the overall industry picture of current and future API use—both as consumers and producers—for healthcare tech vendors, payers, and providers.
Maturity of API Use Ramping Up Rapidly, But Scale is Lacking

More than half of providers report consuming and producing APIs at scale. Payers lag behind, with 43% consuming and 37% producing APIs, but not at scale. This will change dramatically—with 67% of providers and 61% of payers projecting their organizations will be using APIs at scale by 2023.

### Current API Maturity

<table>
<thead>
<tr>
<th>Provider</th>
<th>As a Consumer</th>
<th>As a Producer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>53%</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>18%</td>
<td>20%</td>
</tr>
<tr>
<td>Payer</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>24%</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td>24%</td>
<td>21%</td>
</tr>
<tr>
<td>Healthcare Tech</td>
<td>6%</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>32%</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>29%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>18%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>53%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>21%</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>37%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>26%</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>24%</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td>41%</td>
<td></td>
</tr>
</tbody>
</table>

- **Base**: Provider (n=125), Payer (n=75), Healthcare Tech (n=200)
- **Q1**: Where would you place your organization on the following maturity scale for healthcare APIs?
API Maturity: Current and Future

Providers Double-Up in Maturity

Far more providers report using APIs at scale than payers or healthcare tech vendors, but payers are far outpacing the field in terms of reaching maturity.

As consumers of APIs, more providers (53%) are fully mature than payers (24%) and healthcare tech companies (29%). But 43% of payers are reaching maturity.
Explosive Growth As Consumers

Future parity among payers, providers, and HIT vendors as consumers is projected, with payers (61%), providers (67%), HIT vendors (51%) expecting to be “fully mature” by 2023.

Within three years, all three groups anticipate a substantial increase in API consumption, with more than half of all organizations (including more than two-thirds of providers) expecting to be “fully mature” in API use as consumers.

Future Maturity as Consumers

Nascent | Immature | Reaching Maturity | Fully Mature
--- | --- | --- | ---
9% | 7% | 14% | 9%
13% | 18% | 10% | 23%
13% | 18% | 10% | 23%
67% | 61% | 51% | 51%

Base: Provider (n=125), Payer (n=75), Healthcare Tech (n=200)
Q1: Where would you place your organization on the following maturity scale for healthcare APIs?
Trapped in Silos

As API producers, there’s closer parity among all segments today, but that production is most likely for internal use as an application development methodology.

Although half of providers say they are “fully mature” as API producers, and nearly two-thirds (64%) say they are “fully mature” or “reaching maturity,” more payers (68%) and healthcare tech vendors (66%) indicate being on the mature side of the curve.
Rocketing to Parity

In just three years, all three groups expect massive gains in maturity as API producers. Providers will be at 64%, payer at 65%, and HIT vendors at 59%, a clear indication that APIs will be the glue that binds healthcare together.

Nearly three-fourths of all respondents expect to be reaching maturity or fully mature as API producers within the next three years. Indeed, a solid 80% of payers anticipate being on the mature side of the curve by 2023.

As producers

Base: Provider (n=125), Payer (n=75), Healthcare Tech (n=200)
A1. Where would you place your organization on the following maturity scale for healthcare APIs?
• **Maturity of API use in healthcare is escalating quickly across all stakeholders.** This is the key to pervasive API adoption and strategic use to increase interoperability across payers, providers, and tech vendors.

• **Far more providers are using APIs at scale** than are payers or healthcare tech vendors, which could hinder payers’ ability to comply with pending ONC and CMS regulations governing interoperability.

• **Parity among payers, providers, and HIT vendors is projected by 2023.** As consumers, payers (61%), providers (67%), and HIT vendors (51%) expect to be “majority mature” by 2023.

• **As producers, there’s closer parity today but that’s most likely for internal (siloed) use,** but by 2023 providers will be at 64%, payer at 65%, and HIT vendors at 59%, a clear indication that APIs will become the glue that binds healthcare together.
Executive Perspective—Maturity and Scale

Providers, payers, and HIT vendors all expect to be producing APIs at scale within three years, and see them playing a central role in their operations.

“Until six months ago, I didn’t understand what scale would look like. Now we know that scale means sharing anything with anyone using APIs. An application here, a use case there—that’s not scale. Scale is on-demand, everything, anything, in the thousands.”

Health Plan Executive

“It’s not a matter of using more or less; it’s the quality of your APIs that makes the difference. We’d still be using them at scale, but standards-based APIs allow us to interact at scale with other entities—so interoperability becomes easier among all players.”

Hospital Executive

“They’re core to the way we do business. APIs are critical enablers. There is no Google without the internet. And for us, APIs play a very similar role.”

Healthcare Tech Executive
Research Findings

Additional Insights
Additional Insights

APIs are Essential

Payers, providers, and healthcare tech agree that APIs are mission-critical or at least quite important to organizations’ business strategies.

