FORRESTER®

The Forrester Wave™: Enterprise Health Clouds, Q3 2017

Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

by Kate McCarthy, Michael Facemire, and Alex Kramer
July 26, 2017

Why Read This Report

In our 37-criteria evaluation of enterprise health cloud providers, we identified the 10 most significant ones — ClearDATA, CloudMine, IBM, Kinvey, Medable, Microsoft, MphRx, NTT DATA, Salesforce, and SAS — and researched, analyzed, and scored them. This report shows how each provider measures up and helps healthcare CIOs make the right choice.

Key Takeaways

Salesforce, Kinvey, IBM, CloudMine, And Microsoft Lead The Pack
Forrester's research uncovered a market in which Salesforce, Kinvey, IBM, CloudMine, and Microsoft lead the pack. Medable, ClearDATA, and SAS offer competitive options. NTT DATA and MphRx lag behind.

Enterprise Health Clouds Disrupt Traditional Healthcare Information Technology Vendors
The enterprise health cloud market is growing in large part due to healthcare CIOs increasingly realizing that digital transformation is necessary to advance efforts to better engage patients. Enterprise health cloud vendors act as strategic partners to forward-thinking healthcare organizations, advising them on top digital experience creation decisions.

Seamless Systems Integration, AI, And Developer Community Are Key Differentiators
Cloud-based data insights and digital experience creation will dictate which healthcare firms will thrive. Vendors that can integrate outdated systems of record, provide cognitive capabilities, and offer access to robust developer communities position themselves to successfully deliver true digital transformation to their healthcare customers.

The Forrester Wave™: Enterprise Health Clouds, Q3 2017

Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

by Kate McCarthy, Michael Facemire, and Alex Kramer
with Alex Cullen, Matthew Flug, and Sam Bartlett
July 26, 2017

Table Of Contents

Related Research Documents

2017 Technology Imperatives For US Health Insurers

HIMSS17 Demonstrates Healthcare's Tectonic Technology Shift

Vendor Landscape: Health Clouds For Data Integration And Patient Insight

FORRESTER®

FOR CIOS

July 26, 2017

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

Enterprise Health Clouds Signal The End Of The Dark Ages Of HIT

Healthcare organizations lag behind all other industries in their adoption of digital technologies and engagement tools.[1] Healthcare CIOs prioritize regulatory requirements at the expense of digital transformation, mistakenly putting their faith in siloed systems of record vendors. After a decade of watching healthcare organizations struggle with data interoperability challenges, true tech giants and innovators are bringing their experiences from other highly regulated industries to offer a breadth of solutions. They have created a new space in healthcare information technology (HIT) with the development of enterprise health cloud (EHC) technology. EHCs make it possible for healthcare to step in to digital with platforms that solve numerous issues, including those involving interoperability. These vendors have set the stage for a healthcare future that both reduces cost and improves member, patient, and caregiver engagement in a scalable architecture.[2]

Companies Buy EHC Platforms To Resolve Insights Gaps And Enable Digital Transformation

Firms must meet industry regulatory compliance standards. EHC platforms go beyond these table stakes. They ingest data from popular electronic health records (EHR) providers and claims systems such as Cerner, Epic, and McKesson, as well as from novel data providers (wearables and social platforms, for example). EHC platforms weave data from these sources using a common data definition so that data stewards can create enterprise wide policies that comply with HIPAA Protected Health Information (PHI) requirements. They enable a clean, comprehensive data set that is ready for use across the enterprise. Enterprise health clouds help healthcare organizations become agile businesses by allowing them to:

> › **Drive patient insights with advanced analytics.** Healthcare organizations that have interoperable data in their health clouds finally get analytics that they trust. Payers and providers that embrace an enterprise health cloud can examine data from entire patient care teams as well as from social sources and wearables to stratify risks and identify vulnerable populations.[3] Providers can identify clinical trials that their patients can participate in without having to sift through countless medical records. Payers can determine which types of outreach programs and apps are most likely to engage their at-risk clients.

