How API-led connectivity powers the payer of the future
Introduction

Health insurance is undergoing a digital transformation driven by legislative, competitive, and consumer pressures. In order to survive and thrive amidst industry disruption, many progressive health insurers are pioneering new business models anchored by a modern, “composable,” API-led approach to IT.

Using case studies from leading payer organizations, this paper discusses the benefits of API-led connectivity in health-care and outlines a three-layer reference architecture for API-led connectivity.
A McKinsey report\(^1\) indicates that for health insurers, more than 50% of the strategic IT initiative budget over the next three years will be focused on digital transformation. This change in emphasis can be explained by a number of legislative, technological, and market drivers, including:

**Healthcare consumerism:** Payers face a consumer-driven transition from an episodic, in-person, encounter based system of care delivery to a 24x7, “anytime, anywhere” mode of engagement between patients, providers, and payers.\(^2\) This transition can be explained by the proliferation of mobile devices and health apps; nearly two-thirds of Americans\(^3\) now own smartphones, and there are over 165,000 mobile health apps\(^4\) to choose from.

As many health plans have failed to innovate at the pace seen in other industries, consumer satisfaction with the health insurance industry has hit a 10-year low.\(^5\) Digital transformation provides insurers with an opportunity to differentiate by engaging across mobile and web channels to deliver superior customer service and improve member retention rate.

Furthermore, digital engagement can help payers reduce the cost of care. By providing real-time pricing information for medical services, payers can steer members to lower cost

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options. Payers can also leverage digital engagement to steer members towards low-cost preventive health services (e.g. immunizations, mammographies) that reduce the likelihood of a costly health complication emerging down the line.

In response to these trends, payers are investing in improving member and provider experiences through improved user portals and back-end support tools.

**Market consolidation:** There is a wave of mergers and acquisitions underway in healthcare across all sectors—payers, providers, and Big Pharma. The proposed mergers of Anthem-Cigna and Aetna-Humana will significantly increase consolidation in the health insurance sector. This wave is likely to increase costs for the purchasers of healthcare services while increasing competitive pressures within the industry. M&A activity typically drives cost reduction initiatives through consolidation of IT assets and organizations, which will impose huge demands on CIOs to standardize data and rationalize applications.

Additionally, M&A also places increased competitive pressure on smaller regional payers who have to compete with a comparatively limited number of resources compared to today’s healthcare juggernauts. These smaller payers, when competing against national insurers with lower rates or larger provider networks, must find new ways to differentiate. Providing superior customer service and engagement can help these payers maintain a competitive advantage, particularly when considering the healthcare consumerism trend discussed previously.

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6 Herman, B. (2015, June). *Providers fear insurance mergers will intensify rate pressures*. Modern Healthcare.


Healthcare payment reform: The Affordable Care Act (ACA) has set in motion several new initiatives related to healthcare payment reform—chief among them, the transition from fee-for-service to value-based care. “The ramifications of this transition for payers are significant,” says John Tyler, Data Science Platform Manager at Premera Blue Cross. “Payers are going to have to get really good at providing value to their customers relative to the healthcare system and at managing risk more closely.”

Payment reform has also shifted financial risks toward consumers. Health insurance premiums have far outpaced\(^\text{10}\) income growth in the past year, and there have been significant increases in out-of-pocket expenses, including copays and deductibles. Faced with increased financial responsibility, consumers have no choice but to shop for low-cost options for insurance coverage and healthcare. Payers have an opportunity to develop a competitive advantage by creating digital experiences that help members better manage healthcare costs.

Population health management: The transition to value-based care requires effective population health management, which necessitates a tighter coupling between payers and providers in order to aggregate and act on population health data. Digital initiatives that enable real-time data sharing between payers and providers can help payers improve care while driving down medical costs. Digital tools, such as big data analytics, can be used effectively by payers and providers for predicting and managing risk on a real-time basis.

All of the above industry drivers represent a tremendous opportunity for some while posing severe challenges for others.

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\(^{10}\) Pear, R. (2016, March). *Newest policyholders under health law are sicker and costlier to insurers*. The New York Times.
Enabling population health analytics and “citizen developers” through API-led integration

As one of the largest health plans in the Pacific Northwest, Premera serves 2 million customers in Washington and Alaska.

Premera is focused on two key strategic initiatives: creating a stellar experience for Premera customers and addressing cost and quality. In pursuit of these initiatives, Premera leverages MuleSoft to power an analytics platform that informs better decision-making among providers and internal business leaders. In the future, they also plan to extend this capability to policyholders.

