Aite Novarica

AUGUST 2022

AITE MATRIX: PAYMENT INTEGRITY IN HEALTHCARE, 2022

INCI KAYA

IMPACT REPORT

TABLE OF CONTENTS

IMPACT REPORT

AUGUST 2022

AITE MATRIX: PAYMENT INTEGRITY IN HEALTHCARE, 2022

INCI KAYA

LIST OF FIGURES

LIST OF TABLES

SUMMARY AND KEY FINDINGS

U.S. healthcare payers are on a quest to optimize their claims processing and payment operations. Improving the quality of claims data they receive from providers and smoothing out wrinkles in substantiating claims is part of that quest as well. Payment integrity tools play an important role in these initiatives.

Leveraging the Aite Matrix, a proprietary Aite-Novarica Group vendor assessment framework, this Impact Report evaluates the overall competitive position of payment integrity vendors that service health plans and third-party administrators that pay providers' claims, focusing on vendor stability, client strength, product features, and client services.

- **Criteria:** The three criteria applied to develop a list of eligible vendor participants are a presence of a payment integrity, payment accuracy, or data analytics capability; a presence and expertise in the U.S. healthcare market; and active client contracts with health plans.
- **Evaluated vendors:** A total of 25 vendors were invited to participate, and six vendors agreed to be evaluated under the Aite Matrix framework. The following vendors participated in this report's Aite Matrix framework: Change Healthcare, Codoxo, Cotiviti, EXL, OptumInsight, and SAS Institute.
- **Consolidation has pros and cons:** Vendor consolidation can create a comprehensive suite of products and services, offering a one-stop shop option to healthcare payers. It can also mean fewer vendors to choose from, potentially hurting competition and shifting the balance of power regarding pricing in favor of vendors.
- **Technology brings renewed dynamism:** Technology advances in payment integrity can be bucketed under two major themes. The first theme is incremental steps forward on existing data and analytics tools. The second theme is the adoption of newer capabilities and deployment options, namely, a move to the cloud.
- **AI and data analytics are poised to disrupt:** EXL and Codoxo are emerging vendors to watch, with strong artificial intelligence (AI) and data analytics capabilities.
- **Best-in-class vendors:** Achieving best-in-class status in the Aite Matrix are EXL and OptumInsight.

INTRODUCTION

This Impact Report explores some of the key trends within the payment integrity (PI) market in healthcare and discusses the ways in which technology is evolving to address new market needs and challenges. The Impact Report also compares the leading vendors' offerings and strategies and highlights their primary strengths and challenges. Finally, to help healthcare payers make more informed decisions as they select new technology partners, the report recognizes specific vendors for their strengths in critical areas.

Using the Aite Matrix methodology, this Aite-Novarica Group report evaluates a set of key vendors active in the PI and accuracy vendor market serving health plans. The report addresses two major themes:

- PI vendors identify erroneous, incomplete, suspicious, or inaccurate claims that providers submit to health plans.
- Health plans seeking to optimize, automate, and streamline their claims submission, payment, and recovery process have unexplored opportunities that technology vendor partners can remedy.

The report provides a detailed overview and evaluation of those vendors as health plans consider the emerging capabilities that can benefit their audits, special investigations units (SIUs), and claim processes.

METHODOLOGY

Leveraging the Aite Matrix, a proprietary Aite-Novarica Group vendor assessment framework, this Impact Report evaluates the overall competitive position of each vendor, focusing on vendor stability, client strength, product features, and client services.

The following criteria were applied to develop a list of vendors for participation:

- Presence of PI, payment accuracy, or data analytics capability
- Presence and expertise in the U.S. healthcare market
- Active client contracts with health plans

Participating vendors were required to complete a detailed product request for information (RFI) composed of both qualitative and quantitative questions, conduct a

minimum 60-minute product demo, and provide active client references. The following vendors participated in this report's Aite Matrix framework: Change Healthcare, Codoxo, Cotiviti, EXL, OptumInsight, and SAS Institute.

Other vendors opted not to complete the RFI. The information provided in the report for these vendors is based on in-depth interviews and secondary research, but they are not included in the Aite Matrix analysis.

Appendix I offers a full overview of the Aite Matrix process.

THE MARKET

This section provides information and analysis around the following issues:

- Market trends
- Drivers for adoption and challenges
- Purchasing factors
- Functionality

MARKET TRENDS

The following market trends are shaping the present and future of the PI market (Table A).

TABLE A: THE MARKET

MARKET TRENDS	MARKET IMPLICATIONS
Vendor consolidation means integrating disparate back-end systems for years	As vendors consolidate, the key to success will be to reemerge as a comprehensive entity rather than a patchwork of disparate services. The task at hand for vendor partners now is to integrate back-end systems without disrupting existing client contracts.
Health plan and provider consolidation tests and resets vendor partnerships	Health plan consolidation means that the merged entities will reevaluate vendor partnerships, potentially resting on fewer vendor relationships downstream. Payer-provider collaboration has preserved the same level of attention compared to last year.
Consumerism remains a work in progress	Most market forces (e.g., the expansion of managed care, value-based payments, whole-person care models focused on patient health outcomes) have existed for over a decade and have seen only gradual adoption. This gradual adoption underscores that consumerism in healthcare takes time and will remain a work in progress for years to come.

MARKET TRENDS	MARKET IMPLICATIONS
Regulatory landscape requires constant attention	While broad and demanding, regulations provide a blueprint for fraud-free claims, interoperability, price transparency, and billing models far beyond fee-for-service (FFS).
Technology advances bring renewed dynamism	Technology advances in PI can be categorized under two major themes. The first theme is incremental steps forward on existing data and analytics tools. The second theme is the adoption of newer capabilities and deployment options, namely a move to the cloud.
Transition to value-based care (VBC) soldiers on	Implementing VBC will require payers and vendor partners to focus on the goal of clinical and quality outcomes and accept that this will disrupt existing revenue and business models.

Source: Aite-Novarica Group

Vendor Consolidation Means Integrating Disparate Back-End Systems for Years

Vendor consolidation can create comprehensive suites of products and services, offering a one-stop shop option to healthcare payers. It can also mean fewer vendors to choose from, potentially hurting competition and shifting the balance of power regarding pricing in favor of vendors. As vendors consolidate, the key to success will be to reemerge as comprehensive entities rather than patchworks of disparate services. The task for vendor partners is to integrate back-end systems without disrupting the quality expectations of existing client contracts.

Vendor merger and acquisition (M&A) activity has slowed compared to last year. Future competition will come from vendor partners not native to the healthcare industry but who can apply their expertise from other sectors to the healthcare sector. Doing so will not be a copy-and-paste approach or recycling existing technology; it will require intimate knowledge of the mechanics and nuances of claim submissions, claim adjudication, medical record reviews, and audit functions. It will entail powerful data analytics capabilities that can ingest state or federal regulatory changes and modifications that healthcare payers need based on their specialized provider partners. Finally, it will require technology providers to recognize specific roles, titles, and industry-specific vocabulary.

Health Plan and Provider Consolidation Tests and Resets Vendor Partnerships

Each time two (or more) health plans come together under the same roof, the new and larger entity will review existing partnerships with vendors and seek to reduce the number of vendor contracts. The goal is to simplify vendor management, negotiate favorable contract clauses based on larger claim volume, and mitigate provider abrasion. These conditions will force vendor partners to sharpen their service offerings and price points.

Compared to last year, reducing provider abrasion has grown in importance and urgency. When merged payer entities work on vendor rationalization, they must be mindful of the impact it can have on improving provider abrasion. A vendor partner with a good relationship with providers is a valuable partner to retain.

Provider consolidation is similar to payer consolidation. Providers already financially stressed before the COVID-19 pandemic will now reconsider consolidation and network management strategies. They will also review and rationalize their services, pricing, and payer mix to align with the needs of their population. Such consolidation means vendor partners will have to reconfigure and update their data feeds—often medical claim and medical information feeds—to process, edit, and analyze incoming claims for oversight, overbilling, and fraudulent schemes.

Payer-provider collaboration has maintained the same level of attention compared to last year. Assimilation between providers and payers and the inherent dependence on technology in the long term has the potential to do away with healthcare claims in their entirety, reducing or eliminating the need for PI.

Consumerism Remains a Work in Progress

Recent growth in the number of Medicare enrollees and Medicaid expansion in some states means more insured individuals and, in turn, greater claim volume. These claims will require processing, editing, and adjudicating; more claims will come through claims editing systems. Vendor partners will need to showcase their ability to scale and respond to this increased volume.

Recent regulatory measures such as the No Surprises Act and the Transparency in Coverage and Final Rules will enable consumers to get more engaged with and take charge of their medical records and payments to both in-network and out-of-network providers. Movement from inpatient/outpatient services to ambulatory and home

services also brings the consumer closer to the care delivery and payment continuum. High-deductible health plans are another factor that will increase customer awareness regarding the medical costs and fees they incur. This awareness, coupled with price shopping and burgeoning comparison tools, will mean more consumers will look to switch providers, which will shake up the provider channels as more claims come in.

Some of these trends, like the No Surprises Act, are relatively recent, but others have been around for over a decade with gradual adoption. This gradual pace underscores that consumerism in healthcare takes time and will remain a work in progress for years to come.

Consumerism has gained traction and importance compared to last year. The role of the patient as a pillar in claims processing is far from where it needs to be today. Fortunately, the importance of member engagement is growing, even if much work is yet to be done. This work has multiple aspects. It entails digitizing medical records and historical claims records and ensuring interoperability between different systems housing this data. It entails bringing social networks, financial records, and credit history into patient profiles.

Health plans don't always have the internal resources, data analytics expertise, or access to third-party data sources to utilize this information to its full extent. If consumerism is truly a priority for the payer, then it is an opportune moment to ask vendor partners about their member data sets and how they can be used. This data can be Medicare or Medicaid claims, commercial claims, or other historical data. Vendors can present the data as a resource to mitigate overbilling and erroneous claims, increase patient engagement, and personalize member communications.

Regulatory Landscape Requires Constant Attention

The complexity and scope of data privacy, security laws, and regulations keep payers, providers, and vendor partners on their toes. The False Claims Act, the Anti-Kickback Statute, and the Physician Self-Referral Law, also called the Stark law, are among the notable regulations with direct implications for PI functions. The Trusted Exchange Framework and Common Agreement (TEFCA), part of the 21st Century Cures Act, spells out the next steps on the long and winding road to interoperability.

The implications of the No Surprises Act and price transparency regulations, while profound, are not felt in full force today. As due dates arrive and pass, and proper enforcement is at hand, they hold the power to impact health plan pricing, revenue models, and profitability. They may also displace traditional FFS models in favor of other pricing models yet to be developed.

Regulations are broad and demanding, but they are also idealistic blueprints for fraud-free claims, interoperability, price transparency, and billing models far beyond FFS, namely value-based payments. Such regulations can open the doors to the growth of nontraditional health services and the expansion of services based on Centers for Medicare and Medicaid Services (CMS) COVID-19 rules, such as the inclusion of telehealth. They also enable Medicaid expansion and govern the delivery of care to Medicare and Medicaid beneficiaries and managed care organizations.

Compared to last year, regulation remains an equally important factor for PI, as it prescribes what business rules and parameters PI solutions should include. It also determines how realistic nationwide interoperability is, and how quickly it can be established in the industry.

Technology Advances Bring Renewed Dynamism

Technology advances in PI can be bucketed under two major themes. The first theme is incremental steps forward on existing data and analytics tools. The second theme is the adoption of newer capabilities and deployment options, namely, a move to the cloud.

Payers and providers are now more interested in and comfortable leveraging data and analytics to understand the inner workings of claims editing and adjudication tools. AI and predictive analytics continue to permeate the prepay and post-pay phases of claims adjudication. Payers and vendor partners explored other use cases using AI, including embedding AI to reduce repetitive manual work, create operational efficiencies, and make healthcare more cost-effective. Integration remained an important aspect of bringing together disparate applications into a true ecosystem. Similarly, health plans noted an ongoing need for interoperability as patients required data pertaining to risk factors when assessing their COVID-19 risk during the pandemic.

Likewise, healthcare payer contracts showed a notable uptick in cloud migration and building storage and cloud computing capabilities to run analytics workloads. Vendors started to explore additional use cases such as embedding blockchain within financial,

clinical, and engagement solutions and building on pattern recognition algorithms. Health plans relied on technology's wide reach across the claims adjudication workflow to address their demands to process real-time transactions. Payers and providers relied on automation and electronic medical record retrieval capabilities.

Compared to last year, AI has gained traction from buyers after a long period of skepticism and hesitation regarding its benefits. Buyers showed greater interest in understanding the inner workings of AI to help them analyze claims and understand just how their vendor partners calculate savings. Compared to last year, cloud migration has picked up steam. More health plans are moving their implementations to the cloud, which now match on-premises implementations.

Transition to VBC Soldiers On

VBC promotes quality of care and is linked tightly to patient outcomes. It aims to reduce spending through improved outcomes and shared provider and payer risk. On the other hand, FFS tends to be more about the volume of services rendered and less about incentives to demonstrate benefits to patient outcomes. The ease of FFS is that it can be standardized and automated, making it a scalable option for payers and providers that cannot review each case and determine a price manually. The downside, at least in the near term, is that implementing VBC brings burdens to providers and reduces the need for PI interventions, a concern for vendor partners.

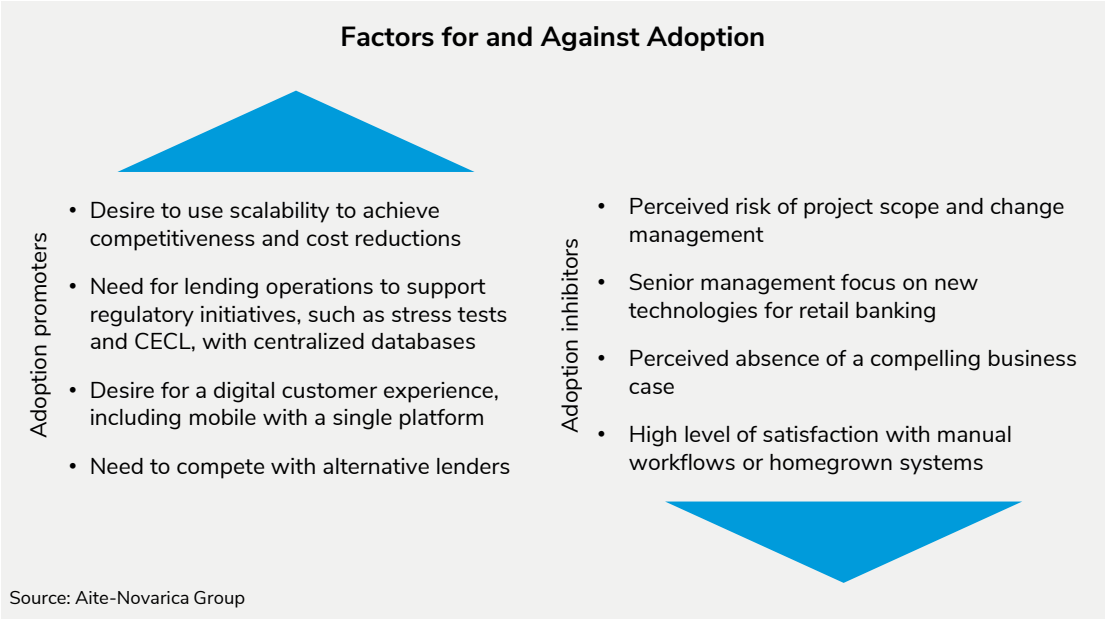
Implementing VBC will require payers and vendor partners to focus on clinical and quality outcomes and accept that this will disrupt existing revenue and business models. Compared to last year, managed care, VBC, and, linked to that, value-based purchasing focused on patient health outcomes have retained their level of priority. The implication for vendor partners in the long term is that such shifts can reduce the need for PI interventions and spend through improved outcomes and shared provider and payer risk. However, payers and providers will require expertise to incorporate VBC on top of existing PI infrastructure (e.g., shared savings bonuses on top of FFS payments). Vendor partners are a valuable asset, building on quality and value metrics that are the basis for VBC and combining them with other financial metrics often tied to prevailing PI methods.

DRIVERS FOR AND AGAINST ADOPTION

The number of PI vendor partners has declined in the last decade largely due to M&A activity, reducing the number of competitive bids payers can make. A competitive PI vendor environment also makes differentiation as difficult as it is critical. Vendors must now be fiercer in demonstrating and quantifying their processes' efficiency, the benefits they yield, and the cost associated with those services. They must also capitalize on the factors fueling adoption and tackle issues that may temper or slow down adoption.