> › **Engage customers with applications designed specifically for their needs.** Enterprise health clouds give healthcare organizations the tools to take these valuable insights and put them into action. They provide out-of-the-box applications for crucial functions such as practice management, personal health records, and telehealth. Enterprise health clouds also offer developer tools such as JavaScript libraries and mobile software development kits (SDKs) to accelerate the development of custom-built healthcare applications.[4]

FOR CIOS

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

July 26, 2017

Enterprise Health Clouds Address Three Types Of Purchasers

While healthcare CIOs struggle with common issues, their organizations are diverse in terms of internal capabilities. Depending on the strength, depth, and size of internal development, security and risk, and business intelligence (BI) staff, EHC purchasers will find vendors that align with them based on their internal gaps. EHC vendors fall into three categories:

› **Those that enable advanced analytics with out-of-the-box capabilities.** Healthcare organizations that want a plug-and-play solution with prebuilt apps will find Salesforce, IBM, and Medable to be the optimal partners that offer advanced analytics with cognitive capabilities. These vendors provide robust cognitive-powered data visualization and analytics as well as off-the-shelf configurable applications.

› **Those that focus on a platform for custom apps.** Organizations with internal development horsepower will find Kinvey, CloudMine, Microsoft, and ClearDATA to be strong partners. These vendors offer robust infrastructure support and best-in-class security and risk tools. Healthcare organizations can partner with third parties or build their own apps and mobile tools using modern services-driven architectures to leverage these platforms.[5]

› **Those that thrive in traditional analytics.** SAS, NTT DATA, and MphRx will be good fits for organizations looking to advance their population health and data visualization capabilities by ingesting and organizing novel data. Dashboards for traditional healthcare analytics come prebuilt, and BI staff can work to build custom reports with minimal need to partner with third parties.

Enterprise Health Cloud Evaluation Overview

Forrester evaluated the strengths and weaknesses of 10 enterprise health cloud vendors to assess the state of the market and rank the vendor offerings. After examining existing research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria. We evaluated vendors against 37 criteria, which we grouped into three high-level areas:

› **Current offering.** We evaluated each vendor's current offering in the six areas necessary for an EHC to provide healthcare organizations with a holistic end-to-end experience: systems integration, patient engagement, analytics, governance, developer platform, and time-to-market accelerators.

› **Strategy.** We evaluated product strategy, go-to-market approach, supporting services, third-party ecosystem, and pricing transparency. We also conducted interviews with customers to evaluate their success with the product and outlook for the vendor's ability to support their future needs.

› **Market presence.** We evaluated each vendor's revenue, customer base, and customer acquisition and retention.

FOR CIOS

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

July 26, 2017

Evaluated Vendors And Inclusion Criteria

Forrester included 10 vendors in the assessment: ClearDATA, CloudMine, IBM, Kinvey, Medable, Microsoft, MphRx, NTT DATA, Salesforce, and SAS. Each of these vendors (see Figure 1):

› **Easily integrates with major EHR providers.** EHC vendors must be able to integrate with major EHR vendors, including but not limited to Allscripts, Cerner, Epic, and NextGen Healthcare. These records are essential, but their lack of common data definitions has made it nearly impossible to share health records across a patient's care continuum.

› **Allows enterprises to develop a 360-degree view of their patients.** EHC vendors must be able to ingest and organize a growing data set from multiple EHRs, consumer health devices, and social sharing to serve up a true 360-degree view of patient data.

› **Provides advanced analytics capabilities, including patient analytics.** EHC vendors must, on their own or through seamless third-party connections, enable comprehensive analytics on infrastructure performance, patient analytics, and other advanced analytics that healthcare organizations struggle with today.

› **Includes SDKs and APIs.** EHC vendors must supply developer environments that enable healthcare organizations to leverage ingested data to build and deploy digital apps and mobile experiences that better engage today's healthcare customer.

› **Provides data governance and access management.** Vendors must provide data quality tools and standards as well as rules for enterprise access management and audit capabilities.

› **Meets HIPAA standards for handling PHI.** Vendors must, at a minimum, be HIPAA-compliant in data handling (ingestion, storage, and deployment).

