apervita

System of Insight
The New Low-Code Platform for Empowering Excellence in Healthcare

apervita

Executive Summary

As the value-based payment purse strings keep tightening, health care leaders need to look towards a new generation of systems of shared insight to deliver more efficient and effective care.

This rapidly increasing demand for operational analytics is causing heightened executive heartburn. Classical back-office reports and proprietary analytics, locked into vendor systems, are failing to hit the mark and health care leaders are struggling to keep up with today's deficient technology patchwork. Sirens continue to wail as executives see the quantity of analytics increase, data volumes rapidly expand, and integration points multiply, with a total lack of enterprise governance.

The Apervita low-code analytics and data platform, built on world-class technology, is a comprehensive solution to this problem. Acting as a core enterprise resource, it distributes and scales real-time intelligence, wherever it is needed. It unifies health data, enabling the agile development of thousands of analytics which can be distributed as real time insight across the care continuum. Apervita is an open and advanced insight sharing platform addressing clinical, financial, operational and strategic goals. It empowers enterprise systems, experiences, and workflow with the broad variety of intelligence needed to efficiently and effectively deliver value-based care.

A New Industry Imperative

A new breed of insight is coming, creeping into our lives, powering everything from robots, to drones, and autonomous vehicles. It allows us to get more done, in less time, with a lot less hassle. Visionaries talk about the elusive master algorithm—the mother of all algorithms or the ultimate learning machine—acting as a central brain, streaming intelligence into our every activity.

However, almost without even realizing it, today we have already become accustomed to relying on a huge variety of services that deliver insight. More often than not, they are algorithms, that silently run in the heart of some of our favorite apps. They're tasked to work for us behind the scenes, continually processing data and responding to our every need. Search engines use them to predict results, social media sites use them to filter posts, GPS apps use them to predict traffic, and email spam filters use them to ease the burden of your inbox.
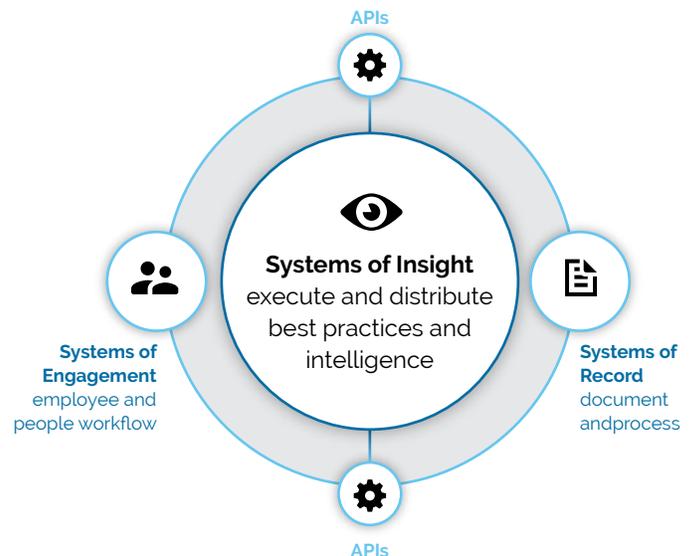
Tech industry thought-leaders, like the acclaimed author Geoffrey Moore, are now pointing to a top industry imperative: the system of insight. They are a new breed of systems that empower enterprises with operational intelligence, infusing insight into systems that document and record the health process and a broad spectrum of interfaces that engage the user in their workflow. They do away with the data shackles, distributing thousands of computable best practices across the enterprise, and enabling people to be more efficient and effective at work.

But, what about health care today?

If electronic health data is the new oil, systems of insight are the new refineries that distill it into hundreds of thousands of nuggets of wisdom, and distribute these to every employee and every person. Systems of insight act as a core resource to unify and harmonize data and then transform it with computable best practices. An API fabric acts as the delivery pipeline, distributing diverse types intelligence to be consumed by systems of engagement, such as the EHR, business intelligence systems, financial systems, supply chain management, customer relationship management,

and others. Systems of insight also take advantage of modern cloud technologies, breaking the classically rigid data-mart paradigm and decoupling algorithms from data structures by intelligently distributing data and computation across hundreds or thousands of processors.