The following factors are contributing to overall adoption and posing challenges for vendors to penetrate additional prospects (Figure 1).

FIGURE 1: FACTORS FOR AND AGAINST ADOPTION



Source: Aite-Novarica Group

Drivers for Adoption

- **Efficiency and savings are key:** Health plans continually look for efficiency and savings across the claim payment continuum. PI solutions can help drive total cost management across the claim life cycle.
- **Interoperability between solutions:** Healthcare payers require support across the board for interoperability between solutions that can provide a consolidated data

feed across medical claims and pharmacy claims. Data exchanges across various stakeholders within the cost-containment ecosystem are a driving factor for payers.

- **Integration across existing client systems:** Integration across electronic medical records, web-based portals for communication, status updates, and medical record submission would provide healthcare payers with the tools and data to analyze unstructured data contained in provider notes. It is a bonus if claims data can be enriched with external and public data sources, such as provider exclusion lists, provider licensing records, or address verification.
- **Continued shift from post-pay to prepay:** An ounce of prevention is worth a pound of cure; the shift from post-pay to prepay continues.
- **Avoid future overpayments altogether:** The shift to prepay is ongoing; the bulk of the work remains in post-pay. However, health plan clients that have prioritized PI are thinking of the next step, making an additional request from vendor partners to avoid future overpayments altogether.

Drivers Against Adoption:

- **Implementation causes concern:** Payers worry about the clunkiness and disruption that implementations can cause. A vendor partner that payers view as having a one-size-fits-all approach to implementation is detrimental to adoption.
- **Inflated savings claims and misaligned expectations are a turn-off:** Payers want to see savings identified and quantified. Vendor partners make concerted efforts to provide greater visibility into those savings in their solutions. However, differences in perceptions of how the payer calculates savings vs. how the vendor calculates savings can create a rift. When a payer spots differences between what the vendor claims and their own calculations, this creates an unfavorable mark against the vendor and questions the validity of the savings they claim to have generated for the payer. Misaligned expectations can also cause disappointment. Vendors may view false positives as a window into the true nature of the client's business and part of AI models' continuous learning and feedback. However, payers may expect zero false positives and view analytics and AI as silver bullets against fraud.
- **Inertia remains a powerful force:** Payers that are content to use spreadsheets and reports to identify and pursue PI cases or are unwilling to change historical processes pose barriers against adoption. Those that lack the funding, incentive, or

desire to invest in technology to support and transform their PI operations remain an impediment to adoption.

- **In-sourcing PI capabilities means tempered demand:** Larger healthcare payers are looking for avenues to bring components of PI functions in-house and dial down the volume of claims outsourced to external partners.
- **SIUs and audit teams may have blind spots:** What SIUs and audit teams don't know can hinder adoption. Not all PI teams may be familiar with the technology and know how to implement and adopt PI solutions. If they don't connect the dots between a PI solution and its practical uses, they are unlikely to move forward with third-party solutions.
- **Competing organizational priorities may lower demand:** Some PI teams (e.g., SIUs, program integrity units) are not integrated into the day-to-day operations of paying claims. This can suggest that the payer organization does not view PI as a strategic priority or that other projects or investments may take precedence. Alignment with organizational decision-makers regarding priorities due to cost and administrative bandwidth can help overcome this barrier to adoption.

PURCHASING FACTORS

There are many different reasons for purchasing from the buyer's perspective, but the following are the key factors:

- **Deep and demonstrated experience:** Payers want to work with vendor partners they trust. They want market leaders that bring new concepts to the table and keep up with or stay ahead of changes and bring a consultative mindset to their engagements. The ability to attract, onboard, and retain a strong bench of talent with low turnover goes a long way toward instilling a sense of quality and confidence. The caution to read between the lines here for vendor partners is regarding offshore work, as there tends to be a higher pace of turnover and more pronounced talent retention issues associated with offshore locations.
- **Build vs. buy (or return on investment):** Build vs. buy compares whether a payer can perform a function in-house. Typically, the answer is no; they cannot build. This brings third parties into the decision process to buy. At that point, the buying decision will be influenced by the return on investment a vendor can promise.

- **Collaboration and partnerships are key:** Technology aside, a vendor partner's willingness to partner with payers is crucial because solutions and services are not off-the-shelf widgets; they require tailoring and customization. Another rarer form of collaboration is when a vendor partner helps the payer client bring certain activities in-house or insource a function.
- **Provider abrasion remains a major sticking point:** The ruler is in the eye of the beholder when it comes to measuring provider abrasion. Payers and providers have vastly different perspectives on just how much provider abrasion exists. Payers posit that providers receive ongoing streams of claims to review, which later get audited, but that they do not keep up with quality and timely responses. Some payers find that providers aren't responding more than they used to, even if they are facing more denials. Providers lament how strict and unwilling payers are to issue reimbursements and question their medical and professional judgment on the type of medical care. Vendor partners can bring a level of objectivity to this issue in the form of reporting and transparency tools. For example, a report that spotlights how frequently a provider has been audited in each time period makes for a valuable example in predicting and preventing provider abrasion. ClarisHealth is one vendor partner that offers these types of metrics for healthcare payers.
- **Value is king:** In simple terms, value is defined by the (positive) difference between service minus the fees and what carries over. In a practical sense, though, there is more to value than a math equation. A health plan that doesn't see expected results, does not get what it was promised, or feels a lack of partnership with its vendor partner is cause for alarm, signaling that the health plan client is getting poor value. Established presence and a good reputation in the marketplace are also a part of value, as they bring credibility and trust into the relationship.
- **Ease of doing business:** Health plans don't always want to be shopping and buying. They want to run their businesses. A vendor partner that provides implementation and delivery in lockstep is one that lets the health plan client spend more time running its business. Such partners are likely to stick around for a long time and have a higher chance of contract renewals. A vendor that frequently sells add-on services risks clients perceiving it as difficult to do business with.

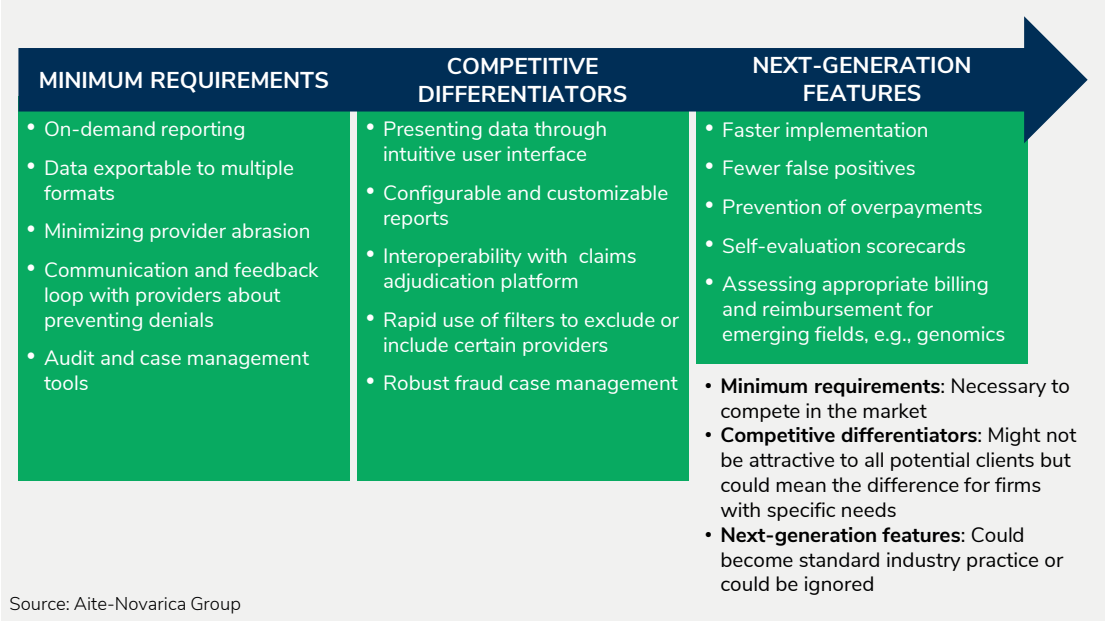
FUNCTIONALITY

Vendors must meet a set of minimum requirements to sustain basic client needs. These minimum requirements are typically the same across different regions and are found in nearly all vendors in the market.

Vendors focus on developing functionality that presents competitive differentiators to increase overall adoption and capture additional market share. Competitive differentiators might not be attractive to all potential clients but are currently driving key client adoption and often could mean the difference for those firms looking for specific functionality needs. Features noted as next-generation could become the standard industry practice within a decade; on the other hand, they could be completely ignored.

Given the limited resources within each vendor, it is imperative that appropriate investments are made across the needs of past, current, and future clients (Figure 2).

FIGURE 2: KEY FUNCTIONALITY TRENDS



Source: Aite-Novarica Group

Minimum Requirements

Minimum requirements are about getting the day-to-day work done. The work here is extensive, based on data ingested from multiple types of plans and payment policies (e.g., provider exclusions); differentiation by geographic region, state, or line of business;

and client-facing processes and workflows (e.g., medical record review). Payers expect to be able to export data into multiple formats and generate on-demand configurable and customized reports.

Minimum requirements for PI solutions extend beyond ensuring that claims get paid at the correct rates and flagging others for review. They also include a delicate balancing act of minimizing provider abrasion and preventing improper payments. Payers rely heavily on their vendor partners to serve as a communication conduit with providers to address and limit denials and requests for medical records. The balancing act entails serving as a feedback loop, explaining the reasons behind claim denials to providers, and influencing provider behaviors to conform to claim adjudication requirements and reduce inappropriate billing practices for future submissions.

As policies, laws, and regulations evolve, so does the need to update business rules to reflect those changes. Audit and case management tools on the back end of the claim adjudication process must also reflect these updates.

Competitive Differentiators

Competitive differentiators move away from the traditional pay-and-chase model and toward more proactive solutions that focus on stopping improper payments and engaging with targeted providers sooner. Pre-submission claim and prepay capabilities will continue to be a valuable capability to supplement and eventually decrease the need for post-pay heavy lifting.

The preventive and proactive mindset must also manifest in vendors' reporting capabilities. Solution providers that can present different views of the data through an intuitive user interface and allow for customized reporting that can accommodate user nuances will be well positioned from a competitive standpoint—bonus points for those that can bring text analysis from contracts, policy documents, and medical records into their solutions.

Competitive differentiators will include the ability to rapidly apply filters to include or exclude certain providers or services at the customer's request. Health plans seeking end-to-end capabilities or considering adding to modular solutions will benefit from vendor partners with unified platforms encompassing pre-claim, prepay, post-pay, and special investigations-related activities.

Additional competitive differentiators that some (but not all) health plan clients find interesting include robust fraud case management functionality and customization to standard fraud models for high-risk medical specialties (e.g., ambulance, transportation, pharmacy, and durable medical equipment).

Next-Generation Features

Next-generation capabilities are about detecting new trends of potential abuse and infusing these findings into rules and edits that surround health plan policies. A vendor's ability to assess appropriate billing and reimbursement practices for emerging fields (e.g., genomics) is an example of bringing next-generation features and functionality into PI solutions.

Next-generation capabilities also require vendors to move from preventing and saving to predicting and avoiding overpayment. This goal is lofty, but vendors can break it down into smaller pieces. Payers expect vendor partners to help them understand diagnosis-related group (DRG) reimbursement methods and intervene at the prepay phase to validate that a DRG has been coded correctly.

Looking ahead, vendors that seek leadership and best-in-class recognition must demonstrate faster speeds of implementing solutions and offer technical customization in their integration work that reflects the client's claims processing business rules. Bonus points for vendors that can open the black box of algorithms to health plan clients, giving them a chance to spot and troubleshoot problem claims that vendors would otherwise find and direct to audit teams or perform as part of a business process outsourcing (BPO) auditing service.

Other next-generation capabilities include identity verification services for members and providers so that the right members are paying the right claims. Similarly, vendors that can provide self-evaluating scorecards that illustrate where they stand today compared to where they started can ensure they align with client expectations.

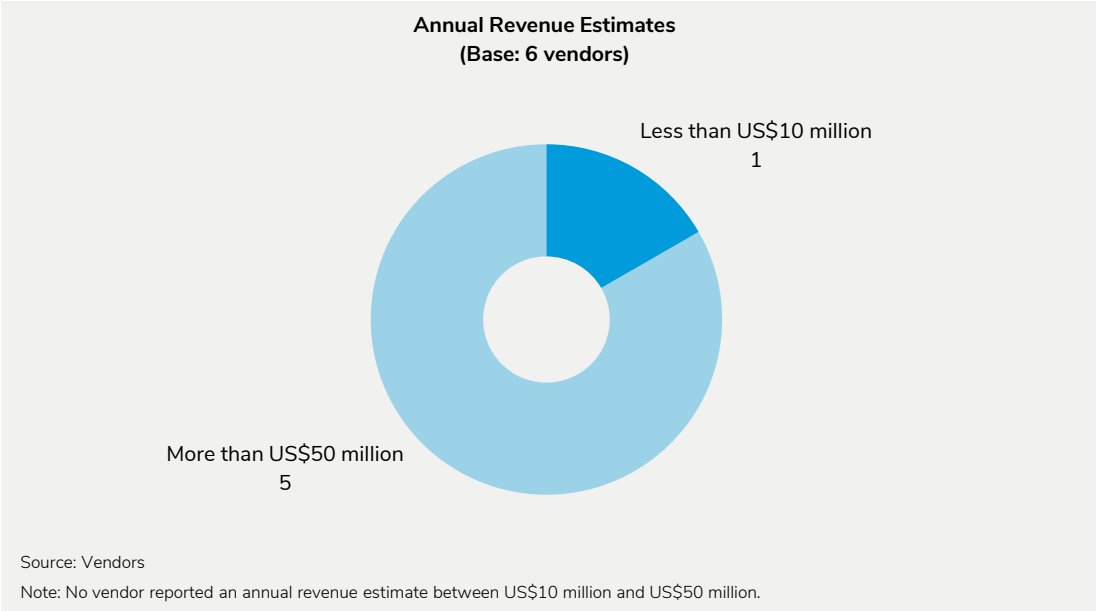
KEY STATISTICS AND PROJECTED IT SPENDING

This section provides information and analysis on key market statistics and IT spending projections related to the vendor market. The consolidated nature of the PI vendor landscape means there are fewer vendors than there were just five years ago. It also means that the revenue bands tend to skew larger than before. At the same time, newer entrants to the healthcare payer market (e.g., Codoxo, EXL, Mastercard Healthcare Solutions, Shift Technology) may pose a challenge to the larger players in the long term.

ANNUAL REVENUE ESTIMATES ANALYSIS

A consolidating vendor landscape means a handful of vendors retain the majority of revenues (Figure 3).

FIGURE 3: ANNUAL REVENUE ESTIMATES



Source: Vendors

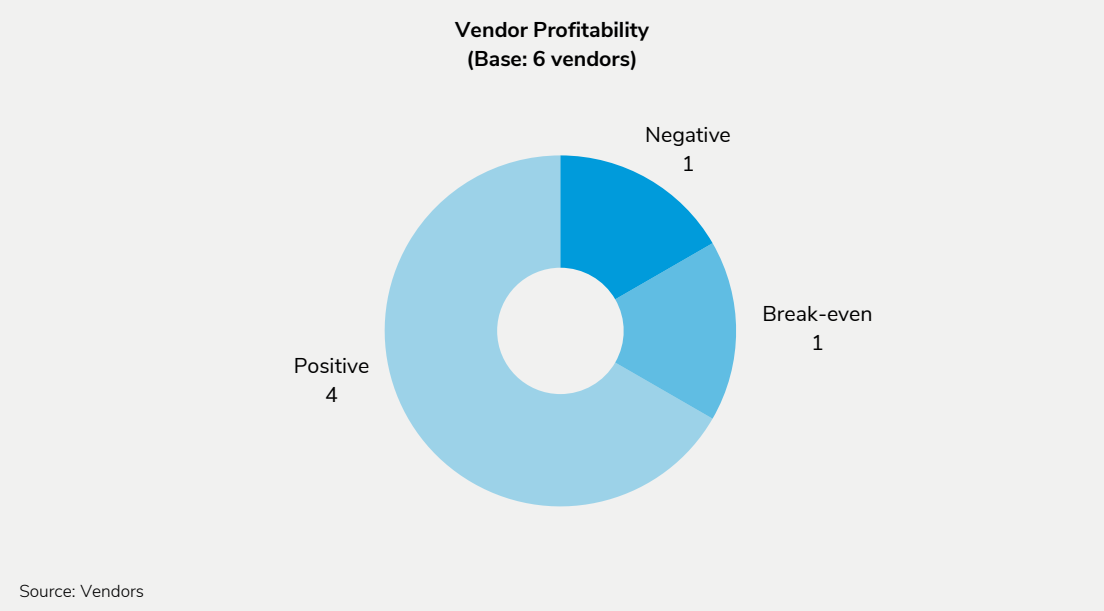
Note: No vendor reported an annual revenue estimate between US$10 million and US$50 million.