FOR CIOS

July 26, 2017

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

FIGURE 1 Evaluated Vendors: Product Information And Selection Criteria

Vendor	Product name
ClearDATA	DevOps Automation and Compliance Dashboard
CloudMine	Connected Health Cloud
IBM	Watson Platform and Enterprise Performance Management
Kinvey	Kinvey BaaS
Medable	Axon, Cerebrum, Core, Cortex
Microsoft	Azure
MphRx	Minerva Platform
NTT DATA	Enterprise Cloud/Unified Clinical Archive for Enterprise Imaging and Analytics
Salesforce	Salesforce Health Cloud
SAS	Cloud Analytics Suite

Inclusion criteria

- Easily integrates with major EHR providers

- Allows enterprises to develop a single and 360-degree view of their patients

- Provides advanced analytics capabilities, including patient analytics

- Provides software development kits and APIs for healthcare application development

- Provides data governance and access management

- Meets HIPAA standards for handling Protected Health Information (PHI)

Vendor Profiles

This evaluation of the enterprise health cloud market is intended to be a starting point only. We encourage clients to view detailed product evaluations and adapt criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool (see Figure 2). Download this tool by clicking "Save" on the following figure and then "Download XLS."
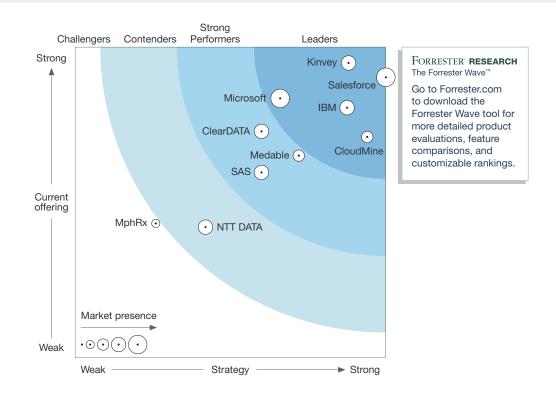
FOR CIOS

July 26, 2017

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

FIGURE 2 Forrester Wave™: Enterprise Health Clouds, Q3 '17

FOR CIOS

July 26, 2017

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

FIGURE 2 Forrester Wave™: Enterprise Health Clouds, Q3 '17 (Cont.)

	Forrester's weighting	ClearDATA	CloudMine	IBM	Kinvey	Medable	Microsoft	MphRx	NTT DATA	Salesforce	SAS
Current offering	50%	3.63	3.54	4.06	4.79	3.30	4.16	2.15	2.09	4.50	2.97
Systems integration	15%	3.20	5.00	4.10	5.00	4.10	4.10	2.30	1.40	4.80	3.00
Patient engagement	10%	3.00	3.60	3.40	5.00	4.40	3.60	3.60	3.60	5.00	3.60
Analytics	15%	2.60	2.10	4.80	4.60	4.00	4.20	2.20	3.00	4.80	2.80
Governance	15%	5.00	3.00	5.00	4.40	3.00	3.60	3.00	1.60	5.00	3.60
Developer platform	20%	3.12	2.88	4.44	5.00	2.54	4.44	2.06	1.23	4.22	2.57
Time-to-market accelerators	25%	4.35	4.35	3.00	4.75	2.75	4.50	1.00	2.35	3.85	2.75
Strategy	50%	3.00	4.70	4.40	4.40	3.60	3.30	1.30	2.10	5.00	3.00
Pricing transparency	15%	3.00	3.00	5.00	5.00	3.00	5.00	3.00	1.00	5.00	3.00
Vision	30%	3.00	5.00	3.00	5.00	3.00	3.00	1.00	1.00	5.00	3.00
Road map	30%	3.00	5.00	5.00	3.00	5.00	3.00	1.00	3.00	5.00	3.00
Alliances	25%	3.00	5.00	5.00	5.00	3.00	3.00	1.00	3.00	5.00	3.00
Market presence	0%	3.67	3.00	4.33	3.67	2.33	4.33	1.67	3.67	4.33	3.67
Product revenue	33%	3.00	1.00	5.00	3.00	1.00	5.00	1.00	3.00	5.00	5.00
Customer base	33%	3.00	3.00	5.00	3.00	1.00	5.00	1.00	5.00	3.00	3.00
Customer acquisition and retention	33%	5.00	5.00	3.00	5.00	5.00	3.00	3.00	3.00	5.00	3.00

All scores are based on a scale of 0 (weak) to 5 (strong).

Leaders

› **Salesforce.** Salesforce launched its Health Cloud product in 2016 to give healthcare organizations a patient-centric insights and engagement system. Its platform brings together clinical and nonclinical data from Salesforce's customer relationship management (CRM) software to create a comprehensive view of each patient's interactions and health status. Salesforce provides prebuilt analytics capabilities with its HIPAA-compliant Einstein Analytics. Its customers noted a learning curve in mastering the development platform, but Salesforce does provide a massive community

FOR CIOS

July 26, 2017

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

of developers and tools to help its customers ramp quickly. Its AppExchange program gives customers a selection of prebuilt applications and microservices for the platform, which is a differentiator in the current market.