As technologies rise to the challenge, the demand for health insight is also becoming increasingly sophisticated. No longer can insight be defined as just a simple rule or score. It is becoming more and more common for insight to be described as a performance or quality measure with a standards-based definition, as a predictive algorithm that is capable of processing many patient data points in real time, as pathways that orchestrate a chain of decision nodes, and as guidelines that combine many tools to help clinicians assess and monitor patient health.

APIs

Systems of Insight
execute and distribute best practices and intelligence

Systems of Engagement
employee and people workflow

Systems of Record
document andprocess

APIs

3/8

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However, today in healthcare, the systems at our disposal leave it up to employees to manually read the data tea leaves or at best browse periodic reports that look back, instead of being relevant to the task at hand. Attempts to make workflow more efficient with computable insight too often require costly infrastructure investments and protracted vendor discussions, while we wait for a future vendor release that may not meet our needs.

Health care leaders are rapidly coming to terms with the fact that value-based care has placed such enormous pressure on enterprise operations that they need to embrace new technologies to optimize workflow and significantly reduce the cost per capita of health care delivery. This requires a much more agile and intentional approach, transitioning the focus from traditional back-office data science to high value, operational analytics, enabling better business processes and higher quality decisions.

## Toward Shared Insight - A Scalable Enterprise Asset

Although we might think of health knowledge as being limited to specific tasks, when we zoom in we begin to appreciate the mind-boggling variety of knowledge organizations already manage across clinical, financial, supply chain and relationship management. It's also easy to underestimate the complexity of enterprise processes. For example, for readmission prevention we might need to calculate patient risks, assess discharge readiness, monitor post-discharge recovery, coordinate a pathway between care settings, and check if the patient is eligible for post-discharge follow up. Zooming back out, at the enterprise-wide level, computable health knowledge can address problems as diverse as identifying inpatients at risk of deteriorating, managing chronic disease, detecting care gaps, recommending follow up interventions, or avoiding submitting claims that will likely be denied.

The universe of health knowledge today is vast, and it is largely disconnected from the care workflow. This unfortunately leads to massive variation in practice, as human behavior is not predictable. According to a Scientific American's myth buster article on scientific certainty in modern medicine:

"The plain fact is that many clinical decisions made by physicians appear to be […] variable. Reams of research point to the same finding: physicians looking at where same thing will disagree with each other, or even with themselves, from 10 percent to 50 percent of the time during virtually every aspect of the medical-care process…"

Hardly anybody wants to simply share data, and there is not much business value in it. Business value comes from deriving and sharing insights about decisions, performance, quality, and cost among the many members of the healthcare ecosystem. Compelling value is found in a network of shared insights, rather than in an assortment of point-to-point data exchanges. By capturing and managing knowledge as a central enterprise asset, it can be distributed everywhere it is needed, enhance any workflow, and empower staff to help reduce care delivery costs and take more optimal decisions.

As a central, shared asset, this knowledge can be standardized, expertly curated and proven, for the benefit of everyone. It has the potential to be transformed into decision support power tools to automate a vast variety of tasks, creating a more scalable, repeatable and efficient process. They can then be used for many enterprise applications, such as: clinical decision making, population management, executive reporting, patient engagement, referral management, appointment scheduling, revenue cycle management, supply chain management, and human resource management.
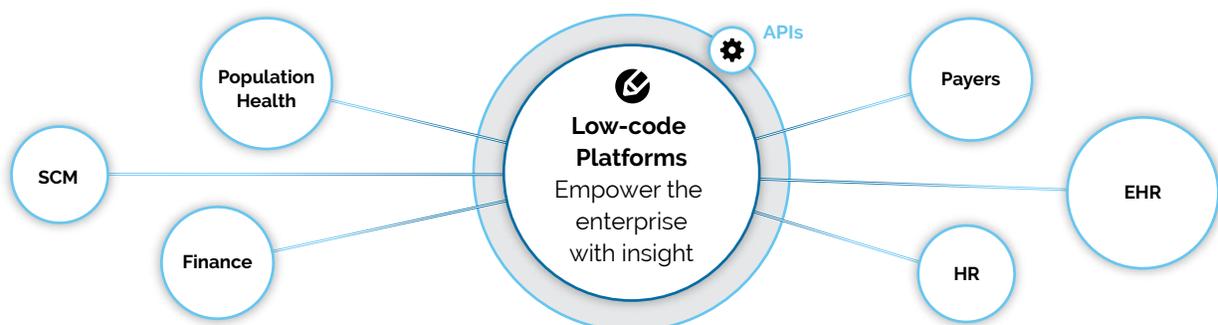
The Power of Platform
— An Industry-Scale System of Insight