At the same time, a newer set of technology, analytics, and AI-powered vendor partners carry the promise of newer and more sophisticated features and functionality for health plan clients.

PROFITABILITY ANALYSIS

Four out of six vendors reported positive profitability figures (Figure 4).

FIGURE 4: VENDOR PROFITABILITY



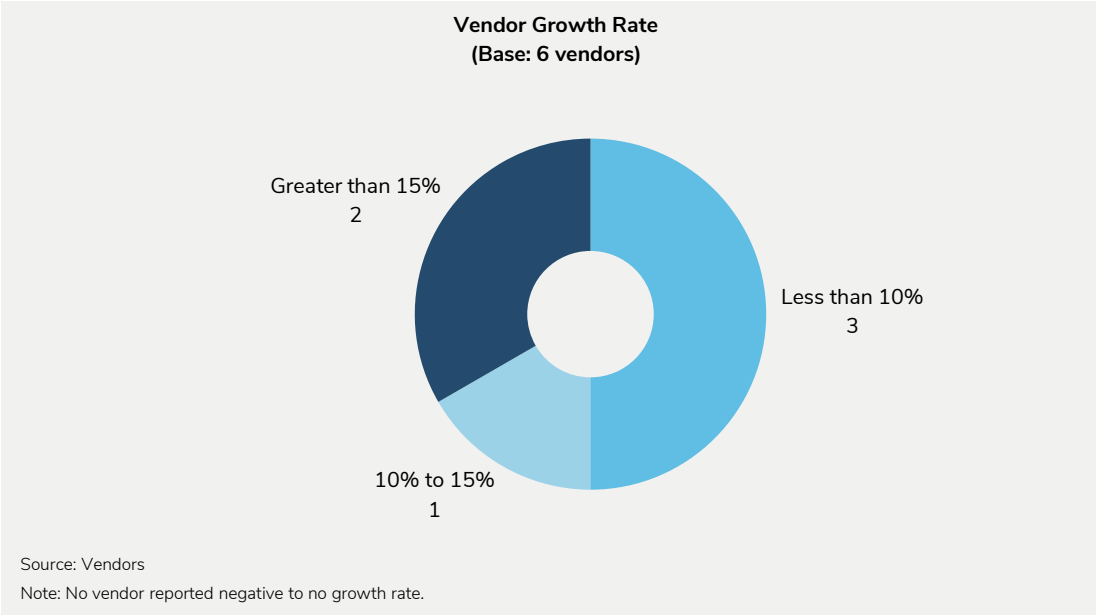
Source: Vendors

These results indicate new client wins, most likely from clients that issued RFIs in search of a new vendor partner or from those that converted from in-house solutions to third-party partners due to insufficient in-house talent or analytics capabilities.

GROWTH RATE ANALYSIS

Three vendor partners report strong growth rates of 10% or more, while others report more modest growth. Typically, newer companies have higher growth, as they are starting from a smaller baseline figure, while larger companies grow more incrementally, often adding to an established client base (Figure 5).

FIGURE 5: VENDOR GROWTH RATE



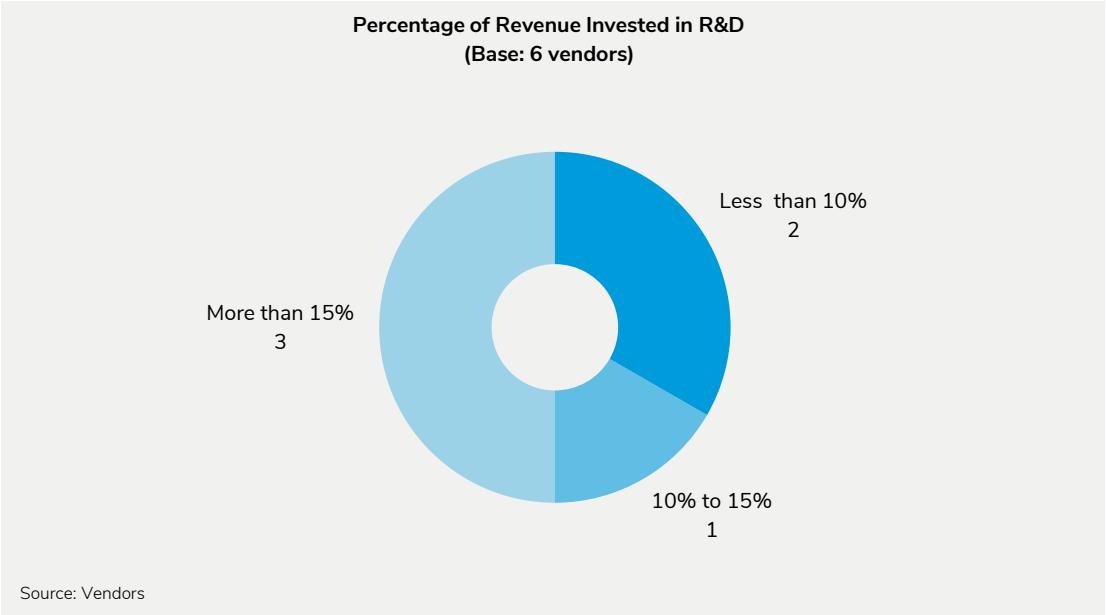
Source: Vendors
Note: No vendor reported negative to no growth rate.

Those that scored below this growth range are often larger entities, where the growth curve tends to be slower.

R&D INVESTMENT ANALYSIS

Technology partners understand the value of ongoing investments and one-half commit 15% or more of their revenue to research and development (R&D; Figure 6).

FIGURE 6: PERCENTAGE OF REVENUE INVESTED IN R&D



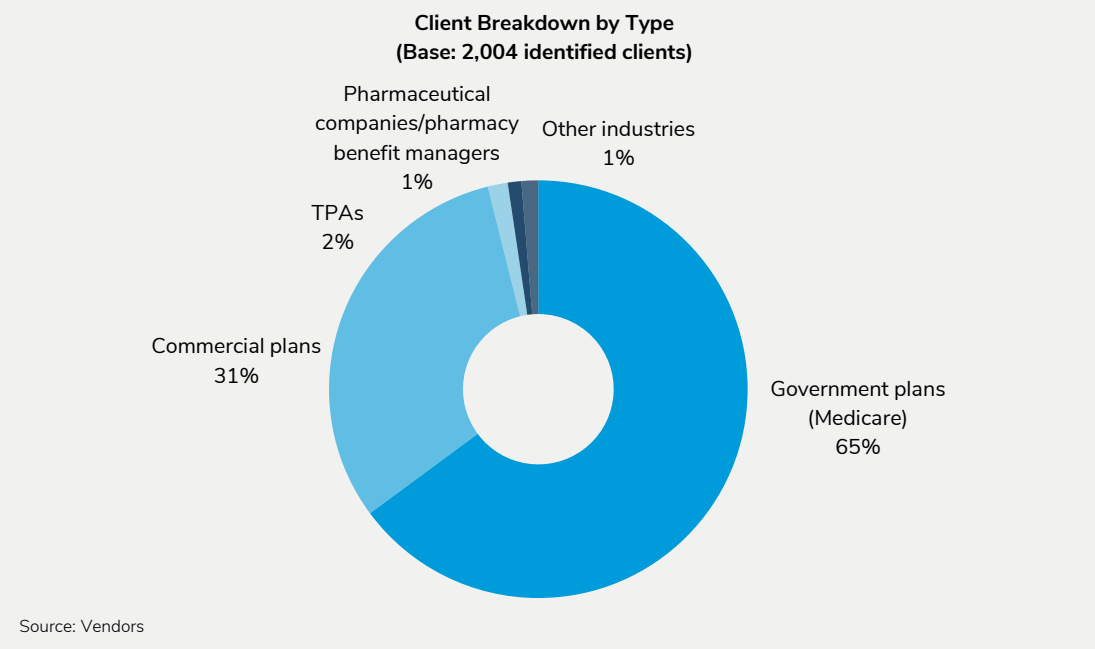
Source: Vendors

This investment goes toward enhancing the use of third-party data, customizing features of reporting and visualization tools, and shifting to the cloud. It also goes toward recruiting professionals from the medical profession, federal fraud investigators, and data scientists.

CLIENT BREAKDOWN BY TYPE

Commercial plans and government plans like Medicare were the main consumers of PI solutions and services. Pharmaceutical companies and TPAs made up smaller portions of vendor partners' client bases (Figure 7).

FIGURE 7: CLIENT BREAKDOWN BY TYPE



Source: Vendors

ANNUAL CLIENT RETENTION RATE

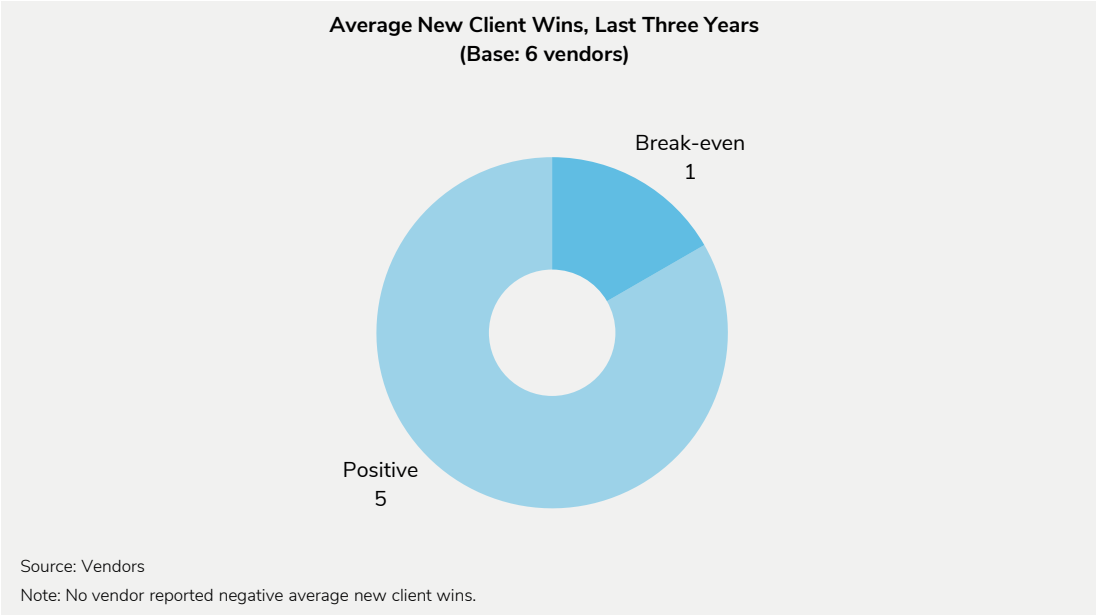
Vendors continue to enjoy high client retention rates.[1] All vendors report client retention rates above 90%. Clients stay with innovative vendors that meet expectations and present forward-looking recommendations for enhanced savings and whose management team remains available and accessible.

AVERAGE NEW CLIENT WINS

Five of the six vendor partners reported new client wins, and the sixth vendor retained its existing client base (Figure 8).

1 See Aite-Novarica Group's report Aite Matrix: Payment Integrity in Healthcare, May 2021.

FIGURE 8: AVERAGE NEW CLIENT WINS IN THE LAST THREE YEARS



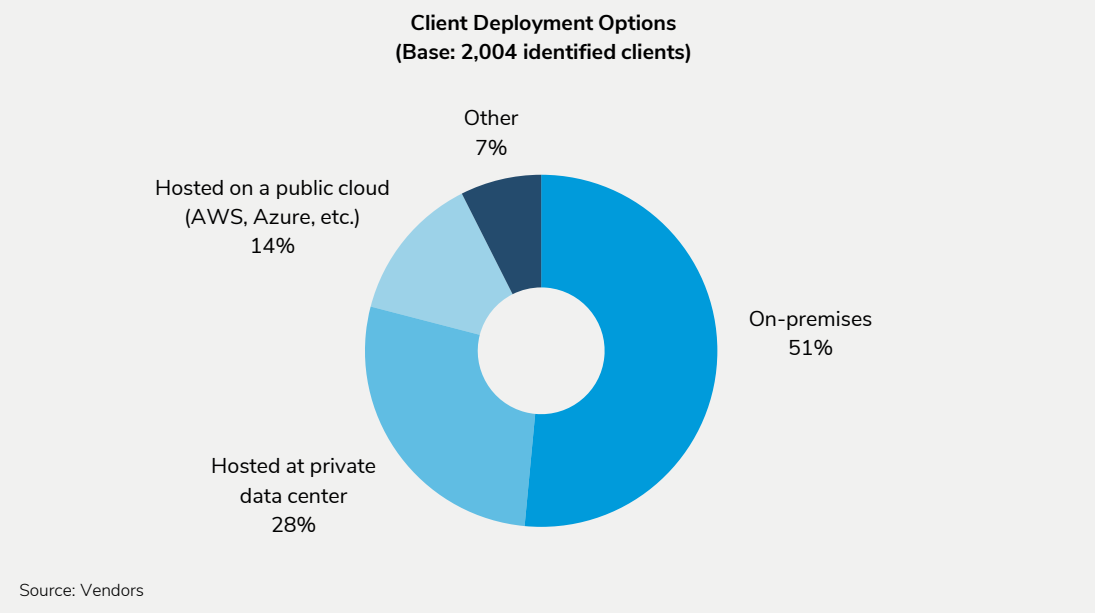
Source: Vendors
Note: No vendor reported negative average new client wins.

This growth may seem organic at first, but chances are that the new clients are health plans that switched vendor partners—explaining in part why other vendors active in the market opted not to participate in the RFI.

DEPLOYMENT OPTIONS ANALYSIS

Deployment options offered to payer clients included on-premises, hosted at a private data center, or hosted on a public cloud (e.g., Amazon Web Services [AWS], Azure). On-premises deployment was traditionally the most popular option. Now, private cloud deployments are emerging as prevalent as on-premises deployments for the first time (Figure 9).

FIGURE 9: DEPLOYMENT OPTIONS



Source: Vendors

LEADING IMPLEMENTATION FIRMS

Often overlooked but potentially more important than the software vendors themselves, many global consulting and IT services firms provide essential implementation services that round out the vendor ecosystem. These firms are client dependent and may vary by contract and specialization required. The following consulting/IT services firms provide client implementation support: Accenture, Axiom Systems, Cognizant (TriZetto Facets, QNXT, AMISYS), Gainwell Technologies, HealthEdge, Isight, and NASCO. Other implementation partners include Citrix, Tableau, and Apache Hadoop.

Not all PI vendors use external partners for implementation. But when they do, they also engage client and vendor IT data management teams, client-specific vendors, senior leadership, an implementation manager, customer success officers, and client users.