› **Kinvey.** Kinvey offers a BaaS (back-end-as-a-service) platform with healthcare-specific capabilities. It has differentiated its services with significant investment in the healthcare vertical during the past few years. Kinvey has developed robust, comprehensive partnerships with leading data integrators for the industry's most complicated environments, including EHRs and internet of things devices. Kinvey is known for its massive developer community, with more than 30,000 applications for all verticals and use cases, built on the platform. It provides developers with 12 SDKs and accelerators that are designed specifically to help healthcare organizations manage PHI. Its customer references cited the strong support system as a major asset in getting teams acclimated to the platform and building apps quickly. Kinvey has recently been acquired by Progress, but this was not considered when completing this scorecard due to the timing of the acquisition.

› **IBM.** IBM Watson Health and its enterprise performance management capabilities integrate with a wide range of EHR, lab, and practice management systems. It has proprietary patient-matching algorithms to create longitudinal records of each patient, providing a holistic account of interactions. IBM provides deep, out-of-the-box cognitive and analytics capabilities as well as configurable dashboards for tracking clinical risk, population health, and cost analytics. Watson Health leverages input from technical and clinical experts to help healthcare organizations move to predictive analytics for functions such as normalizing unstructured clinical notes and identifying population risks. Its road map is focused on integrating recent acquisitions, including Explorys, Phytel, and Truven Health Analytics, to move healthcare organizations to value-based care.

› **CloudMine.** Coming from a mobile back-end-as-a-service background, CloudMine has pivoted to focus on helping healthcare organizations create digital health solutions with its Connected Health Cloud product. It has quickly developed strategic partnerships to help organizations aggregate complicated and disparate data such as EHRs and wearables into its secure cloud platform. CloudMine provides an entirely black-boxed deployment stack, allowing users to focus on developing digital health applications without worrying about server-level concerns. Its customer references highlighted excellence in customer service with a hands-on approach to implementation and execution, providing a solid foundation of support to get customers going with the platform and keeping them up to date on upcoming product enhancements.

› **Microsoft.** Microsoft leverages its Azure platform to provide a HIPAA-compliant host for healthcare customers. Azure aggregates disparate data sources from a wide range of vendors. It enables data visualization with the Power BI tool and advanced cognitive and AI capabilities; some of its customers are now using these capabilities across the full care continuum. Microsoft takes a thorough approach to compliance requirements, continuously updating its standards to meet national and regional requirements. It has also developed strong healthcare partnerships to develop turnkey solutions for healthcare organizations on Azure.

FOR CIOS

July 26, 2017

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

Strong Performers

› **Medable.** Founded in 2013, Medable is a healthcare-focused company that helps organizations aggregate data and build HIPAA-compliant mobile applications. It can serve as an aggregated data lake for organizations to aggregate data across multiple apps and systems. Medable's Axon product is compatible with ResearchKit, which allows its customers to develop and deploy clinical research applications without significant development effort. It also provides flexible analytics dashboards to help researchers analyze data from their trials or create their own through Medable's custom API.

› **ClearDATA.** ClearDATA is a rapidly growing healthcare cloud service provider that offers HITRUST-certified application environments with its DevOps Automation and Compliance Dashboard tools. It focuses on providing APIs to allow healthcare organizations to deploy workloads from multiple data sources, serving as the back end for interoperable healthcare applications. ClearDATA provides hands-on support for customers looking to move to the public cloud with customized libraries and SDKs for Amazon Web Services. It offers state-of-the-art compliance and security support and stands behind it, signing one of the industry's most comprehensive business associate agreements and offering a prepackaged analytics platform that gives customers a dashboard of the compliance metrics.

› **SAS.** SAS brings its deep analytics experience to healthcare by integrating with popular EHR vendors to help healthcare organizations perform advanced analytics and data visualization through its Cloud Analytics suite. SAS's platform allows healthcare organizations to handle structured and unstructured health-related and patient data, making it a fit for healthcare organizations looking to get new clinical, financial, and healthcare insights from their information by using advanced analytics. SAS has positioned itself as a foundational infrastructure for helping organizations maximize their EHR investments while being flexible to adapt to new data sources.