Low-code analytics and data platforms are the next generation cloud-based platforms that fulfill the need for systems of shared insight in healthcare. They are characterized by their ability to bring together two very powerful and complementary capabilities, which when combined enable organizations to rapidly create, implement and manage health insight:

1. Insight Innovation

Insight innovation is the ability to capture enterprise knowledge and rapidly develop it into an extensive library of shared computable assets that can be connected to any data and packaged for use in a broad variety of tasks and experiences.

2. Insight Operationalization

Insight operationalization is the ability to execute thousands of analytics in real time, with distributed, on-demand computation and storage, providing enterprise-class control and governance in a secure environment which supports Protected Health Information (PHI) and many different types of user roles.

The Apervita Low-Code Analytics and Data Platform

Apervita was conceived specifically for the needs of the health industry. Apervita is a low-code platform for health analytics and data. Apervita is where health professionals from around the globe are transforming the world's health knowledge into a variety of trusted applications with limited needs for software developers. It enables the analytics and data to be separated and managed independently, the agile creation of new analytics, their reuse and iteration, and the ability to empower entire enterprise operations and workflows with shared intelligence.

The Apervita Value Proposition

⚡	**Empower**	Infuse powerful insight into workflow throughout the enterprise
◐	**Operate**	Enterprise-wide management and control of 1,000s of insight solutions
⚙	**Innovate**	Agile development 100x faster, from concept to deployment
▦	**Unify**	Simplify and harmonize fragmented data, analytics, and technology

Key Apervita Benefits

1.
Create a Shared Knowledge Library

While many health enterprises have invested heavily in health data, often naming a Chief Data Officer, the person responsible for data management and governance, we are beginning to see an increasing trend towards in-house knowledge curation, often led by analytics, business intelligence and informatics teams. We believe that this trend will likely give the rise to the role of Chief Knowledge Officer (CKO). The future CKO will be responsible for directing the sourcing, curation, use, and life cycle of enterprise health knowledge, ensuring its integrity and continual improvement. The CKO will combine the best knowledge from industry experts with in-house knowledge, helping the enterprise automate their enterprise processes.

The Apervita low-code data and analytics platform brings rigor to the development of the enterprise knowledge assets and overtime to manage an entire library. It starts with the development of individual scores, algorithms, and models to solve specific enterprise problems. They are created using platform development tools requiring only low-code or no-code skills. If required, they can be re-used or re-purposed, and orchestrated together to form larger solutions. Once created, they can be quickly tested with sample data using on-board debugging and test tools. For larger teams, different roles and privileges can be broken up between different skills sets. So, while one person might be responsible for development of the analytic script, another might be responsible for testing, and a third person responsible for integrating data and packaging results into a user experience. One platform, for many purposes, using many data sources.

2.
Design Insightful and Integrated Workflow Experiences

Systems of shared insight are interconnected with other enterprise systems and applications through APIs, allowing data and analytics results to be distributed. APIs can be integrated in a point-to-point fashion, or more ambitious enterprises may decide to create their own API gateway. An API gateway provides a single point of management for all connectivity across platforms. It can also be used to abstract vendor APIs and provide a uniform API layer for developers to access, enabling insight innovation to further accelerate.