PROJECTED IT SPENDING

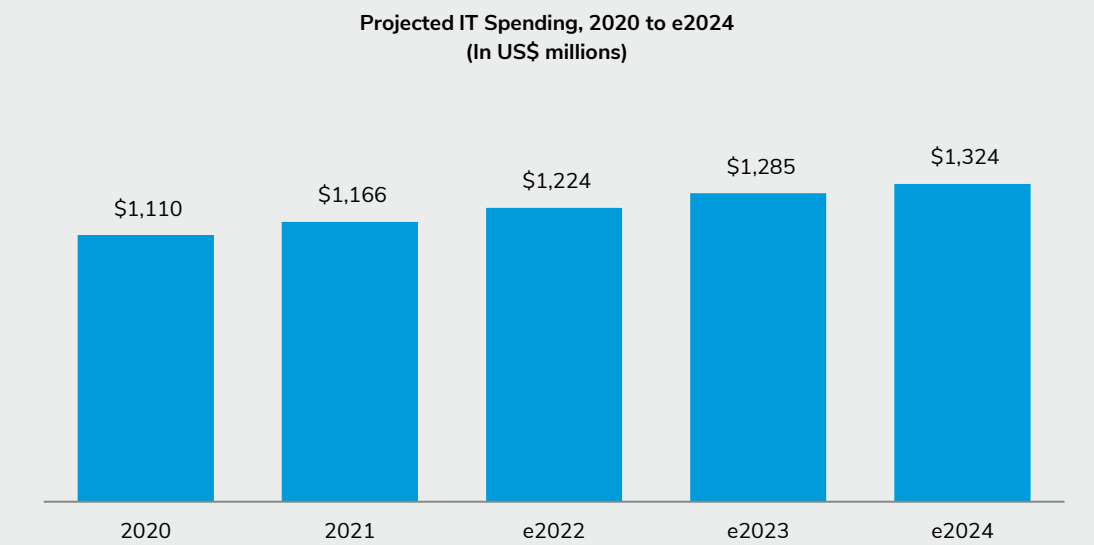
Aite-Novarica Group's IT spending estimates for the PI market include the following key components:

- One-time license fee at sign up
- Hosting

- Maintenance and support
- Ongoing access to the latest version
- Implementation of upgrades

Despite the ups and downs of the last few years, PI-related IT spending reached US$1.1 billion at the end of 2021. It is projected to grow at a tempered pace to US$1.3 billion by the end of 2024 (Figure 10).

FIGURE 10: PROJECTED GLOBAL IT SPENDING IN THE PI MARKET



Source: Aite-Novarica Group

VENDOR COMPARISONS

This section presents comparative data and profiles for the individual vendors that participated in the Aite Matrix evaluation. This is by no means an exhaustive list of vendors, and firms looking to undergo a vendor selection process should conduct initial due diligence prior to assembling a list of vendors appropriate for their own unique needs. Table B presents basic vendor information for the participating solutions.

TABLE B: BASIC VENDOR INFORMATION

FIRM	HEADQUARTERS	YEAR FOUNDED	TARGET MARKET	NUMBER OF EMPLOYEES	NUMBER OF CLIENTS
Change Healthcare	Nashville, Tennessee	2005	Healthcare payers	13,533	152
Codoxo	Atlanta	2017	Healthcare payers and state agencies	55	17
Cotiviti	South Jordan, Utah	2004	Healthcare payers	Over 6,000	251
EXL	New York	1999	Healthcare payers	32,500	39
OptumInsight	Eden Prairie, Minneapolis	2011	Commercial, Medicare Advantage, Medicaid	195,000	200
SAS Institute	Cary, North Carolina	1976	Healthcare payers	12,545	1,345

Source: Vendors

Table C presents high-level production information.

TABLE C: HIGH-LEVEL PRODUCT INFORMATION

FIRM	PRODUCT NAME	LAUNCH DATE	CURRENT VERSION	PRICING STRUCTURE
Change Healthcare	ClaimsXten, ClaimsXten Select Secondary editing services (includes Insight Record Review and Itemized Bill Review), Coding Advisor, Coordination of Benefits Services, Integrated Repricing Network, Claim Pricing Services, Pre-Pay Insight and Review Services, Post-Payment Audit and Recovery Services	Nearly 40 years	7.0.1	Varies: license, contingency, statement of work (SOW)
Codoxo	Fraud Scope, Provider Scope, Audit Scope, Payment Scope, Insight Scope, Network Scope, Clinical Scope	v2.0	Fraud Scope v3.5, Provider Scope v2.12, Audit Scope v2.0, Payment Scope v2.2, Clinical Scope v1.5, Insight Scope v2.0, Network Scope v1.5	Annual license Software-as-a-Service (SaaS) fixed-fee arrangement or a contingency-based fee. Terms typically range from three to five years. Pricing considerations include an annual licensing fee and membership count (per-member/per-month fixed fee).

FIRM	PRODUCT NAME	LAUNCH DATE	CURRENT VERSION	PRICING STRUCTURE
Cotiviti	End-to-end Payment Accuracy solution suite offered as a managed service model (i.e., SaaS), Payment Policy Management (prepay claim editing), Coding Validation (prepay clinical claim review). This is an abbreviated list, please see vendor profile for full list.		SaaS	Payment Accuracy solutions' pricing is contingency-based on savings. FWA solutions' pricing is annual per-member per-year and annual recurring software license.
EXL	EXLMINE	2008	7.19	Pricing models are engagement dependent and specific to each client's business priorities. EXL provides flexibility to move from a full-time, equivalent-based model to transaction- or outcome-based model as required based on clients' objectives. Traditional time and materials models are supported as well.

FIRM	PRODUCT NAME	LAUNCH DATE	CURRENT VERSION	PRICING STRUCTURE
OptumInsight	Pre-Submission Services (see vendor profile for detail) Pre-Pay Claim Validation (Abbreviated list): CES, Application Managed Services (AMS), Prospective Payment Solutions (PPS), COB. Post-Pay Services (Abbreviated list): Subrogation, COB, DRG Audit, Short-Stay Billing Validation, Hospital Bill Audit Payment Integrity: Partial or full PI outsource Advisory Services (see vendor profile for details)	Over 34 years.	No version numbers as very few are stand-alone software and predominantly include services.	Pricing options vary depending on the scope of contract. Larger, more strategic partnerships tend to focus is on risk-based arrangements with the health plan having limited to no upfront costs or any associated fixed fees. Most pricing arrangements are contingency with fees calculated as a percent of the medical expense saved for the client. In smaller, single solution contracts, there are licensing costs, but they are primarily for installed software solutions.
SAS Institute	SAS Detection and Investigation for Health Care (D&I for Health Care)	September 2016	Viya 3.5	Pricing structure is based on the number of covered lives.

Source: Vendors

Table D presents high-level technical information associated with each product. For more detailed information, buy-side firms should consult individual vendors.

TABLE D: PRODUCT TECHNICAL INFORMATION

VENDOR	PROGRAMMING LANGUAGES	OPERATING SYSTEMS SUPPORTED	DATABASE SUPPORTED	METHODS TO CONNECT TO THIRD-PARTY APPLICATIONS
Change Healthcare	N/A	Windows, Linux	MS SQL, Sybase, Oracle	FIX, MSMQ, XML, SDK API, Files
Codoxo	JavaScript, Python, PHP, Py Spark	Ubuntu 20.4	PostgreSQL, Cloud-native database	Codoxo supports Data export into a standard CSV file format which can be integrated with any other system. Its flexible design can expose or integrate REST APIs.
Cotiviti	Object-Oriented (Java, NET, C++) Scripting (JavaScript, Python, PHP) Other programming languages used are best of breed programming. Nucleus user interface is .net based; Machine Learning uses Scala and Python. As a service, the languages used are transparent to	RHL (Red Hat Linux) and Microsoft Windows As a service, the operating systems are transparent to clients. None of the interfaces require a specific operating system capability.	Relational (MSSQL, MySQL, Oracle, etc.) Nonrelational (Hadoop, MongoDB, etc.)	Hosted managed service model is for all payment solutions except for retrospective FWA. Data connectivity is enabled through XML for real-time claim transaction processing or integrated claim inquiries. Flat file data exchange is for batch file transfers.

VENDOR	PROGRAMMING LANGUAGES	OPERATING SYSTEMS SUPPORTED	DATABASE SUPPORTED	METHODS TO CONNECT TO THIRD-PARTY APPLICATIONS
	clients. None require a specific language be used.			
EXL	Object-Oriented (Java, NET, C++) Scripting (JavaScript, Python, PHP) Other programming languages: SAS	Windows and Linux	Relational (MSSQL, MySQL, Oracle, etc.) Nonrelational (Hadoop, MongoDB, etc.)	API, Files
OptumInsight	Object-Oriented (Java, NET, C++) Scripting (JavaScript, Python, PHP) Other programming languages: Spark SQL, Scala	One, but it didn't provide the name of the operating system.	Relational (MSSQL, MySQL, Oracle, etc.) Nonrelational (Hadoop, MongoDB, etc.) Cloud-native database Other: Cosmos	Connections to the claim stream are at the point of pre-adjudication, mid-adjudication, post-adjudication/pre-payment, and post-payment.
SAS Institute	Object-Oriented (Java, NET, C++) Scripting (JavaScript, Python, PHP) Other programming languages: SAS supports Base SAS, Java, Python, R and	Red Hat Enterprise Linux 6.7 (64-bit) and later within 6.x Red Hat Enterprise Linux 7.1 and later within 7.x Oracle Linux 6.7 and later within 6.x	Relational (MSSQL, MySQL, Oracle etc.) Nonrelational (Hadoop, MongoDB, etc.) Cloud-native database Other: SAS supports all major databases	Flat text files and comma-separated files, XML, JSON, Microsoft Excel and Access, Parquet, AWS S3, REST, and WSDL Web Services

VENDOR	PROGRAMMING LANGUAGES	OPERATING SYSTEMS SUPPORTED	DATABASE SUPPORTED	METHODS TO CONNECT TO THIRD-PARTY APPLICATIONS
	Lua directly and any programming language capable of issuing REST call via open REST APIs.	Oracle Linux 7.1 and later within 7.x SUSE Linux Enterprise Server 12.2 and later within 12.x	through database access engines. SAS has a SAS/ACCESS interface for nonrelational data sources.	

Source: Vendors

Table E presents each vendor's standard client service offerings. For certain vendors, stronger client support are available with an additional fee.

TABLE E: CLIENT SERVICE SUPPORT

VENDOR	SLA	ONLINE ISSUE TRACK-ING	SINGLE POINT OF CONTACT	24/7 SUPPORT	GLOBAL/ LOCAL-IZED SUPPORT	ON-SITE TRAIN-ING	ONLINE TRAIN-ING
Change Healthcare	■	■	■	■	◪	■	■
Codoxo	■	■	■	■	◪	■	■
Cotiviti	■	■	■	■	■	■	■
EXL	■	■	■	■	■	■	■
OptumInsight	■	■	■	■	■	■	■

VENDOR	SLA	ONLINE ISSUE TRACK-ING	SINGLE POINT OF CONTACT	24/7 SUPPORT	GLOBAL/ LOCAL-IZED SUPPORT	ON-SITE TRAIN-ING	ONLINE TRAIN-ING
SAS Institute	■	■	■	■	■	■	■

Source: Vendors

* Standard service with no additional fee

Key: ■= Yes; ◪= Partial; □= No

Table F presents the vendors' ability to support various deployment options.

TABLE F: PRODUCT DEPLOYMENT OPTIONS

VENDOR	ON-PREMISES	HOSTED AT PRIVATE DATA CENTER	HOSTED ON A PUBLIC CLOUD
Change Healthcare	■	■	■
Codoxo	□	□	■
Cotiviti	■	■	□
EXL	■	■	□
OptumInsight	■	■	□
SAS Institute	■	■	■

Source: Vendors

Key: ■= Yes; □= No

Table G and Table H present the vendors' key functionalities related to claims editing.

TABLE G: CLAIMS EDITING CAPABILITIES (PART 1)

VENDOR	INTEGRATION WITH PAYER/PROVIDER CLAIM FILES	AUTOMATED CLAIM REVIEWS	REAL-TIME EDITS	STANDARDIZED SET OF RULES/ RULES ENGINE
Change Healthcare	■	■	■	■
Codoxo	■	■	□	■
Cotiviti	■	■	■	■
EXL	■	■	■	■
OptumInsight	■	■	■	■
SAS Institute	■	■	■	■

Source: Vendors

Key: ■= Yes; □= No

TABLE H: CLAIMS EDITING CAPABILITIES (PART 2)

VENDOR	CUSTOMIZABLE SET OF RULES/ RULES ENGINE	CONFIGURABLE EDITS	EDIT TRANSPARENCY	USE OF NLP*/AI
Change Healthcare	■	■	■	■
Codoxo	■	■	■	■

VENDOR	CUSTOMIZABLE SET OF RULES/ RULES ENGINE	CONFIGURABLE EDITS	EDIT TRANSPARENCY	USE OF NLP*/AI
Cotiviti	■	■	■	■
EXL	■	■	■	■
OptumInsight	■	■	■	■
SAS Institute	■	■	■	■

Source: Vendors

* Natural language processing

Key: ■= Yes; □= No

Table I presents the vendors' key functionalities related to claim types reviewed.

TABLE I: TYPES OF CLAIMS REVIEWED

VENDOR	INSTITUTIONAL BILLING	PROFESSIONAL BILLING	RX	DENTAL	VISION
Change Healthcare	■	■	■	□	□
Codoxo	■	■	■	■	□
Cotiviti	■	■	■	■	■
EXL	■	■	■	□	□
OptumInsight	■	■	□	■	■

VENDOR	INSTITUTIONAL BILLING	PROFESSIONAL BILLING	RX	DENTAL	VISION
SAS Institute	■	■	■	■	■

Source: Vendors

Key: ■= Yes; □= No

Table J and Table K presents the vendors' key functionalities related to payment accuracy assessment.

TABLE J: PAYMENT ACCURACY ASSESSMENT (PART 1)

VENDOR	PROSPECTIVE ACCURACY	MID-ADJUDICATION ACCURACY	RETROSPECTIVE ACCURACY	FWA MANAGEMENT AND REPORTING
Change Healthcare	■	■	■	■
Codoxo	■	□	■	■
Cotiviti	■	□	■	■
EXL	■	■	■	■
OptumInsight	■	■	■	■
SAS Institute	■	■	■	■

Source: Vendors

Key: ■= Yes; □= No

TABLE K: PAYMENT ACCURACY ASSESSMENT (PART 2)

VENDOR	CLINICAL CHART VALIDATION	CLINICAL CODE EDITS	PAYMENT POLICY MANAGEMENT AND ADMINISTRATION	CLAIM INQUIRY SUPPORT
Change Healthcare	■	■	■	□
Codoxo	■	■	■	□
Cotiviti	■	■	■	□
EXL	■	■	■	■
OptumInsight	■	■	■	■
SAS Institute	■	■	■	■

Source: Vendors

Key: ■= Yes; □= No

Table L and Table M presents the vendors' key functionalities related to claims adjudication.

TABLE L: CLAIMS ADJUDICATION (PART 1)

VENDOR	INITIAL PROCESSING	AUTOMATED REVIEW	MANUAL REVIEW	PAYMENT DETERMINATION	PAYMENT REMITTANCE
Change Healthcare	■	■	■	■	■
Codoxo	■	■	■	■	■

VENDOR	INITIAL PROCESSING	AUTOMATED REVIEW	MANUAL REVIEW	PAYMENT DETERMINATION	PAYMENT REMITTANCE
Cotiviti	☐	■	■	■	☐
EXL	☐	☐	☐	☐	☐
OptumInsight	■	■	■	■	■
SAS Institute	☐	☐	☐	☐	☐

Source: Vendors

Key: ■= Yes; ☐= No

TABLE M: CLAIMS ADJUDICATION (PART 2)

VENDOR	COORDINATION OF BENEFITS	CONTRACT CHECKS	CLAIM DENIALS
Change Healthcare	■	■	■
Codoxo	☐	■	■
Cotiviti	■	■	■
EXL	☐	☐	☐
OptumInsight	■	■	■
SAS Institute	☐	☐	☐

Source: Vendors

Key: ■= Yes; ☐= No

Table N, Table O, and Table P present the vendors' key functionalities related to medical bill reviews.