Contenders

› **NTT DATA.** NTT DATA's cloud services offer a competitively priced solution for healthcare organizations that are looking to deploy traditional analytics offerings, such as population health management. It offers a full portfolio of population health analytics as part of its overall services portfolio. Analytics dashboards are customizable and can consistently be refined by the customer's changing priorities. NTT DATA has a specific data integration plan for each of the EHR vendors that it works with and typically takes 6-9 months to provide meaningful integration and adoption for its customers' analytics solutions.

Challengers

› **MphRx.** MphRx is a new player in the health cloud market. Its Minerva product provides clinicians with an integrated view of their patients' records and gives patients a portal to coordinate care between the patient, clinical care team, and the caregiver. MphRx is built as an open platform

FOR CIOS   July 26, 2017

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

with data exposure through RESTful APIs, and it is currently working to create a community for external developers to provide shared libraries and tools for the platform. MphRx does not provide prebuilt analytics dashboards, but it does have partners that can help customers visualize data sets from Minerva.

Engage With An Analyst

Gain greater confidence in your decisions by working with Forrester thought leaders to apply our research to your specific business and technology initiatives.

Analyst Inquiry

To help you put research into practice, connect with an analyst to discuss your questions in a 30-minute phone session — or opt for a response via email.

Learn more.

Analyst Advisory

Translate research into action by working with an analyst on a specific engagement in the form of custom strategy sessions, workshops, or speeches.

Learn more.

Webinar

Join our online sessions on the latest research affecting your business. Each call includes analyst Q&A and slides and is available on-demand.

Learn more.

Forrester's research apps for iPhone® and iPad®
Stay ahead of your competition no matter where you are.

Supplemental Material

Online Resource

The online version of Figure 2 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

FOR CIOS

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

July 26, 2017

Data Sources Used In This Forrester Wave

Forrester used a combination of three data sources to assess the strengths and weaknesses of each solution. We evaluated the vendors participating in this Forrester Wave in part using materials that they provided to us by July 10.

› **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.

› **Product demos.** We asked vendors to conduct demonstrations of their products' functionality. We used findings from these product demos to validate details of each vendor's product capabilities.

› **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with up to three of each vendor's current customers.

The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria for evaluation in this market. From that initial pool of vendors, we narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave evaluation — and then score the vendors based on a clearly defined scale. We intend these default weightings to serve only as a starting point and encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve. For more information on the methodology that every Forrester Wave follows, please visit The Forrester Wave™ Methodology Guide on our website.

Integrity Policy

We conduct all our research, including Forrester Wave evaluations, in accordance with the Integrity Policy posted on our website.

FOR CIOS

July 26, 2017

The Forrester Wave™: Enterprise Health Clouds, Q3 2017
Developer-Friendly Platforms Lead The Way With Insights-Driven Offerings

Endnotes

[1] See the Forrester report "HIMSS17 Demonstrates Healthcare's Tectonic Technology Shift."

[2] See the Forrester report "Vendor Landscape: Health Clouds For Data Integration And Patient Insight."

[3] See the Forrester report "2017 Technology Imperatives For US Health Insurers."

[4] See the Forrester report "Vendor Landscape: Health Clouds For Data Integration And Patient Insight."

[5] For additional detail on building these modern applications, see the Forrester report "Mobile Needs A Four-Tier Engagement Platform."

FORRESTER®

We work with business and technology leaders to develop customer-obsessed strategies that drive growth.

PRODUCTS AND SERVICES

› Core research and tools
› Data and analytics
› Peer collaboration
› Analyst engagement
› Consulting
› Events

Forrester's research and insights are tailored to your role and critical business initiatives.

ROLES WE SERVE

Marketing & Strategy Professionals	**Technology Management Professionals**	**Technology Industry Professionals**
CMO	› CIO	Analyst Relations
B2B Marketing	Application Development & Delivery	
B2C Marketing	Enterprise Architecture	
Customer Experience	Infrastructure & Operations	
Customer Insights	Security & Risk	
eBusiness & Channel Strategy	Sourcing & Vendor Management	

CLIENT SUPPORT

For information on hard-copy or electronic reprints, please contact Client Support at +1 866-367-7378, +1 617-613-5730, or clientsupport@forrester.com. We offer quantity discounts and special pricing for academic and nonprofit institutions.