Apervita turns the tables on siloed user experiences, by introducing an open API-enabled environment where the results of any corporate insight can be shared and woven back into the enterprise workflow fabric. Insight can either power third-party applications or be used through visualizations on the platform. Apervita takes advantage of applications already deployed, such as financial, clinical and operational applications, and enriches them with a centralized source of insight. Today, many systems and applications already have methods to embed insight results delivered through APIs, such as smart EHR infobuttons that on demand can securely pass a set of patient data through an API and display actionable results within a browser frame, or mobile app notifications, splash screen messages, or BI tool dashboards.
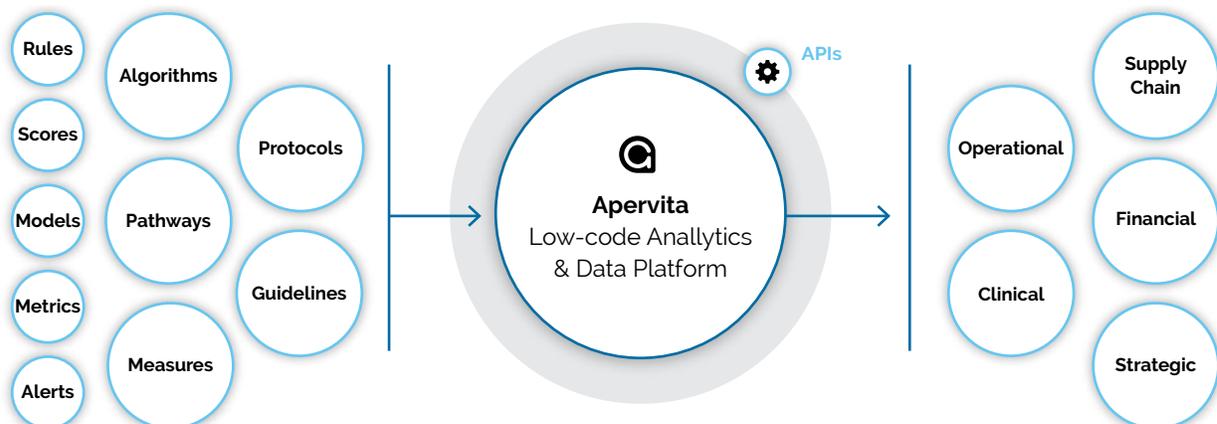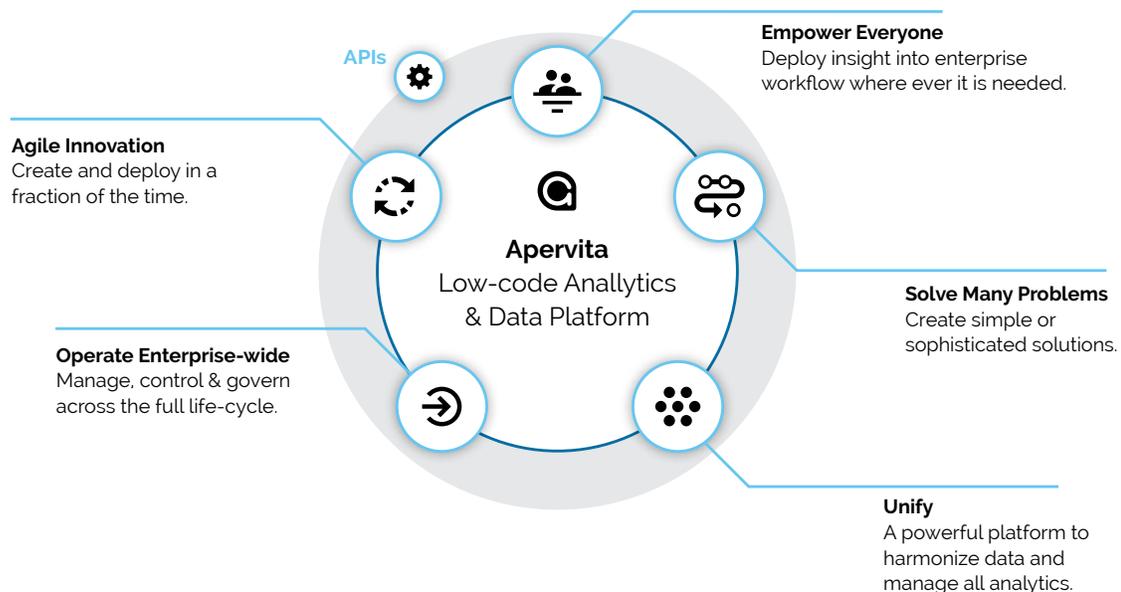
3.
Unify and Harmonize Data

In today's traditional IT environment, a great deal of attention needs to be paid to efficiently assemble the data required for any particular analysis - a major hurdle in itself. That's why we build data marts to support BI, but there are never enough data marts, nor skilled personnel to build them. This classical approach embeds analytics into data, and results into siloed reports, which significantly limits their use. Enhancements to analytics are time consuming, and dependent on the interests of the solution vendor. This legacy model is no longer tolerable by the majority of CIOs who wish to gear up their organizations to take advantage of their investments in digital health data.