TABLE N: MEDICAL BILL REVIEW (PART 1)

VENDOR	BILLING AUDITS	CENTRALIZED PI OFFICE SUPPORT	CLINICAL AUDITS	CHARGE AUDITS - PREPAY	CLAIMS AUDITS - POST-PAY
Change Healthcare	■	■	■	■	■
Codoxo	■	■	■	■	■
Cotiviti	□	□	□	□	□
EXL	■	■	■	■	■
OptumInsight	■	■	■	■	■
SAS Institute	■	■	■	■	■

Source: Vendors

Key: ■= Yes; □= No

TABLE O: MEDICAL BILL REVIEW (PART 2)

VENDOR	CLINICAL CODING REVIEWS	COMPLIANCE*	CREDIT BALANCE AUDITS - POST-PAY	PROVIDER AUDITS	RECOVERY AUDITS (MEDICARE)
Change Healthcare	■	■	■	□	□

VENDOR	CLINICAL CODING REVIEWS	COMPLIANCE*	CREDIT BALANCE AUDITS - POST-PAY	PROVIDER AUDITS	RECOVERY AUDITS (MEDICARE)
Codoxo	■	■	■	■	□
Cotiviti	■	□	■	□	□
EXL	■	■	■	■	□
OptumInsight	■	■	□	■	□
SAS Institute	■	■	□	■	■

Source: Vendors

* Ensuring payments are compliant with contracted/negotiated fees

Key: ■= Yes; □= No

TABLE P: MEDICAL BILL REVIEW (PART 3)

VENDOR	PI ASSESS-MENTS BASED ON INDUSTRY BENCHMARKS	CASE TRACK-ING SERVICES	CASE INVESTI-GATION SERVICES	APPEALS AND APPEALS OVER-TURN SUPPORT	SIU-AS-A-SERVICE	CASE DEVELOP-MENT AND INVESTIGA-TION SYSTEM IN-HOUSE
Change Healthcare	□	■	□	■	□	□
Codoxo	■	■	■	■	■	■
Cotiviti	□	■	■	■	■	■

VENDOR	PI ASSESSMENTS BASED ON INDUSTRY BENCHMARKS	CASE TRACKING SERVICES	CASE INVESTIGATION SERVICES	APPEALS AND APPEALS OVERTURN SUPPORT	SIU-AS-A-SERVICE	CASE DEVELOPMENT AND INVESTIGATION SYSTEM IN-HOUSE
EXL	■	■	□	■	■	□
OptumInsight	■	■	■	■	■	■
SAS Institute	■	■	■	■	■	■

Source: Vendors

Key: ■= Yes; □= No

Table Q presents the vendors' key functionalities related to network management and subrogation.

TABLE Q: NETWORK MANAGEMENT AND SUBROGATION

VENDOR	NETWORK MANAGEMENT	SUBROGATION SERVICES
Change Healthcare	□	□
Codoxo	■	□
Cotiviti	□	■
EXL	□	■
OptumInsight	■	■

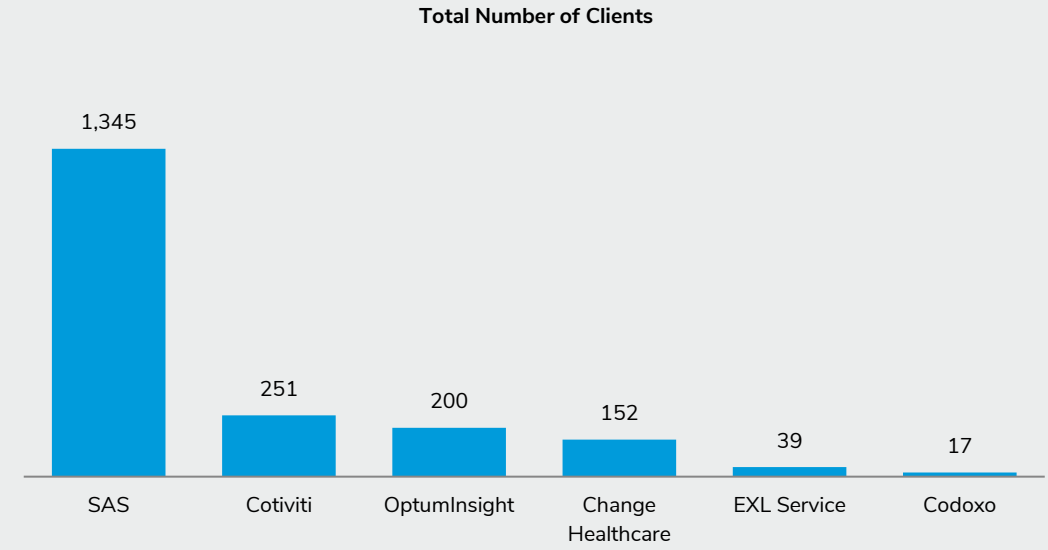
VENDOR	NETWORK MANAGEMENT	SUBROGATION SERVICES
SAS Institute	☐	☐

Source: Vendors

Key: ■= Yes; ☐= No

Figure 11 compares the total number of clients across the participating vendors. For more detailed analysis of vendor clients, please refer to the vendor profiles.

FIGURE 11: TOTAL NUMBER OF CLIENTS



Source: Vendors

AITE MATRIX EVALUATION

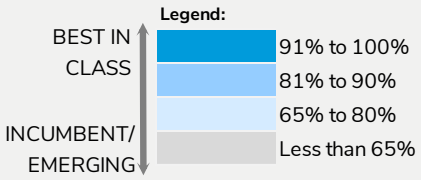
This section breaks down the individual Aite Matrix components, drawing out the vendors that are strong in each area and how they are differentiated in the market.

THE AITE MATRIX COMPONENTS ANALYSIS

Figure 12 overviews how each vendor scored in the various areas of importance. Each vendor is rated, in part, based on its own data provided when responding to the RFI distributed by Aite-Novarica Group as well as on product demos and follow-up discussions as part of the Aite Matrix process. Ratings are also driven by the reference customers of the examined vendors to support a multidimensional rating.

FIGURE 12: AITE MATRIX COMPONENTS ANALYSIS BY HEAT MAP

Vendors	Vendor stability	Client strength	Client service	Product features
Change Healthcare	77%	90%	79%	84%
Codoxo	74%	81%	82%	89%
Cotiviti	83%	83%	86%	82%
EXL	93%	97%	89%	85%
OptumInsight	89%	97%	86%	94%
SAS	89%	90%	77%	94%



Source: Aite-Novarica Group

Vendor Stability

EXL scored the highest for vendor stability, with OptumInsight and SAS Institute following. Vendor stability metrics comprise number of employees, years in business, and the length of time that the CEO has been leading the company. It also considers financial stability, which comprises revenue estimates, profitability, recurring revenue, growth rates, and share of revenue invested in R&D. Finally, it takes into account third-party risk assessments and client reference checks regarding the quality of the management team.

Client Strength

EXL and OptumInsight tied with the highest scores in client strength, followed by another tie between Change Healthcare and SAS Institute. The client strength score is based on the number of clients, the diversity of the client base, average client tenure and retention rate, percentage of revenue accounted for by the largest client (i.e., single point of failure), new client wins, client reference checks on the likelihood of replacing the current vendor solution, and the vendor's reputation.

Client Service

EXL stood out in client services scores, with Cotiviti and OptumInsight following. Client service scores are based on many metrics, including service-level agreements, pricing structure, implementation costs, service and maintenance costs, client reference checks on service and support, and client reference checks on the vendor's ability to deliver on promises and cost value.

Product Features

OptumInsight and SAS excelled in product features. These scores are based on client references that reviewed user interface, support for customization, ease of implementation and integration, responsiveness to product changes, satisfaction with features and functionalities, and the user experience based on product demos and briefings.

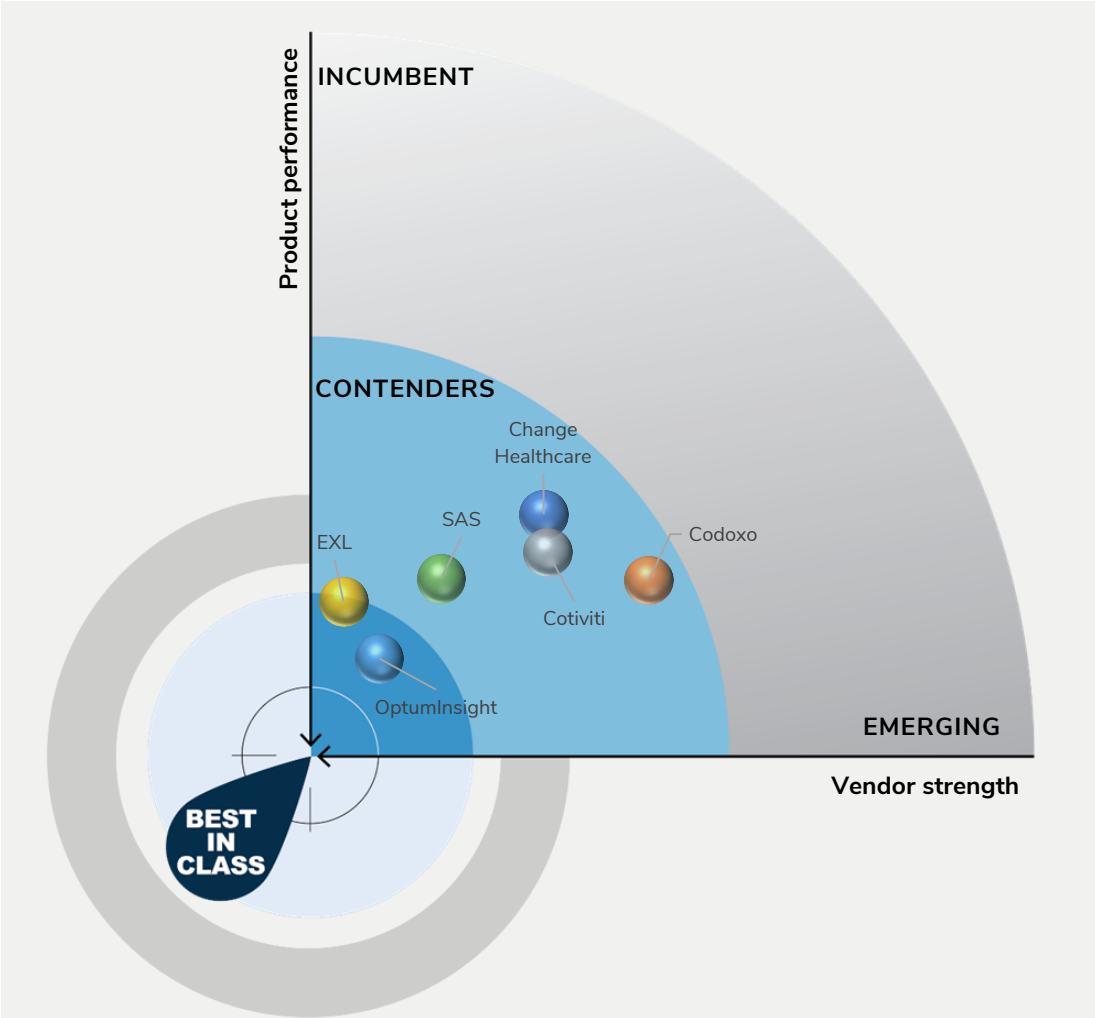
THE AITE MATRIX RECOGNITION

To recap, the results of the Aite Matrix recognition are driven by three major factors:

- Vendor-provided information based on Aite-Novarica Group's detailed Aite Matrix RFI document
- Participating vendors' client reference feedback or feedback sourced independently by Aite-Novarica Group
- Analysis based on market knowledge and product demos provided by participating vendors

Figure 13 represents the final Aite Matrix evaluation, highlighting the leading vendors in the market.

FIGURE 13: PAYMENT INTEGRITY AITE MATRIX



Source: Aite-Novarica Group

Best-in-Class Vendors: EXL and OptumInsight

Product performance: OptumInsight, an anchor vendor in the field, provides a complete solution from prepay to post-pay programs that are integrated with each other. OptumInsight makes it easy for users to switch where edits fire from: post-pay to prepay.

Vendor strength: For two years in a row, EXL's vendor stability and client strength has topped these component rankings compared to peers. EXL's data analytics roots, AI orientation, nimble approach, and responsiveness to clients confirms them as a rising

star. The company's muscle in ingesting, sorting, organizing, and, most importantly, visualizing data is evident throughout the PI and claims adjudication process. By creating a unique profile for each claim, EXL ensures that data is tagged and identified properly, allowing the claim to be used in investigations, clinical and pharma audits, and case management instances.

Leading Contenders: Cotiviti and SAS Institute

- **Cotiviti:** Cotiviti has a consistent and strong track record and enjoys high brand recognition. There are signs that the vendor's solution is due for technology improvement and upgrades. Considering the high retention rates prevalent in the space, the company is well positioned to retain its footing with existing clients but may benefit from updating the features and functionality.
- **SAS Institute:** SAS Institute scored the highest in the product features category. SAS Institute's PI product, SAS D&I for Health Care, combines rules, anomaly detection, and predictive methods to detect actors who exhibit improper treatment or billing and payment behavior at every stage of the claims process, and stops improper payments before claims are paid.

Noteworthy Performers: Change Healthcare and Codoxo

- **Change Healthcare:** Change Healthcare has maintained its client strength, in part thanks to its flagship ClaimsXten primary editing solution. The company is one of the three anchor industry partners. ClaimsXten can be applied retroactively as well as prospectively, making it a versatile one-stop-shop PI solution.
- **Codoxo:** As a relative newcomer to the PI vendor landscape, Codoxo is a small but mighty player sprouting from academic roots and finding generous venture capital favor thanks to its forward-looking AI skills. The vendor is poised to disrupt the market between its strong data dashboard visualization capabilities and willingness to work with new accounts or potential accounts as brand recognition grows over time.

VENDOR PROFILES

This section provides profiles of vendors that have participated in this Aite Matrix evaluation.

CHANGE HEALTHCARE

Change Healthcare is a provider of revenue and payment cycle management that connects payers, providers, and patients in the U.S. healthcare system. Change Healthcare supports one of the largest clinical and financial healthcare networks in the U.S. The company has a history of M&A over the past decade, accumulating a wide range of services and capabilities, and making it one of the big three vendor partners in the industry.

As a company formed from a string of mergers and has been public for a short time, Change Healthcare has successfully established new relationships and partnerships within the industry, and has reestablished existing relationships that began through legacy organizations. Its ability to integrate its disparate business units and solutions has no doubt helped with this turnaround.

UnitedHealth Group, which also owns OptumInsight, continues its intent to acquire Change Healthcare. As of July 2022, the proposed acquisition has not been finalized, as it remains under regulatory review due to competitive concerns. If the acquisition goes forward, Change Healthcare's claims management business, that includes ClaimsXten, would be spun off as an independent company under TPG Capital. Such a move would mean that Change Healthcare preserves and doubles down on its roots in primary and secondary editing software and associated modules.

On the product front, the company has been deploying its prepay secondary editing solutions with select clients. The secondary editing solution is powered by its flagship ClaimsXten primary claim editing platform.

Basic Firm and Product Information

- **Headquarters:** Nashville, Tennessee
- **Founded in:** 2005
- **Number of employees:** Change Healthcare has 13,533 full-time and 977 part-time employees worldwide.

- **Ownership:** Public company
- **Key financial information:** US$1.5 billion in reported revenues as of March 2021
- **Key products and services:** ClaimsXten primary editor, ClaimsXten Select, secondary editing services (includes Insight Record Review and Itemized Bill Review), Coding Advisor, CoB Services, Integrated Repricing Network, Claim Pricing Services, Pre-Pay Insight and Review Services, Post-Payment Audit and Recovery Services
- **Target customer base:** Healthcare payers
- **Number of clients:** 160
- **Global footprint:** Change Healthcare has a global footprint, with delivery of solutions in the North America, Europe, Middle East, Australia, and New Zealand. The company serves healthcare payer PI clients from their U.S. headquarters in Nashville and 12 regional offices throughout the country.

  It is U.S.-based with multiple locations in Nashville, Tennessee; Alpharetta, Georgia; King of Prussia, Pennsylvania; Chicago; Weston, Florida; St. Louis Park, Minnesota; Asheville, North Carolina; San Juan, Puerto Rico; and Vancouver, British Columbia, Canada.
- **Implementation options:** The company supports on-premises, private cloud, and public cloud deployments. ClaimsXten can be hosted by a health plan, core system vendor, or by Change Healthcare. The company hosts cloud services through AWS. All other payment accuracy solutions are hosted by Change Healthcare.
- **Pricing structure:** Implementation costs related to ClaimsXten varies by contract and SOW stipulation. Pricing typically includes an implementation fee and an annual license fee. Other solutions are priced as shared savings or as contingency fee arrangements. There are typically no service maintenance costs.

Key Features and Functionality Based on Product Demo

- Change Healthcare deployed a cloud-based, real-time automated secondary editing solution (compared to batch capabilities of other vendor partners) that provides transparency in turnaround times. Supported by a robust reporting dashboard,

additional editing embedded within the claim adjudication workflow allows claims from being withheld from adjudication.

- The company's automated plan policies and workflows compare and validate claims submitted by providers with the plan policy. This tool enables configuration to be built into the workflow, so claims are validated automatically.
- Coding Advisor is an analytics based service that targets outlier billing through a collaborative approach with providers to drive cost reduction in areas not previously addressed. Complete with audit rules, payment policies, and messaging designed for providers. This educational tool explains the correct way to file claims, pointing out potential mistakes. Coding Advisor illustrates what a normal billing example may look like and points out the discrepancies between that normal view and what the provider has filled out.
- Change Healthcare's comprehensive prepay and post-pay processing solutions include DRG audits, complex chart review, clinical validation, hospital bill validation, hospital charge audits, and carve outs.
- Change Healthcare solutions can interact with claims anywhere along the adjudication process and can be plugged in wherever they are needed throughout the workflow. The solutions use lessons learned from overpayments from the vendor's post-pay solutions to drive more savings in prepay.