One use case for the analytics platform, Premera’s patient 360 view, illustrates how leveraging APIs can improve quality of care, patient experience, and cost through increased healthcare data liquidity. Due to their size and scale, Premera often has more detailed information on a given patient than the patient’s doctor, since patients may see multiple providers from multiple health systems—each with their own set of siloed data. “One of the big problems we’re trying to solve for is the data liquidity issue that exists in healthcare,” said John Tyler, Data Science Platform Manager, “Physicians working in a clinic may not have access to all the data that relates to their patient.” By aggregating this data in real-time and exposing it to providers through the use of APIs, Premera intends to help providers provide better care based on a more informed view of the patient. Premera intends to extend the reach and interoperability of their patient 360 view by exposing the underlying capabilities as an API.

API-led connectivity is key to supporting Premera’s long-term strategic initiatives. John Tyler envisions “a catalog of reusable services that people can build mobile apps and web apps on”—all in support of improving the quality of care and lowering healthcare costs.
Integration: The defining challenge in achieving digital transformation

In light of the digital transformation imperative, IT has taken center stage as a key enabling function supporting the survival and growth of modern health plans. New technologies and tools support anytime, anywhere access of data, real-time processing, and increasingly rich analytics functionality. As health plan executives and line-of-business owners increase the pressure on IT teams to deliver these new capabilities to support strategic business objectives, demands on IT have now exceeded IT delivery capacity (Figure 1).

Figure 1: As digital transformation grows, increasingly, business-critical demands on IT outpace IT delivery capacity

With the increasing number of technologies required to support the digital experiences and functionality needed to remain competitive, integration can serve as a bottleneck to increasing IT delivery capacity. The challenges of working with and integrating healthcare data are well documented, from information security concerns, to HIPAA restrictions on access
and use of PHI, to interoperability issues\textsuperscript{11} with proprietary EHR Systems. It’s no wonder that insurance companies find their IT teams bogged down by the increasing number of digital products and services required to remain competitively viable.


A Harvard Business Review article titled “The Untapped Potential of Healthcare APIs” states that efforts to “liberate” healthcare data for third-party applications have progressed slowly because the sector lacks the robust APIs and app developer programs common in other industries.  

Instead of leveraging APIs, healthcare payer organizations have typically followed a point-to-point approach or service oriented architecture (SOA) approach to integration. Point-to-point approaches might seem attractive for quick delivery of a single given project or when there are a limited number of endpoints and a slower pace of change. However, this approach is increasingly untenable when used for modern payer integrations, which must manage an explosion of endpoints and increasing demands from internal stakeholders for data access.

Figure 2: Traditional point-to-point architecture in health insurance

Meanwhile, traditional SOA cannot move at the pace at which today’s new systems and applications evolve and change. For example, while the 834 EDI format has not changed in years, the requirements for patient experience portals or mobile applications for members are changing monthly. Commenting on the modern integration needs facing his team, one payer architect commented that he wanted “something agile that wouldn’t get us bogged down, something different from a top-down Oracle or IBM SOA.”

In contrast to traditional SOA, API-led connectivity calls for a distinct “connectivity building block” that encapsulates three distinct components as described in Figure 3.

Designing with the consumption of data as the primary objective, APIs are the instruments that provide both a consumable and controlled means of accessing connectivity.

Figure 3: Three distinct components of API-led connectivity.
Case study: Not-for-profit metropolitan player

Improving agility through real-time data orchestration within the enterprise

This payer currently serves close to 1.2 million members within a large metropolitan area due to government-sponsored programs. Their primary business objectives in the near term are to expand membership to 2 million and expand vertically into the commercial market while improving performance on value-based care metrics.

They had recently implemented several new platforms including Salesforce and Pega, and one of their immediate priorities was to integrate these into core administration systems such as claims and broker portals. Other priorities included transitioning to real-time processing, reducing system latency, and improving care quality.

Due to a large number of integrations called for by the product roadmap, they needed an integration platform that would enable easy development and reuse of assets. Recognizing the value of an API-led connectivity approach in achieving these aims, the IT leadership at this payer selected MuleSoft for their integration needs.

Once selected, MuleSoft was deployed to:

› Build an orchestration layer to connect legacy systems of record (mainframes, data repositories)
› Be the “glue” to connect their Salesforce customer service portal to member and provider systems of record
› Augment the real-time effectiveness of Pega’s BPM platform
› Support emerging analytics initiatives by enabling real-time access to data.

All systems integrations within their enterprise now go through MuleSoft. In the short period of time since implementing MuleSoft, they have improved developer productivity and completed strategic IT projects within an accelerated timeframe.
Three-layered reference architecture for API-led connectivity

Large enterprises have complex, interwoven connectivity needs that require multiple API-led connectivity building blocks. In this context, putting in a framework for ordering and structuring these building blocks is crucial. Agility and flexibility can only come from a multi-tier architecture containing three distinct layers. This is described below in Figure 4.

System layer: Underlying all IT architectures are core systems of record (such as ERP, EHR, core administration systems, proprietary databases). Often, these systems are not easily accessible due to a lack of connectivity between systems. APIs provide a means of accessing underlying systems of record and exposing that data, often in a canonical format, while providing downstream insulation from any interface changes or rationalization of those systems.