Users of Apervita benefit from innovations like no-SQL, low-code, and graph databases to make it much quicker and simpler to connect complex enterprise data to analytics. By separating analytics from the underlying data, analytics can evolve independently and within their own life cycle, without requiring data models or data marts, and with no prior knowledge of the nuances of underlying data format, structure, or nomenclature. Data only needs to be mapped to the analytic at run-time, often called latebinding. Connectors in the form of rich coding systems, value sets, and ontologies normalize the view of data, so that even complex data can be rapidly connected to the analytic at run-time.

4.
Scale with Open, On-Demand Platforms

In the old days, we would frequently need to project future capacity requirements, always ensuring that our data center was dimensioned to provide sufficient front-end and back-end transactional power and data storage leeway to meet the demands of emerging use cases. Even with a finite number of use cases, this task would typically be difficult and time consuming. As we move to a new paradigm where hundreds, if not thousands, of use cases will be managed simultaneously, we must look towards the potential of cloud technologies.

The Apervita cloud infrastructure allows enterprise professionals to focus on the task at hand, i.e. deploying and operating powerful health analytics, while taking advantage of cloud economics with multi-dimensional scalability. By multi-dimensional we mean their ability to scale from a small to an immense number and variety of users, use cases, executions, facts, visualizations, and API calls. The infrastructure provides on-demand scalability while offering appropriate mechanisms for the physical and logical security of data, analytics, and intellectual property. Importantly, Apervita also facilitates interoperability, eliminating black-box, insular vendor products, by incorporating native interoperability using popular web service APIs and the ability to interoperate with healthcare-specific standards, like HL7, CCDs and FHIR and CQL. This allows enterprise systems and platforms to seamlessly exchange data and analytics results.

APIs

Empower Everyone
Deploy insight into enterprise workflow where ever it is needed.

Agile Innovation
Create and deploy in a fraction of the time.

Apervita
Low-code Anallytics & Data Platform

Solve Many Problems
Create simple or sophisticated solutions.

Operate Enterprise-wide
Manage, control & govern across the full life-cycle.

Unify
A powerful platform to harmonize data and manage all analytics.

5.
Manage the Analytics Life Cycle

Most health enterprises are only just beginning to come to grips with the ever increasing number of analytics they need to deploy. As they do so, IT leaders must consider how to enforce the appropriate controls and governance framework for analytics to be deployed and managed in live production environments. How can they enforce enterprise-wide management and centralized control, while enabling distributed teams to participate in creating valuable insight? Today's fragmented approach to analytics means that these controls are almost entirely lacking.

The Apervita platform comprehensively addresses this need. It allows administrators to delegate multiple roles, such as author, developer, informatics, publisher and user. Each role plays their part in the analytic and data life cycle, having different responsibilities and privileges, as assigned by an administrator. The platform permits the creation of virtual enterprise workspaces which can be dedicated to different goals. Workspaces allow users, analytics and data to be appropriately separated off from each other. Apervita also allows for release control of analytics, where authors may decide to do A/B testing, deploy an analytic to a sandbox, or release it to the enterprise and then continue to monitor it. Analytic life cycle management puts the enterprise in full operational control of its computable knowledge and governance process.

A few examples of many enterprise critical challenges that can be solved with Apervita.

Inpatient Safety	Outpatient Care	Optimize Finances	Capture Incentives	Avoid Penalties	Report Measures
Inpatient Early Warning Essentials	Chronic Care Mgmt. Essentials	Population Risk Claims	Pay-for-Performance	Readmissions	eQuality Measures
Sepsis	Diabetes	Denials	MACRA/MIPS goals	ER Visit Frequency & Duration	Public Health
Cardiac Arrest	Heart Failure	Fraud Detection	Bundled Payments	Overuse of Medical	Case Reporting
SSI	Cardiac Risk	Inappropriate Use	Comprehensive	Devices & Imaging	Reporting for:
CAUTI	Stroke	Length of Stay Mgmt.	Care for Joint	ICDs	Accreditation
CLI	Hypertension	Strategic Planning	Replacement,	Imaging Studies	Certification
Decubitus Ulcers	Mental Health		Valve Replacement		Benchmarking
	Prevention & Wellness		Pacemaker Implants		Payer Agreements
	Cancer Prognosis				