Top Three Strategic Product Initiatives Over the Last Three Years

- Supporting health plans' revenue through payment accuracy solutions
- Transforming from paper to digital communication to personalize health plan member experiences
- Using electronic payments to generate savings by moving away from paper payments

Top Three Strategic Product Initiatives in the Next 12 to 18 Months

- Change Healthcare continues to work on automating, integrating, and transforming financial and clinical processes. Solutions support organizations in improving their care management processes, control chronic health conditions, guide level-of-care decisions, determine risk, forecast needs, and manage their claims payment cycle.

- The company continues to supply new technology, services, and ideas to further improved outcomes for businesses and patients. Its focus remains on creating networks that expand access, reduce waste, and bring people and information together.
- United Healthcare Group's pending acquisition of Change Healthcare notwithstanding, Change Healthcare's goals center on supporting payers and providers to automate, integrate, and transform financial and clinical processes across healthcare.

Client Feedback

Health plans note that ClaimsXten is the star of the show in primary editing, and they view the company as an anchor partner in PI solutions across the board. The pending acquisition by United Healthcare, which would bring Change Healthcare and OptumInsight's claims data and products together, poses some concerns, as United Healthcare is a competing health plan to other plans.

Table R displays the vendor's strengths and challenges.

TABLE R: KEY STRENGTHS AND CHALLENGES—CHANGE HEALTHCARE

STRENGTHS	CHALLENGES
ClaimsXten's suite of primary code editing rules is robust and unmatched in the market. That ClaimsXten can be applied retroactively as well as prospectively, and the ability to navigate between primary and secondary edits, makes it an indispensable and versatile one-stop-shop PI solution.	Implementation is at times regarded as being one-size-fits-all and can be alleviated with a willingness to adapt and respond to client requests for specific configurations and modifications as feasible.
The vendor is viewed as a strong and innovative partner, and one that brings a great deal of depth to claims editing. The company is also regarded as a front-runner in electronic data interchange and professional claims.	There are discrepancies between the savings that a health plan identifies and that Change Healthcare identifies. Clarification on how savings are calculated for payer clients can help clarify this discrepancy.

STRENGTHS	CHALLENGES
Change Healthcare's presence in the provider and the payer side of the market remains an important differentiator. Its market presence in the clearinghouse space and the ability to connect payers and providers are valuable.	The pending UHG acquisition poses some concern for health plans as United Healthcare is a competitor and stands to gain too much power if the acquisition goes through. Having Change Healthcare serve as an alternative to OptumInsight would also disappear, narrowing the options and differentiators available to buyers.

Source: Aite-Novarica Group

CODOXO

Codoxo provides the only unified cost containment platform that allows healthcare organizations to contain costs in post-pay and pre-pay, and that allows the industry to shift further left by bringing savings through an interactive provider education program within a single platform. Codoxo's platform is designed to work beyond silos across various teams (payment integrity, SIU, etc.) for improving efficiencies. It enables across claim types, such as professional, facility/institutional, pharmacy, and dental claims, in one place to for deeper insights.

Basic Firm and Product Information

- **Headquarters:** Duluth, Georgia
- **Founded in:** 2017
- **Number of employees:** 65
- **Ownership:** Private
- **Key financial information:** Undisclosed
- **Key products and services:** Fraud Scope, Provider Scope, Audit Scope, Payment Scope, Insight Scope, Network Scope, Clinical Scope
- **Target customer base:** Codoxo services healthcare payers, state agencies, and PBM of all sizes across the cost containment spectrum.
- **Number of clients:** 17

- **Global footprint:** The company is based in Atlanta.
- **Implementation options:** Solutions are hosted on a HITRUST certified AWS public cloud.
- **Pricing structure:** Depending on the product, Codoxo's solutions are offered either as an annual license (SaaS) fixed-fee arrangement or a contingency-based fee. Terms typically range from three to five years. Pricing considerations include an annual licensing fee and membership count (per-member/per-month fixed fee).

  Pricing includes ongoing access to all new AI enhancements within the platform developed through research conducted by staff of doctoral-level scientists, platform system enhancement and feature updates, product training, monthly and quarterly reviews, and a dedicated project manager.

Key Features and Functionality Based on Product Demo

- Proactive AI-based detection of PI and FWA schemes allow SIU and PI analysts to accurately identify emerging schemes using AI and rules-based techniques to minimize financial losses and maximize savings at health plans and agencies.
- Primary users are PI analysts and SIU investigators who use the unified cost containment platform to detect, investigate, and open audits/cases on identified issues using the integrated audit and case management module. They can also use the robust reporting to automate their reports.
- The AI creates leads for users and provides rate of risks from 0 to 100, with 100 being the highest level of risk.
- Codoxo provides a unique visualization dashboard called schemes that provides insights into suspicious activity across the organization and drills down into the details.
- The platform provides an integrated audit and case management system that helps track notes, claims, communication, documents, financials, events, etc.
- Codoxo is making a name with speedy implementations. Counting from when it receives clean historical data, implementation can take under three months, compared to others wherein it can take 15 months or more.

- Implementation success comes from applying metrics to each project to measure adherence to project plan, comparison of actual vs. planned success metrics speed to review and customer feedback, go-live trainings, and other user metrics such as time in platform.

Top Three Strategic Product Initiatives Over the Last Three Years

- Expansion into clinical review audits, such as DRG Validation Implantable Device/Pricing Hospital-Acquired Condition (HAC), High Cost Drugs/Specialty Drugs, Durable Medical Equipment (DME), and Skilled Nursing Facility, that can be conducted using the platform.
- Developing and honing AI-recommended data cleansing to proactively identify data quality issues from customers and give clients the option to correct their data issues using recommendations from the AI to improve accuracy.
- AI-based peer group enhancement to accommodate analysis across eight dimensions to identify true peers for accurate peer comparisons.

Top Three Strategic Product Initiatives in the Next 12 to 18 Months

- Expand provider scope: Contain healthcare costs by collaborating with providers to maximize coding accuracy. Building the industry's only provider portal that identifies issues across all codes and shares trends and insights to providers and billing staff, which enables them to self-audit and improve their coding accuracy.
- Expand audit scope: Automate and streamline end-to-end audit detection and workflow to create efficiencies and ensure compliance. Several organizations are really excited about the level of automation that is being included in the vendor's next version of Audit Scope. The entire audit process can be initiated and worked on by a few clicks without the need to enter any manual data at all.
- Expand payment scope: Enhancement of real-time pre-pay risk scoring driven by AI and longitudinal historical data. This initiative builds upon the existing Codoxo Payment Scope and is designed to improve the accuracy and speed of pre-pay claims scoring.

Client Feedback

Table S displays the vendor's strengths and challenges.

TABLE S: KEY STRENGTHS AND CHALLENGES—CODOXO

STRENGTHS	CHALLENGES
Codoxo's customer focus is a genuine and consistent point of strength. Clients note the vendor is receptive to feedback and readily evolves its product suite to suit client needs.	As a newer player in the market, Codoxo's product capabilities and brand name are not yet as robust as some of the more established technology providers.
Codoxo's technology and AI prowess is noticed and appreciated by clients—it is a true differentiator. AI tools allow health plan users to create and visualize different scenarios using claims data.	The company is undergoing rapid growth, which may be stretching existing resources. Senior management will need to recruit and retain additional expertise to support clients.
The company is very highly regarded for its intuitive user interface and posts an overall high level of satisfaction with delivering on promises.	

Source: Aite-Novarica Group

COTIVITI

Cotiviti has been well established in the PI space for decades, providing risk adjustment, quality, and analytics programs for healthcare payers. Acquisitions over the years have continually strengthened its capabilities. In August 2018, Verscend Technologies Inc., a portfolio company of Veritas Capital, completed its acquisition of Cotiviti Holdings Inc. On April 1, 2021, Cotiviti acquired HMS Holding Corp's PI and population health management capabilities focused on health plans and federal markets. The combined private company operates under the Cotiviti name.

Basic Firm and Product Information

- **Headquarters:** South Jordan, Utah
- **Founded in:** 2004
- **Number of employees:** More than 6,000
- **Ownership:** Private company

- **Key financial information:** Undisclosed
- **Key products and services:** End-to-end Payment Accuracy solution suite, offered as a managed service model (i.e., SaaS). Cotiviti's individual solution includes Payment Policy Management (prepay claim editing), Coding Validation (prepay clinical claim review), FWA Validation (prepay review), FWA Management (post-pay), Dental Claim Accuracy (prepay review), COB Validation (prepay and post-pay), Data Mining
- **Target customer base**: Healthcare payers.
- **Number of clients**: 251
- **Global footprint:** Cotiviti has numerous locations across the U.S.
- **Implementation options:** Depending on the solution, type of deployment, and individual client's needs, applicable service fees are based on a contingent rate fee structure based on product and value delivery model.
- **Pricing structure:** Cotiviti's Payment Accuracy solutions' pricing is contingency-based on savings. The FWA solutions' pricing is annual per-member, per-year, and an annual recurring software license.

Key Features and Functionality Based on Product Demo

- Payment Policy Management (PPM) is Cotiviti's flagship prepay editing solution that finds missed savings after other editing solutions in a final filter position. The Integrated Claims Management System behind the solution is also foundational to move more post-payment interventions into prepayment.
- Coding Validation services catch improper claims that are clinically complex for automated editing to handle. After automated edits are run, clinical and coding algorithms flag suspect claims that Cotiviti's nurses and coding experts review. For edits that do not require medical record review, the solution renders a payment recommendation so the health plan can move forward with reimbursing the healthcare provider.
- Risk Adjustment suite includes complete prospective and retrospective risk adjustment solutions supported by technology, analytics, AI, and deep subject-matter expertise.

  - Post-pay data mining identifies and recovers billing and payment errors through advanced analytics and expert validation. Proprietary analytics and data mining tools used by the vendor's healthcare claim accuracy specialists can find overpayments that have gone undetected. Data Mining also includes a Contract Compliance module that focuses on the application of liability, coverage, and payment terms for contracted agreements. Errors are accompanied with details and supporting documentation, so clients can decide whether to pursue recovery efforts from providers.
  - Coordination of Benefits (COB) Validation reviews and analyzes contracts, eligibility files, third-party benefits agreements, and other data sources to determine COB and payment responsibility before and after claims have been paid. The solution targets members with a high probability of Medicare coverage using custom analytics, validates eligibility with Medicare, and works with providers to refile claims with Medicare.
  - Prospective COB Validation, an add-on solution to retrospective COB validation, can move post-pay COB concepts to a prepay validation model, generating incremental value above standard audit and recovery models.
  - Contract Compliance solution focuses on the application of liability, coverage, and payment terms for contracted agreements. Errors are accompanied with details and supporting documentation, so clients can decide whether to pursue recovery efforts from providers.
- Clinical Chart Validation provides clinical experience and decision-making rules that spot cases with the highest likelihood of inaccuracy and the highest potential savings. A team of registered nurses and certified coding professionals work on cases that require a clinical perspective both before and after claim payment.

Top Three Strategic Product Initiatives Over the Last Three Years

- In 2019, Cotiviti launched two major enhancements of new prepay review capabilities to its COB Validation and Clinical Chart Validation solutions.
- A notable change to the prospective services is the introduction of BCBS Home Host services that allows plans to create value through editing of home plan claims when serving as a host and integrated invoicing to the partner home plan.
- Cotiviti released its Prepay Fraud, Waste, and Abuse solution, FWA Validation, that is integrated with its PPM product to allow claims to flow through automated editing

on PPM, nurse/code review on CV, and then FWA analysis for correct claims payment when aberrant billing patterns are flagged.

Top Three Strategic Product Initiatives in the Next 12 to 18 Months

- **Continued transition to value-based payments (VBP):** Cotiviti will evaluate how to incorporate value-based payments on top of existing PI infrastructure (e.g., shared savings bonuses on top of FFS payments). The company will also focus on quality and value metrics, which provide the basis for VBP, and consider combining these metrics with financial ones from prevailing PI methods to implement alternative payments (e.g., P4Q models). Cotiviti will also incorporate clinical and quality outcomes (e.g., contract compliance review to evaluate provider performance on both FFS and fee for value contract terms).
- **Evolution in payer policies:** Cotiviti will continue refining policies to handle telehealth and behavioral claims and progress in specialty drugs and biologics, and growing genetic testing volume more prospectively and at scale.
- **Continued move to more prepayment integrity:** The company's search for identifying savings through reducing inappropriate medical costs is ongoing and moving earlier in the claim processing journey as payers are looking to bolster their existing prepay initiatives vs. doing more post-pay audit and recovery.

Client Feedback

Table T displays the vendor's strengths and challenges.

TABLE T: KEY STRENGTHS AND CHALLENGES—COTIVITI

STRENGTHS	CHALLENGES
Cotiviti is one of the big three all-inclusive "full gamut" vendors. Its acquisitions have built up and fully rounded out its offerings over the years. The company is regarded as being very strong in client relationships, going beyond "just the numbers" and maintaining an open and ongoing dialogue.	Market perception suggests that the company is slow on upgrades and new functionality, is not sufficiently nimble, and technology solutions are slipping back.

STRENGTHS	CHALLENGES
SIU and PI teams rely on Cotiviti as a first pass or second pass vendor as well as for post-pay reviews.	Clients would like to see even more reporting flexibility that can generate more specific reports and findings if needed.
The company's SIU services are a valuable addition for health plans that do not have this function in-house.	

Source: Aite-Novarica Group

EXL

EXL has been a well-kept secret until now, with strong roots in data analytics. The company has been growing organically and through targeted, strategic acquisitions to establish a foothold in several key industries including health, banking, and transportation. Its ability to retain talent with industry expertise is stronger than other vendor partners in the industry, putting it in a highly favorable position for years to come and as contracts come up for renewal. To date, it has 6,000 healthcare professionals, over 1,400 nurses and doctors, 550 data scientists, and over 300 coding and claims experts and continues to recruit strong clinical expertise and accreditations. The company is U.S.-based and has global service delivery centers.

Basic Firm and Product Information

- **Headquarters:** New York
- **Founded in:** 1999
- **Number of employees:** 40,600
- **Ownership:** Publicly traded
- **Key financial information:** EXL posted US$1.12 billion in revenues in 2021, US$112.4 million of which came from their healthcare business.
- **Key products and services:** EXLMINE
- **Target customer base:** Health plans generally greater than 250,000 members

- **Number of clients:** 39
- **Global footprint:** The U.S., the U.K., Europe, India, the Philippines, Colombia, Australia, and South Africa
- **Implementation options:** EXLMINE is deployed either on an on-site basis, hosted, or on the cloud.
- **Pricing structure:** EXL's pricing models are typically determined based on business requirements and client needs. EXL offers flexibility to move from FTE-based models to transaction- or outcome-based models as required based on clients' objectives. Traditional time and materials models are supported as well.

Key Features and Functionality Based on Product Demo

- **Well-rounded offering powered with AI:** EXL combines auditing capabilities with workflow digitization and predictive and prescriptive analytics to deliver a complete cost-optimization solution. Its solution skews toward post-pay with a primary focus on audit and recovery as a service. Subrogation is a secondary focus on PBM and clinical audits and data mining.
- **Real-time rules engine:** Real-time rules engine detects billing anomalies.
- **Staff augmentation as a service:** EXL's staff augmentation has capabilities that allow payers that fall behind to catch up on the workload associated with cost of savings goals when adjusting claims. EXL can supply staff that is familiar with different payer systems and processes, on demand, so payers can get caught up with workloads and hit their cost of care goals.
- **Choice of black box vs. white box approach:** The black box approach entails EXL auditing overpayments in a contingency fee arrangement. The white box approach puts clients in the driver's seat, allowing them to identify and fix the problems in the claims themselves, adding BPO auditing as needed. Rates on the white box approach are lower than the rates in the black box approach because the client is a do-it-yourself actor in that instance, compared to having EXL do it for them.
- **HITRUST compliant:** EXLMINE, PI system for pre- and post-payment modalities, is designed to help management and handling of potential improper claims payments (HITRUST, HIPAA, and ISO 2700-1 compliant).