Process layer: The underlying business processes that interact with and shape this data should be strictly

Figure 4: Three-layered reference architecture for API-led connectivity in health insurance
encapsulated independent of the source systems from which that data originates, as well as the target channels through which that data is to be delivered. For example, in a member enrollment process, there is some logic that is common across products, geographies, and channels that can and should be distilled into a single service that can then be called by product/geography/channel-specific parent services. These APIs perform specific functions and provide access to non-central data.

Experience layer: Data is now consumed across a broad set of channels, each of which requires access to the same data but in a variety of different forms. For example, member enrollment, billing, and claim processing systems may all need to access the same customer information fields, but be presented in different formats. Experience APIs are the means by which data can be reconfigured so that it is most easily consumed by its intended audience, all from a shared data source, rather than setting up separate point-to-point integrations for each channel.

The three-tiered reference architecture of system, process, and experience layer APIs maintains critical governance while enabling a bottom-up agile IT infrastructure to meet the speed and innovation demands of healthcare payers.

Here are the benefits of API-led connectivity:

» IT as a platform for innovation: By exposing data assets as a service to a broader audience, IT can be a platform that allows lines of business to self-serve and accelerate innovation.

» Increased developer productivity: Realizing an API-led connectivity approach is consistent with a service oriented approach, whereby logic is distilled to its constituent parts and reused across different applications. This approach
prevents duplication of efforts and allows developers to build on each other’s efforts.

› **Predictable and controllable change:** By ensuring modularization of integration logic and by providing a logical separation between modules, IT leaders can better estimate, plan, and ensure delivery of changes to the code with minimal testing and downstream impact.

› **Distributed and tailored approach:** An API-led connectivity approach recognizes that there is no one-size-fits-all architecture. This helps address connectivity in small pieces and exposes capability through APIs or microservices.

› **Greater agility through loose coupling of systems:** Within an organization’s IT architecture, there are different levels of governance that are appropriate. The so-called bimodal IT\(^\text{13}\) or the two-speed IT\(^\text{14}\) approach makes this dichotomy explicit. API-led connectivity supports the ability to carefully manage and gate changes to the core systems of records (e.g. annual schema changes to core ERP systems), while retaining the flexibility to iterate quickly for user-facing edge systems, such as web and mobile applications.

› **Deeper operational visibility:** Approaching connectivity holistically allows greater operational insight that goes beyond whether an API or a particular interface is working or not. It provides end-to-end insight from the receipt of an initial API request call to the fulfillment of that request, based on an underlying database query. At each step, a fine-grained analysis is possible that cannot be easily realized when considering connectivity in a piecemeal fashion.

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Case study: North-east regional player

Standardizing enrollment and improving care quality with API-led connectivity

This payer provides state-sponsored health insurance within a large regional area in the Northern United States. To address the emerging trend of healthcare consumerism, the payer has leveraged MuleSoft to power a number of initiatives focused on improving the patient experience and improving patient retention rate.

The first, a revamp of their member portal’s provider search function, helps members search for in-network providers close to their home or work by aggregating location data from multiple systems of record, standardizing that data, and making it accessible to members. They also plan to use MuleSoft for orchestration of prior authorization requests to enable real-time approvals.

By approving prior authorization requests in real-time, patients can undergo pressing medical procedures (such as ER surgeries) with the reassurance that they will be covered by their insurance, instead of having to make medical decisions without immediate knowledge of cost or reimbursement.

In addition to supporting improved member experiences, MuleSoft also helps them to comply better with legislative mandates in a cost-effective manner. For example, in response to the requirement to provide claims query servicing for service inquiry calls, they have built an SOAP-based service to validate incoming claim query service data, enrich the data, and serve it back to the requester. By employing an API-led approach, they have constructed this service as an internally reusable asset that will support future development efforts for other inquiry services such as enrollment checking.
Healthcare is in the early stages of a digital transformation, providing a massive opportunity for payers to reimagine and reengineer traditional business models. In an increasingly competitive and disrupted market, effective digital transformation will be a key competitive differentiator between the payers who thrive and the payers who falter.

Integration is the anchor powering the type of digital transformation required to succeed. As one IT executive commented, “Healthcare is an integration problem. The smarter we get about figuring out how to network information, the more competitive we are going to be.” By providing end-to-end connectivity across API, service orchestration, and application integration needs through a single unified platform. MuleSoft’s Anypoint Platform allows enterprises to deliver on their digital transformation initiatives through API-led connectivity. The platform allows developers to connect rapidly, orchestrate, and enable any internal or external endpoint—providing payers with a decisive competitive advantage in today’s market.
About MuleSoft

MuleSoft’s mission is to help organizations change and innovate faster by making it easy to connect the world’s applications, data and devices. With its API-led approach to connectivity, MuleSoft’s market-leading Anypoint Platform™ is enabling over 1,200 organizations in approximately 60 countries to build application networks.

For more information, visit mulesoft.com

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