Strategic Importance of APIs

- **Provider**
  - Mission critical: 40%
  - Quite important: 51%
  - Nice to have: 8%
  - Not a factor: 1%

- **Payer**
  - Mission critical: 48%
  - Quite important: 41%
  - Nice to have: 11%

- **Healthcare Tech**
  - Mission critical: 38%
  - Quite important: 50%
  - Nice to have: 12%
  - Not a factor: 0%

This importance is because of the functionality APIs enable. Aspects of this functionality:

- Capabilities that “Can’t be delivered any other way.” For example, real-time communication, which is “becoming the expected standard.”
- Are or will be necessary for regulatory compliance.
- Provide “operational flexibility and business flexibility.”

Base: Provider (n=125); Payer (n=75); Healthcare Tech (n=200)

A4. How important are healthcare APIs to your organization’s strategy?
Additional Insights

APIs Boost Productivity

There is widespread agreement (40% of providers, 60% of payers, 45% of HIT vendors) that APIs boost productivity by reducing manual work and enabling transformative capabilities that are otherwise impossible. Most payers, providers, and vendors also agree that APIs improve solution quality and make patient data access “easy.”

**Productivity Impact of APIs**

<table>
<thead>
<tr>
<th>Positive Efficacy (e.g., improved productivity, improved access to data)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provider</strong></td>
</tr>
<tr>
<td><strong>Payer</strong></td>
</tr>
<tr>
<td><strong>Healthcare Tech</strong></td>
</tr>
<tr>
<td><strong>Neutral</strong></td>
</tr>
<tr>
<td><strong>Negative Convenienc</strong> (e.g., saves time/speeds up business)</td>
</tr>
<tr>
<td><strong>Negative Efficacy</strong></td>
</tr>
<tr>
<td><strong>No impact/ nothing/ N/A</strong></td>
</tr>
</tbody>
</table>

Additional Insights

APIs have a positive impact on productivity because they reduce manual work and enable what was previously impossible.
Additional Insights

Executive Perspective—Better, Stronger, Faster

“It’s a richer, more personalized experience for consumers. That comes from speed of the API and the ability to put data to work in the right place at the right time, and in the right context for the consumer. That translates into more, faster, better business decisions. You are fueling the consumer experience but, also collecting insight faster, more frequently with richer analytics. It’s about enabling cooperation.”

“Faster deployment, faster migration and cloning.”

“‘Standardized’ way of allowing local control of massive amounts of information. In healthcare, that is really important, because local control can translate to consent and privacy control. It allows for information to be generated at a population level, which is otherwise impossible to generate. So you’re getting better answers that are more diverse and representative of the population.”
### Additional Insights

#### APIs Everywhere

Virtually all respondents build APIs and purchase content/services delivered via APIs. Payers and providers build APIs for internal use, some of which are also offered to other companies. Healthcare tech companies build some APIs for internal use, some for use by others, and some for both internal and external use.

#### What APIs are Being Built For

<table>
<thead>
<tr>
<th>Category</th>
<th>For internal use only</th>
<th>To offer to other companies but not for internal use</th>
<th>For internal use and to offer to other companies</th>
<th>No (NET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider</td>
<td>51%</td>
<td>10%</td>
<td>34%</td>
<td>6%</td>
</tr>
<tr>
<td>Payer</td>
<td>35%</td>
<td>8%</td>
<td>52%</td>
<td>5%</td>
</tr>
<tr>
<td>Healthcare Tech</td>
<td>29%</td>
<td>35%</td>
<td>34%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Base: Provider (n=125), Payer (n=75), Healthcare Tech (n=200)

S9. Has your organization built any APIs to deliver healthcare content or healthcare services?
Additional Insights

Spending Set to Escalate

Most respondents report that spending on APIs will increase this year. Very few report a spending decrease. They also note that spending on APIs increases in correlation with revenues or the volume of transactions, due to scale, but that economies are realized.

Change in Spending on APIs

<table>
<thead>
<tr>
<th></th>
<th>Decrease</th>
<th>Stay about the same</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider</td>
<td>6%</td>
<td>30%</td>
<td>63%</td>
</tr>
<tr>
<td>Payer</td>
<td>3%</td>
<td>27%</td>
<td>71%</td>
</tr>
<tr>
<td>Healthcare Tech</td>
<td>4%</td>
<td>25%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Base: Provider (n=125), Payer (n=75), Healthcare Tech (n=200)

Q1: How will this year’s spending on healthcare APIs compare to last year’s spending?
Additional Insights

Knowledge Gap and Security Concerns

Surprisingly, knowledge of how to use APIs is also named as a key challenge by more healthcare tech companies than other respondents. Providers find security to be the biggest barrier, while payers find technical infrastructure a challenge. Healthcare tech companies report security, technical infrastructure, and knowledge of how to create or use APIs as leading barriers.
Additional Insights

FHIR Dominates the Future

But the jury is still out. The adoption of FHIR is fundamental to driving efficiency and scale, but there appears to be a lack of refinement that must be addressed to provide a standards-based interface. Some differentiate HL7 integrations from APIs but see FHIR as a true API standard.

Organizations use multiple standards and will continue to do so. More providers use EDI than HL7 or FHIR, while more payers (64%) and healthcare tech (61%) companies use FHIR than HL7 or EDI. Although more respondents say FHIR will dominate than EDI or HL7, EDI is a close runner up according to providers (56%).