- **API-enabled solution debut:** EXL is debuting a solution in 2022 called SmartPlatform, a real-time API-leveraged play on its existing cloud capabilities to facilitate solutions for claims for security.
- **Other capabilities:** EXL has PBM audits, digital Business-Process-as-a-service (BPasS) solutions, audit and recovery solutions, clinical audits, data mining, a scalable platform for enterprise resource planning (ERP) throughput to widget creation, and interoperable workflows.

Top Three Strategic Product Initiatives Over the Last Three Years

- Enhanced UI/UX
- Expanded data visualization
- Digital enablement using natural language processing (NLP) to extract information from medical records

Top Three Strategic Product Initiatives in the Next 12 to 18 Months

- Cloud migration
- Digital enablement using NLP, machine learning (ML), and AI-powered workflows
- Expansion of claims audit services

Client Feedback

Table U displays the vendor's strengths and challenges.

TABLE U: KEY STRENGTHS AND CHALLENGES—EXL

STRENGTHS	CHALLENGES
EXL is regarded as an excellent and long-term partner with deep demonstrated expertise. The market perception is that EXL aggressively goes after overpayments, and finds and recovers them.	The company's brand recognition may be limited at this time due to its market orientation as a BPO provider.

STRENGTHS	CHALLENGES
The company's ability to retain talent for a long time coupled with low turnover (compared to other vendors that have retention challenges) helps boost the confidence that clients place in EXL.	Not so much a challenge, but a wish list item to consider is to become more preventive and gradually avoid overpayments over time.
Health plans note that they give EXL first right of refusal on claims (first access to claims), thanks to its success rates, before bringing in other vendors.	EXL is not fully mature in its ability to offer scorecards that compare its performance to the start of the contract. Demonstrating how it is performing against expectations can resolve this concern.

Source: Aite-Novarica Group

OPTUMINSIGHT

OptumInsight, a wholly owned subsidiary of UnitedHealth Group, is a health services company focused on the healthcare industry, serving payers, care providers, health systems, employers, governments, life sciences companies, and consumers. OptumInsight is the business unit that provides data, analytics, research, consulting, technology, and managed services solutions. PI is one of the company's core competencies, addressing medical claim and administrative costs through improved accuracy and efficiency. OptumInsight's solutions comprise pre-submission, pre-payment, and post-payment suites.

Basic Firm and Product Information

- **Headquarters:** Eden Prairie, Minnesota
- **Founded in:** 2011
- **Number of employees:** 195,000
- **Ownership:** Parent company UnitedHealth Group is publicly traded; Optum, a subsidiary of UnitedHealth Group, does not publish separate financial statements.
- **Key financial information:** Optum does not report revenue for individual service categories. OptumInsight, the analytics, research, consulting, and technology business unit of Optum, reported estimated revenue of US$12.2 billion in fiscal year

2021. Optum's total 2021 estimated revenue was US$155.6 billion. OptumInsight does not disclose information about its percentage of recurring revenue or the percentage of revenue invested in R&D.

- **Key products and services:**
  - Pre-Submission Services: Provider Messaging, Education, and Consulting Services
  - Pre- and Post-Pay Claim Validation Services:
    - Editing: Claims Editing Software and Services, Advanced Editing (coding and specialty content)
    - Auditing: Fraud, Waste, Abuse, and Error; Itemized Bill Review; High Dollar Claim Review; Short-Stay Billing Validation; and DRG Audit
    - Third-party liability: Coordination of Benefits and Subrogation
    - Pricing: Pricing and Grouping
    - Recovery: Data Mining and Credit Balance
- **Target customer base:** The target market is commercial, Medicare Advantage, Medicaid, and third-party administrator health plans. Optum also serves government and veterans agencies.
- **Number of clients:** Approximately 200
- **Global footprint:** Optum has more than 15 delivery locations across the United States, India, Ireland, and the Philippines.
- **Implementation options:** On-premise, hosted in a private data center, or hosted on a public cloud (Azure and AWS).
- **Pricing structure:** Optum has a variety of pricing options dependent on the scope of the partnership a health plan prefers. The focus in larger, more strategic partnerships is on risk-based arrangements with the health plan having limited to no upfront costs or any associated fixed fees. Most pricing arrangements are contingency with fees calculated as a percent of the medical expense saved for the client. In smaller, single-solution contracts, Optum tends to have licensing costs primarily for its installed software solutions.

Key Features and Functionality Based on Product Demo

- Single implementation for Comprehensive Payment Integrity services
- Real-time provider alerts, which empower providers to avoid claim denials
- Medical records sourced from electronic medical record (EMR) systems to reduce provider abrasion
- Integrated specialized medical management and payment integrity services

Top Three Strategic Product Initiatives Over the Last Three Years

- Build on comprehensive payment integrity offering, which includes integrated claim editing, auditing, third-party liability coordination, and overpayment recovery deployed across the claim lifecycle
- Expand advanced analytic claim selection models and overpayment identification, which generates incremental medical cost savings with precise claim targeting to minimize provider abrasion
- Continue to drive Lab Benefits Management that addresses genetic and routine lab testing with minimal abrasion by combining clinical policy, prior authorization, and payment integrity capabilities in an integrated solution

Top Three Strategic Product Initiatives in the Next 12 to 18 Months

- Expand editing and analytic content for under-managed and high-growth categories of spend
- Reduce provider abrasion through avoidance
- Broaden from accurate payments to affordability through integrated specialty medical management and payment integrity offerings

Client Feedback

Table V displays the vendor's strengths and challenges.

TABLE V: KEY STRENGTHS AND CHALLENGES—OPTUMINSIGHT

STRENGTHS	CHALLENGES
It's a complete solution from prepay to post-pay, with programs that are integrated with each other. Optum teams work together, making switches on where edits fire from very easy.	Management may be overstretched and carrying a lot of responsibility, which doesn't lend itself to catching the details. Missing small things early on could impact the timeliness of deliverables downstream. Having the main project manager with adequate support from multiple product lines can help.
It has the flexibility and nimbleness to work with clients, with proactive guidance for health plans on where is the best place to fire certain edits.	Some health plans note that they are uncomfortable working with Optum because they are owned by UnitedHealth Group, a major competitor to commercial health plans.
It is willing to move past the black box model and toward supporting clients so they can internalize specific capabilities, to the extent their internal tech and talent is interested in handling.	While client management is generally well regarded, a greater emphasis on showing clients the next best thing to identify and prevent overpayments would be welcome.

Source: Aite-Novarica Group

SAS INSTITUTE

SAS Institute is a multinational developer of analytics software. SAS Institute's PI product, SAS Detection and Investigation for Health Care, combines rules, anomaly detection, and predictive methods to detect actors who exhibit improper treatment, billing behavior, and payment behavior at every stage of the claims process, and to stop improper payments before claims are paid. SIUs are likely to use the data at the post-pay phase, while chief financial officers will opt to access the data for real-time insights.

Basic Firm and Product Information

- **Headquarters:** Cary, North Carolina
- **Founded in:** 1976
- **Number of employees:** 11,764

- **Ownership:** Private
- **Key financial information:** SAS Institute is a profitable company that has more than US$3.1 billion in revenue, with over US$500 million of that generated from healthcare. Half to three-quarters of that figure comes from recurring revenue. The company invests more than 15% of revenue back into R&D.
- **Key products and services:** SAS Detection and Investigation for Health Care (D&I for Health Care)
- **Target customer base:** Healthcare payers
- **Number of clients:** 1,345
- **Global footprint:** SAS has offices in 56 countries.
- **Implementation options:** Deployed on-site, hosted on a private data center, or hosted on a public cloud
- **Pricing structure:** Pricing is based on the number of covered lives as well as other flexible models.

Key Features and Functionality Based on Product Demo

- End-to-end solution, purpose-built for healthcare PI and fraud
- Cloud-native architecture
- Breadth of analytical capabilities
- Embedded knowledge of fraud schemes and workflow

Top Three Strategic Product Initiatives Over the Last Three Years

- Re-platforming the solution into a cloud-native architecture that allows for rapid deployment and continuous updates.
- Integration of text analytics capabilities to support the ingestion of unstructured data, which accounts for over 90% of total data volume in healthcare.
- Workflow enhancements, including hardcoded values, an escalation process for workflow tasks, the ability to capture who is currently assigned a user task and who manually starts a workflow, a group detail view in reports, the option for null values

in workflow variables, and the ability to select the user type when updating an entity.

Top Three Strategic Product Initiatives in the Next 12 to 18 Months

- Integration with a real-time decisioning engine. The company will continue to aim to complete integration with the SAS real-time decisioning engine to support prepayment analysis and enable fraud/integrity analytics on the edge (such as embedded in medical devices, wearables, and durable medical equipment).
- Creation of out-of-the-box models for analyzing unstructured healthcare data.
- Full integration of D&I for Health Care with identity verification capabilities to create a seamless, cloud-based offering.

Client Feedback

Table W displays the vendor's strengths and challenges.

TABLE W: KEY STRENGTHS AND CHALLENGES—SAS INSTITUTE

STRENGTHS	CHALLENGES
Flexible, leading-edge and feature-rich tools ideal for data mining	While analytics is a golden egg, in some cases, the solutions can be overwhelming or complex and try to do too much. In other words, while more is better, sometimes simpler is better.
Project management	Client user training came up as a point of concern two years in a row. Considering that clients may include nurses or investigators who do not necessarily have a technology background, keeping training modules simpler may be helpful.

Source: Aite-Novarica Group

OTHER VENDORS ACTIVE IN PAYMENT INTEGRITY

In addition to the vendors that participated in our Aite Matrix, the following vendors are among those active in the field and have made investments to expand their presence in the healthcare payer market. Select emerging vendors to watch in this competitive marketplace include ClarisHealth, CGI Technologies & Solutions, Healthcare Fraud Shield, Gainwell Technologies, Mastercard Healthcare Solutions, Shift Technology, and Zelis.

CLARISHEALTH

ClarisHealth provides AI-enabled technology to health plans to support their cost-containment efforts associated with PI and FWA. Automated workflows, claim-line-level tracking, user-level dashboards, and other claims overpayment inventory management features provide a platform that allows payers to manage internal and external auditing operations. The application ingests structured and unstructured data, can integrate with other systems, and transfers information bi-directionally to reduce manual work processes and create efficiencies.

ClarisHealth's Pareo platform expands health plans' ability to use multiple vendors and makes vendor portfolio management possible. The platform functions as a central integration point for health plans' other vendor solutions for a more comprehensive approach to payment integrity. Among its many data flow capabilities, the Pareo platform directs incoming post-adjudicated prepay and post-pay claims from claims editing solutions and reroutes them to the appropriate or designated vendor partner or internal audit team.

Clients indicate that Pareo is the only product that allows the software to tag claims to identify those that have already undergone an audit review and which employees interacted with which claim.

Pareo's enterprise SaaS platform offers multiple feature sets that can be "stacked" to create a technology ecosystem that configures to meet the needs of health payers. These feature sets include Supplier Optimization, Audit, Clinical, Fraud, Prepay, Provider, and Data, and a solution specific to BCBS plans called Pareo InterPlan Invoicing. Pareo Supplier Optimization is the only commercially available platform that offers health plans vendor management technology, minimizing the IT work required to set up a vendor for multiple services.

CGI TECHNOLOGIES & SOLUTIONS

CGI Technologies & Solutions, an IT and business consulting services firm, delivers end-to-end services and solutions including strategic IT and business consulting, systems integration, intellectual property, managed IT, and business process services. The company's ProperPay Solution and Audit Recovery services provide an integrated platform that predicts, identifies, manages, and recovers overpayments.

Key products include CGI ProperPay, Sovera, and Hyland OnBase. Services include Audit services—prepay and post-pay FWA solution (SaaS) and reimbursement consulting services. The company's leading product for PI clients, ProperPay, has a module of cognitive business rules that can be customized to payer-specific reimbursement rules and policies. This customization is layered on top of CGI Technologies & Solutions' standard suite of edits, logic, and algorithms to identify the claims with the highest probability of payment errors.

CGI's workflow management solution is designed for auditors to use from the screening phase of claims through the audit itself. Auditors can review the claims and audits for further investigations using multiple coding, clinical, regulatory, and behavioral methodologies.

HEALTHCARE FRAUD SHIELD

Healthcare Fraud Shield (HFS) is an FWA software solution suite that offers a variety of prepay, post-pay, and case management tools as well as investigative expertise with an AI component.

HFS has a suite of seven modules that span the healthcare claims process: AIShield, PreShield, PostShield, RxShield, QueryShield, CaseShield, and SIU Services. These can serve as individual modules but also constitute an integrated product.

The flagship platform, FWAShield, includes a prepay and post-pay detection system, AI, an ad hoc query tool, and a case management system. HFS' case management tool is designed for use by SIUs at client sites. The rules-based approach takes parameters and applies them to detect known schemes while the AI models detect unknown schemes. The solutions absorb data, such as medical records, public records, and multiple years of claims data and codes, then model the data and translate it into meaningful insights:

- Models are continuously trained and improved with additional data sets, user collaboration, and input. That said, models need to be interpreted by skilled personnel to determine whether an anomaly is truly an anomaly.
- AIShield's AI score comprises a variety of factors and behaviors. It is maintainable and adapts to new data, but it requires skilled personnel to interpret the findings.

GAINWELL TECHNOLOGIES

Gainwell Technologies provides cost containment and care quality solutions to healthcare payers. In April 2021, Gainwell Technologies acquired HMS, signaling a period of revision for its existing suite of services and discontinuing the HMS brand. Its bundled solutions, designed for state Medicaid programs, include PI solutions to avoid and recover improper payments, detect and prevent fraud, and ensure government funds are used as intended. Its PI solutions address improper payments utilizing analytics and clinical expertise. The PI solution suite includes clinical claim reviews, with a focus on prepay reviews, payment analytics, and utilization management. The company also has a modular, cloud-hosted platform called Fraud Capture, that provides end-to-end support in the identification of FWA. The platform's mobile-friendly software provides data visualization and data exploration tools.

MASTERCARD HEALTHCARE SOLUTIONS

Mastercard Healthcare Solutions is building on its experience in healthcare payments and fraud prevention technologies it uses for the financial services industry to address FWA in healthcare. Mastercard AI helps payers detect erroneous or fraudulent claims—before reimbursing providers. AI models can be tailored to identify healthcare claims fraud, prescription abuse, upcharges, phantom billings, and many other FWA challenges. Mastercard's Smart Agent technology suite has profiling and modeling capabilities that adapt to improve results. Advanced AI tools can offer customized decisions for payers, insurance companies, federal or state governments, payment processors, and other PI vendors.

SHIFT TECHNOLOGY

Shift Technology works with property and casualty, and health and life insurers around the world to combat insurance fraud and optimize insurance decisioning with AI and industry experience. Shift's insurance suite consists of improper payment detection for

healthcare, underwriting fraud detection, claims fraud detection, document and claims intake decisioning, subrogation, and financial crime detection.

Shift Improper Payment Detection is an AI-native decisioning engine, enriched with third-party data that scores each claim against a library of fraud scenarios to identify suspicious claims. Shift Improper Payment Detection scores and prioritizes claim alerts and issues alerts in real time to SIU teams for pre-payment and post-payment investigations. Users can view and manage fraud scenarios and indicators as well as access network visualizations on the user interface. Shift Improper Payment Detection can be used as a stand-alone application with its own interface or layered on top of payers' existing solutions or core systems.

The solution combines sophisticated AI techniques and ML algorithms to analyze historical and current claims data. The investigator receives prioritized alerts supported with a suspicion score that takes multiple variables such as patient characteristics, diagnosis, procedure type, and claims history combined with robust internal plan data and external data sources for increased accuracy.

Shift's Improper Payment Detection solution offers pre-payment detection, post-payment detection, and integrated case management for health plans. Key features of the solution include third-party data sources (federal and state data, data aggregators, provider data, and more), data cleansing and mapping that consolidates relevant claims data using data quality routines, denoising algorithms, and entity resolution techniques. AI presents in the form of automatic anomaly detection and NLP of text variables as well as continuous-learning models designed to uncover complex fraud and increase accuracy of alerts. Network link analysis helps uncover unknown linkages or relationships among seemingly unrelated claims, providers, and beneficiaries. Prioritized alerts at the claims, beneficiary, provider, and network level generate alerts and investigative information. The solution also features integrated case management, custom data exploration, and reporting.

Using a SaaS model, the Customer Success Manager, the Shift Data Scientist, and Shift Improper Payment Detection's ML algorithms continually update fraud scenarios to stay current with evolving fraud trends and emerging schemes.

ZELIS

Zelis is a healthcare payments company that partners with over 700 payers, including the top-five national health plans, BCBS insurers, regional health plans, TPAs and self-insured employers, and works with 4 million providers across the United States. Zelis has a suite of claims cost solutions that facilitates accurate payments and compliant out-of-network savings. Zelis seeks to create savings by adjudicating claims, balancing savings for health plans, and reducing provider abrasion. Zelis' Payment Integrity solutions include Claims Editing and Hospital Bill Review, and promotes payment on accurate claims in a compliant manner. Through the relationships with adjudication partners, Zelis Payment Integrity provides data flows for claim reviews.

CONCLUSION

Healthcare payers (health plans and TPAs):

- Consider the impact of vendor consolidation on provider abrasion. A vendor with a good relationship with providers is valuable to retain.
- Health plans prioritizing consumerism or member engagement would benefit from asking vendor partners about their member data sets. Explore how to repurpose the data to improve patient engagement and personalize member communications.
- Consider taking advantage of third-party vendor partners' flexibility to support understaffed areas and functions, such as claims adjustments and SIU augmentation.

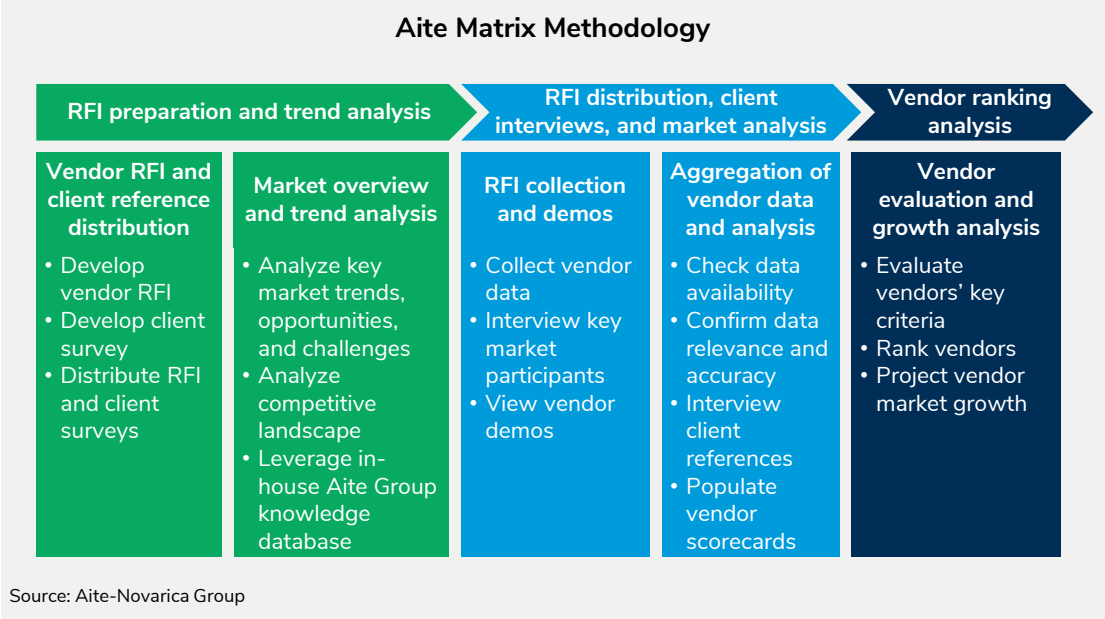
Vendors:

- Demonstrate scalability to meet high claim volume. Growth in the number of Medicare enrollees and Medicaid expansion in some states means a higher claim volume to process and adjudicate. Vendor partners that demonstrate an ability to scale and respond to increased volume will be better positioned to preserve relationships.
- Be easy to do business with. A vendor partner that provides implementation and delivery lets the health plan spend more time running its business. Such partners have a higher chance of contract renewals than vendors selling add-on products.
- Strike a strong balance between integration work and in-flight client engagements. Manage back-end systems integration while preserving the quality expectations of client engagements in flight.
- Don't expect copy-and-paste to get you far. The technology used for other industries does not apply to healthcare as-is. Intimate knowledge of the mechanics and nuances of claim processing, industry-specific roles, titles, and industry-specific vocabulary matter.
- Vendors that can provide self-evaluating scorecards that illustrate where they stand today compared to where they started can ensure they align with client expectations.

APPENDIX I

The Aite Matrix is a comprehensive proprietary vendor evaluation process designed to provide a holistic analysis of participating vendors and identify market leaders in each evaluated vendor market. By incorporating many aspects of a vendor's essential characteristics for success and growth, including financial and client stability, product features, and customer service, the Aite Matrix provides an actionable guide for market participants looking for viable third-party vendor solutions and services. Figure 14 highlights the key stages of the Aite Matrix methodology.

FIGURE 14: AITE MATRIX METHODOLOGY



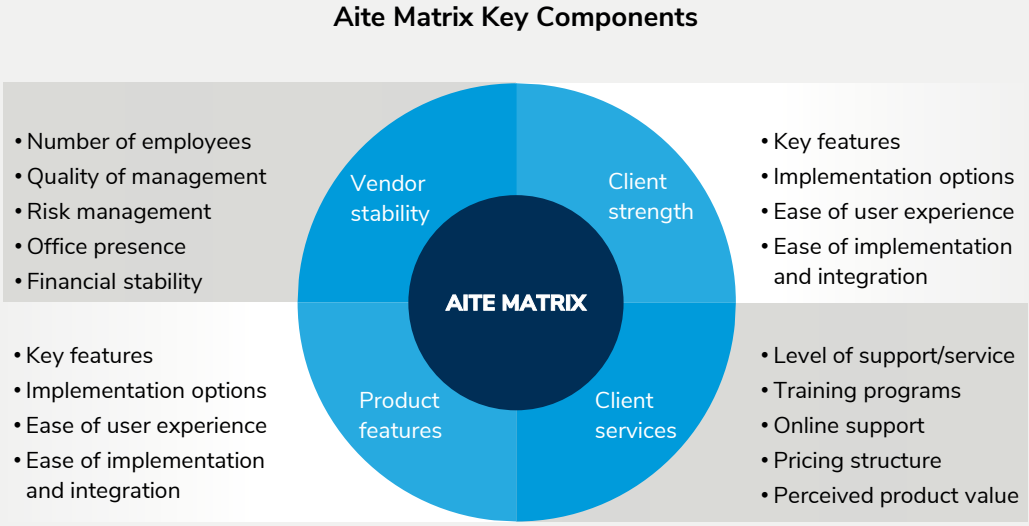
Source: Aite-Novarica Group

To ensure full transparency in terms of key areas of measurement and evaluation, Aite-Novarica Group shares the entire Aite Matrix with each vendor prior to publication. Each participating vendor also provides client references to measure their overall satisfaction. Details of the client reference survey and questions to be discussed with clients are shared with the participating vendor prior to the interviews. Aite-Novarica Group reserves the right to identify and interview other clients that may not be recommended by participating vendors to validate certain areas of analysis.

AITE MATRIX COMPONENTS

The Aite Matrix has four key components: vendor stability, client strength, product features, and client services. Examples of the criteria that could be included in each component are listed in Figure 15.

FIGURE 15: AITE MATRIX KEY COMPONENTS



Source: Aite-Novarica Group

Vendor Stability

The vendor stability component evaluates the overall strength of the vendors in terms of financial stability, management reputation, risk management, and global presence. This component determines whether a given vendor has the basic foundation to compete and sustain its overall market presence.

Client Strength

The client strength component focuses on the number and diversity of the vendor's customers, the vendor's reputation among the clients, and overall customer turnover. This component measures whether a given vendor has a strong foundation of clients and a robust client pipeline to sustain its growth trajectory.

Product Features

The product features component analyzes the key features and functionality of vendor solutions and services, including implementation options, user experience, and the strength of the future product roadmap. This component measures whether the vendor offers enough key features and functionality to remain competitive.

Client Services

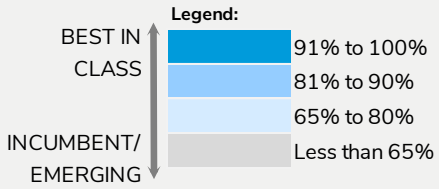
The client services component evaluates the pricing structure and its various attributes as well as the comprehensive nature of the vendor's client support and service infrastructure. This component measures whether the vendor provides robust service and support to provide real value to the clients.

AITE MATRIX

After a comprehensive analysis, Aite-Novarica Group can assess participating vendors within the four key evaluation components (Figure 16).

FIGURE 16: SAMPLE ASSESSMENT VIA HEAT MAP REPRESENTATION

Vendors	Vendor stability	Client strength	Client service	Product features
Vendor 1	83%	77%	81%	82%
Vendor 2	67%	74%	83%	86%
Vendor 3	93%	68%	81%	85%
Vendor 4	93%	90%	92%	89%
Vendor 5	76%	81%	92%	81%
Vendor 6	86%	90%	81%	77%
Vendor 7	79%	77%	92%	88%
Vendor 8	88%	90%	81%	82%
Vendor 9	71%	65%	89%	85%
Vendor 10	79%	68%	75%	85%
Vendor 11	81%	81%	75%	80%
Vendor 12	88%	90%	89%	85%
Vendor 13	81%	81%	92%	88%
Vendor 14	88%	87%	83%	85%
Vendor 15	74%	71%	81%	83%



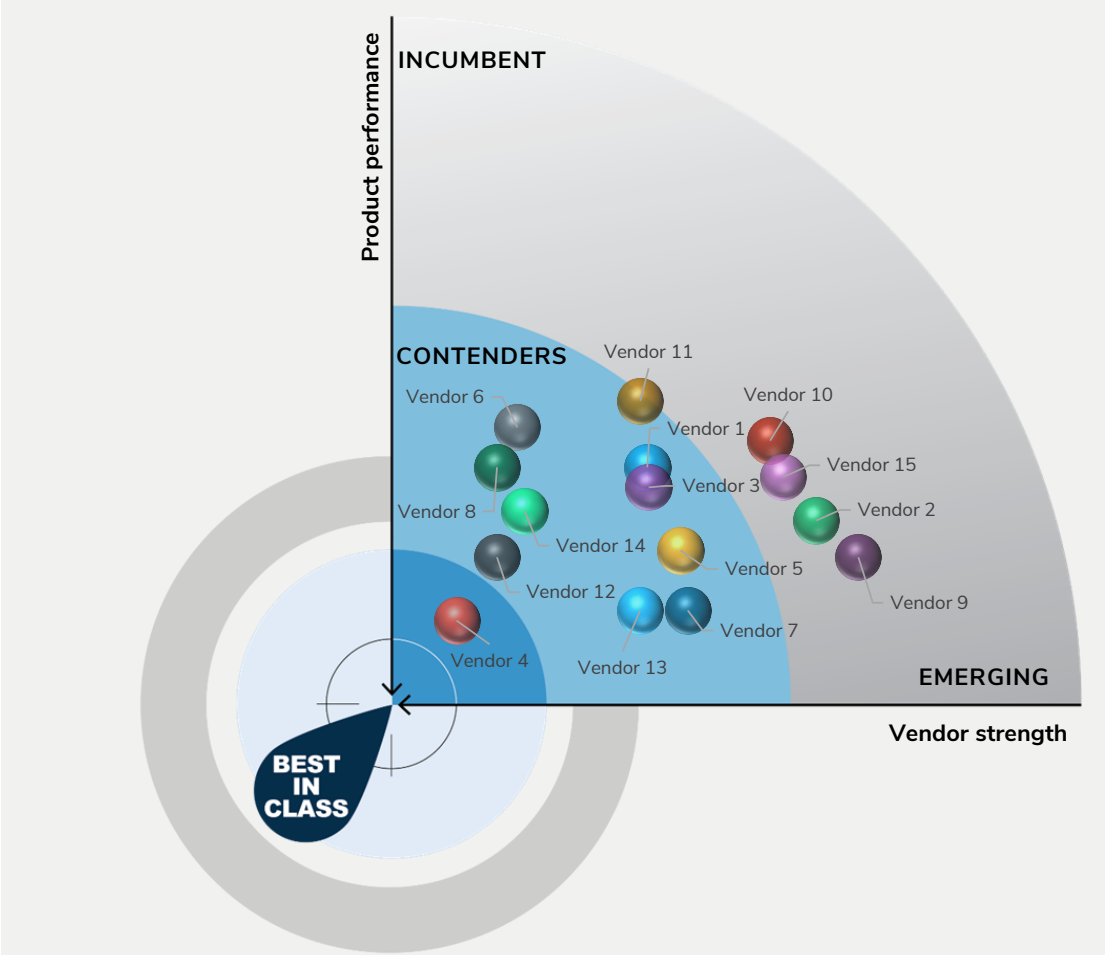
Source: Aite-Novarica Group

The Aite Matrix leverages these four components to create a concise composite evaluation that identifies market-leading vendors:

- **Vendor strength:** Combining the scores from the vendor stability and client strength, this criterion measures the vendor's overall long-term business viability as a product and service provider.
- **Product performance:** Combining the scores from the product features and client service components, this criterion measures the vendor's ability to deliver key product functionality and support.

Figure 17 provides a sample output of the Aite Matrix, presenting those market-leading vendors that provide robust product performance as well as showcase their ability to execute on their long-term strategies.

FIGURE 17: SAMPLE AITE MATRIX



Source: Aite-Novarica Group

The Aite Matrix highlights three specific types of vendor groupings as a result of the analysis:

- **Best in class:** Vendors in this grouping represent the leaders in the particular vendor market, with strong financials, diverse client bases, and robust product offerings with industry-leading functionality and reliable client service. These are essentially the leading vendors that everyone else is chasing.
- **Contenders:** Contenders have created stable businesses and client bases as well as competitive product offerings. But they struggle at times to identify the next big market trend or product features, or lack consistent research and development

(R&D) or IT investment, leading to a failure to update overall performance and infrastructure. Contenders' overall competitive positions will vary a bit, from vendors that are having a tough time keeping up with the best-in-class vendors—due to a lack of resources or stable but outdated technology stacks—to vendors that are just inches away from joining the best-in-class grouping if only they could properly execute on the next release or successfully capture a new client segment.

- **Incumbent or emerging:** This last grouping represents vendors that either have a large potential for future growth or are established vendors with stagnating offerings. This group may represent startups or vendors with limited resources. They may exhibit unstable business models, low client count, and limited client service capabilities. However, this group of vendors may also support innovative product features and transformative business models that will help them home in on the Aite Matrix framework.

The relative positions of vendors that have been bucketed into these three distinctive vendor groupings within the Aite Matrix are, of course, not static. In fact, an emerging vendor of today may, given the speed of innovation in recent years, find itself in the best-in-class grouping five years from now.

The beauty of the Aite Matrix is that by leveraging this framework, Aite-Novarica Group analysts can pinpoint vendors' strengths and challenges, and vendors can utilize this framework to make sure they are on the right path to reaching the coveted best-in-class position. The flexibility of the Aite Matrix is also designed to be beneficial for those financial institutions looking to make vendor decisions tied to their unique set of internal requirements.

RELATED AITE-NOVARICA GROUP RESEARCH

Aite Matrix Client Reference Feedback: Payment Integrity in Healthcare, June 2021

Aite Matrix: Payment Integrity in Healthcare, May 2021

Market Overview: Payment Integrity in Healthcare, May 2021

Top 10 Trends in Health Insurance, 2021: Moving Forward, January 2021

U.S. Health Insurance: Payment Integrity and Fraud in Claim Adjudication, July 2020

ABOUT AITE-NOVARICA GROUP

Aite-Novarica Group is an advisory firm providing mission-critical insights on technology, regulations, strategy, and operations to hundreds of banks, insurers, payments providers, and investment firms—as well as the technology and service providers that support them. Comprising former senior technology, strategy, and operations executives as well as experienced researchers and consultants, our experts provide actionable advice to our client base, leveraging deep insights developed via our extensive network of clients and other industry contacts.

CONTACT

Research and consulting services:
Aite-Novarica Group Sales
+1.617.338.6050
sales@aite-novarica.com

Press and conference inquiries:
Aite-Novarica Group PR
+1.617.398.5048
pr@aite-novarica.com

For all other inquiries, contact:
info@aite-novarica.com

Global headquarters:
280 Summer Street, 6th Floor
Boston, MA 02210
www.aite-novarica.com

AUTHOR INFORMATION

Inci Kaya
+1.617.398.5047
ikaya@aite-novarica.com