“FHIR is the only one out there, but it’s incomplete.”

Payer Executive

“I think FHIR is going to dominate ... because it was created from within healthcare.”

Provider Executive

“I’m not holding my breath for any of the standards to be dominant.”

Healthcare Tech Executive
APIs: Seismic Shift Underway

“We, as an industry, stand on the edge of an innovation revolution—a revolution that will require healthcare organizations to strategically embrace the use of APIs as both consumers and producers. There’s no better evidence of this seismic shift than CMS’s recent and upcoming rules requiring APIs for data exchange and prior authorization. The next two years will be pivotal, with the market consolidating around data interoperability, enhanced patient experience, and operating efficiencies. The laggards risk being left behind.”

Gautam M. Shah
Vice President of Platform and Marketplace at Change Healthcare
Best Practices in API Implementation

We asked our API development experts for insights on key considerations that payers, providers, and healthcare tech organizations should weigh as they expand their consumption and production of APIs.

To Build or Not to Build

Determine what will provide core differentiation and focus your efforts there. Explore what exists before building.

- Ask yourself, why hasn’t anyone done this before? Answering this question can make sure that your differentiator is viable, feasible, and desirable. Odds are that someone has had this idea before, but failed in one of those three categories. For example: Cost transparency in healthcare is desirable, but often fails the feasibility test.

- Build vs buy: While focusing on your core differentiator, analyze existing healthcare players to see where they can plug in to enable your solution. This will allow more time to dive deep into your functionality while still ensuring you are meeting what’s required to operate in the healthcare industry.
Data Considerations
Determine your model and considerations for providing, receiving, and ingesting clinical, financial, and engagement data.

- Data is king in the 21st century. Laying the groundwork to intake, store, and extract insights from your data will pay major dividends once you reach scale.
- Become very familiar with HIPAA guidelines and the standard accreditations such as EHNAC and HITRUST. Healthcare data is among the most sensitive, and your proven compliance will be a major selling point to your customers and end users.
Five Tips Related to Pending ONC & CMS Rules

On March 9, 2020, two rules were issued by the HHS Office of the National Coordinator for Health Information Technology (ONC) and Centers for Medicare & Medicaid Services (CMS) to implement the interoperability and patient access provisions of the 21st Century Cures Act. The rules’ intent is to put the consumer at the center of their care. The CMS Rule applies to Medicare- and Medicaid-participating providers, while the ONC Rule applies to payers, providers, and healthcare tech vendors. CMS will begin enforcing these new requirements beginning July 1, 2021. The ONC Information Blocking rule goes into effect April 5, 2021.

1. Become familiar with the mandates, their requirements, and their standards, such as FHIR
2. Conduct an objective assessment of your current capabilities to comply with the mandates
3. Identify any gaps in readiness—technical, operational, resource, data
4. Determine the processes, protocols, training, etc., for providing patients/proxies easy access to data
5. Create a streamlined implementation plan with clear deliverables, resource requirements, and timelines
Frequently Asked Questions

Q What would you tell a developer who is new to using APIs in healthcare?

A Familiarize yourself with the main players in the industry (providers, payers, clearinghouses, third-party administrators) as well as the main transactions needed to succeed. What part of the patient and member experience do you want to focus on? Eligibility, claim submission, rejection/denial management, clinical data exchange, member payments, and more are all viable candidates. Spend time on use cases. What kinds of scenarios in healthcare will you see 80% of the time? What do you need to succeed? Consolidate the questions and needs, so that you can resolve them and be confident in your solution before going live.
Frequently Asked Questions

Q: What tips would you offer to better understand how to use APIs?

A: Test in a sandbox! Avoid implementing all APIs at once. Focus on the most important problem to solve first. To this end, hire a healthcare subject matter expert to escalate the project, or engage an API provider with deep expert healthcare expertise.
Frequently Asked Questions

What shouldn’t you do?

Avoid making broad assumptions. Healthcare is a large industry with many niche scenarios. There is a myriad of complexities between stakeholder interactions and transactions, as well as the types and uses of data. Take the time to test thoroughly before going live.
How Change Healthcare and AWS Marketplace Can Help
If you’re a healthcare tech start-up, hospital, insurer, or other health-focused business working to develop innovative solutions and services, you can speed the process by accessing the data, networks, and embedded functionality that power Change Healthcare’s proven solutions. To accelerate transformation in the healthcare system through the use of pervasive APIs, Change Healthcare offers clinical, financial, operational, and patient experience API products in AWS Marketplace.

Visit us at: changehealthcare.com

AWS Marketplace proactively addresses the needs of today’s healthcare organizations—improving business outcomes and helping to enhance the care they provide. Through a curated digital catalog of over 100 healthcare specific software solutions from independent software vendors, AWS Marketplace can help healthcare organizations find the software they need to innovate care and simplify procurement. Visit AWS Marketplace to learn more about Change Healthcare and AWS Marketplace’s solutions for the healthcare industry. You can also explore use cases on the Healthcare AWS Marketplace Solutions page.